7.0 CEQA CONSIDERATIONS

This chapter describes those potential environmental effects identified in Chapter 3.0, Transportation, Chapter 5.0, Environmental Consequences and Mitigation Measures, and Chapter 6.0, Construction Methods, Impacts, and Mitigation Measures, that would be considered significant under the California Environmental Quality Act (CEQA). Potential cumulative impacts and the potential for the Project to stimulate unplanned growth are also described.

While CEQA requires that a determination of significant impacts be stated in an EIR, the National Environmental Policy Act (NEPA) does not have a similar requirement for an EIS. Under NEPA, significance is used to determine whether an EIS or some other level of documentation is required, and once a decision to prepare an EIS is made, the magnitude of the impact is evaluated and no further judgment of its significance is required. The CEQA significance criteria and determinations of significance of adverse effects have been summarized in this chapter. Significant environmental impacts which can not be avoided are also described in this chapter.

Under CEQA, a finding of significant impacts requires that mitigation measures be identified to alleviate or reduce the impact to less-than-significant, NEPA anticipates that an EIS will identify means to mitigate or reduce the adverse impacts of a project if such measures are not already included in the proposed action or alternatives. While Chapters 5.0 and 6.0 identify general mitigation measures, this chapter identifies mitigation measures as defined under CEQA to address significant impacts and improvement measures are identified to address impacts, which may be less-than-significant.

7.1 SIGNIFICANCE CRITERIA

CEQA requires that an EIR identify the significant environmental effects of the Project (CEQA Guidelines Section 15126), but does not provide thresholds for significance. Instead, CEQA Guidelines Section 15064(b) states that "the determination…calls for careful judgment on the part of the public agency involved…" and that "an ironclad definition of significant effect in not possible because the significance of an activity may vary with the setting." In May 2006, the San Francisco Board of Supervisors adopted Ordinance 1160-06 requiring the use of the CEQA Initial Study Checklist based on the form included in Appendix G in the state CEQA Guidelines for determining level of significance. Accordingly the Planning Department has recently adopted a new Initial Study checklist, consistent with Appendix G, but also incorporating additional questions specific to the urban environment of San Francisco. This new checklist includes some new topic areas that are generally not relevant within San Francisco and, upon consideration, have been determined not to involve any potential impacts resulting

from the proposed Project. These topics include agriculture, airports and airport plans, septic systems, and mineral resources. All other of the Appendix G requirements are discussed in their appropriate environmental categories. These criteria are summarized in Table 7-1.

Some impact categories lend themselves to scientific or mathematical analysis, and therefore to quantification. For other impact categories that are more qualitative or are dependent on changes to the existing setting, a hard-and-fast threshold is not generally feasible. In these cases, the definition of significant effects from the CEQA Guidelines (Section 15382), "a substantial adverse change in physical conditions" has been applied as the significance criterion. Also CEQA, unlike NEPA, does not require a discussion of socioeconomic effects except where they would result in physical changes, and states that social or economic effects shall not be treated as significant effects (see CEQA Guidelines Sections 15064 (f) and 15131). For this reason, socioeconomic criteria are not included in Table 7-1.

TABLE 7-1

CEQA SIGNIFICANCE CRITERIA

Impact Category	CEQA Significance Threshold	Source(s)
Traffic (Congestion)	The operational impact on signalized intersections is considered significant when project-related traffic causes the intersection level of service to deteriorate from LOS D or better to LOS E or F, or from LOS E to LOS F. The project may result in significant adverse impacts at intersections that operate at LOS E or F under existing conditions depending upon the magnitude of the project's contribution to the worsening of the average delay per vehicle. In addition, the project would have a significant adverse impact if it would cause major traffic hazards or contribute considerably to cumulative traffic increases that would cause deterioration in levels of service to unacceptable levels.	State CEQA Guidelines, Appendix G and San Francisco Planning Department
Traffic **(**Circulation)	A significant impact would occur if the project would substantially change traffic circulation patterns, creating an unusual safety hazard, or eliminating access to surrounding areas.	State CEQA Guidelines, Appendix G.
Parking	San Francisco does not consider parking supply as part of the permanent physical environment. Parking conditions are not static, as parking supply and demand varies from day to day, from day to night, from month to month, etc. Hence, the availability of parking spaces (or lack thereof) is not a permanent physical condition, but changes over time as people change their modes and patterns of travel. Parking deficits are considered to be social effects, rather than impacts on the physical environment as defined by CEQA. Under CEQA, a project's social impacts need not be treated as significant impacts on the environment. Environmental documents should, however, address the secondary physical impacts that could be triggered by a social impact. (CEQA Guidelines § 15131(a).) The social inconvenience of parking deficits, such as having to hunt for scarce parking spaces, is not an environmental impact, but there may be secondary physical environmental impacts, such as increased traffic congestion at intersections, air quality impacts, safety impacts, or noise impacts caused by congestion. In the experience of San Francisco transportation planners, however, the absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit service, taxis, bicycles or travel by foot) and a relatively dense pattern of urban development, induces many drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service in particular, would be in keeping with the City's "Transit First" policy. The City's Transit First Policy, established in the City's Charter Section 16.102 provides that "parking policies for areas well served by public transit. The transportation analysis accounts for potential secondary effects, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the project site and then seek parking farther away if convenient parking is	San Francisco Planning Department

TABLE 7-1

CEQA SIGNIFICANCE CRITERIA

Impact Category	CEQA Significance Threshold	Source(s)
	unavailable. Moreover, the secondary effects of drivers searching for parking is typically offset by a reduction in vehicle trips due to others who are aware of constrained parking conditions in a given area. Hence, any secondary environmental impacts which may result from a shortfall in parking in the vicinity of the proposed project would be minor, and the traffic assignments used in the transportation analysis, as well as in the associated air quality, noise and pedestrian safety analyses, reasonably addresses potential secondary effects.	
Transit Services and Accessibility	The project would have a significant effect on the environment if it would cause a substantial increase in transit demand that could not be accommodated by adjacent transit capacity, resulting in unacceptable levels of transit service; or cause a substantial increase in delays or operating costs such that significant adverse impacts in transit service levels could result.	San Francisco Planning Department
Pedestrians	The project would have a significant effect on the environment if it would result in substantial overcrowding on public sidewalks, create potentially hazardous conditions for pedestrians, or otherwise interfere with pedestrian accessibility to the site and adjoining areas.	San Francisco Planning Department
Bicycles	The project would have a significant effect on the environment if it would create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle accessibility to the site and adjoining areas.	San Francisco Planning Department
Loading Activities	A project would have a significant effect on the environment if it would result in a loading demand during the peak hour of loading activities that could not be accommodated within proposed on-site loading facilities or within convenient on-street loading zones, and created potentially hazardous conditions or significant delays affecting traffic, transit, bicycles or pedestrians.	San Francisco Planning Department
Land Use	A significant impact would occur if the project would physically divide an established community; have a substantial adverse impact upon the existing character of the project's vicinity or conflict with any applicable land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental affect.	State CEQA Guidelines, Appendix G.
Population/Housing	A significant impact would occur if the project would directly or indirectly induce substantial population growth in an area or displace substantial numbers of existing housing units or residents requiring the construction of replacement housing elsewhere. Unlike NEPA, CEQA does not require a discussion of socioeconomic effects, except where they would result in physical changes, and states that social or economic effects shall not be treated as significant effects unless there is a physical effect.	State CEQA Guidelines, Appendix G. CEQA Guidelines Sections 15064(e) and 15131
Community Facilities and Services	A significant impact would occur if the project would: conflict with established recreational, educational or religious uses; conflict with adopted plans and goals of the community; or create additional demand for public service facilities, the expansion of which would result in significant environmental impact. A significant impact would also occur if acceptable service ratios, response	State CEQA Guidelines, Appendix G.

TABLE 7-1

CEQA SIGNIFICANCE CRITERIA

Impact Category	CEQA Significance Threshold	Source(s)
	times or other performance objectives for Fire, Police, schools, parks or other public facilities would not be maintained or if the project would increase the use of public facilities such that substantial physical deterioration would occur or be accelerated.	
Cultural Resources	A project is normally found to have a significant impact on the environment if the project would have a substantial adverse change to an historic resource – an archaeological site, an historic architectural structure, or an historic district. A "historic resource" is defined as a resource that is listed in or determined eligible for listing in the California Register of Historic Resources; listed in or determined eligible for listing in the National Register of Historic Places; one that is included as significant in a locally adopted register such as Article 10 and 11 of the San Francisco Planning Code; or one determined by the lead agency to be historically significant. A resource that is deemed significant due to its identification in a historic resource survey that meets the criteria of Public Resources Code Section 5024.1(g) would be presumed an historic resource unless a preponderance of evidence demonstrates otherwise. A "substantial adverse change" is defined as demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired (a major change to the defining elements of historic character). A project may be found to have a significant impact on an archeological resource if it would impair or have a substantial adverse change to a resource that has been deemed an "historical resource" or a "unique archeological resource" or where it can be demonstrated that there is a potential for the resource to significantly contribute to questions of scientific or historical importance. Destruction of a unique paleontological site or geological feature or disturbance of human remains would also be considered a significant adverse effect of a project.	State CEQA Guidelines, Appendix G, Section 21084.1 and San Francisco Planning Department
Visual and Aesthetics	Would the project have a substantial effect on a scenic vista ,substantially degrade the existing visual character or the quality of the site and its surroundings, or generate obtrusive light or glare that would adversely affect day and nighttime views or substantially affect other properties? The project would have a significant effect on the environment if it would substantially damage degrade or obstruct publicly accessible views and resources or result in a substantial, demonstrable negative aesthetic effect;	State CEQA Guidelines, Appendix G. San Francisco Planning Department
Shadow	A project would have a significant effect if it would result in substantial new shadow on public open	San Francisco Planning Code,

TABLE 7-1

CEQA SIGNIFICANCE CRITERIA

Impact Category	CEQA Significance Threshold	Source(s)
	space under the jurisdiction of the Recreation and Park Commission during the period from one hour after sunrise to one hour before sunset, at any time of the year. A project could also have a significant effect if it were to cast shadow so that direct sunlight was not maintained on named sidewalks in the downtown C-3 districts as defined in San Francisco Planning Code Section 146.	Sections 295 and 146
Utilities	A significant impact would occur if the project would conflict with wastewater treatment requirements of the Bay Area Regional water Quality Control Board or require or result in the construction of: new water or wastewater treatment facilities or new storm water drainage facilities the construction of which would cause significant environmental effects. A significant impact would also occur if there were not sufficient water, wastewater treatment or landfill facilities available to serve the projects needs.	Derived from State CEQA Guidelines, Appendix G
Energy	A significant impact would occur if the project would encourage activities which result in the use of large amounts of fuel, water or energy; or use fuel, water, or energy in a wasteful manner.	Derived from State CEQA Guidelines, Appendix G
Geology and Seismicity	A significant impact would occur if the project would expose people or structures to major geologic hazards such as rupture of a known earthquake fault, strong seismic ground-shaking, liquefaction or landslides. A significant impact would also occur if the project resulted in substantial soil erosion, loss of topsoil or a substantial change in the topography of any unique geologic or physical features or if it were located on unstable or expansive soils so that there were substantial risks to life or property.	State CEQA Guidelines, Appendix G.
Hydrology and Water Quality	A significant impact would occur if the project would violate any water quality standards or waste discharge requirements, substantially change the existing drainage patterns, create or contribute substantially to runoff water that exceeds the existing or planned stormwater system or cause substantial flooding, erosion, or siltation, or would substantially degrade water quality, or would substantially degrade or deplete ground water resources.	Derived from State CEQA Guidelines, Appendix G
Biological Resources	A project would have significant impact if there were a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or if there would be a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. A significant impact would also occur if the project were to substantially conflict with any local policies or ordinances protecting biological resources, such as natural areas or policies of the Open Space/Recreation Element or with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.	State CEQA Guidelines, Appendix G
Hazards /Hazardous Materials	A significant impact would occur if the project would create a potential public health hazard involving the transport, use, production, or disposal of materials which pose a hazard to people or animal or plant	State CEQA Guidelines, Appendix G; City and County

TABLE 7-1

CEQA SIGNIFICANCE CRITERIA

Impact Category	CEQA Significance Threshold	Source(s)
	populations in the area affected, or if the project would emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, or be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code 65962.5 or within the area in San Francisco identified pursuant to Article 20 of the S.F. Health Code (Maher Area) and, as a result, would create a significant hazard to the public or the environment. A significant impact would also occur if the project would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation.	of San Francisco Health Code
Air Quality	A significant impact would occur if the project would violate any ambient air quality standard (NAAQS or CAAQS) or obstruct implementation of the current BAAQMD Clean Air Plan, increase the number or frequency of violations of air quality standards, contribute substantially to an existing or projected air quality violations, expose sensitive receptors to substantial pollutant concentrations or cause objectionable odors affecting a substantial number of people.	State CEQA Guidelines, Appendix G; US EPA; BAAQMD
Noise and Vibration	A significant impact would occur if the project would create a substantial permanent increase in the ambient noise levels above levels common and accepted in urban areas resulting in the exposure of people to noise levels in excess of local noise ordinance established standards and affect the use or enjoyment of nearby areas. A noise increase of 10 db is perceived as a doubling of noise, and is generally considered substantial. A significant impact would occur if the project would expose people to excessive and intrusive groundborne vibration or a groundborne noise level substantially affecting adjacent land uses. A vibration level of 75 VdB is generally considered intrusive for residential land uses. A significant impact would also occur if the project were to expose people to existing excessive ambient noise levels in the project vicinity.	State CEQA Guidelines, Appendix G
Construction Period Effects	Construction impacts on traffic, transit, noise, air quality, and the visual environment would generally not be considered significant since construction-related changes are by their nature temporary. A significant impact would occur only if temporary effects substantially affected accessibility to an area for a long period of time, or posed a severe health or safety threat.	San Francisco Planning Department; State CEQA Guidelines, Section 15382

Source: San Francisco Planning Department

7.2 FINDINGS OF SIGNIFICANCE

A summary of the environmental impacts associated with the implementation of the Project are summarized in Table 7-2. A determination as to the significance of the impacts and the mitigation measures and improvement measures recommended to reduce Project impacts are also identified. The detailed discussion of impacts and mitigation measures is included in Chapter 3.0, Transportation and Chapter 5.0, Environmental Consequences and Mitigation Measures.

All of the significant environmental impacts identified can be mitigated to a less-than-significant level except those related to traffic, residential and small business displacement, archaeological resources, and historical resources. These are summarized in Section 7.3.

7.3 SIGNFICANT ENVIRONMENTAL EFFECTS WHICH CAN NOT BE AVOIDED

7.3.1 TRAFFIC (CONGESTION)

Under the No Project/TSM Alternative, traffic congestion and delays would increase at all of the five intersections analyzed. The Third/King ~~and Fourth/Harrison~~ Streets intersection~~s~~ would degrade from LOS D to LOS E, the Fourth/King Streets intersection would continue to operate at LOS E, and Sixth/Brannan Streets intersection would experience increased delays at LOS F in the a.m. peak hour. In the p.m. peak hour, the Third/King, Fourth/King, and Sixth/Brannan Streets intersections would continue to operate at LOS F. Under all Build Alternatives, the Third/King, Fourth/King, and Sixth/Brannan Streets intersections would operate at LOS F in the a.m. or p.m. peak hours. The Project would have a cumulatively considerable contribution to the 2030 adverse cumulative impact at the following locations: Sixth/Brannan Streets intersection for Alternative 2~~;~~ and Third/King, ~~and~~ Fourth/King ~~for Alternatives 3A and 3B~~, and Fourth/Harrison Streets intersections for Alternative 3A and 3B (see Tables E-12 and E-13 in Appendix E). This determination was based on the examination of traffic volumes for the traffic movements which determine overall LOS intersection performance.

For Alternative 2, ~~two~~ three of the five intersections analyzed would operate at LOS E or F conditions for Cumulative 2030 conditions during the a.m. peak hour and three of the five intersections analyzed would operate at LOS ~~E or~~ F conditions for Cumulative 2030 conditions during the p.m. peak hour. There would be a project-specific significant traffic impact at the Third/King intersection compared to No Project/TSM conditions due to a deterioration of LOS from ~~D~~ E to F for the a.m. peak hour. The Project's share of future traffic growth at the Sixth/Brannan Streets intersection would constitute a cumulatively considerable contribution to adverse 2030 cumulative traffic conditions for the p.m. peak hour. Alternative 2 contributions to adverse cumulative conditions were found to be significant, in particular, as under Alternative 2 project-related traffic would constitute substantial percentages for

critical volume movements that would operate with adverse conditions. As project-related traffic would represent a

TABLE 7-2

SUMMARY OF ENVIRONMENTAL IMPACTS

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
TRANSPORTATION **Transit** Construction	No construction impacts.	*Less-than-Significant Impact:* 1. Temporary reduction in traffic lanes on King, Third, Fourth, Harrison, Kearny, Geary, and Stockton Streets during construction would disrupt transit operations. 2. F-line service would be temporarily disrupted for the subway crossing of Market Street. 3. Rerouting of the 30-Stockton and 45-Union/Stockton trolley bus lines would likely be required. *Improvement Measures:* 1. DPT will develop detour routes for all non-transit related traffic to minimize the construction disruption to transit. 2. Overhead wires for the 30-Stockton and the 45-Union/Stockton lines will be temporarily relocated or reconstructed to alternative routes where feasible or motor coaches would be temporarily substituted on alternative routes.	*Less-than-Significant Impact:* Same as Alternative 2, except: 1. Reduction in traffic lanes would not occur on Third, Harrison, Kearny, or Geary Streets 2. Buses would be temporarily rerouted to the west side of Fourth Street. 3. The bus stop at the southwest corner of Fourth and Howard Streets would be temporarily relocated. 4. Construction of a TBM retrieval shaft near Washington Square would require temporary relocation of bus stops for the 30-Stockton and 45-Union/ Stockton and possible temporary shifting of overhead wires to accommodate continued transit service. 5. Excavation of the construction shaft under the I-80 freeway between Bryant and Harrison Streets would also impact Golden Gate Transit bus operations. 6. Temporary disruption to BART service could occur	*Less-than-Significant Impact:* Same as Alternative 3A, except: 1. The overall project duration of construction would be .5 years shorter. 2. The bus stop at the southwest corner of Fourth and Howard Streets would not need to be relocated. 3. The BART entry at One Stockton Street would need to be closed temporarily during construction. *Improvement Measures:* Same as Alternative ~~2~~ 3A.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		3. SFMTA will provide signing related to transit changes in Chinese as well as English.	during construction. *Improvement Measures:* Same is Alternative 2, except SFMTA would coordinate with TJPA and GGBHTD to minimize construction impacts on Golden Gate Transit. SFMTA would stage excavation shaft construction and utility relocation to maintain access to the bus storage facility by Golden Gate buses and work with GGBHTD to develop bus detour routing plans for continued access. Access to the construction shaft would be scheduled to avoid conflict with the active bus periods. MTA and BART will prepare and enter into a Station Improvement Coordination Plan to include construction management procedures and processes to address any and all construction and operational impacts resulting from the tuneel boring. MTA will also coordinate with BART to develop bus bridges, if needed, public outreach, and other programs to minimize impacts to transit riders during construction.	
Operation/Cumulative	*Less-than-Significant Impact:*	*Less-than-Significant Impact:*	*Less-than-Significant Impact:*	*Less-than-Significant Impact:*

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
	1. Muni Metro rail service on the Embarcadero and the 9AX San Bruno express buses are projected to experience capacity issues by 2030. The capacity constraints on the Embarcadero rail line between Market Street and Folsom Street would preclude capacity improvements for the rail service. 2. Surface transit travel times would increase as a result of increased congestion on streets. *Improvement Measure:* Muni will monitor ridership levels and modify service plans to increase transit capacity as ridership demand warrants.	The Central Subway rail service and the 9AX/~~BX~~ San Bruno express buses are projected to experience capacity issues by 2030. *Improvement Measure:* Same as Alternative 1.	Same as Alternative 2, except the Powell Street Station may also experience capacity issues at the concourse level due to increased passenger activity at the northeast end of the station. *Improvement Measure:* Same as Alternative 2, except the MTA and BART will prepare and enter into a Station Improvement Coordination Plan for the Powell Street Station that will provide for, at a minimum, implementation of allocation of cost for any station infrastructure improvements necessary to maintain pedestrian safety and a pedestrian level of service of D or better at the Powell Street Station as a result of the Central Subway Project.	1. The Central Subway rail service and the 9AX San Bruno Express are ~~is~~ projected to experience capacity issues by 2030. 2. The Powell Street Station may also experience capacity issues at the concourse level due to increased passenger activity at the northeast end of the station. *Improvement Measure:* Same as Alternative ~~2~~, 3A.
Traffic Construction	No construction impacts.	*Less-than-Significant Impact:* 1. Temporary reduction in traffic lanes on King, Third, Fourth, Harrison, Kearny, Geary, and Stockton Streets during construction would disrupt traffic flows. 2. The subway crossing of Market Street would disrupt traffic. *Improvement Measures:* DPT will develop detour routes for all non-transit related traffic	*Less-than-Significant Impact:* Temporary reduction in traffic lanes on Fourth and Stockton Streets during construction would disrupt traffic flows. *Improvement Measures:* Same as Alternative 2.	*Less-than-Significant Impact:* Same as Alternative 3A, except the overall duration would be 0.5 years shorter. *Improvement Measures:* Same as Alternative 2.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		to minimize the construction		

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		disruption to traffic.		
Operation/Cumulative	*Significant Impacts:* ~~Increases in traffic congestion and delays would occur in 2030 at all of the five intersections evaluated as a result of cumulative traffic growth.~~ Third/King ~~(a.m. peak only),~~ Streets intersection would degrade from LOS E to LOS F in the a.m. peak hour and would continue to operate at LOS F in the p.m. peak hour. Fourth/King~~,~~ and Sixth/Brannan Streets intersections would continue to operate at LOS E or F conditions in the a.m. and p.m. peak hours. ~~The intersection of Fourth and Harrison Streets would degrade from LOS B to LOS E when compared to the existing conditions.~~ ~~*Mitigation Measure:*~~ ~~Restriping the southbound curb lane of Fourth Street to accommodate a shared through/right-turn lane to Harrison Street would mitigate the impacts to LOS B resulting in a less-than-significant impact. Harrison Street would mitigate the impacts to LOS B resulting in a less-than-~~	*Significant Impacts:* ~~Increases in traffic congestion and delays would occur in 2030 at three out of the five intersections evaluated.~~ The Project would have a significant traffic impact at the Third/King Streets intersection in the a.m. peak hour due to degradation in LOS from ~~D~~ E to F when compared to the No Project/TSM Alternative and a cumulatively considerable contribution to the cumulative traffic impacts at the Sixth/Brannan Streets intersection during the p.m. peak hour in 2030. *Significant environmental effects which can not be avoided:* The traffic impacts at Third/King and Sixth/Brannan Streets intersections could not be reasonably mitigated to a less-than-significant level.	*Significant Impacts:* ~~Increases in traffic congestion and delays would occur in 2030 at three out of the five intersections evaluated.~~ The Project would have a significant traffic impact at the Third/King Streets intersection in the a.m. peak hour due to a degradation in LOS from ~~D~~ E to F and at the Fourth/Harrison Streets intersection in the p.m. peak hour due to a degradation in LOS from C to E when compared to the No Project/ TSM Alternative. This alternative would have a cumulatively considerable contribution to the adverse cumulative traffic impacts at the King Street intersections with Third and Fourth Streets and the Fourth/Harrison Streets intersection during the p.m. peak hour in 2030. *Mitigation Measure:* Restriping the southbound curb lane of Fourth Street to accommodate a shared through/right-turn lane to Harrison Street would mitigate the impacts to LOS B resulting in a less-than-significant	*Significant Impacts:* 1. Same as Alternative 3A, except the Project would also have ~~a significant impact at the Fourth/Harrison Streets intersection during the a.m. peak hour when compared to the No Project/TSM Alternative and~~ a cumulatively considerable impact on the cumulative traffic impacts at the King Street and Third Streets intersection during a.m. peak hour ~~and the Fourth/Harrison Streets intersection during the p.m. peak hour~~ in 2030. 2. In addition, the portal at Fourth Street under I-80 may restrict ~~access to the proposed bus storage facility at Perry Street and~~ large truck movements onto Stillman Street. *Mitigation Measures:* Same as Alternative 3A, in addition SFMTA will explore options ~~design modifications to the portal location~~ with Caltrans, the TJPA and Golden Gate Transit that will permit ~~bus access to Perry Street and~~ truck access to Stillman Street ~~that will~~ to reduce the impacts to

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
	~~significant impact.~~		impact.	a less-than-significant level.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
	Significant environmental effects which can not be avoided: ~~None of the remaining traffic impacts could be reasonably mitigated.~~ The traffic impacts at Third/King, Fourth/King, and Sixth/Brannan Streets intersections could not be reasonably mitigated to a less-than-significant level.		*Significant environmental effects which can not be avoided:* The traffic impacts at the Third/King and Fourth/King Streets intersections could not be reasonably mitigated to a less- than-significant level.	*Significant environmental effects which can not be avoided:* Same as Alternative 3A.
Freight and Loading Construction	No construction impacts.	*Less-than-Significant Impact:* 1. During construction, temporary disruption to truck traffic flow and removal of on-street loading zones adjacent to construction work areas would occur along the Corridor on King, Third, Fourth, Harrison, Kearny, Geary, and Stockton Streets. *Improvement Measures;* 1. DPT will develop detour routes for all non-transit related traffic to minimize the construction disruption to traffic. 2. Immediately adjacent to the construction zones, a portion of the curb parking should be converted to short-term truck	*Less-than-Significant Impact:* Same as Alternative 2, except there would be no loss of on-street loading zones on King, Third, Harrison, Kearny, or Geary Streets. *Improvement Measures*: Same as Alternative 2.	*Significant Impacts:* Cumulative construction impacts could occur on the block bounded by Perry, Third, Stillman, and Fourth Streets due to sequential construction of the I-80 retrofit, Golden Gate Transit bus storage facility, and the Central Subway projects. *Mitigation Measures:* DPT will work with the property and business owners on Perry and Stillman Streets to develop temporary detour routes for traffic to maintain property access during construction. With the implementation of this mitigation measure, the

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		loading zones to facilitate delivery of goods to nearby businesses.		construction freight and loading impacts on this block would be mitigated to a less-than-significant level. *Less-than-Significant Impact:* Same as Alternative 3A. *Improvement Measures*: Same as Alternative 2.
Operation/Cumulative	*Less-than-Significant Impact:* The increase in traffic volumes is expected to impact all traffic flows, but would not disproportionately affect truck traffic. *Improvement Measures:* No improvement measures are proposed.	*Less-than-Significant Impact:* Permanent removal of approximately 10 or 11 on-street loading spaces (3 on Third, Street, 2 on Fourth Street, and 5 or 6 near Union Square Station) would occur. *Improvement Measures;* During final design, new locations for off-street loading should be identified along Third and Fourth Streets, which may displace on-street parking.	*Less-than-Significant Impact:* Permanent removal of some on-street loading spaces on Fourth Street, 5 or 6 near Union Square Station, and two spaces on Stockton Street between Clay and Washington Streets would occur. *Improvement Measures;* During final design, new locations for off-street loading should be identified along Fourth Street or on Brannan Street for the 601 Lofts Building, which may displace on-street parking.	*Less-than-Significant Impact:* 1. Permanent removal of some on-street loading spaces on Fourth Street and four spaces on Stockton Street between Washington and Jackson Streets would occur. 2. The access to Stillman Street for larger trucks would be restricted under this alternative due to the portal location. *Improvement Measures;* Same as Alternative 2, except SFMTA will explore with the TJPA and Golden Gate Transit options that will permit truck access to Stillman Street.
Parking Construction	No construction impacts.	*Less-than-Significant Impact:* 1. All on-street parking would be temporarily prohibited in construction zones.	*Less-than-Significant Impact:* Less than Alternative 2 because less surface disruption with TBM.	*Less-than-Significant Impact:* Same as Alternative 3A. *Improvement Measures;*

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		2. Use of the SXM would mean sequential loss of parking on a block by block basis along the	*Improvement Measures;*	Same as Alternative 2.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		Corridor. *Improvement Measures;* 1. During construction, signs denoting alternative parking areas would be placed upstream of the construction zone. 2. Retained parking spaces should be designated for short-term and freight loading purposes.	Same as Alternative 2.	
Operation/Cumulative	No operation or cumulative impacts.	*Less-than-Significant Impact:* This alternative would eliminate 111 on-street parking spaces and 59 off-street parking spaces. *Improvement Measures;* No improvement measures are proposed.	*Less-than-Significant Impact:* This alternative would eliminate 29 on-street parking spaces and 29 off-street parking spaces. *Improvement Measures;* No improvement measures are proposed.	*Less-than-Significant Impact:* This alternative would eliminate 82 on-street parking spaces for the semi-exclusive option and ~~81~~79 spaces for the mixed-flow option and 59 off-street parking spaces. An additional 3 spaces may be removed on the north side of Ellis Street to accommodate emergency exiting. *Improvement Measures;* No improvement measures are proposed.
Pedestrians Construction	No construction impacts.	*Less-than-Significant Impact:* 1. Sidewalks on one side of the street would be temporarily closed during excavation of each of the subway stations. 2. The west sidewalk of Stockton Street would be closed during the entire construction period adjacent to the Union Square and Chinatown stations.	*Less-than-Significant Impact:* Same as Alternative 2. *Improvement Measures:* Same as Alternative 2.	*Less-than-Significant Impact:* Same as Alternative 2, except that the west sidewalk on Stockton Street would be closed only during construction of the Chinatown Station *Improvement Measures;* Same as Alternative 2.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		Improvement Measures; During excavation of subway stations, access to adjacent businesses should be maintained on the existing sidewalk or via temporary ADA compliant access ways.		
Operation/Cumulative	No operation or cumulative impacts	<u>*Less-than-Significant Impact:*</u> Sidewalk widths would be reduced adjacent to the Market Street and Union Square Stations. *Improvement Measures;* 1. During final design, consideration should be given to widening the Stockton Street sidewalks near Union Square or reducing the width of the stairways and escalators. 2. Elevator shafts should be located so as not to block the line of sight of motorists exiting the garage to maximize pedestrian safety. 3. During final design, elevators, escalators, and stairways should be located as close as possible to the primary circulation path to facilitate disabled access.	<u>*Less-than-Significant Impact:*</u> Sidewalk widths would be reduced adjacent to the Moscone and Union Square/Market Street Stations. *Improvement Measures;* Same as Alternative 2, except that consideration should also be given to securing an easement within the Moscone Center right-of-way to maintain a minimum sidewalk width adjacent to the Moscone Center on Fourth and Howard Streets at the station entrance.	<u>*Less-than-Significant Impact:*</u> Sidewalk widths on Geary Street would be reduced adjacent to the Union Square Station. *Improvement Measures;* 1. During final design consideration should be given to ensure that stairways and escalators would not compete with sidewalk space for pedestrians. 2. Elevator shafts should be located so as not to block the line of sight of motorists exiting the garage to maximize pedestrian safety. 3. During final design, elevators, escalators, and stairways should be located as close as possible to the primary circulation path to facilitate disabled access.
Bicycles Construction	No construction impacts.	<u>*Less-than-Significant Impact:*</u> 1. During construction, congestion on Third and Fourth Streets resulting from the temporary lane reduction could	<u>*Less-than-Significant Impact:*</u> Same as Alternative 2 except: 1. There would be no Third Street traffic diversion related to	<u>*Less-than-Significant Impact:*</u> Same as Alternative 3A. *Improvement Measures;*

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		divert traffic to Second and Fifth Streets, thereby impacting bicycle travel on Bicycle Routes # 11 and #19, respectively. 2. Temporary diversion of traffic from Geary and Stockton Streets could impact bicycle travel, especially on Route #17. 3. Construction of the subway crossing of Market Street could impact travel on Bicycle Route #50 along Market Street. *Improvement Measures;* 1. During construction, it is recommended that every effort be made to maintain wide curb lanes to facilitate bicycle travel or to reroute bicycle travel to Second and Fifth Streets. 2. Implementation of the bicycle improvements proposed on Second and Fifth Streets would facilitate bicycle travel on these routes.	the Project. 2. There would be no disruption to Market Street at Third due to the shallow subway crossing. *Improvement Measures;* Same as Alternative 2.	Same as Alternative 2.
Operation/Cumulative	No operation or cumulative impacts	*Less-than-Significant Impact:* Diversion of traffic from Third and Fourth Street resulting from increased congestion associated with the project implementation could permanently impact the proposed bicycle lanes along Second and Fifth Streets. *Improvement Measures:*	*Less-than-Significant Impact:* Diversion of traffic from Fourth Street, resulting from increased congestion associated with the project implementation could permanently impact the proposed bicycle lanes along Second and Fifth Streets. *Improvement Measures:*	*Less-than-Significant Impact:* Same as Alternative 3A. *Improvement Measures:* Same as Alternative 2.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		Implementation of the Second and Fifth Street bicycle projects are recommended to facilitate bicycle travel in South of Market.	Same as Alternative 2.	
Emergency Vehicle Access Construction	No construction impacts.	*Less-than-Significant Impact:* 1. Response times from Fire Station #8 along Third and Fourth Streets would be impacted by construction along Third and Fourth Streets for approximately 18 to 24 months. 2. Construction on the Union Square Station would affect response from Fire Station #1 times along Stockton Street for 12 to 18 months. 3. Temporary lanes closures on Stockton Street for the construction of the Chinatown Station may affect response times from Fire Station #2. *Improvement Measures;* 1. DPT will develop alternative detour routes for all general traffic to minimize the construction disruption to traffic flows and emergency vehicles. 2. Contractor will be required to develop a site specific emergency access response plan as part of compliance with bid specifications.	*Less-than-Significant Impact:* Same as Alternative 2, except: 1. Construction would occur only on Fourth Street, not on Third Street and if the TBM were extracted in North Beach rather than in Chinatown, there would be one less week of potential disruption to Fire Station #2. 2. The following locations would have temporary disruption to emergency access: west side of Fourth Street between Clementina and Howard Streets; Moscone Center West at the northwest corner of Fourth and Howard Streets; east side of Stockton Street between Post and Ellis; west side of Stockton Street between O'Farrell and Ellis; and the southwest corner of Stockton and Clay Streets. *Improvement Measures;* Same as Alternative 2.	*Less-than-Significant Impact:* Same as Alternative 3A, except: 1. There would be no impacts at Moscone Center West. 2. No impacts on Stockton Street between Post and Maiden Lane. 3. Access to the west side of Stockton Street between Washington and Jackson Streets would be restricted. *Improvement Measures;* Same as Alternative 2.
Operation/Cumulative	No operation or cumulative impacts	*Less-than-Significant Impact:* The introduction of a single-track	*Less-than-Significant Impact:* Same as Alternative 2, except	*Less-than-Significant Impact:* Same as Alternative 3A, except

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		median in the middle of Fourth Street would require fire trucks exiting Fire Station #8 on Bluxome Street to cross the entire trackway to travel contra-flow on Fourth Street. *Improvement Measures;* DPT will be upgrading traffic signals with emergency vehicle preemption equipment in order to minimize the emergency response time and improve signal operations.	there would be a double-track median to cross in Fourth Street. *Improvement Measures;* Same as Alternative 2.	the trackway would be about 3 feet wider than under Alternative 2 and with two-way operation on Fourth Street, there would be no contra-flow travel. *Improvement Measures;* Same as Alternative 2.
LAND USE Construction	No construction impacts.	*Less-than-Significant Impact:* Construction would not cause a change in land use patterns or neighborhood character, but would temporarily disrupt access to the adjacent uses as described under Transportation. *Improvement Measures:* Public information programs and signage will be used to minimize impacts to adjacent land uses during construction.	*Less-than-Significant Impact:* Same as Alternative 2, but would have a lesser area of surface disruption. *Improvement Measures:* Same as Alternative 2.	*Less-than-Significant Impact:* Same as Alternative 3A, except that the surface area of disruption would be greater than under Alternative 3A and an amendment of Planning Code would be required to allow the demolition of residential apartment units. *Improvement Measures:* Same as Alternative 2.
Operation/Cumulative	No operation or cumulative impacts.	*Less-than-Significant Impact:* Minor changes to land use or neighborhood character would be associated with the new station that would be built in the street (Third Street) or off-street for the subway sections as demolition of	*Less-than-Significant Impact:* Same as Alternative 2, except the Moscone Station would also replace a gas station.	*Less-than-Significant Impact:* Same as Alternative 3A.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		one building in Chinatown would be required.		
SOCIOECONOMIC (POPULATION AND HOUSING) Construction	No construction impacts.	*Less-than-Significant Impact:* The Project would create temporary construction-related jobs that would not be expected to have a substantial effect on the regional population.	*Less-than-Significant Impact:* Same as Alternative 2.	*Less-than-Significant Impact:* Same as Alternative 2, except an amendment of Planning Code would be required to allow the demolition of residential apartment units.
Operation/Cumulative	*Less-than-Significant Impacts:* 1. Lack of transit investment could result in long-term degradation of mobility in the Corridor, but would not be expected to have a major affect on planned employment and population growth.	*Significant Impacts:* Acquisition of one parcel for the Chinatown Station would cause the displacement of 10 small businesses ~~and one or two residential units~~ in a predominantly minority and low income neighborhood. ~~All displaced residents would be relocated.~~ *Mitigation Measures:* Redevelop the Chinatown Station site with affordable housing units above the station and ground floor retail where possible. *Significant environmental effects which can not be avoided:* The construction of new ~~affordable housing units~~/ground floor retail would not mitigate to a less-than-significant level the disruption to existing ~~residents and~~ small businesses associated with the temporary dislocation as	*Significant Impacts:* Same as Alternative 2. *Mitigation Measures:* Same as Alternative 2. *Significant environmental effects which can not be avoided:* Same as Alternative 2. *Less-than-Significant Impacts:* Same as Alternative 2, except: 1. Alternative 3A would displace only 29 public off-street parking spaces. 2. Would require acquisition of an additional parcel for the Moscone Station causing the displacement of one business. 3. Would not result in the displacement of subsurface basement uses along Market Street.	*Significant Impacts:* Acquisition of one parcel for the Chinatown Station would cause the displacement of 8 small businesses and 17 residential units in a predominantly minority and low income neighborhood. *Mitigation Measures:* Same as Alternative 2, except the loss of affordable housing would not mitigate to a less-than significant level the disruption to existing residents as well as businesses. *Significant environmental effects which can not be avoided:* Same as Alternative 2. *Less-than-Significant Impacts:* Same as Alternative 2, except: 1. The Project would require the

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		new units are constructed.. <u>*Less-than-Significant Impacts:*</u> 1. The Project would create 40 new jobs that would not be expected to have a long-term major impact on the employment or population characteristics of the city or the region. 2. The Project would require the acquisition of 4 easements and the displacement of 30 private and 29 public off-street parking spaces. 3. The greatest amount of business ~~and residential~~ displacement would occur in the Chinatown neighborhood, but the neighborhood would receive increased accessibility as called for in the Project Purpose & Need. 4. There would be displacement of subsurface basement uses along Stockton Street at the Union Square Station and along Market Street between the Powell and Montgomery Street BART Stations. *Improvement measures:* No improvement measures would be required as acquisition and relocation activities would follow the Uniform Relocation Act and eminent domain law.	*Improvement measures:* Same as Alternative 2.	acquisition of 2 easements and the displacement of 59 public off-street parking spaces. 3. Would not result in the displacement of subsurface basement uses along Market Street. *Improvement measures:* Same as Alternative 2.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
COMMUNITY FACILITIES Construction	No construction impacts.	<u>*Less-than-Significant Impacts:*</u> 1. Construction of this alternative could temporarily disrupt access to community facilities and parks along the Corridor (Union Square and Willie "Woo Woo" Wong Playground). 2. Lane closures during construction could affect emergency vehicle access time, particularly for Fire Station #8 which is located on Bluxome Street off of Fourth Street. 3. Station construction at Union Square and Chinatown Stations and adjacent to Yerba Buena Gardens would result in temporary noise and dust impacts for park users, which would be minimized by adherence to noise regulations. 4. Emergency access and circulation could be temporarily disrupted on streets leading to construction sites. *Improvement Measures:* 1. Pedestrian access would be maintained to all community facilities, parks, and recreation areas during construction. 2. Traffic detours will be put in place to minimize disruption to traffic and public transit along the	<u>*Less-than-Significant Impacts:*</u> Impacts would be less than those identified for Alternative 2 as Third, Harrison, Kearny, and Geary Streets would not be disrupted. The use of the TBM would result in less surface disruption than would occur under the surface excavation method used in Alternative 2. *Improvement Measures:* Same as Alternative 2.	<u>*Less-than-Significant Impacts:*</u> Impacts same as Alternative 2, except the impacts would not occur for Willie "Woo Woo" Wong Playground. Construction impacts would occur at the Gordon Lau Elementary School. *Improvement Measures:* Same as Alternative 2, except no noise wall would be required at Willie "Woo Woo" Wong Playground.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		Corridor. 3. Noise limits will be included in the specifications to ensure that construction is in compliance with City regulations. 4. A temporary noise wall will be constructed east of the Chinatown Station site to minimize noise and dust impacts to the Willie "Woo Woo" Wong Playground during construction. 5. Use of a uniform police officer or traffic control officer, paid for by MTA, at construction sites could facilitate traffic flows.		
Operation	*Less-than-Significant Impacts:* 1. Lack of transit investment could result in long-term degradation of mobility in the Corridor, but would not be expected to have a major affect on access to community facilities, parklands, or recreational facilities or cause major impedance for emergency response times.	*Less-than-Significant Impacts:* 1. The placement of vent shafts and station entries and elevators in Union Square Plaza would permanently remove 1,517 square feet of open space for transportation purposes. 2. Pedestrian traffic to and from the Union Square plaza would be increased as would pedestrian traffic on Hang Ah Alley. *Improvement Measures:* 1. During the final design, minimize the footprint of station entrances in Union Square plaza and locate them in such a manner as to minimize disruption to park users. 2. Design subway entrances so	*Less-than-Significant Impacts:* Same as described for Alternative 2, except improvements to the existing Powell Street Station, as needed for the connection to the UMS Station, will be addressed in cooperation with BART during final design of the station connections. This will include assessment and, if necessary, implementation of improvements to the existing vertical circulation, platform capacity, lighting, ventilation system, fire suppression system and way-finding. The emergency ventilation system for the UMS shall be designed and operating procedures written/revised and tested to ensure that the UMS and Powell	*Less-than-Significant Impacts:* Same as Alternative ~~2~~ 3A, except that only 1,690 square feet of open space would be permanently removed for transportation purposes in Union Square. The vent shafts would be located in the Ellis/O'Farrell garage rather than in Union Square. Access to the Union Square/Market Street Station would be from Geary Street and would not result in increased pedestrian traffic through the plaza and access to and from Willie "Woo Woo" Wong Playground would not be impacted. *Improvement Measures:* Same as Alternative 2, except

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		they are visually integrated with the existing park design. 3. Ensure subway entrances are maintained by MTA on a regular basis to keep them free of litter and graffiti in perpetuity. 4. The secondary access to the Chinatown Station could be closed to minimize impacts to Hang Ah Alley.	Street Station emergency ventilation systems do not adversely affect each other during an emergency event or system test. *Improvement Measures:* Same as described for Alternative 2.	closure of Hang Ah Alley would not be relevant.
Cumulative	Same as operation impacts described above for Alternative 1.	*Less-than-Significant Impacts.* Growth in the Study Area in conjunction with increased access could place increased demands on community facilities, parks, and recreation facilities.	*Less-than-Significant Impacts.* Same as Alternative 2.	*Less-than-Significant Impacts.* Same as Alternative 2.
CULTURAL RESOURCES **Archaeological** Construction	No construction impacts.	*Significant Impacts:* 1. One known prehistoric archaeological resource (CA-SFR-2) may be impacted as a result of construction trenching on Third Street, between Folsom and Bryant Streets. 2. At least 14 locations were identified in this alignment as sensitive for the presence of prehistoric archaeological resources. 3. Six locations where historical archaeological resources might be uncovered were identified in the alignment. *Mitigation Measures:* 1. Consistent with the SHPO	*Significant Impacts:* 1. At least 6 locations were identified in this alignment as sensitive for the presence of prehistoric archaeological resources. 2. One known historical archaeological resource (CA-SFR-137H) may be impacted as a result of the placement of a construction yard in this alignment. 3. Fifteen locations where historical archaeological resources might be uncovered were identified in the alignment. *Mitigation Measures:*	*Significant Impacts:* Same as Alternative 3A, except 13 locations have been identified along the alignment, where historical archaeological resources may be uncovered during construction. *Mitigation Measures:* Same as Alternative 2.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		Programmatic Agreement and the MOU with the City, MTA would work with a qualified archaeologist to ensure that all state and federal regulations regarding Native American concerns are enforced. 2, Limited subsurface testing in identified archaeologically sensitive areas shall be conducted once an alignment has been selected. 3. During construction, archaeological monitoring shall be conducted in those sections of the alignment identified in the HCASR and through pre-construction testing as moderately to highly sensitive for prehistoric and historic-era archaeological deposits. 4. Upon completion of archaeological field investigations, a comprehensive technical report shall be prepared for approval by the San Francisco Environmental Review Officer and SHPO that describes the archaeological findings and interpretations in accordance with state and federal guidelines. 5. If unanticipated cultural deposits are found during subsurface construction, soil disturbing activities in the vicinity of the find shall be halted until a qualified archaeologist can	Same as Alternative 2.	

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		assess the discovery and make recommendations for evaluation and appropriate treatment in keeping with adopted regulations and policies. *Significant environmental effects which can not be avoided:* There is no absolute assurance that the impacts to archaeological resources can be mitigated to a less-than-significant level.		
Operation	No operational impacts.	No operational impacts.	No operational impacts.	No operational impacts.
Cumulative	No cumulative impacts.	No cumulative impacts.	No cumulative impacts.	No cumulative impacts.
Historic Architectural Resources Construction	No construction impacts.	*Significant Impacts:* 1, One historical architectural resource located at 814-828 Stockton Street that is contributory to the Chinatown Historic District would be demolished to construct the Chinatown Station. Removal of this building would have an adverse effect on the Historic District. 2. 34 historical architectural resources along the alignment could potentially be affected by temporary construction-related ground-borne vibration or visual impacts. *Mitigation Measures:* 1. Partial preservation of 814-	*Significant Impacts:* Same as Alternative 2, except 25 (34 if the North Beach Construction Variant is implemented) historical architectural resources have the potential for temporary construction effects from ground-borne vibration or visual disturbance. *Mitigation Measures:* Same as Alternative 2.	*Significant Impacts:* 1, One historical architectural resource located at 933-949 Stockton Street that is contributory to the Chinatown Historic District would be demolished to construct the Chinatown Station. This would have an adverse effect on the Historic District. 2. 25 historical architectural resources along the alignment could potentially be impacted by construction-related ground-borne vibration and visual disturbance. *Mitigation Measures:* Same as Alternative 2, except the historic resource is 933-949

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		828 Stockton Street or incorporation of elements of 814-828 Stockton Street into the design of the new station building; salvage significant architectural features from the building for conservation into a historical display or exhibit in the new Chinatown station or in museums; and/or develop a permanent interpretive display for public use on the T-Third line cars or station walls. *Significant environmental effects which can not be avoided:* Implementation of these mitigation measures would not reduce the impacts to historical resources to a less-than-significant level; significant adverse impacts to historic resources and to the Historic District would occur. *Improvement Measures*: 1. If the 814-828 Stockton Street building is demolished, perform a Historic American Buildings Survey/Historic American engineering Record documentation. 2. Pre-drilling for pile installation in areas that would employ seacant piles with ground-supporting walls in the		Stockton Street.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		cut-and-cover areas would reduce the potential effects of vibration. 3. Vibration monitoring of historic structures adjacent to tunnels and portals will be specified in the construction documents to ensure that historic properties do not sustain damage during construction. Vibration impacts would be mitigated to a less-than-significant level. If a mitigation monitoring plan provides the following: a. The contractor will be responsible for the protection of vibration-sensitive historic building structures that are within 200 feet of any construction activity. b. The maximum peak particle vibration (PPV) velocity level, in any direction, at any of these historic structures should not exceed 0.12 inches/second for any length of time. c. The Contractor will be required to perform periodic vibration monitoring at the closest structure to ground disturbing construction activities, such as tunneling and station excavation, using approved seismographs. d. If at any time the construction activity exceeds this level, that activity will immediately be halted until such time as an		

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		alternative construction method can be identified that would result in lower vibration levels.		
Operation	No operational impacts.	*Significant Impacts:* 1. Construction of a new station in Chinatown on a site occupied by an historic structure would create a visual break in the cohesive grouping of contextually-related buildings resulting in potential adverse impacts to the Chinatown Historic District. *Mitigation Measures:* Same as outlined for Construction impacts above. *Significant environmental effects which can not be avoided:* Implementation of these mitigation measures would not reduce the impacts to historical resources to a less-than-significant level; significant adverse impacts to historic resources would occur. *Less-than-Significant Impacts*: Station entrances located in Union Square would permanently alter the plaza and parking garage, but would not be considered significant due to the recently redesigned landscape of	*Significant Impacts:* Same as Alternative 2. *Mitigation Measures:* Same as Alternative 2. *Significant environmental effects which can not be avoided:* Same as Alternative 2. *Less-Than-Significant Impacts:* Same as Alternative 2. *Improvement Measures:* Same as Alternative 2.	*Significant Impacts:* Same as Alternative 2. *Mitigation Measures:* Same as Alternative 2. *Significant environmental effects which can not be avoided:* Same as Alternative 2. *Less-Than-Significant Impacts:* Same as Alternative 2. *Improvement Measures:* Same as Alternative 2.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		the plaza. *Improvement Measures:* 1. Potential visual impacts at Union Square and Chinatown Stations will be minimized through the use of design and architectural materials that would be compatible with the surrounding structures and landscape. All final designs for stations will be subject to Design Review by the City. 2. The design for each of the new stations will be reviewed by the Environmental Review Officer, the City Preservation Officer, and a historic architect hired by MTA for compliance with the Secretary of Interior's standards based on their compatibility with the character-defining features of each of the districts.		
Cumulative	No cumulative impacts.	No cumulative impacts.	No cumulative impacts.	No cumulative impacts.
VISUAL AND AESTHETIC RESOURCES Construction	No construction impacts.	*Less-than-Significant Impacts:* The presence of construction equipment at the Moscone, Union Square, and Chinatown Station locations would temporarily obstruct public views of these scenic landscapes and would temporarily change the streetscape along the Corridor.	*Less-than-Significant Impacts:* Same as Alternative 2, except the North Beach Construction Variant would introduce temporary visual impacts near Washington Square. *Improvement Measures:* Same as Alternative 2.	*Less-than-Significant Impacts:* Same as Alternative 3A. *Improvement Measures:* Same as Alternative 2.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		Improvement Measures: 1. Construction staging areas and excavation sites will be screened from view during construction. 2. In visually sensitive landscapes, like Union Square and Chinatown, temporary screening or physical barriers (noise walls) around the station construction sites and shaded night lights are recommended to reduce the visual effects of construction equipment and to reduce glare.		
Operation/Cumulative	No operational or cumulative impacts.	*Less-than-Significant Impacts:* 1. The portals on Third and Fourth Street would introduce new visual elements on the streetscape that would be visible to motorists, pedestrians, and adjacent residents and businesses. 2. The station entrances at Moscone Station would be located in the Tehama Pedestrian Way and vent shafts along the southeast exterior of the Moscone Center; they would not detract from existing architecture or landscape features. 3. Utility cabinets would be installed along the east and west sides of the Mission and Third Street intersections and would be visible to pedestrians. 4. Station entrances and vent shafts for the Union Square	*Less-than-Significant Impacts:* 1. The portals on Fourth Street would introduce new visual elements on the streetscape that would be visible to motorists, pedestrians, and adjacent residents and businesses. 2. The station entrances and vent shafts at Moscone Station would be located at an off-street location. This would require the demolition of an existing gas station and construction of a station entrance and transit-oriented development in the future which would change the visual character at the southwest corner of Fourth and Clementina Streets. 3. Visual impacts for the Union Square/Market Street and the Chinatown Stations would be	*Less-than-Significant Impacts:* 1. By moving the portals on Fourth Street to under the freeway, the visual impacts to pedestrians and adjacent residents and businesses would be less than under Alternative 3A. 2. The station entrances and vent shafts at Moscone Station would be located at an off-street location. This would require the demolition of an existing gas station and construction of a station entrance and transit-oriented development in the future which would change the visual character at the southwest corner of Fourth and Clementina Streets. 3. Station entrances for the Union Square Station would be

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		Station would be visible in the plaza from Maiden Lane and the east side of Stockton Street. 5. The demolition of an existing building to accommodate the Chinatown Station and the construction of a new station entrance and transit-oriented development in the future would visually change the street façade along Stockton Street and also the view from Willie "Woo Woo" Wong Playground. 6. There would be minor shading of the tennis courts at Willie "Woo Woo" Wong Playground, but would not be considered substantial in the context of the adjacent 4- and 6-story buildings. *Improvement Measures:* Station architectural treatment for the exterior façade in the visually sensitive Union Square and Chinatown station areas would be developed during preliminary and final design in consultation with the Planning, Recreation and Parks Departments, the Union Square Merchants Association, and the Chinatown Association.	the same as described for Alternative 2. *Improvement Measures:* Same as Alternative 2.	visible in the plaza from Stockton and Geary Streets. Vent shafts would be extended above the roof of the Ellis/O'Farrell garage rather than be placed in Union Square and therefore would not be visible to pedestrians. 4. The demolition of an existing building to accommodate the Chinatown Station and the construction of a new station entrance and transit-oriented development in the future would visually change the street façade along Stockton Street. *Improvement Measures:* Same as Alternative 2.
UTILITIES AND ENERGY Construction	No construction impacts.	*Less-than-Significant Impacts:* 1. Construction of the subway and stations would require major utility relocation work, which could affect private parcel	*Less-than-Significant Impacts:* Same as Alternative 2, except: 1. The use of TBMs would result in less disruption of	*Less-than-Significant Impacts:* Same as Alternative 3A. *Improvement Measures:*

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		connections to main utility lines and result in short-term utility service disruption as relocated utility lines are reconnected to the utility system. 2. Utility relocation would require street and sidewalk excavations that would impact traffic and pedestrian flows adjacent to the relocation areas. Permanent vacation of sub-surface sidewalk basements may be required. *Improvement Measures:* Utility relocation coordination would take place during detailed design in consultation with the utility agencies to ensure that pedestrian and vehicular flows are maintained.	utilities along the tunnel. 2. The North Beach Construction Variant would result in disruption to utilities on Columbus Avenue between Union and Filbert Streets for construction of the TBM retrieval shaft. *Improvement Measures:* Same as Alternative 2.	Same as Alternative 2.
Operation/Cumulative	No operational or cumulative impacts.	No operational or cumulative impacts.	*Less-than-Significant Impacts:* This alternative would increase energy consumption above that projected for Alternative 1 by 16 million BTU's, as the reduction in fossil use would not completely offset the increased electrical energy consumption associated with the operation of light rail service.	No operational or cumulative impacts.
GEOLOGY AND SEISMICITY Construction	No construction impacts.	*Significant Impacts:* 1. Construction period settlement could cause damage to existing building foundations, subsurface	*Significant Impacts:* Same as Alternative 2, except the use of TBMs for deep tunnel construction would minimize	*Significant Impacts:* Same as Alternative 3. *Mitigation Measures:*

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		utilities, and surface improvements. 2. Construction of the shallow subway crossing over the BART tunnel would be expected to result in reduction of ground loads and upward displacement of the BART/Muni Metro tunnels. *Mitigation Measures:* 1. Provisions such as concrete diaphragm walls to support the excavation and instrumentation to monitor settlement and deformation would be used to ensure that structures adjacent to tunnel alignments are not affected by excavations. 2. Tunnel construction methods that minimize ground movement, such as pressure-faced TBMs, Sequential Excavation Method, and ground improvement techniques such as compensation grouting, jet grouting or underpinning will be used. 3. Rigorous geomechanical instrumentation would be used to monitor underground excavation and grouting or underpinning will be employed to avoid displacement of structures. 4. Automated ground movement monitoring will be used to detect distortion on the BART/Muni	the impact to BART/Muni Metro tunnels. Similar to Alternative 2, the construction of a deep tunnel could result in the potential downward displacement of the BART structures. *Mitigation Measures:* Same as Alternative 2. *Less-than-Significant Impacts:* Same as Alternative 2.	Same as Alternative ~~2~~ 3A. *Less-than-Significant Impacts:* Same as Alternative 2.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		Metro tunnels and grout pipes will be placed prior to tunnel excavation to allow immediate injection of compensation grouting to replace ground losses if deformation exceeds established thresholds. With the implementation of these mitigation measures the impacts would be less-than-significant. *Less-than-Significant Impacts:* Adherence to all applicable federal, state and local safety and health codes and practices for construction of the underground tunnels, shafts, and excavations would be required to minimize harm to workers should an earthquake occur during construction. MTA would also require contractors to submit a site-specific earthquake preparedness and emergency response plan as part of compliance with bid specifications.		
Operation/Cumulative	No operational or cumulative impacts.	*Less-than-Significant Impacts:* The subway tunnels would be designed and built to current seismic standards to withstand a design earthquake on the San Andreas Fault (Magnitude ~7).	*Less-than-Significant Impacts:* Same as described for Alternative 2.	*Less-than-Significant Impacts:* Same as described for Alternative 2.
HYDROLOGY AND	No construction impacts.	*Significant Impacts:*	*Significant Impacts:*	*Significant Impacts:*

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
WATER QUALITY Construction		Construction activities at the Union Square Station could increase or otherwise disrupt flow of ground water to the Powell Street Station. *Less-than-Significant Impacts:* Excavation for tunnel and station construction would result in exposure of soil to erosion and run-off, mobilizing sediments toward the bay or the City's combined storm and sanitary sewer system. As required by SFPUC Ordinance 19-92, Sections 118 and 123, MTA would develop and submit to the PUC a Storm Water Pollution Prevention Plan (SWPPP). *Mitigation Measures:* Watertight shoring and fully waterproof station structures will be designed and constructed to avoid compounding ground water inflows to the Powell Street Station. With the implementation of these mitigation measures, the impacts would be less-than-significant.	Same as Alternative 2. *Less-than-Significant Impacts:* Impacts would be the same as Alternative 2 except that the amount of excavation would be less under this Alternative. *Mitigation Measures:* Same as Alternative 2.	Same as Alternative 3A. *Less-than-Significant Impacts:* Impacts would be the same as Alternative 2 except that the amount of excavation would be less under this Alternative. *Mitigation Measures:* Same as Alternative 2.
Operation/Cumulative	No operational or cumulative impacts.	No operational or cumulative impacts related to flooding or groundwater recharge.	No operational or cumulative impacts related to flooding or groundwater recharge.	No operational or cumulative impacts related to flooding or groundwater recharge.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		Less-than-Significant Impacts: 1. Operation of the light rail system would result in discharge of contaminants, including heavy metals, solvents, and petroleum hydrocarbons, to the environment that would be transported to the city combined storm and sanitary sewer system which is operated in accordance with the existing NPDES permits. 2. Hydrologic modeling would be used to determine whether measures to encourage lateral flows of ground water around the Union Square Station would be required to avoid impacts to the ground water inflows at the Powell Street Station.	*Less-than-Significant Impacts:* Impacts would be the same as Alternative 2.	*Less-than-Significant Impacts:* Impacts would be the same as Alternative 2.
BIOLOGICAL AND WETLAND RESOURCES Construction	No construction impacts.	*Less-than-Significant Impacts:* Construction may result in the removal of some existing street trees along Third, Fourth, and Stockton Streets at surface segments and at station entrances. *Improvement Measures:* Street trees removed or damaged during construction would be replaced at a 1:1 ratio.	*Less-than-Significant Impacts:* 1. Same as Alternative 2, except there would be no construction on Third Street. 2. If the North Beach Construction Variant is implemented, mature trees roots could be exposed along Columbus Avenue adjacent to Washington Square Park. *Improvement Measures:* 1. Street trees removed or damaged during construction would be replaced at a 1:1 ratio. 2. A certified arborist would be	*Less-than-Significant Impacts:* Same as Alternative 3A. *Improvement Measures:* Same as Alternative 3A.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
			present during construction of the Columbus Avenue tunnel portal to monitor and ensure protection of the tree roots during the 2 to 3 week excavation period.	
Operation/Cumulative	No operational or cumulative impacts.	No operational or cumulative impacts.	No operational or cumulative impacts.	No operational or cumulative impacts.
HAZARDOUS MATERIALS Construction	No construction impacts.	*Significant Impacts:* 1. Previous subsurface soils investigations indicate the potential for exposure of site workers and the public to potentially hazardous materials, including metals, volatile organic compounds (VOCs), and semi-VOCs, during site excavation or transport of excavated soil materials (35,000 cubic yards) which would be disposed of at a Class I facility. Servicing and fueling of diesel-powered construction equipment on-site could result in exposure to lubricants, diesel fuel, antifreeze, motor oils, degreasing agents, and other hazardous materials. Properties landside of the 1851 highwater mark that are not subject to Article 20 would have potential for exposure to hazardous materials. *Mitigation Measures:* Implementation of mitigation measures similar to those	*Significant Impacts:* Same as Alternative 2. *Less-than-Significant Impacts:* Same as Alternative 2, except: 1. The amount of excavated materials would be less (25,000 cubic yards) which would be disposed of at a Class I facility. 2. There would be additional investigation in Soils Analysis Report north of Jackson Street if the North Beach Construction Variant is implemented. *Potentially Significant Impacts:* Same as Alternative 2. *Mitigation Measures:* Same as described for Alternative 2.	*Significant Impacts:* Same as Alternative 2. *Less-than-Significant Impacts:* Impacts would be the same as described for Alternative 3A, except the amount of excavated materials would be less (13,000 cubic yards) which would be disposed of at a Class I facility. *Mitigation Measures:* Same as described for Alternative 2.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		required for properties under the jurisdiction of Article 20: preparation of a Site History Report; Soil Quality Investigation, including a Soils Analysis Report and a Site Mitigation Report (SMR); description of Environmental Conditions; Health and Safety Plan (HSP); Guidelines for the Management and Disposal of Excavated Soils; and a Certification Statement that confirms that no mitigation is required or the SMR would mitigate the risks to the environment of human health and safety. This measure would ensure that the project impacts are mitigated to a less-than-significant level. *Less-than-Significant Impacts:* 1. Previous subsurface soils investigations indicate the potential for exposure of site workers and the public to potentially hazardous materials, including metals, volatile organic compounds (VOCs), and semi-VOCs, during site excavation or transport of excavated soil materials (35,000 cubic yards) which would be disposed of at a Class I facility. Servicing and fueling of diesel-powered construction equipment on-site		

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		could result in exposure to lubricants, diesel fuel, antifreeze, motor oils, degreasing agents, and other hazardous materials. Measures to avoid adverse effects of hazardous materials as required by Article 20 of the San Francisco Municipal Code for all properties on the Bay side of the 1851 high water mark would be implemented as part of this alternative. 2. Dewatering activity occurring as part of the construction work would require a permit or approval from the Regional Water Quality Control Board (RWQCB) to ensure that thresholds identified in the San Francisco Bay Basin Water Quality Control Plan are not exceeded. 3. Dewatering activity that generates water to the combined City storm and sanitary sewer system would need to obtain from the San Francisco Public Utilities Commission, Bureau of Environmental Regulation and Management a Batch Wastewater Discharge permit prior to discharge to ensure that it meets threshold limits. Previously collected groundwater quality data indicate the potential for dewatered effluent throughout portions of the alignment to contain elevated metals, VOCs,		

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		petroleum hydrocarbons, and oil and grease concentrations which may require pretreatment to reduce contaminant concentrations to acceptable levels. 4. Off-site disposal of contaminated soils excavated from construction of this and other projects would be controlled by landfill operators to ensure their capacity is not exceeded.		
Operation/Cumulative	No operational or cumulative impacts.	*Less-than-Significant Impacts:* Operation of the light rail would involve the use, handling, and storage of hazardous materials including degreaser, lubricants, cleaning solutions, solvents, paints, and miscellaneous petroleum products, which may be used for maintenance activities. In addition, further excavation for track maintenance could expose workers to soil contaminants. The California General Industry Safety Order requires all employers in the state to prepare and implement an Emergency Acton Plan, Fire Prevention Plan, and Injury and Illness Prevention Program to ensure safe workplace and employee work practices.	*Less-than-Significant Impacts:* Same as Alternative 2.	*Less-than-Significant Impacts:* Same as Alternative 2.
AIR QUALITY Construction	No construction impacts.	*Less-than-Significant Impacts:* 1. Dust emissions occurring over	*Less-than-Significant Impacts:* Impacts would be similar to	*Less-than-Significant Impacts:* Impacts would be similar to

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		the approximately six-year construction period will be controlled by the implementation of BAAQMD dust controls measures. 2. Air monitoring at playgrounds and schoolyards during construction would be required as part of the project. 3. Short-term exhaust emissions from construction-related equipment and from off-site transport of soils will be reduced by implementation of exhaust emission control measures.	Alternative 2, except that the surface area disrupted during construction would be smaller.	Alternative 3A, except that the construction duration is expected to last approximately 5 years or one year less than other alternatives.
Operation/Cumulative	*Less-than-Significant Impacts:* PM_{10} emissions from vehicles are expected to increase with population growth.	No operational or cumulative impacts.	No operational or cumulative impacts.	No operational or cumulative impacts.
NOISE AND VIBRATION Construction	No construction impacts.	*Significant Impacts:* Historic buildings within 200 feet of a construction area may be subject to adverse vibration impacts if the maximum peak particle vibration (PPV) velocity level in any direction exceeds 0.12 inches/second for any length of time. *Mitigation Measures:* The Contractor shall be required to perform periodic vibration monitoring using approved seismographs at the historic structure closest to the	L*ess-than-Significant Impacts:* Same as Alternative 2, except construction of a portal on Third Street would be eliminated. *Improvement Measures:* Same as Alternative 2. *Potentially Significant Impacts:* Same as Alternative 2. *Mitigation Measures:* Same as Alternative 2.	L*ess-than-Significant Impacts:* Same as Alternative 3A. *Improvement Measures:* Same as Alternative 2. *Potentially Significant Impacts:* Same as Alternative 2. *Mitigation Measures:* Same as Alternative 2.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		construction activity. If the construction activity exceeds a 0.12 inches/second level, the construction activity shall be immediately halted until an alternative construction method that would result in lower vibration levels can be identified. 2. During final design engineering, a more detailed construction noise and vibration analysis will be prepared to address construction staging areas, tunnel portals, cut-and-cover construction, and underground mining and excavation operations. Implementation of these mitigation measures would reduce the impacts to a less-than-significant level. L*ess-than-Significant Impacts:* 1. Noise in the range of 85 to 89 dBA at 100 feet would be generated from construction activities along surface portions of the alignment and staging areas and station or portal construction areas. 2. Vibration levels of 58 to 112 Lv at 25 feet would be experienced as a result of equipment used during at-grade construction activities.		

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		3. Vibration impacts on buildings could result from equipment used for underground construction, particularly from tunneling. *Improvement Measures:* 1. The incorporation of noise control measures would minimize noise impacts during construction: noise control devices such as equipment mufflers, enclosures, and barriers; stage construction as far away from sensitive receptors as possible; maintain sound reducing devices and restrictions throughout construction period; replace noisy with quieter equipment; schedule the noisiest construction activities to avoid sensitive times of the day; hire an Acoustical Engineer to oversee the implementation of the Noise Control and Monitoring Plans; prepare a Noise Control Plan; comply with the nighttime noise variance provisions; conduct periodic noise measurements to ensure compliance with the Noise Monitoring Plan; and use equipment certified to meet specified lower noise level limits during nighttime hours.		
Operation/Cumulative	No operational or cumulative impacts.	*Significant Impacts:* The FTA vibration criteria of 72 VdB would be exceeded at one	*Significant Impacts:* The FTA vibration criteria of 72 VdB would be exceeded at one	*Significant Impacts:* Impacts same as Alternative 3A.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		residential building at 570 Fourth Street at Freelon Alley and the FTA ground-borne noise criteria of 35 dBA would be exceeded at two residential buildings at 527 and 529 Third Street. All locations have residential development over ground-floor commercial. *Mitigation Measures:* Vibration propagation testing will be conducted at these locations during final engineering to determine the predicted impacts and finalize the mitigation measures. MTA will select one of the following mitigation measures during final design of the project: high resilience (soft) direct fixation fasteners for embedded track and in underground subway tunnels or ballast mat for ballast and tie track. Implementation of these measures would reduce the impacts to a less-than-significant level. *Less-than-Significant Impacts:* 1. No light rail noise impacts would occur provided standard operational maintenance practices are implemented for light rail operations. 2. Vent shafts and traction power	residential building at 570 Fourth Street at Freelon Alley. *Mitigation Measures:* Mitigation measure same as Alternative 2. *Less-than-Significant Impacts:* 1. No light rail noise impacts would occur provided standard operational maintenance practices as outlined are implemented for light rail operations. 2. The traffic noise would be 0.4 dB higher at the Hotel Utah site under this alternative. 3. Vent shafts and traction power substations would be designed to standards of the San Francisco Noise Ordinance to ensure no adverse noise impacts. *Improvement Measures:* Improvement measures same as Alternative 2.	*Mitigation Measures:* Mitigation measure same as Alternative 2. *Less-than-Significant Impacts:* 1. No light rail noise impacts identified provided standard operational maintenance practices are implemented for light rail operations. *2.* Vent shafts and traction power substations would be designed to standards of the San Francisco Noise Ordinance to ensure no adverse noise impacts. *Improvement Measures:* Improvement measures same as Alternative 2.

Environmental Area/Impacts	Alternative 1 -No Project/TSM	Alternative 2 - EIS/EIR Enhanced Alignment	Alternative 3A - Fourth/Stockton Alignment Option A	Alternative 3B - Fourth/Stockton Alignment Option B
		substations would be designed to standards of the San Francisco Noise Ordinance to ensure no adverse noise impacts. *Improvement Measures:* Improvement measures for the vent shafts and traction power substations will be determined during preliminary and final design of the project.		

considerable contribution to adverse cumulative conditions for Alternative 2 during the p.m. peak hour at the Sixth/Brannan Streets intersection and because there would also be a project-specific significant impact during the a.m. peak hour at the Third/King Streets intersection, Alternative 2 would have a significant traffic impact.

For Alternative 2, the project's share of future traffic growth would not constitute a cumulatively considerable contribution to adverse 2030 cumulative traffic conditions at the Sixth/Brannan Streets intersection for the a.m. peak hour nor at the Third/King Streets and Fourth/King Streets intersections for the p.m. peak hour. At the Sixth/Brannan Streets intersection for the a.m. peak hour and the Third/King Streets and Fourth/King Streets intersections for the p.m. peak hour Alternative 2 contributions to adverse cumulative conditions were found to be not significant, because project-related traffic would generally be added to movements that would continue to operate satisfactorily. In some instances, Alternative 2 would add vehicles to movements which would operate poorly under cumulative conditions. However, in these instances the project's contributions to these movements would be small. Therefore, for a.m. peak hour conditions at the Sixth/Brannan Streets intersection as well as p.m. peak hour conditions at the Third/King Streets and Fourth/King Streets intersections, project traffic would not represent a considerable contribution to the adverse cumulative conditions, and the project would not have a significant traffic impact at these intersections for these conditions.

For Alternative 3A, there would be a project-specific significant traffic impact at the Third/King Streets intersection compared to No Project/TSM conditions due to a deterioration of LOS from ~~D~~ E to F for the a.m. peak hour and Fourth/Harrison Streets due to a deterioration of LOS C to LOS ~~F~~ E in the p.m. peak hour compared to No Project/TSM conditions. Four of the five intersections analyzed would operate at LOS E or F conditions for Cumulative 2030 conditions for the p.m. peak hour. For Alternative 3A, the project's share of future traffic growth at the Third/King Streets, Fourth/King Streets, and Fourth/Harrison Streets intersections would constitute a cumulatively considerable contribution to adverse 2030 cumulative traffic conditions for the p.m. peak hour. Under Alternative 3A project-related traffic would constitute substantial percentages of critical volumes for movements at each of these three intersections that would operate with adverse conditions. As project-related traffic would represent a considerable contribution to the cumulative conditions for Alternative 3A during the p.m. peak hour for the Third/King Streets, Fourth/King Streets, and Fourth/Harrison Streets intersections as well as a project-specific significant impact at the Third/King Streets intersection during the a.m. peak hour, the project would have a significant traffic impact.

For Alternative 3A, the project's share of future traffic growth would not constitute a cumulatively considerable contribution to adverse 2030 cumulative traffic conditions at the Sixth/Brannan Streets intersection for the p.m. peak hour nor for a.m. peak hour conditions at the Fourth/King Streets and Sixth/Brannan Streets intersections. At the intersections where project contributions to adverse cumulative conditions were found to be not significant, the project would generally add traffic to movements that would continue to operate satisfactorily. In some instances, Alternative 3A would add vehicles to movements which would operate poorly under cumulative conditions. However, in these instances the project's contributions to these movements would be small. Therefore, for the Sixth/Brannan Streets intersection for p.m. peak hour conditions and at the Fourth/King Streets and Sixth/Brannan Streets intersections for a.m. peak hour conditions, project traffic would not represent a considerable contribution to the cumulative conditions, and the project would not have a significant traffic impact for Alternative 3A at these intersections for these conditions.

For Alternative 3B, the impacts would be the same as described for Alternative 3A, except ~~that at the Fourth/Harrison Streets intersection there would also be a Project-specific impact in the a.m. peak hour where level of service would degrade from LOS E to LOS F and the LOS would degrade from LOS C to LOS F in the p.m. peak hour~~ the Project's share of future traffic growth would also constitute a cumulatively considerable contribution to adverse 2030 cumulative traffic conditions at the Third/King Streets intersection in the a.m. peak hour.

No mitigation measures have been identified that would mitigate the impacts to a less-than-significant level at the Third/King, Fourth/King, and Sixth/Brannan Streets intersections, therefore the impacts at these intersections would be considered significant effects which can not be avoided. The impacts at the Fourth and Harrison Street intersection can be mitigated with striping and signal timing changes as outlined in Table 7-2.

7.3.2 POPULATION, HOUSING, AND EMPLOYMENT (SOCIOECONOMIC CHARACTERISTICS)

Alternatives 2 and 3A would result in the displacement of 10 small businesses (10 or fewer employees per business) ~~and 1 or 2 residential units~~ in the Chinatown neighborhood at 814-828 Stockton Street for construction of the proposed Chinatown Station. Alternative 3B would result in the displacement of 8 small businesses (10 or fewer employees each) and 17 residential units at 933-949 Stockton Street for the Chinatown Station. As the Chinatown District has a high proportion of minority and low income residents, this displacement is likely to result in the displacement of affordable housing units. While the replacement of affordable units in the redeveloped station site under each of the Build Alternatives would partially mitigate the displacement of existing affordable units, the impacts would not be reduced to a

less-than-significant level because of the temporary disruption and dislocation of the residents while the new housing units are being constructed.

7.3.3 CULTURAL RESOURCES

Alternative 2 – Enhanced EIS/EIR Alignment

Prehistoric Archaeological Resources

The following known prehistoric archaeological resource may be affected by the Project:

- Cultural deposits associated with site CA-SFR-2 (official designation by the State Office of Historic Preservation) may be impacted as a result of construction trenching in two of the Alternative 2 sections; on Third Street, between Folsom and Harrison Streets; and on Third Street, between Harrison and Bryant Streets. Based on the range and quantity of cultural materials that are documented from CA-SFR-2, and the presence of human remains, the site appears potentially eligible for inclusion on the NRHP/CRHR under Criterion D/4. There is, however, no certainty that eligible site materials extend into the Project's vertical APE.

As a result of geoarchaeological analysis summarized in Section 4.1 of this SEIS/SEIR and described in detail in the HCASR (ASC 2007), at least 14 locations were identified that are considered sensitive for the presence of prehistoric archaeological resources along the Alternative 2 alignment. No specific evidence confirms that subsurface prehistoric cultural deposits are present at these locations; the sensitivity assessments are based on preliminary geoarchaeological research.

Historical Archaeological Resources

No construction impacts will affect known historic-era resources within Alternative 2. The block-by-block historic overview, developed in the HCASR to predict areas of potential historic-era archaeological sensitivity, identified six locations at which previously unrecorded archaeological resources might be encountered.

- Union Square Station is moderately sensitive for early historic refuse deposits in fill;
- Chinatown Station Head House is highly sensitive for buried architectural remains, archaeological features, and/or sheet refuse;
- Two locations of Chinatown Station Emergency Stairs are highly sensitive for buried architectural remains, archaeological features, and/or sheet refuse.

Among the specific resources indicated by the block-by-block overview are potential caches of artifacts, as well as isolated objects within the Gold Rush-era fill layer at the northbound portal on Third Street; historic tent pads and artifacts at the Market Street Station that may have been buried during filling of the Third Street roadway prior to 1854; and artifact caches dating prior to 1854 where the roadway was filled

to grade at Union Square. At the Chinatown Station site, potential finds are artifact-filled features dating to the Gold Rush era or earlier, prior to street paving; and architectural remains and archaeological features dating up to and including 1906 beneath the modern sidewalks (based on an 1850s photograph), including basement room or niche extensions and tunnels of the type reported in San Francisco's Chinatown and found elsewhere in California. Also possible are garden features, as well as artifact caches and architectural deposits from the Gold Rush or earlier up to 1906, at the Chinatown Station Head House location.

Historical Architectural Resources

The demolition of one historical architectural resource, a contributing building in the Chinatown Historic District (out of 371 contributing buildings) located at 814-828 Stockton Street, for construction of the Chinatown Station would be significant. While mitigation measures have been identified, the implementation of these measures would not necessarily reduce the impacts to a less-than-significant level, therefore there would be significant environmental effects that can not be avoided. Measures to reduce the impact are described in Chapter 5.0, such as retaining or replicating historic architectural features in the station design and recording the history of the building site for posterity.

Alternative 3 – Fourth/Stockton Alignment Option A (LPA) and Option B

Prehistoric Archaeological Resources

No construction impacts will affect known prehistoric resources within Alternative 3A. As a result of geoarchaeological analysis, described in detail in the HCASR (ASC 2007) and in Section 4.4.2 of this SEIS/SEIR, at least 6 locations of prehistoric archaeological sensitivity were identified in the Alternative 3A and 3B alignment.

Historical Archaeological Resources

One known historical archaeological resource may be affected by Project activities within these two alternatives:

- **CA-SFR-137H** consists of the buried remains of a historic city block (bounded by Fourth, Fifth, Harrison, and Bryant Streets, and intermediate streets). The location will be used for a construction yard. Resources include the archaeological remains of residential and commercial buildings, 1906 earthquake/fire debris, intact ground surfaces, and hollow-filled features from the 1870s. The site is eligible to the NRHP/CRHR under Criterion D/4.

The block-by-block historic overview, developed in the HCASR to predict areas of potential historic-era archaeological sensitivity, identified 15 locations at which archaeological resources may be encountered in the Alternative 3A alignment and 13 locations for Alternative 3B.

Historical Architectural Resources

The impacts on historical architectural resources would be the same for Alternatives 3A and 3B as defined under Alternative 2, except Alternative 3B would result in demolition of one contributory building, located at 933-949 Stockton Street (rather than at 814-828 Stockton Street), out of a total 371 contributory buildings in the Chinatown Historic District.

7.4 SUMMARY OF CUMULATIVE IMPACTS

CEQA defines cumulative impacts as "two or more individual effect which, when considered together are considerable" and notes that cumulative impacts may "result from individually minor, but collectively significant projects taking place over a period of time" (State CEQA Guidelines Section 15355). CEQA documents are required to include a discussion of potential significant cumulative effects using one of the following two methods. The list-based approach considers a list of past, present, and reasonably foreseeable future projects to assess the potential for creating related or cumulative impacts. The projections-based approach uses a summary of growth projections contained in an adopted general plan or related planning document to evaluate regional or area wide conditions.

While CEQA allows a choice in approaching cumulative impacts, NEPA and FTA guidelines require that regional growth projections from the Metropolitan Planning Organization (MPO) be used as input for evaluating the cumulative impacts of transportation projects for future year conditions. In the San Francisco Bay Area, the Metropolitan Transportation Commission (MTC) maintains a regional travel demand forecast model that uses the regional population and employment growth forecasts by the Association of Bay Area Governments (ABAG).

To be consistent with both the CEQA and NEPA guidelines, the projections-based approach was used for this analysis. The San Francisco Transportation Authority (SFCTA) countywide travel demand forecasting model (San Francisco Model) was used to develop the travel forecasts for development and growth through the year 2030 in the region, as well as to determine travel demand to and from the Study Area. The SFCTA Model is consistent with MTC's regional model in terms of population and employment forecasts for the region. The San Francisco model estimates demand for San Francisco residents only and integrates the citywide travel demand with the regional travel demand estimated by the MTC model. The most up-to-date version of the San Francisco Model, estimates travel demand based on

regional growth estimates developed and adopted by ABAG in 1998 (Projections `98). Travel demand was estimated for the year 2030.

7.4.1 REGIONAL CONTEXT

The analysis in this document is based on accepted, regional and San Francisco land use forecasts for 2030 and includes the implementation of proposed and funded transportation improvements listed in the Regional Transportation Plan. The analysis of land use, socioeconomic conditions, transportation, air quality, and noise cumulative impacts have all been assessed in a regional context using the San Francisco Model forecasts.

After mitigation, the Central Subway Project would have a cumulatively considerable contribution to the identified region wide cumulative significant traffic impacts as shown in Table 7-2 and discussed in Section 7.3.1, Traffic (Congestion). These impacts are expected to occur in the future whether or not the Project is adopted and constructed, but the Project would have a substantial contribution to the significant impacts.

7.4.2 LOCAL CONTEXT

Cumulative effects that are local in context were also analyzed in this SEIS/SEIR. The impacts of the proposed Project were considered to determine whether less-than-significant local impacts could become significant when taken into account with other reasonably foreseeable development citywide as described in Section 4.1.

Construction of planned projects in the general vicinity of the Central Subway Project could involve temporary (over five to six years) cumulative traffic disruptions, including lane closures and detours, construction–related noise and dust and visual effects. As construction of the Central Subway Project is underway, construction of the Transbay Terminal improvements and ongoing Mission Bay and South of Market development could also be underway. While construction effects are normally temporary and not considered significant, when combined with other major projects in the Study Area these impacts could be considered cumulatively significant. Though the Central Subway Project would have an incremental contribution to a cumulative effect, the Project would be consistent with approved plans (*Four Corridors Transit Plan, MTC Long Range Plan, Bay Area Air Quality Plan*) and would comply with all conditions for permits and approvals and with mitigation measures described in Sections 3.0 and 5.0 of this SEIS/SEIR. MTA would continue to coordinate with other Project sponsors and City agencies through the on-going outreach program, particularly as actual construction schedules are confirmed.

7.5 GROWTH INDUCING IMPACTS

This section examines whether the proposed Central Subway Project would encourage growth at a level in excess of what is projected for the Bay Area region and for San Francisco, resulting in growth inducement. Increased development and growth in an area are dependent on a variety of factors, including employment opportunities, land use controls and availability of developable land, and availability of infrastructure, water, and power resources.

Transportation projects are potentially growth inducing when they extend service to the edge of an urban area, reducing travel times and improving access between employment opportunities and vacant or underdeveloped land to the extent that the travel time savings and enhanced accessibility outweigh other factors affecting locational decisions. The Central Subway Project would replace existing bus service with improved transit service in a relatively built-out urban environment. It is expected to increase public transportation reliability and to provide some travel time savings for Muni patrons. The Project would support the additional or higher density development on specific parcels in the immediate vicinity of stations and would in general accommodate the transit needs envisioned for growth planned in the Study Area and the immediate vicinity.

Plans to redevelop parts of the Corridor, such as Mission Bay North, the Transbay Area, Rincon Hill, and South of Market are expected to proceed whether or not the Central Subway Project is built. The development projected for these areas is outlined in Section 4.1. Section 4.2 summarizes the population and employment growth projected in the Study Area by the year 2030. The overall growth within the City of San Francisco and within the Study Area is not expected to change as a result of the implementation of the Project. Growth may be redirected within the Study Area in a manner to take the greatest advantage of improved transit accessibility around stations that would be afforded by the proposed Project. In San Francisco, growth of population and employment is controlled by the San Francisco *General Plan* and the San Francisco Planning Code which specifies the level of development appropriate to each neighborhood within the City. As part of the *General Plan*, area plans are intended to guide the type and intensity of development allowed throughout the City. The neighborhoods through which the Corridor passes in the South of Market area are slated for redevelopment and increasing density and the area north of Market Street is already one of the most densely developed areas of the City. The implementation of the Central Subway Project (consistent with the *General Plan* and with adopted area plans) would be consistent with the growth already planned for the South of Market area and with the high density development that already exists north of Market Street. The implementation of the Project is not expected to generate substantial new development in and of itself.

7.6 IRREVERSIBLE AND IRRETREIVABLE COMMITMENT OF RESOURCES

CEQA calls for a discussion of the uses of non-renewable resources during the initial and continued phases of the Project that could be irreversible because of a commitment of resources that make removal or nonuse of the resource unlikely thereafter. Implementation of the Central Subway Project would involve the use of some non-renewable resources. Materials (such as fossil fuels and lubricants) and energy would be consumed during Project construction and operation. By accommodating a greater number of trips on transit in the future, however, the Project would provide for a more efficient use of fossil fuels than if these trips were to use private automobiles.

7.7 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Section 15126 (A)(d)(4) of the CEQA Guidelines sates that "if the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. For the Central Subway Project, the No Project/TSM Alternative would not have the temporary construction impacts, the business, residential, and parking displacements, potential archaeological and historical architectural impacts, impacts on parks, and noise and vibration impacts as would the Build Alternatives. The No Project/TSM Alternative would, however, result in reduced transit reliability, increased travel times for transit patrons, diminished mobility for residents in the southeast quadrant of the City, and increased air pollutants when compared to the Build Alternatives. It would also have a higher level of energy consumption than the Enhanced EIS/EIR or Fourth/Stockton Alignment Option B alternatives. The No Project/TSM Alternative would not be consistent with the goals and objectives set forth in the City's adopted land use and transportation plans and policies calling for rail transit investment in the Project Corridor. As a result, the No Project/TSM Alternative would not meet the stated Purpose and Need for the Project.

All Build Alternatives would result in the potential loss of affordable housing units and small businesses in the Chinatown neighborhood as a result of station construction. Alternatives 2 and 3A would result in the loss of 10 small businesses and 1 or 2 residential units while Alternative 3B would result in the loss of 8 small businesses and 17 residential units. If affordable housing is provided on the station sites as part of the redevelopment of these properties, then the impacts would be reduced.

Of the Build Alternatives, the Fourth/Stockton Alignment Option B would be the environmentally superior alternative. This alternative was structured to reduce construction duration so as to minimize temporary construction impacts. Through the use of a TBM construction method and a refined alignment and station and mechanical structure locations, the impacts on park and recreation facilities (particularly impacts to Willie "Woo Woo" Wong playground and Hang Ah Alley), archaeological and historical

architectural resources, utility relocation, noise and vibration, and soil disturbing activities would be minimized when compared to the other two alternatives.

8.0 FINANCIAL FEASIBILITY

This section of the SEIS/SEIR summarizes the cost and revenue projections for the various Central Subway Project alternatives and for the San Francisco Municipal Transportation Agency (MTA) as a whole. The primary basis for this section is the MTA's Central Subway FY ~~2008~~ 2009 New Starts Report, Financial Plan, which was prepared in ~~2006~~ 2007, ~~although this section also includes~~ in addition to updated costs estimates and revenue projections ~~for Project alternatives, which~~ that have been provided by the MTA and its consultants. The analysis is not required for CEQA environmental review, but is presented for informational purposes as a financial plan is an important element of the federal and local project approval process. ~~Total forecast o~~Operating and capital costs are compared to ~~operating and non-operating~~ revenue~~s from federal, state and local~~ sources to determine the financial feasibility of the Project alternatives. The feasibility of the capital investment, as well as the ability of the MTA to support ongoing system-wide capital and operating needs, is factored into the determination.

Typical of projects at this stage of financial feasibility analysis, capital and operating costs, as well as ridership, operating and non-operating revenues are preliminary and will be further refined throughout the Project's development process. Project cost estimates become more certain as Preliminary Engineering is completed and Project details and funding strategies become more certain. This will lead to continuing refinements of the financial plan for the Project. The MTA expects to update the Project financial plan in September ~~2007~~ 2008.

8.1 COSTS AND AVAILABLE REVENUES

8.1.1 CAPITAL COSTS

This section describes the techniques, assumptions and methodology used for estimating the capital cost for the Project alternatives.

Cost Estimation Methods

General Approach

Capital costs have been estimated according to the Federal Transit Administration (FTA) Guidelines for Preparation of a Capital Cost Estimate for New Starts Projects. Detailed estimates of quantities for different cost categories are based on preliminary engineering drawings for tunnels and stations and typical section sketches, with contingencies consistent with the level of the design. Cost estimates for various components of the Project or line items in the cost estimate have been developed based on a breakdown of labor, permanent materials, construction materials, plant and equipment required to

construct or install a component of the project, indirect costs and margin plus any additional subcontractor costs. All construction and systems costs include design contingencies to cover design development and uncertain market conditions at the time of bids. Contingencies as applied to the direct construction cost do not cover changes to the currently identified scope of work. A Project reserve or "unallocated contingency" is also applied to the entire Project cost. Excluded from the capital cost estimates are subsequent reconstruction or replacement of facilities and components, as well as replacement of vehicles. Annualized costs, which are discussed later, account for reconstruction and replacement and assume no finance charges.

Approach for Major Cost Categories

Cost estimates have been prepared for all Project Alternatives. The cost estimate for the Alternative 2 was originally prepared in 2004 and escalated to 2007 dollars in accordance with construction industry published indices for escalation and reflects further refinement of the Project and construction methods since the 2004 estimate. The Alternative 3A estimate is based on the estimate prepared in 2005 and escalated to 2007 with adjustments for refinements and construction methods. The cost estimate for the Alternative 3B has been developed as a new "bottom-up" estimate in 2007.

The estimating approach for construction of guideway and station components of the LPA and Modified LPA has been developed using heavy civil engineering estimating software where bid items were prepared for each component of the guideway and stations construction. A "bottom-up" estimate was prepared by developing labor crew costs for construction; adding the costs of permanent and construction materials, plant and equipment used in the construction process; and contractor indirect costs plus contingencies consistent with the level of design. Where appropriate, unit rates for major components of a structure or construction process (e.g. precast tunnel linings, muck haulage and disposal, escalators, elevators, ventilation fans etc) are based on manufacturer and supplier quotations. The detailed methodology for each cost category is as follows:

Guideway & Track - Horizontal alignment plans on a scale of 1 inch to 400 feet and profiles on a scale of 1 inch to 80 feet have been prepared for all Project Alternatives. Detailed quantity take-offs have been developed from cross section drawings for both surface guideway and underground elements of the guideway. The estimate assumed new TBMs would be procured for excavation of the underground tunnels. An extensive geotechnical site investigation program carried out during preliminary engineering defined the ground types allowing adjustments to be made for excavation rates and costs. The surface guideway and track costs were compared with known costs from the recently completed T-Third Line (Initial Operating Segment).

Stations, Stops, Terminals, & Intermodal Buildings - The unit costs for the underground stations and surface platforms have been developed in accordance with the general approach described above and compared against as-built construction costs for a number of recently completed transit systems. Station architecture and finishes costs are developed from conceptual level architectural finishing drawings. An allowance of two percent of the station construction costs is included for the provision of public art at each of the stations, as required by the San Francisco public arts policy.

Support Facilities: Yards, Shops, & Administrative Buildings - The Central Subway would use existing support facilities. No allowance has been provided in the cost estimate for expansion of the facilities.

Sitework & Special Conditions - The special conditions consist of roadway modifications, utility relocations at the stations, portals and surface guideway footprints, traffic control, environmental remediation, demolition and reinstatement. Lane modifications or the relocation of curbs and medians would be required. Given that the majority of the guideway is deep underground, excavated using TBMs, there would be a relatively modest amount of utility relocation required for Alternatives 3A and 3B to support excavation and construction of the stations and portal. The construction methods required for excavation and construction of Alternative 2 would require significantly more utility relocations.

Systems - The systems costs include signals (train control), communications and traction power. The LPA would be similar in guideway length and fleet size to several transit projects currently in operation or under design. The basis of the system cost estimate is experience with the existing T-Third Line. Actual supplier bid prices in 2007 dollars have been used to develop unit costs. The resulting unit costs are multiplied by the Project quantities to obtain the cost estimate.

Right-of-Way Acquisition, Land, Easements, and Existing Improvements - Market research determined the price of real estate parcels required at Chinatown Station, Moscone Station and for public parking spaces required at the Ellis/O'Farrell and Union Square parking garages (Alternative 2 would also include use of space in the Moscone Garage and Hearst Garage). The costs reflected the value of the land in 2005 dollars, which is increased by 20 percent to reflect year 2007 costs. The costs of easements required where the tunnels pass under private property are also included. No adjustments have been made in the capital cost estimate for potential real estate cost savings related to joint development.

Vehicles - The patronage forecasting model and transit operations plan show that four additional rail cars (three plus one spare) would be required for the LPA (Alternative 3A). The capital costs have been developed on a per car basis, based on recent light rail transit car purchases.

Professional Services – The estimate is based on a percentage of construction cost, including preliminary engineering, final design, project management for design and construction, construction administration, legal costs, permits, reviews by other agencies, survey testing, inspection and start up costs. An allowance of 25 percent of construction costs has been allocated for all professional services.

Unallocated Contingency - Unallocated contingency covers unexpected changes or additions in the work scope and unanticipated costs above and beyond the assumed normal rates that occur during construction, particularly construction change orders and claims. Eight percent on all items is included in the cost estimate.

Cost Estimation Results

Table 8-1 presents the capital cost estimates for the Enhanced EIS/EIR Alignment (Alternative 2), Fourth/Stockton Alignment Option A (Alternative 3A - LPA) and Fourth/Stockton Alignment Option B (Alternative 3B - Modified LPA) in both 2007 (constant) dollars and year of expenditure (YOE) dollars. The 2007 dollars cost estimates represent the cost of the alternatives if they were built this year and the YOE cost estimates escalate the costs to reflect the MTA's estimated implementation schedule and the associated cost inflation. When evaluating financial feasibility and comparing Project costs to available funding, which is usually expressed in year-of-occurrence dollars, the year of expenditure cost estimates are the most relevant.

Implementation Schedule

Preliminary estimates predict that utility relocations for the Central Subway will commence in ~~2010~~ 2009 with heavy construction scheduled to begin in ~~2011~~ 2010. ~~The start of revenue service~~ Completion of construction is scheduled for 2016 for Alternative 3B and 2017 for Alternative 2 and Alternative 3A.

The project delivery approach assumes design/bid/build for all contracts including stations, tunnels and underground guideway, systems, surface guideway and platforms.

TABLE 8-1

CENTRAL SUBWAY CAPITAL COSTS (IN $MILLIONS)

Project Elements	Alternative 2		Alternative 3A[1]		Alternative 3B[1]	
	$2007	**YOE$**	**$2007**	**YOE$**	**$2007**	**YOE$**
Guideway & Track Elements	$364	$446	$248	$304	$244	$296
Stations, Stops, Terminals, Intermodal[2]	$376	$473	$376	$473	$325	$403
Sitework & Special Conditions	$94	$115	$70	$85	$47	$56
Systems	$118	$161	$110	$151	$94	$122
Row, Land, Existing Improvements	$15	$24	$20	$24	$20	$23
Vehicles	$21	$28	$21	$28	$21	$26
Professional Services	$229	$271	$202	$237	$188	$214
Unallocated Contingency	$97	$122	$84	$105	$75	$94
Finance Charges		$45		$0.8		$0
Total Project Cost	**$1,345**	**$1,685**	**$1,131**	**$1,407**	**$1,014**	**$1,235**

Source: PB/Wong 2007

[1] Costs for Alternatives 3A and 3B do not include the North Beach Variant. The North Beach Variant would add approximately $54 million (YOE$).

[2] Alternative 2 and 3B would have four stations and Alternative 3A would have three stations.

Note: Escalation is assumed to average approximately four percent per year over the duration of the project.

Comparative Discussion

Alternative 3A would extend light rail service along Fourth Street as a semi-exclusive double-track surface line for a short distance from the T-Third terminus at Fourth and King Streets. The rail would transition to a subway (tunnel) between Townsend and Brannan Streets for the remainder of the Project's 1.7-mile length. Three underground subway stations are included in this alternative and four additional light rail vehicles (LRVs) would be required beyond the No Project/TSM Alternative.

Alternative 3B is similar to Alternative 3A, but its cost estimates differ in part because of a shorter tunnel (with a longer surface line), four stations (the fourth is a surface platform), and a shorter (one year less) construction period than the other build alternatives. Tunnel sections and subway stations are typically more expensive to construct than surface lines and surface platforms. Alternative 3B is similar to Alternative 3A, but its cost estimates differ in part because of a shorter tunnel (with a longer surface line), four stations (the fourth is a surface platform), and a shorter (~~one year~~ six months less) construction period than the other build alternatives.

Other differences in Alternative 2 that affect the alternatives cost estimates include: operation as a surface line on both Third and Fourth Streets, south of Harrison Street; two portals (one on Third Street and one on Fourth Street) rather than one portal; a tunnel under Third Street ~~instead of~~ in addition to

Fourth Street, and five stations (four underground and one surface). A detailed description of the alternatives and their differences can be found in Chapter 2.0.

8.1.2 OPERATING AND MAINTENANCE COSTS

Cost Estimation Methods

General Approach

Once the Central Subway is complete, the T-Third line would operate as a new line from the southern terminal at the Caltrain Bayshore Station through the Central Subway to the northern terminus in Chinatown (T-Third Long Line). ~~A second independent line (~~The T-Third Short Line~~)~~ is anticipated to operate between Chinatown and a turnaround loop near 18th Street and the T-Third Very Short Line is planned to operate between Chinatown and Fourth and Berry Streets. Service levels are planned for single car trains on the T-Third Long and Short lines and two-car trains on the T-Third Very Short Line operating at ~~five~~ six-minute peak period and 10-minute midday frequencies on each line. For Alternative 3B (the LPA as selected in February 2008), t~~T~~his would require three additional LRVs, plus one spare, for a total of four additional LRVs in 2030. For Alternative 2, it would require six additional LRVs (five peak plus one spare) and for Alternative 3A, it would require three additional LRVs (two peak plus one spare). It would also require the MTA to bring the spare ratio on the LRV fleet to the 20 percent recommended by FTA. Service changes to Muni bus routes would also be implemented in conjunction with Central Subway service start-up. When the operation of the T-Third line into the Central Subway begins, the Castro Shuttle would be restored.

Basis for ~~Rail~~ Estimating Operation and Maintenance Costs

~~Light rail operating expenses were estimated in four major cost categories: vehicle operations, vehicle maintenance, non-vehicle maintenance, and general and administrative. Total MTA costs including the Central Subway Project were estimated by using FY2005 MTA data to calculate cost ratios (e.g., $37.13 per train revenue hour for vehicle operator salaries and wages) for subcategories of the four major categories and multiplying the ratios by an appropriate cost driver (e.g., revenue car miles, number of service and inspection yards, etc.). The MTA has assumed that rail operating and maintenance (O&M) costs increase at a rate of 3.5 percent per year on average.~~

~~Basis for Other Costs~~

~~MTA system operating expenses for motor bus, trolley bus, and cable car were estimated using the same major cost categories and methodology as rail costs. Similar to the rail costs, the MTA has assumed that bus and cable car O&M costs increase 3.5 percent per year on average.~~

The system wide Operations and Maintenance (O&M) expenses were estimated by applying the results of an O&M cost model developed for the Transit Effectiveness Project (TEP) and the FY 2009 Central

Subway New Starts Report submission to the FTA.

The O&M cost model is disaggregate and resource build-up in structure, consistent with the approach suggested by the Federal Transit Administration (FTA). Line item costs are determined according to the quantity of service supplied and other system characteristics. Expenses are classified as fixed and/or variable (a driving variable drives the variable costs). Costs are broken out by class so appropriate inflation rates can be applied to project future costs for labor, fringes, and energy costs, which historically have varied significantly from each other.

The O&M cost model was calibrated and unit costs computed based on the SFMTA FY 2006 actual operating expenses, staffing costs, and levels of service provided. The following inflation factors were applied to FY 2006 dollars to forecast unit costs in year-of-expenditure dollars.

- Salaries and Wages: San Francisco Consumer Price Index - All Urban Consumers (CPI-U) + 0.5%, based on historical growth in salaries and wages
- Health Benefits: Historical growth in healthcare expenses of 10%
- Other Benefits: San Francisco CPI-U - All Items
- Fuel and Lubes: Crude Oil Price: West Texas Intermediate - Sweet Wellhead
- Materials & Supplies: San Francisco CPI-U - All Items
- Propulsion Electricity: San Francisco CPI-U - Electricity
- Other: San Francisco CPI-U - All Items

Factors That May Alter Operating Cost Estimates

~~Altering the following variables in the operating plan for the Central Subway Project would change the operating cost forecasts: number of peak cars; car revenue miles; train revenue hours; subway stations; one-way route miles; and number of service and inspection yards.~~ The O&M cost model estimates unit costs using a variety of variables, including peak vehicles, revenue bus/train hours, weekday peak revenue bus/train hours, revenue vehicle miles, ridership, manned stations, wayside or surface platforms, maintenance garages, power sub-stations, miles of trolley wire lines, and track miles. Some of these variables were broken out to associate mode-specific costs to the mode-specific variable. Any change in the value of these variables would affect the forecast of O&M costs for the baseline and the build alternatives.

Cost Estimation Results

The projected incremental operating costs for both the T-Third line (IOS) and Central Subway Alternatives are summarized in Table 8-2 in year of expenditure dollars (YOE). ~~All Project a~~ Alternatives 3A and 3B are expected to result in a net operating cost savings relative to the No Project/TSM Alternative, however, Alternative 2 would result in a net-operating increase. The 2016 figures represent the cost at the startup of the Central Subway operations, while the 2030 figures are for a selected forecast year.

Comparative Discussion

Due to a faster and more direct alignment, Alternative 3A creates an annual reduction of ~~2,400~~ 40,300 LRV car hours on the Central Subway Corridor and a system-wide annual ~~reduction~~ increase of ~~27,800~~ 11,900 car hours when compared to the No Project Alternative. Alternative 3A would also reduce the number of system-wide annual bus hours by 76,400. Alternative 3B would save the same number of annual bus hours, however, it would ~~increase~~ reduce the annual LRV car hours by ~~6,000~~ 39,000 on the Central Subway Corridor while ~~reducing~~ increasing by ~~19,400~~ 13,200 system-wide LRV hours compared to the No Project/TSM Alternative. Alternative 2 would result in ~~yields~~ an annual ~~increase~~ decrease of ~~7,100~~ 33,100 LRV car hours, a system-wide annual ~~reduction~~ increase of ~~18,300~~ 19,100 car hours, and would reduce the number of system-wide annual bus hours by 76,400 when compared to the No Project/TSM Alternative.

TABLE 8-2

CENTRAL SUBWAY INCREMENTAL OPERATING COSTS (IN YOE$ MILLIONS)

	No Project/TSM Alternative	Alternative 2	Alternative 3A	Alternative 3B
2016	~~$707.9~~ $852.61	~~$693.4~~ $852.73	~~$693.0~~ $849.65	~~$693.2~~ $849.41
2030	~~$1,145.9~~ $1,261.49	~~$1,122.3~~ $1,262.13	~~$1,121.7~~ $1,257.77	~~$1,122.1~~ $1,258.31
Difference from No Project/TSM Alternative				
2016	N/A	~~($14.5)~~ $.011	~~($14.9~~ $2.96)	~~($14.7~~ $3.20)
2030	N/A	~~($23.6)~~ $0.64	~~($24.2~~ $3.72)	~~($23.8~~ $3.18)

Note: YOE is Year of Expenditure.

Source: ~~MTA, May 2007~~ AECOM Consult, Inc. April 2008.

8.1.3 PROJECT FUNDING

Capital Sources

Project Specific

A total of ~~$432.2~~ $473 million in state and local capital funding has been committed to the Central Subway Project. In addition, the MTA is currently seeking $762.2 million in federal "New Starts" funding, for a total of ~~$1,194.4~~ $1,235 million in capital funding identified for the Project. These sources are discussed in this

section. Only Alternative 3B is fully funded; ~~and~~ the ~~steps that the MTA is taking to overcome the capital~~ funding shortfalls for the other alternatives are discussed in Section 8.1.4. MTA's funding plan for the Central Subway Project ~~alternatives are~~ is displayed in Table 8-3.

TABLE 8-3

CENTRAL SUBWAY CAPITAL FUNDING PLAN (IN SMILLIONS)

Source	Amount
Federal – 5309 New Starts	$762
State	$306
Local	~~$126~~$167
Total	~~$1,194~~$1,235
Source: MTA Central Subway FY200~~8~~9 New Starts Financial Plan	

FTA Section 5309 "New Starts." The Section 5309 New Starts program administered by the Federal Transit Administration (FTA) provides discretionary capital grants for construction of new fixed guideway systems or extensions to existing fixed guideway systems. To receive a New Starts grant, projects must complete a planning and project development process that consists of Alternatives Analysis, Preliminary Engineering, and Final Design phases. The funding program is discretionary and highly competitive, with funding decisions made on the basis of New Starts Criteria specified in law and regulation. Near the completion of Final Design, highly-rated projects are eligible to receive a Full Funding Grant Agreement (FFGA), which defines the scope of the Project, specifies requirements with which the Project sponsor must comply to receive New Starts funds, identifies the multi-year federal financial commitment to the Project, and signals federal intent to seek the specified amounts of funding through future appropriations.

The MTA is seeking a minimum of $762.2 million in Section 5309 New Starts funding. The MTA started receiving New Starts funds for the Central Subway Project in FY 2003. To date, the MTA has received $45.3 million in New Starts funds as follows: $1.5 million in 2003; $8.9 million in 2004; $9.9 million in 2005; ~~and~~ $25 million in 2006, and $11.74 million approved for 2008. These funds were allocated for preliminary engineering and environmental review. The Central Subway Project ~~still~~ needs to complete Preliminary Engineering and enter Final Design before it is eligible to receive an FFGA, and the federal government's allocation of New Starts funding to-date does not guarantee that the Central Subway Project will receive an FFGA. A project must also have a "Medium" or higher Overall Rating, have a "Medium" or higher Cost Effectiveness Rating, and be able to be implemented within the available Section 5309 program resources to receive an FFGA. In FTA's FY 200~~8~~9 New Starts Report to

Congress, the Central Subway Project (Alternative 3~~A~~B) received a "Medium" Overall Rating, a "Medium" Local Financial Commitment Rating, a "Medium" Project Justification Rating, a "Medium-~~Low~~" Cost Effectiveness Rating, and a "High" Transit Supportive Land Use Rating.

The MTA is currently performing value engineering reviews to lower the capital cost and to improve the Central Subway's Cost Effectiveness Rating.

State Traffic Congestion Relief Program (TCRP). The San Francisco County Transportation Authority (SFCTA) has committed $14.0 million in State of California Traffic Congestion Relief Program (TCRP) funds to the Central Subway Project through a Program Supplement for the TCRP funds. A $140 million TCRP allocation was made to the Third Street Light Rail Project, of which $126 million was used for the T-Third line (IOS).

State Regional Improvement Program. The SFCTA has committed $92.2 million in State Regional Improvement Program funds to the Central Subway Project. This commitment was made in the Regional Transportation Plan and Resolution #04-62.

State Infrastructure Bonds (Prop. 1B). Working in cooperation with MTC, the MTA has secured $200 million in state infrastructure bond funds for the Project; $100 million of revenue-based funds, which have been approved by the MTA, and $100 million in population-based funds, which have been approved by MTC.

Local (San Francisco County Transportation Authority) Sales Tax. The SFCTA committed $126.0 million in Local Proposition K Sales Tax funds to the Central Subway Project in the Proposition K Expenditure Plan. Proposition K, which began collecting revenues in April 2004, is a one-half cent sales tax program approved by San Francisco County voters in November 2003.

Systemwide

The MTA's 20-year Capital Improvement Program (CIP), covering FY2006-FY2025, is divided into two parts, a State of Good Repair CIP and an Enhancement/Expansion CIP. ~~Muni~~ The MTA has either planned, programmed, or been awarded funding for all capital projects in the State of Good Repair CIP, which includes the capital projects needed to maintain the current level of service as well as the Central Subway Project Alternative 3~~A~~B. The MTA's estimated State of Good Repair CIP expenditures and capital funding forecast are shown in Tables 8-4 and 8-5, respectively.

As shown in Table 8-5, the MTA projects $4.0 billion in capital funding will be available for the State of Good Repair CIP.[1] This funding projection includes approximately $416 million in other local funding sources, which are to be determined. Tables 8-4 and 8-5 reflect the 2006 cost estimate for Alternative 3A

[1] MTA Central Subway FY2008 New Starts Financial Plan, Figure 9.

TABLE 8-4

TWENTY-YEAR CAPITAL PLAN - STATE OF GOOD REPAIR EXPENDITURES (IN YOE $MILLIONS)

Fiscal Year	Fleet	Infrastructure	Facilities	Equipment	Other Projects	Total Expenditures
FY06	$23	$98	$7	$0	$20	$148
FY07	$16	$80	$31	--	$3	$129
FY08	$14	$148	$10	$0	$1	$172
FY09	$10	$169	$1	--	$0	$181
FY10	$40	$265	--	--	$0	$306
FY11	$42	$222	$0	--	$0	$264
FY12	$85	$184	--	--	$0	$269
FY13	$38	$159	--	--	$0	$198
FY14	$64	$159	--	--	$0	$223
FY15	$154	$159	--	--	$0	$313
FY16	$155	$159	--	--	$0	$314
FY17	$72	$126	--	--	$0	$198
FY18	$128	$56	--	--	$0	$184
FY19	$108	$29	--	--	$0	$137
FY20	$110	$38	--	--	$0	$148
FY21	$83	$38	--	--	$0	$121
FY22	$99	$38	--	--	$0	$137
FY23	$114	$38	--	--	$0	$152
FY24	$156	$38	--	--	$0	$194
FY25	$174	$38	--	--	$0	$212
20-Year Total	**$1,684**	**$2,239**	**$49**	**$0**	**$24**	**$3,996**
Percent of Total	**42.1%**	**56.0%**	**1.2%**	**0.0%**	**0.6%**	**100.0%**

Source: MTA Central Subway FY2008 New Starts Financial Plan, Figure 11.

of $1.410.8 million, compared to the current Alternative 3A cost estimate of $1.418.1 million. Representing 0.2 percent of the State of Good Repair CIP, the change in cost is negligible within the scope of the larger program, and is well within the margin of forecasting error. No additional capital funding beyond the State of Good Repair CIP was projected as of 2006; however, the MTA is updating its funding forecast and the MTA's funding agencies estimate that an additional $2.2 billion, for a total of $6.2 billion, might be available for capital improvement projects during the life of the 20-year CIP based on a review of recent regional funding history.[2] These estimates are shown in Table 8-6. If the MTA receives more than $4.0 billion during the life of the current CIP, the MTA could pursue projects in the Enhancement/Expansion CIP or make other capital investments, although these projects could be deferred if sufficient funding does not become available. A list of the CIP projects and short descriptions can be found in the MTA FY2006-2025 Short Range Transit Plan.[3]

[2] MTA Central Subway FY2008 New Starts Financial Plan, p.10-13, Figure 9 and Figure 10.
[3] http://www.sfmta.com/cms/rsrtp/documents/ShortRangeTransitPlanFy20062025-Web.pdf

TABLE 8-5

TWENTY-YEAR CAPITAL PLAN - STATE OF GOOD REPAIR FUNDING PROJECTIONS (IN $MILLIONS YEAR OF OCCURRENCE)

Fiscal Year	Federal	State	Local	Total Funds
FY06	$106	$0	$42	$148
FY07	$79	--	$50	$129
FY08	$111	--	$61	$172
FY09	$90	$1	$89	$181
FY10	$173	--	$133	$306
FY11	$170	--	$95	$264
FY12	$160	--	$108	$269
FY13	$140	--	$58	$198
FY14	$165	--	$58	$223
FY15	$218	--	$95	$313
FY16	$206	--	$108	$314
FY17	$172	--	$25	$198
FY18	$167	--	$17	$184
FY19	$87	--	$50	$137
FY20	$84	--	$63	$148
FY21	$110	--	$11	$121
FY22	$126	--	$11	$137
FY23	$107	--	$45	$152
FY24	$132	--	$61	$194
FY25	$160	--	$51	$212
20-Year Total	**$2,763**	**$1**	**$1,232**	**$3,996**
Percent of Total	**69.1%**	**0.0%**	**30.8%**	**100.0%**

Source: MTA Central Subway FY2008 New Starts Financial Plan, Figure 11.

TABLE 8-6

CAPTIAL FUNDING ESTIMATES BASED ON CURRENT FUNDING LEVELS (IN $MILLIONS YEAR OF OCCURRENCE)

Fiscal Year	Federal	State	Local	Total Funds
FY06	$106.5	$0.0	$48.2	$154.7
FY07	$137.7	--	$54.0	$191.6
FY08	$182.0	--	$72.8	$254.8
FY09	$177.4	--	$119.6	$296.9
FY10	$238.0	--	$113.0	$351.0
FY11	$244.3	--	$170.9	$415.2
FY12	$250.6	--	$102.5	$353.1
FY13	$257.0	--	$121.5	$378.5
FY14	$263.8	--	$95.0	$358.8
FY15	$270.8	--	$97.9	$368.7
FY16	$278.1	--	$91.5	$369.6
FY17	$285.7	--	$58.5	$344.2
FY18	$240.5	--	$42.6	$283.1
FY19	$221.8	--	$43.0	$264.7
FY20	$230.2	--	$66.7	$296.9
FY21	$239.0	--	$44.0	$283.0
FY22	$248.1	--	$44.6	$292.7
FY23	$257.5	--	$45.2	$302.7
FY24	$267.3	--	$45.8	$313.2
FY25	$277.6	--	$46.5	$324.0
20-Year Total	**$4,673.8**	**$0.0**	**$1,523.7**	**$6,197.5**

Source: MTA Central Subway FY2008 New Starts Financial Plan, Figure 9.

Operating Sources

Project Specific Transit Farebox and Non-farebox Operating Revenue Sources

~~In 2030 t~~The MTA's estimate~~s that the~~ of additional annual fare revenues ~~by~~ from the Central Subway Project ~~would be~~ is ~~$9.0~~ 7.0 million ~~per year~~ for Alternative 3A, based on the estimated change in ridership and an increase in the average fare that is consistent with the MTA's estimate for inflation (~~3.2~~ 2.3 percent per year). Alternative 3B is ~~predicted~~ projected to generate slightly less incremental annual revenues of ~~$8.8~~ 6.6 million and Alternative 2 is expected to generate ~~$11.6~~ 5.6 million more than the No Project/TSM Alternative. The operating revenue estimates are shown in Table 8-7. MTA has assumed that the Central Subway Project will generate the same non-farebox operating revenue as the No Project/TSM Alternative.

~~**TABLE 8-7**~~

~~**2030 CENTRAL SUBWAY OPERATING REVENUES (NOMINAL$)**~~

	~~**Alternative 2**~~	~~**Alternative 3A**~~	~~**Alternative 3B**~~
~~Boardings with Central Subway~~	~~283,284,830~~	~~281,333,060~~	~~281,151,420~~
~~Boardings for No Project/TSM Alternative~~	~~274,528,660~~	~~274,528,660~~	~~274,528,660~~
~~Change in Boardings~~	~~8,756,170~~	~~6,804,405~~	~~6,622,764~~
~~Average Fare~~	~~$1.33~~	~~$1.33~~	~~$1.33~~
~~Fare Revenue Generated by Central Subway~~	~~$11,645,710~~	~~$9,049,860~~	~~$8,808,280~~
~~Note: Estimates developed using MTA methodology from MTA Central Subway FY2008 New Starts Financial Plan, Figure 15 and updated MTA boarding estimates.~~			

TABLE 8-7

2030 CENTRAL SUBWAY OPERATING REVENUES (YOE$)

	Alternative 2	**Alternative 3A**	**Alternative 3B**
Light Rail, Bus Trolley Bus, and Historic Streetcar			
Boardings with Central Subway	262,855,770	265,115,520	264,783,700
Boardings for No Project/TSM Alternative	259,447,570	259,447,570	259,447,570
Change in Boardings	3,408,200	5,66,950	5,336,130
Average Fare	$0.98	$0.98	$0.98
Fare Revenue Generated by Central Subway	$3,325,750	$5,530,840	$5,207,040
Cable Car			
Boardings with Central Subway	11,717,740	11,591,460	11,573,020
Boardings for No Project/TSM Alternative	11,329,200	11,329,200	11,329,200
Change in Boardings	388,540	262,260	243,820
Average Fare	$5.79	$5.79	$5.79

Fare Revenue Generated by Central Subway	$2,250,580	$1,519,120	$5,579,950
Total Change in Boardings	**3,796,740**	**5,930,210**	**5,579,950**
Total Fare Revenue Generated by Central Subway	**$5,576,330**	**$7,049,950**	**$6,619,330**
Note: YOE is Year of Expenditure. Estimates developed using MTA methodology from MTA Central Subway FY2009 New Starts Financial Plan and updated MTA boarding estimates.			

Systemwide

The MTA has estimated the amount of revenue available for operating and maintaining the New Starts Project while maintaining the existing and proposed level of service.[4] This estimate is shown in Table 8-8. It also assumes two new revenue measures ~~requiring third-party approval~~. The first of these is an increase to the parking tax of 10 percent, from the current rate of 25 percent to a proposed rate of 35 percent~~. The MTA's analysis assumes it would be approved by voters in FY2008~~ that was approved by voters in November 2007 and will begin to generate additional revenues in FY2009. The second new revenue source MTA staff is currently pursing is the ~~development of a Transit Operations fee.~~ proactive management of parking collections in on-street meters and off-street parking facilities generating an expected increase of $30 million annually.

~~The MTA's operating financial plan is based on its estimates of long-term growth trends rather than the budget estimate or requirements for any given year.[5] The MTA has indicated that deficits or surpluses shown in Table 8-8 are for planning purposes only, and are intended to flag years in which revenue~~

[4] Maintaining existing service levels is required to receive a Federal New Starts Full Funding Grant Agreement.
[5] ~~MTA Central Subway FY2008 New Starts Financial Plan, p.10-27.~~

~~DELETED TABLE 8-8~~

~~MTA 20-YEAR FINANCIAL PLAN INCLUDING CENTRAL SUBWAY ALTERNATIVE 3A (YOE $MILLIONS)~~

	Total	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
SOURCES																					
Operating																					
Fare Revenues	$4,152	$131	$159	$159	$159	$179	$179	$179	$197	$197	$197	$216	$216	$216	$236	$236	$236	$259	$259	$259	$284
Parking Revenues	4,847	173	177	182	190	196	202	211	218	225	234	242	249	260	268	277	288	298	307	320	330
Parking Tax Increase	198	0	0	0	9	9	10	10	10	10	11	11	12	12	12	13	13	13	14	14	15
New Cong. Mgmt/Trans. Imp. Fee	221	0	0	0	10	10	11	11	11	12	12	12	13	13	14	14	15	15	16	16	17
Charges for Service	137	5	5	5	5	6	6	6	6	6	6	7	7	7	8	8	8	8	8	8	9
Intergovernmental Revenue	3,032	91	114	151	122	125	129	133	137	141	146	151	155	160	166	171	176	182	188	194	200
Miscellaneous Revenue	755	14	29	30	31	32	33	34	35	36	37	38	40	41	42	44	45	46	48	49	51
Gen. Fund Cont. - Prop E Form.	4,150	140	154	160	167	172	178	184	189	195	202	208	215	222	229	236	244	252	260	268	276
Use of Carryforward Fund Bal.	9	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interdepartmental Recoveries	419	15	16	16	17	17	18	18	19	20	20	21	22	22	23	24	25	25	26	27	28
Departmental Transfer Adj.	(256)	(9)	(10)	(10)	(10)	(11)	(11)	(11)	(12)	(12)	(12)	(13)	(13)	(14)	(14)	(15)	(15)	(15)	(16)	(16)	(17)
Dedicated Paratransit Funding	351	16	16	16	16	16	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20
Special Revenue - TIDF	247	10	10	10	10	10	10	11	11	11	12	12	13	13	13	14	14	15	15	16	16
Total Operating Sources	**18,262**	**586**	**679**	**720**	**726**	**764**	**781**	**802**	**839**	**859**	**882**	**923**	**945**	**970**	**1,015**	**1,040**	**1,068**	**1,117**	**1,144**	**1,175**	**1,229**
Capital - State of Good Repair																					
Federal	2,763	106	79	111	90	173	170	160	140	165	218	206	172	167	87	84	110	126	107	132	160
State	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local	1,232	42	50	61	89	133	95	108	58	58	95	108	25	17	50	63	11	11	45	61	51
Total Capital Sources	**3,996**	**148**	**129**	**172**	**181**	**306**	**264**	**269**	**198**	**223**	**313**	**314**	**198**	**184**	**137**	**148**	**121**	**137**	**152**	**194**	**212**
Total Sources	**22,259**	**734**	**808**	**893**	**906**	**1,069**	**1,046**	**1,071**	**1,037**	**1,082**	**1,195**	**1,237**	**1,143**	**1,154**	**1,152**	**1,187**	**1,188**	**1,254**	**1,296**	**1,368**	**1,441**
USES																					
Operating																					
Platform Salaries	4,124	128	144	150	156	162	169	176	183	190	198	206	214	222	231	240	250	260	270	281	293
Other Salaries	4,357	157	168	172	174	180	186	192	198	204	211	217	224	232	239	247	254	263	271	280	289
Fringe Benefits	6,795	114	131	144	158	174	191	210	231	254	280	308	339	373	410	451	496	545	600	660	726
Overhead	191	7	7	7	8	8	8	8	9	9	9	10	10	10	10	11	11	12	12	12	13
Non-Personal Services	3,201	109	121	125	129	133	137	141	146	151	155	160	165	171	176	182	188	194	200	206	213
Materials and supplies, incl. fuel	1,041	35	39	41	42	43	45	46	47	49	51	52	54	56	57	59	61	63	65	67	69
Capital/Facilities Expenditures	162	3	25	28	5	5	5	5	5	6	6	6	6	6	7	7	7	7	8	8	8
Services of Other Departments	1,039	36	39	40	42	43	44	46	47	49	50	52	54	55	57	59	61	63	65	67	69
Debt Service	171	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Allocated Charges	(381)	(14)	(14)	(15)	(15)	(16)	(16)	(17)	(17)	(18)	(18)	(19)	(20)	(20)	(21)	(22)	(22)	(23)	(24)	(24)	(25)
Appropriated Rev. - Res. & Des.	202	1	10	10	10	10	10	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Repay Breda Money	7	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Service Plan Changes	(57)	0	0	0	0	5	5	5	5	5	5	(8)	(8)	(8)	(8)	(9)	(9)	(9)	(9)	(10)	(10)
Transfer to Unapprop. Fund Bal.	23	0	0	9	8	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Operating Uses	**20,875**	**586**	**679**	**720**	**726**	**764**	**794**	**833**	**875**	**919**	**966**	**1,003**	**1,058**	**1,116**	**1,178**	**1,245**	**1,316**	**1,394**	**1,477**	**1,566**	**1,663**
Capital - State of Good Repair																					
Fleet	1,684	23	16	14	10	40	42	85	38	64	154	155	72	128	108	110	83	99	114	156	174
Infrastructure	2,239	98	80	148	169	265	222	184	159	159	159	159	126	56	29	38	38	38	38	38	38
Facilities	49	7	31	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Projects	24	20	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capital Uses	**3,996**	**148**	**129**	**172**	**181**	**306**	**264**	**269**	**198**	**223**	**313**	**314**	**198**	**184**	**137**	**148**	**121**	**137**	**152**	**194**	**212**
Total Uses	**$24,872**	**$734**	**$808**	**$893**	**$906**	**$1,069**	**$1,058**	**$1,102**	**$1,072**	**$1,142**	**$1,279**	**$1,318**	**$1,255**	**$1,299**	**$1,315**	**$1,392**	**$1,437**	**$1,530**	**$1,629**	**$1,760**	**$1,875**
Projected Surplus (Deficit)	**($2,613)**	**$0**	**$0**	**($0)**	**$0**	**$0**	**($12)**	**($31)**	**($36)**	**($60)**	**($84)**	**($81)**	**($113)**	**($145)**	**($162)**	**($205)**	**($249)**	**($277)**	**($333)**	**($392)**	**($434)**

Note: Data reflects the combined total for the Municipal Transportation Agency, which includes Muni and DPT.

~~Source: MTA, 2007~~

NEW TABLE 8-8
MTA 30-YEAR FINANCIAL PLAN INCLUDING CENTRAL SUBWAY ALTERNATIVE 3B
(YOE $MILLIONS)

CAPITAL SOURCES OF FUNDS (Year of Expenditure Dollars in Millions) Fiscal Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total 2007 - 2036
FY07 & FY08 Capital Funding - Non-Central Subway Project Sources	*$172.15*	*$432.09*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$604.25*
Transfer from Operations	*$0.03*	*$3.35*	*$77.32*	*$87.45*	*$111.53*	*$101.05*	*$133.29*	*$137.03*	*$153.75*	*$165.26*	*$181.08*	*$179.76*	*$218.49*	*$211.33*	*$228.92*	*$236.61*	*$253.47*	*$248.48*	*$288.48*	*$289.74*	*$305.81*	*$324.95*	*$354.78*	*$343.21*	*$392.64*	*$400.56*	*$436.10*	*$441.90*	*$481.81*	*$477.31*	*$7,263.51*
Dedicated Revenues	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*
Federal Grants																															
FTA: Section 5307 Urbanized Area Formula Program	$0.00	$0.00	$3.38	$27.00	$34.52	$49.25	$25.00	$69.43	$108.97	$85.79	$63.40	$101.19	$51.95	$32.84	$78.55	$69.15	$45.00	$48.34	$52.50	$56.72	$28.40	$46.19	$48.04	$49.96	$51.96	$54.04	$56.20	$58.45	$60.78	$63.22	$1,501.22
FTA: Section 5309 Fixed Guideway Modernization	$0.00	$0.00	$53.15	$50.67	$52.78	$53.95	$35.02	$46.99	$42.38	$47.52	$42.86	$54.97	$51.55	$59.46	$57.33	$43.23	$44.44	$10.00	$72.34	$75.24	$50.92	$50.59	$52.61	$54.72	$56.90	$59.18	$61.55	$64.01	$66.57	$69.23	$1,480.15
FTA: Section 5309 New Starts & Extensions	$0.00	$8.25	$10.25	$10.00	$92.50	$120.00	$120.00	$120.00	$120.00	$84.83	$21.61	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$717.44
FTA: Section 5309 Bus/Alternative Fuels	$0.00	$0.00	$2.96	$7.00	$7.00	$8.00	$8.00	$8.00	$8.00	$8.00	$8.00	$8.00	$8.00	$9.00	$9.00	$9.00	$9.00	$9.00	$9.00	$9.00	$9.00	$9.00	$9.00	$9.00	$9.00	$9.00	$9.00	$9.00	$9.00	$9.00	$233.96
FTA: Section 5303 Planning	$0.00	$0.00	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$1.40
Federal Congestion Mitigation & Air Quality (CMAQ) Program	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Federal Surface Transportation Program	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$27.77	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$27.77
Federal Transportation Enhancement Activities Program	$0.00	$0.00	$0.41	$0.43	$0.44	$0.46	$0.48	$0.50	$0.52	$0.54	$0.51	$0.53	$0.55	$0.57	$0.59	$0.62	$0.64	$0.67	$0.69	$0.72	$0.75	$0.78	$0.81	$0.85	$0.88	$0.91	$0.95	$0.99	$1.03	$1.07	$18.90
Subtotal Federal Grants	***$0.00***	***$8.25***	***$70.21***	***$95.15***	***$187.29***	***$222.71***	***$188.55***	***$234.97***	***$279.92***	***$236.73***	***$136.43***	***$164.74***	***$112.10***	***$101.92***	***$173.30***	***$122.05***	***$99.14***	***$68.06***	***$134.59***	***$141.73***	***$89.11***	***$106.61***	***$110.51***	***$114.57***	***$118.79***	***$123.18***	***$127.75***	***$132.49***	***$137.43***	***$142.57***	***$3,980.84***
State Grants																															
State Regional Transportation Improvement Program (RTIP)	$4.00	$0.00	$30.00	$32.20	$26.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$92.20
State Traffic Congestion Relief Program (TCRP)	$0.00	$0.00	$9.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$9.00
State Infrastructure Bond Funds - Prop 1B (MTC)	$0.00	$0.00	$0.00	$0.00	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$100.00
State Infrastructure Bond Funds - Prop 1B (MTA)	$0.00	$0.00	$23.60	$23.60	$173.60	$23.60	$23.60	$23.60	$23.60	$17.45	$17.60	$17.77	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$368.02
State Infrastructure Bond Funds - Prop 1B (Transit Security)	$0.00	$0.00	$6.00	$6.00	$6.00	$6.00	$6.00	$6.00	$6.00	$6.00	$6.00	$6.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$60.00
State Other - Various Resources	$0.00	$0.00	$0.21	$0.20	$0.20	$0.20	$0.21	$0.21	$0.22	$0.22	$0.23	$0.23	$0.23	$0.24	$0.24	$0.25	$0.25	$0.26	$0.26	$0.27	$0.27	$0.28	$0.29	$0.29	$0.30	$0.30	$0.31	$0.32	$0.32	$0.33	$7.14
Subtotal State Grants	***$4.00***	***$0.00***	***$68.81***	***$62.00***	***$305.80***	***$29.80***	***$29.81***	***$29.81***	***$29.82***	***$23.67***	***$23.83***	***$24.00***	***$0.23***	***$0.24***	***$0.24***	***$0.25***	***$0.25***	***$0.26***	***$0.26***	***$0.27***	***$0.27***	***$0.28***	***$0.29***	***$0.29***	***$0.30***	***$0.30***	***$0.31***	***$0.32***	***$0.32***	***$0.33***	***$636.36***
Local Grants																															
AB 664 - Bridge Tolls	$0.00	$0.00	$1.39	$2.28	$2.11	$4.16	$4.09	$1.27	$1.28	$1.29	$1.30	$1.31	$1.32	$3.44	$3.45	$3.45	$3.46	$3.35	$2.47	$2.47	$2.48	$2.48	$2.48	$2.49	$2.49	$2.50	$2.50	$2.51	$2.51	$2.52	$68.84
TFCA - AB434 - Regional	$0.00	$0.00	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$5.60
TFCA - AB434 - Program Manager Fund	$0.00	$0.00	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$1.40
Prop. K - San Francisco 1/2-cent Sales Tax - Transit Projects	$0.00	$0.00	$91.71	$64.62	$96.12	$57.06	$6.70	$7.44	$50.02	$58.10	$12.20	$17.83	$46.89	$59.77	$6.70	$7.35	$48.73	$64.88	$50.35	$30.05	$75.43	$53.89	$55.58	$57.72	$59.49	$61.50	$63.64	$64.89	$66.80	$69.00	$1,404.44
Prop. K - San Francisco 1/2-cent Sales Tax - Parking & Traffic Projects	$0.00	$0.00	$5.88	$5.06	$6.44	$6.56	$6.59	$6.63	$6.66	$6.70	$6.74	$6.78	$6.82	$6.86	$6.91	$6.95	$6.99	$7.04	$7.08	$7.13	$7.17	$7.22	$7.27	$7.32	$7.36	$7.41	$7.49	$7.56	$7.61	$7.67	$193.91
S.F. Municipal Railway Improvement Corp.	$0.00	$0.00	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	$14.00
Municipal Transportation Fund	$0.00	$0.00	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.15
Local Other - Various Resources	$0.00	$0.00	$19.04	$16.97	$16.83	$16.83	$16.83	$13.00	$13.00	$13.00	$13.00	$13.00	$13.00	$13.00	$13.00	$13.00	$13.00	$13.00	$13.11	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$397.61
Subtotal Local Grants	***$0.00***	***$0.00***	***$118.78***	***$89.68***	***$122.26***	***$85.35***	***$34.96***	***$29.09***	***$71.72***	***$79.85***	***$33.99***	***$39.67***	***$68.80***	***$83.83***	***$30.81***	***$31.50***	***$72.93***	***$89.13***	***$74.65***	***$54.41***	***$99.83***	***$78.34***	***$80.09***	***$82.28***	***$84.10***	***$86.17***	***$88.38***	***$89.71***	***$91.68***	***$93.95***	***$2,085.95***
Debt Service Sinking Fund Transfer	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***
Financing Program Proceeds																															
Commercial Paper	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Conventional Bond	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Short-term financing (Line of Credit)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Subtotal Financing Program	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***
New Capital Revenue																															
Future Capital Revenue	$0.00	$0.00	$0.37	$0.34	$0.19	$0.04	$172.24	$386.58	$141.20	$180.66	$0.00	$0.00	$0.00	$0.00	$302.19	$112.41	$60.86	$254.75	$1,091.39	$0.00	$0.00	$0.00	$66.34	$294.66	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	***$3,064.21***
Subtotal New Capital Revenue	***$0.00***	***$0.00***	***$0.37***	***$0.34***	***$0.19***	***$0.04***	***$172.24***	***$386.58***	***$141.20***	***$180.66***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$302.19***	***$112.41***	***$60.86***	***$254.75***	***$1,091.39***	***$0.00***	***$0.00***	***$0.00***	***$66.34***	***$294.66***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$3,064.21***
TOTAL CAPITAL SOURCES OF FUNDS	**$176.19**	**$443.69**	**$335.49**	**$334.62**	**$727.06**	**$438.95**	**$558.84**	**$817.48**	**$676.39**	**$686.16**	**$375.34**	**$408.18**	**$399.62**	**$397.32**	**$735.46**	**$502.82**	**$486.65**	**$660.68**	**$1,589.37**	**$486.15**	**$495.03**	**$510.19**	**$612.01**	**$835.02**	**$595.83**	**$610.22**	**$650.54**	**$664.42**	**$711.25**	**$714.15**	**$17,635.12**

CAPITAL USES OF FUNDS (Year of Expenditure Dollars in Millions) Fiscal Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total 2007 - 2036
Central Subway Project																															
All Costs	$16.95	$17.80	$23.14	$65.83	$226.56	$316.16	$275.65	$199.31	$132.35	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,273.74
Subtotal Central Subway Project	***$16.95***	***$17.80***	***$23.14***	***$65.83***	***$226.56***	***$316.16***	***$275.65***	***$199.31***	***$132.35***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$1,273.74***
Other Capital Programs																															
FY07 CIP	$159.20	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$159.20
Fleet Program	$0.00	$98.96	$0.00	($0.00)	$161.11	$49.35	$78.03	$114.43	$365.02	$479.09	$62.21	$48.93	$301.77	$61.87	$249.48	$272.03	$145.28	$254.10	$1,102.79	$146.68	$47.15	$67.81	$445.93	$495.75	$27.71	$59.48	$490.27	$173.29	$32.84	$29.95	$5,851.30
Infrastructure Program	$0.00	$240.25	$221.54	$155.65	$247.04	$0.00	$136.65	$433.06	$157.04	$152.05	$147.96	$159.00	$165.20	$163.60	$926.59	$105.55	$275.28	$310.00	$316.56	$313.01	$291.52	$216.26	$224.74	$230.40	$217.00	$224.62	$230.32	$268.47	$273.42	$266.10	$6,900.65
Facilities Program	$0.00	$81.61	$57.78	$76.34	$68.03	$44.61	$8.19	$8.44	$8.75	$9.06	$13.19	$9.52	$9.86	$10.20	$10.57	$15.90	$11.21	$11.48	$11.90	$12.27	$34.21	$12.08	$12.48	$12.84	$13.30	$18.92	$14.01	$14.48	$14.73	$15.06	$632.04
Equipment Program	$0.00	$1.83	$24.73	$32.56	$28.11	$26.11	$38.70	$38.13	$39.24	$40.34	$43.66	$43.67	$43.39	$44.27	$45.36	$47.70	$49.81	$48.53	$49.87	$50.69	$59.50	$55.98	$55.16	$56.12	$57.50	$59.74	$62.35	$60.85	$61.19	$62.14	$1,327.22
Future Rehabilitation & Replacement for Expansion Projects	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.42	$0.87	$1.45	$3.09	$8.76	$16.66	$23.95	$28.53	$31.84	$31.84	$31.84	$31.84	$31.84	$31.84	$31.84	$31.84	$31.84	$31.84	$401.77
Total Other Capital Programs	***$159.20***	***$422.64***	***$304.05***	***$264.55***	***$496.09***	***$120.07***	***$261.57***	***$594.85***	***$560.04***	***$680.54***	***$267.02***	***$262.01***	***$520.67***	***$280.88***	***$933.45***	***$534.31***	***$490.33***	***$641.46***	***$1,504.68***	***$551.99***	***$454.22***	***$385.98***	***$770.16***	***$827.04***	***$348.15***	***$394.60***	***$828.80***	***$548.92***	***$414.02***	***$419.09***	***$15,241.39***
Financing Program																															
Principal	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Interest	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Refinanced Principal from Constr/Rail Car TECP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Reissuance of Cumulative TECP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Surety	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Debt Issuance	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Debt Service Reserve Fund	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Short-term Financing Issuance Expense	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Short term Financing Facilty Fees	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Financing Program	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***	***$0.00***
TOTAL CAPITAL USES OF FUNDS	**$176.15**	**$440.44**	**$327.19**	**$330.38**	**$722.65**	**$436.23**	**$537.22**	**$794.16**	**$692.39**	**$680.54**	**$267.02**	**$262.01**	**$520.67**	**$280.88**	**$933.45**	**$534.31**	**$490.33**	**$641.46**	**$1,504.68**	**$551.99**	**$454.22**	**$385.98**	**$770.16**	**$827.04**	**$348.15**	**$394.60**	**$828.80**	**$548.92**	**$414.02**	**$419.09**	**$16,515.13**
NET CAPITAL CASH FLOW	**$0.03**	**$3.25**	**$8.30**	**$4.24**	**$4.41**	**$2.72**	**$21.62**	**$23.32**	**($16.00)**	**$5.62**	**$108.31**	**$146.17**	**($121.05)**	**$116.44**	**($197.99)**	**($31.49)**	**($3.68)**	**$19.22**	**$84.69**	**($65.84)**	**$40.81**	**$124.21**	**($158.15)**	**$7.98**	**$247.68**	**$215.63**	**($170.26)**	**$115.49**	**$297.23**	**$295.07**	**$1,119.99**

Source: AE Com April 2008

NEW TABLE 8-8 (CONTINUED)
MTA 30-YEAR FINANCIAL PLAN INCLUDING CENTRAL SUBWAY ALTERNATIVE 3B
(YOE $MILLIONS)

OPERATING SOURCES OF FUNDS (Year of Expenditure Dollars in Millions) Fiscal Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total 2007 - 2036
Passenger Revenue	*$133.76*	*$133.46*	*$141.30*	*$158.95*	*$167.90*	*$176.93*	*$193.58*	*$200.44*	*$211.89*	*$228.02*	*$231.56*	*$233.38*	*$254.26*	*$256.90*	*$259.63*	*$282.11*	*$284.84*	*$287.54*	*$310.83*	*$313.57*	*$316.86*	*$341.06*	*$344.69*	*$347.82*	*$374.37*	*$377.77*	*$381.52*	*$401.06*	*$403.36*	*$406.86*	*$8,156.20*
Parking Revenues																															
Parking Revenues	$51.25	$65.57	$70.91	$73.24	$78.47	$80.56	$87.29	$88.71	$95.72	$98.42	$105.15	$107.65	$116.44	$118.79	$127.66	$131.31	$140.49	$143.27	$154.40	$156.93	$168.38	$172.46	$184.95	$188.19	$202.20	$205.56	$219.93	$224.48	$236.96	$240.64	$4,135.99
Parking Tax Revenue	$22.29	$24.18	$26.15	$27.01	$28.94	$29.71	$32.19	$32.71	$35.30	$36.29	$38.77	$39.70	$42.94	$43.80	$47.07	$48.42	$51.81	$52.83	$56.94	$57.87	$62.09	$63.60	$68.20	$69.40	$74.56	$75.80	$81.10	$82.78	$87.38	$88.73	$1,526.54
Fines	$88.74	$89.22	$96.49	$99.67	$106.78	$109.62	$118.79	$120.72	$130.26	$133.93	$143.08	$146.49	$158.45	$161.65	$173.72	$178.68	$191.18	$194.96	$210.11	$213.55	$229.14	$234.69	$251.69	$256.09	$275.16	$279.73	$299.28	$305.47	$322.46	$327.46	$5,647.26
Permits	$5.98	$5.49	$5.94	$6.13	$6.57	$6.74	$7.31	$7.43	$8.01	$8.24	$8.80	$9.01	$9.75	$9.94	$10.69	$10.99	$11.76	$11.99	$12.93	$13.14	$14.10	$14.44	$15.48	$15.75	$16.93	$17.21	$18.41	$18.79	$19.84	$20.15	$347.94
Parking Fees	$5.12	$6.68	$7.23	$7.47	$8.00	$8.21	$8.90	$9.04	$9.76	$10.03	$10.72	$10.98	$11.87	$12.11	$13.01	$13.39	$14.32	$14.61	$15.74	$16.00	$17.17	$17.58	$18.86	$19.19	$20.62	$20.96	$22.42	$22.89	$24.16	$24.53	$421.57
Other Operating Revenues																															
Rental Income	$2.44	$2.10	$2.16	$2.23	$2.28	$2.34	$2.42	$2.46	$2.53	$2.60	$2.65	$2.71	$2.80	$2.85	$2.92	$3.01	$3.07	$3.13	$3.22	$3.27	$3.34	$3.42	$3.50	$3.56	$3.65	$3.71	$3.78	$3.86	$3.88	$3.94	$89.85
Advertising	$5.21	$8.22	$8.71	$9.23	$9.79	$10.37	$10.99	$11.65	$11.99	$12.33	$12.56	$12.86	$13.26	$13.53	$13.86	$14.26	$14.55	$14.83	$15.24	$15.49	$15.85	$16.23	$16.60	$16.89	$17.30	$17.59	$17.94	$18.31	$18.41	$18.70	$412.75
Muni Feeder to BART	$2.52	$2.40	$2.48	$2.56	$2.61	$2.68	$2.77	$2.82	$2.90	$2.98	$3.03	$3.11	$3.20	$3.27	$3.35	$3.45	$3.51	$3.58	$3.68	$3.74	$3.83	$3.92	$4.01	$4.08	$4.18	$4.25	$4.33	$4.42	$4.45	$4.52	$102.65
Paratransit Revenue	$1.36	$1.41	$1.46	$1.51	$1.54	$1.58	$1.63	$1.66	$1.71	$1.76	$1.79	$1.83	$1.89	$1.93	$1.97	$2.03	$2.07	$2.11	$2.17	$2.21	$2.26	$2.31	$2.36	$2.40	$2.46	$2.50	$2.55	$2.61	$2.62	$2.66	$60.34
Proof of Payment Revenue	$0.18	$0.16	$0.16	$0.17	$0.17	$0.18	$0.18	$0.18	$0.19	$0.20	$0.20	$0.20	$0.21	$0.21	$0.22	$0.23	$0.23	$0.23	$0.24	$0.25	$0.25	$0.26	$0.26	$0.27	$0.27	$0.28	$0.28	$0.29	$0.29	$0.30	$6.74
Miscellaneous	$0.27	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03	$0.04	$0.04	$0.04	$0.04	$0.04	$0.04	$0.04	$0.04	$0.04	$0.04	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$0.05	$1.45
Operating Assistance																															
Transit Operating Assistance	$0.00	$3.81	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.81
FTA Grants	$0.00	$4.57	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4.57
Gas Tax Adjustment	$1.32	$3.47	$3.58	$3.70	$3.78	$3.88	$4.01	$4.07	$4.19	$4.31	$4.39	$4.49	$4.63	$4.73	$4.84	$4.98	$5.08	$5.18	$5.33	$5.41	$5.54	$5.67	$5.80	$5.90	$6.04	$6.14	$6.27	$6.40	$6.43	$6.53	$146.08
State Sales Tax	$29.95	$34.44	$35.52	$36.69	$37.47	$38.47	$39.76	$40.41	$41.58	$42.75	$43.54	$44.57	$45.98	$46.91	$48.07	$49.44	$50.43	$51.43	$52.85	$53.72	$54.95	$56.28	$57.54	$58.55	$59.98	$60.98	$62.19	$63.48	$63.84	$64.83	$1,466.60
Prop. 42 Gas Tax Revenue	$6.81	$6.11	$6.30	$6.51	$6.65	$6.82	$7.05	$7.17	$7.38	$7.58	$7.72	$7.91	$8.16	$8.32	$8.53	$8.77	$8.95	$9.12	$9.38	$9.53	$9.75	$9.99	$10.21	$10.39	$10.64	$10.82	$11.03	$11.26	$11.33	$11.50	$261.69
TDA Sales Tax	$37.74	$35.83	$36.96	$38.18	$38.99	$40.03	$41.37	$42.04	$43.27	$44.49	$45.30	$46.38	$47.83	$48.81	$50.02	$51.45	$52.47	$53.51	$54.99	$55.89	$57.18	$58.56	$59.88	$60.92	$62.41	$63.45	$64.71	$66.05	$66.42	$67.45	$1,532.60
S.F. Transportation Authority	$7.80	$9.67	$9.97	$10.30	$10.52	$10.80	$11.17	$11.35	$11.68	$12.01	$12.23	$12.52	$12.91	$13.17	$13.50	$13.88	$14.16	$14.44	$14.84	$15.08	$15.43	$15.81	$16.16	$16.44	$16.84	$17.12	$17.47	$17.83	$17.93	$18.20	$411.24
BART ADA	$1.08	$1.25	$1.29	$1.33	$1.36	$1.40	$1.44	$1.47	$1.51	$1.55	$1.58	$1.62	$1.67	$1.70	$1.74	$1.79	$1.83	$1.87	$1.92	$1.95	$1.99	$2.04	$2.09	$2.13	$2.18	$2.21	$2.26	$2.30	$2.32	$2.35	$53.23
Bridge Tolls	$0.09	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50	$72.59
STA	$9.34	$18.81	$19.40	$20.04	$20.47	$21.01	$21.72	$22.07	$22.71	$23.36	$23.78	$24.35	$25.12	$25.63	$26.26	$27.01	$27.55	$28.09	$28.87	$29.34	$30.02	$30.75	$31.44	$31.99	$32.77	$33.31	$33.98	$34.68	$34.87	$35.41	$794.15
Carryover Funds from FY06	$19.61	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$19.61
Departmental Transfer Adjustment	$19.29	$35.26	$36.37	$37.57	$38.37	$39.39	$40.72	$41.38	$42.58	$43.78	$44.58	$45.65	$47.09	$48.04	$49.22	$50.63	$51.64	$52.66	$54.12	$55.01	$56.27	$57.64	$58.93	$59.96	$61.43	$62.45	$63.69	$65.01	$65.37	$66.38	$1,490.30
General Fund Support	$158.28	$178.92	$184.55	$190.63	$194.70	$199.88	$206.60	$209.95	$216.05	$222.14	$226.21	$231.60	$238.92	$243.75	$249.76	$256.90	$262.03	$267.20	$274.61	$279.11	$285.52	$292.44	$298.99	$304.23	$311.67	$316.84	$323.15	$329.83	$331.68	$336.83	$7,622.96
State and Local Assistance	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*
FTA Sec 5307 Preventative Maintenance	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*
Interest on Capital Reserve	*$2.88*	*$3.00*	*$3.32*	*$4.20*	*$4.34*	*$3.43*	*$3.88*	*$5.61*	*$4.71*	*$5.53*	*$5.74*	*$8.86*	*$16.45*	*$12.99*	*$15.03*	*$7.26*	*$6.41*	*$5.12*	*$5.81*	*$10.81*	*$5.95*	*$8.70*	*$14.14*	*$7.23*	*$6.68*	*$18.39*	*$22.68*	*$17.99*	*$22.83*	*$21.63*	*$281.59*
New Operating Revenue																															
Incremental Parking Tax Revenue	$0.00	$0.00	$26.00	$26.86	$28.77	$29.54	$32.01	$32.53	$35.10	$36.09	$38.55	$39.47	$42.69	$43.56	$46.81	$48.15	$51.52	$52.53	$56.62	$57.54	$61.74	$63.24	$67.82	$69.00	$74.14	$75.37	$80.64	$82.31	$86.89	$88.23	$1,473.72
Enhanced Parking Related Revenue	$0.00	$0.00	$10.00	$10.33	$20.55	$21.10	$31.81	$32.32	$33.26	$34.20	$34.83	$35.65	$36.78	$37.53	$38.45	$39.55	$40.34	$41.14	$42.28	$42.97	$43.96	$45.02	$46.03	$46.84	$47.98	$48.78	$49.75	$50.78	$51.06	$51.85	$1,065.13
Other New Operating Revenue (Operating Shortfall)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
TOTAL OPERATING SOURCES OF FUNDS	**$613.31**	**$676.55**	**$738.77**	**$777.04**	**$821.53**	**$847.20**	**$910.13**	**$930.72**	**$976.82**	**$1,015.13**	**$1,049.29**	**$1,073.51**	**$1,145.86**	**$1,162.67**	**$1,208.87**	**$1,250.22**	**$1,292.79**	**$1,313.93**	**$1,389.66**	**$1,414.93**	**$1,464.12**	**$1,510.66**	**$1,582.10**	**$1,599.76**	**$1,687.04**	**$1,723.70**	**$1,791.93**	**$1,835.43**	**$1,887.32**	**$1,912.24**	**$37,611.37**

OPERATING USES OF FUNDS (Year of Expenditure Dollars in Millions) Fiscal Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total 2007 - 2036
Motor Coach	*$223.78*	*$214.55*	*$221.90*	*$230.03*	*$236.91*	*$244.53*	*$254.97*	*$260.44*	*$270.04*	*$279.06*	*$285.13*	*$293.57*	*$304.31*	*$312.05*	*$320.87*	*$331.93*	*$340.26*	*$348.72*	*$360.47*	*$368.35*	*$379.24*	*$391.33*	*$402.42*	*$411.65*	*$424.11*	*$433.58*	*$444.97*	*$456.73*	*$459.93*	*$469.58*	*$9,975.39*
Trolley Coach	*$130.55*	*$144.27*	*$150.47*	*$156.71*	*$162.06*	*$179.40*	*$186.76*	*$190.95*	*$198.20*	*$199.47*	*$198.39*	*$204.19*	*$211.87*	*$217.39*	*$224.34*	*$232.05*	*$238.99*	*$244.24*	*$252.55*	*$258.14*	*$265.87*	*$273.89*	*$281.65*	*$288.48*	*$297.30*	*$304.03*	*$312.11*	*$320.46*	*$323.53*	*$330.44*	*$6,977.94*
Demand Response	*$20.25*	*$20.76*	*$21.42*	*$22.14*	*$22.63*	*$23.25*	*$24.04*	*$24.44*	*$25.17*	*$25.89*	*$26.38*	*$27.02*	*$27.89*	*$28.47*	*$29.18*	*$30.04*	*$30.65*	*$31.27*	*$32.16*	*$32.70*	*$33.47*	*$34.30*	*$35.09*	*$35.72*	*$36.62*	*$37.25*	*$38.01*	*$38.82*	*$39.05*	*$39.68*	*$892.78*
Light Rail Transit	*$113.06*	*$118.33*	*$123.48*	*$132.34*	*$136.83*	*$145.18*	*$151.23*	*$154.74*	*$160.83*	*$171.00*	*$179.94*	*$185.69*	*$193.02*	*$198.43*	*$204.86*	*$212.01*	*$217.64*	*$223.37*	*$230.97*	*$236.28*	*$243.55*	*$250.89*	*$258.27*	*$265.43*	*$273.52*	*$279.94*	*$287.62*	*$295.36*	*$298.40*	*$304.96*	*$6,247.19*
Historic Street Car	*$6.91*	*$7.34*	*$7.64*	*$9.88*	*$10.18*	*$10.52*	*$10.95*	*$11.19*	*$11.62*	*$12.02*	*$12.30*	*$12.67*	*$13.14*	*$13.49*	*$13.92*	*$14.39*	*$14.75*	*$15.12*	*$15.61*	*$15.96*	*$16.44*	*$16.92*	*$17.38*	*$17.78*	*$18.31*	*$18.72*	*$19.22*	*$19.72*	*$19.91*	*$20.32*	*$424.31*
Cable Car	*$35.46*	*$37.29*	*$38.90*	*$40.55*	*$41.95*	*$43.39*	*$45.21*	*$46.24*	*$48.03*	*$49.70*	*$50.90*	*$52.45*	*$54.48*	*$55.92*	*$57.69*	*$59.73*	*$61.29*	*$62.88*	*$65.05*	*$66.50*	*$68.49*	*$70.59*	*$72.65*	*$74.37*	*$76.68*	*$78.42*	*$80.51*	*$82.49*	*$83.50*	*$85.29*	*$1,786.82*
Maintenance Facilities	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*
Parking	*$84.69*	*$87.29*	*$90.60*	*$94.18*	*$96.92*	*$99.87*	*$103.67*	*$105.67*	*$109.19*	*$112.73*	*$115.17*	*$118.36*	*$122.66*	*$125.58*	*$129.19*	*$133.48*	*$136.64*	*$139.85*	*$144.38*	*$147.24*	*$151.25*	*$155.58*	*$159.73*	*$163.12*	*$167.86*	*$171.27*	*$175.38*	*$179.76*	*$181.19*	*$184.66*	*$3,987.17*
Transfer to Capital	*$0.03*	*$3.35*	*$77.32*	*$87.45*	*$111.53*	*$101.05*	*$133.29*	*$137.03*	*$153.75*	*$165.26*	*$181.08*	*$179.76*	*$218.49*	*$211.33*	*$228.92*	*$236.61*	*$253.47*	*$248.48*	*$288.48*	*$289.74*	*$305.81*	*$324.95*	*$354.78*	*$343.21*	*$392.64*	*$400.56*	*$434.10*	*$441.90*	*$481.81*	*$477.31*	*$7,263.51*
Fixed Costs/Adjustments	*($1.43)*	*$43.38*	*$7.03*	*$3.75*	*$2.52*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$55.25*
TOTAL OPERATING USES OF FUNDS	**$613.31**	**$676.55**	**$738.77**	**$777.04**	**$821.53**	**$847.20**	**$910.13**	**$930.72**	**$976.82**	**$1,015.13**	**$1,049.29**	**$1,073.51**	**$1,145.86**	**$1,162.67**	**$1,208.87**	**$1,250.22**	**$1,292.79**	**$1,313.93**	**$1,389.66**	**$1,414.93**	**$1,464.12**	**$1,510.66**	**$1,582.10**	**$1,599.76**	**$1,687.04**	**$1,723.70**	**$1,791.93**	**$1,835.43**	**$1,887.32**	**$1,912.24**	**$37,611.37**
NET OPERATING CASH FLOW	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**

CASH BALANCES (Year of Expenditure Dollars in Millions) Fiscal Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total 2007 - 2036
General Fund Balance																															
Beginning Cash Balance	$61.49	$61.53	$64.78	$73.09	$77.32	$81.73	$84.45	$106.07	$129.39	$113.40	$119.01	$227.33	$373.50	$252.45	$368.89	$170.90	$139.41	$135.73	$154.95	$239.64	$173.80	$214.60	$338.81	$180.67	$188.65	$436.33	$652.0	$473.7	$589.19	$886.4	
Additions (Deletions) to Cash	$0.03	$3.25	$8.30	$4.24	$4.41	$2.72	$21.62	$23.32	($16.00)	$5.62	$108.31	$146.17	($121.05)	$116.44	($197.99)	($31.49)	($3.68)	$19.22	$84.69	($65.84)	$40.81	$124.21	($158.15)	$7.98	$247.68	$215.63	($178.26)	$115.49	$297.23	$295.07	$1,119.99	
Ending Cash Balance	**$61.53**	**$64.78**	**$73.09**	**$77.32**	**$81.73**	**$84.45**	**$106.07**	**$129.39**	**$113.40**	**$119.01**	**$227.33**	**$373.50**	**$252.45**	**$368.89**	**$170.90**	**$139.41**	**$135.73**	**$154.95**	**$239.64**	**$173.80**	**$214.60**	**$338.81**	**$180.67**	**$188.65**	**$436.33**	**$651.96**	**$473.70**	**$589.19**	**$886.42**	**$1,181.49**	

Source: AECOM Consult, Inc. April 2008

~~enhancements or cost cutting measures are needed, or to alert the MTA to years in which contributions to a Contingency Fund or service enhancements may be possible.~~ By law, the MTA must have a balanced operating budget every year.

The ~~surplus/deficit line~~ annual cash balance is not an indication that the MTA has the ability to build up a capital reserve or channel surplus operating revenues into capital projects. However, the agency does have a policy of Capital Reserve Fund and a MTA Board of Directors resolution establishing a policy of designating operating surplus or one-time revenues, as deemed prudent by the MTA Executive Director, into this reserve. As of August 2006, $15 million in remaining proceeds from the Breda lease/leaseback financing were available in the Reserve Fund. Additionally, the MTA had an undesignated cash reserve account of $11 million at the close of FY06, which is available for appropriation. The Agency is able to carry surpluses forward into subsequent years. The FY07 budget also includes $10 million in an operating reserve. In total, approximately $36 million is potentially available for a Contingency Fund.

8.1.4 CAPITAL AND OPERATING SHORTFALL

Based on the MTA's estimates of the capital cost for Alternative 3B, this is the only alternative that is fully funded. Both Alternative 2 and 3A would have funding shortfalls based on the current funding plan. ~~3A, $424 million in local capital funding is still unidentified. The Central Subway is expected to result in a net operating surplus on a project-level basis.~~

~~If the MTA identifies $424 million in local capital funding, it estimates that it will have sufficient funds for its 20-year State of Good Repair Capital Improvement Program, which includes the capital cost of the Central Subway Project (Alternative 3A). Alternative 3B is estimated to have a lower capital cost and would therefore result in a smaller shortfall whereas Alternative 2 would result in a larger shortfall due to its higher capital cost.~~

Systemwide, the MTA estimates that Muni will ~~have an~~ not experience ~~operating shortfalls beginning in 2011 that continues through the end of the evaluation period~~. ~~Although a cumulative 20-year budget deficit of $2.6 billion is shown in Table 8-8, t~~The MTA is required to have a balanced operating budget every year pursuant to the City Charter. To the extent that the MTA experiences operating shortfalls during a fiscal year, operating expenses have typically been constrained through the use of hiring freezes, salary savings (whereby budgeted positions remain unfilled) and other personnel cuts. If there is still a shortfall, the MTA limits Muni's operating and maintenance costs to the total amount of available revenues.

8.1.5 ADDITIONAL REVENUE SOURCES

The MTA has identified the following sources as having potential to fill shortfalls identified in the previous section.

Federal Funding

The MTA has indicated that it may seek additional Section 5309 New Starts funds for the Central Subway Project. FTA considers the amount of Section 5309 New Starts funding available when it signs a Full Funding Grant Agreement~~, and outside of New York City, the largest FFGA awarded has been $750 million~~. The Central Subway Project's ability to secure the $762.2 million it is currently seeking or any additional funding will depend in part upon the availability of Section 5309 New Starts resources at the time the FFGA would be signed.

New Non-Federal Funding

MTC adopted Resolution 3434 on the Regional Transit Expansion Program (RTEP) of Projects, which includes the Central Subway. The RTEP is a coordinated regional approach to prioritizing investments in new rail and express/rapid bus projects. It sets forth the expansion priorities for the Bay Area. Placing the Central Subway Project in the recommended program of projects indicates a level of commitment in the region to funding the Project.

MTA staff is currently in discussion with City policy makers regarding the possibility of including the Central Subway in a large, citywide capital bond proposal planned for the ballot in FY 2009. San Francisco voters have historically supported the city's Transit First policy. Two general sales tax measures failed a public vote in 2004; however, the reauthorized Proposition K sales tax dedicated to transit was approved by 75 percent of voters in <u>2003 and Proposition A, which secured parking revenues for use by the MTA was passed in November 2007</u>.

The MTA has also indicated that it may seek additional commitment of STIP funds through the SFCTA's programming function. This happened with the Transportation Congestion Relief Program and Regional Measure 2 (RM-2), which was passed in March 2004 and raised bridge tolls in the region to $3. A portion of the new revenues is dedicated to the MTA capital and operating needs. The MTA also has real property assets that it is considering for joint development. The MTA owns two parcels of land, currently serving as bus yards, that could be developed, as well as numerous parking garages and lots located throughout the City. The MTA believes there is also potential for transit-oriented development along the Central Subway corridor itself, especially near the stations.

Although the MTA estimates that the Central Subway Project would generate a net operating savings, the Project would be eligible to receive operating funds from Proposition K sales tax revenues if its operating costs increased. Projects constructed with Proposition K funds are eligible to receive funding for the incremental additional operating costs incurred because of the Project. In addition, as a result of Proposition E, the MTA would receive a base amount of revenue from the General Fund annually, which stabilizes the annual budgeting process.

8.1.6 RISK AND UNCERTAINTY

Several cost and revenue risks could influence the final financial results and will play an important role in the further refinement of the underlying assumptions. Risks can be broken down into several main categories:

Cost Risks

Both capital and operating costs are subject to inflation uncertainty related to the global markets for raw materials such as concrete and steel, energy, and labor. For example, the recent volatility of fuel prices could affect the magnitude of operating expenditures for providing existing and programmed transit services. This could greatly impact rubber-tired or diesel-fueled operations as well as electrical surcharges for operations.

There is a design and schedule risk that is inherent to any major construction work. At this stage, subsoil conditions are not known with a high level of certainty. There might also be some changes in Project scope, bid quantities or unexpected utility relocation.

The Project cost estimate includes cost contingencies. If the Project budget exceeds this built-in contingency, the MTA would have to rely on a special Contingency Fund. The MTA staff is seeking to develop a Contingency Fund in order to cover unpredicted revenue shortfalls in the Project or the operating budget.

Revenue Risks

As discussed in Section 8.1.3, the Central Subway Project must ~~improve its~~ receive a federal New Starts Cost Effectiveness Rating ~~from "Medium-Low" to~~ of "Medium" from the FTA to receive a Full Funding Grant Agreement (FFGA), ~~which is needed to~~ and receive a significant portion of the Project's capital funding. ~~The MTA is working to reduce the Project's capital cost as well as preparing an Action Plan to resolve~~

~~issues that the Federal Transit Administration has indicated need to be addressed. Even with a Medium rating for Costs~~ ~~Effectiveness, there is no assurance of New Starts funding. The New Starts program is scheduled to expire in 2009 unless it is reauthorized by Congress, and many other projects nationwide are competing~~

~~for available funds. The level of New Starts funding the MTA is seeking for the Project is unprecedented outside of New York City.~~ Finally a New Starts FFGA does not guarantee that the annual grant for ~~Even if the MTA receives a New Starts funding commitment form FTA, there is also a risk that~~ New Starts funds will be appropriated by Congress in accordance with the funding schedule in the FFGA.

If operating costs for the Central Subway Project result in a net increase, the Central Subway Project would be eligible to receive operating funds from Proposition K sales tax revenues. Projects constructed with Proposition K funds are eligible to receive funding for the incremental additional operating costs incurred because of the Project.

Proposition E, approved by the San Francisco voters in 2000, created a Municipal Transportation fund that is dedicated to transit operations. All MTA revenues flow into this fund, which is separate from the City's General Fund. Proposition E provides the MTA with more control over its budget and fare policy than it previously had, and it also established a more predictable funding base; however, it also created a number of financial challenges. If the General Fund contribution increases or decreases by the same percentage as overall city revenues, there is no guarantee that the General Fund will make up future shortfalls in fare, parking, sales tax, or other revenues. The MTA must fund the future cost of existing liabilities such as workers' compensation and judgments and claims, and there are no provisions to have the General Fund cover inflation, fringe benefit increases, or cost of living allowances that represent a significant portion of the MTA's annual cost increases. Finally, there are only limited provisions for funding new activities that are required under Proposition E such as human resources functions, procurement, and service standards data collection and analysis.

Finance Risks

~~The MTA has indicated i~~If federal capital funds are not received according to the amounts or schedule as planned, or if the federal funding stream is lengthened beyond the projected cash flow, the MTA ~~would~~ will pursue additional bond financing through the City and County of San Francisco and/or financing through the SFCTA. If state or local capital funds were reduced or delayed, the MTA has indicated that it would rely on a Contingency Fund and/or other local sources to be determined.

Additional finance risk lies ~~mostly~~ in variations in interest rates, construction costs, and ridership on the existing system ~~that could affect the total capital cost estimate. Both long-term and short-term borrowing are dependent on this variable.~~ These risks can be mitigated through staging the construction of the project, controlling the growth of service, raising fares, redefining the scope of the project, and introducing short and long term financing strategies.

Effect of Sensitivity Analysis

~~A downside sensitivity analysis on the MTA 20-year Financial Plan, with operating and capital revenue reduced by 5 percent and operating and capital expenditures increased by 5 percent was developed. These projections increase the 20-year budget shortfall from $2.6 billion to $5.0 billion. An upside sensitivity analysis on the 20-year Financial Plan with revenues increased by 5 percent and expenditures decreased by 5 percent shows the MTA with a 20-year deficit of $0.3 billion.~~ An uncertainty analysis using a "Monte Carlo" simulation was undertaken to assess the financial risks of the project on MTA over a 30-year period. This simulation tool provides a probability distribution of potential project financing out-comes that reflects all possible outcomes of risk variable values. The Monte Carlo simulation determined that the mean of the average annual revenue required over the 30-year period of analysis is $134 million for a mean 30-year a total future capital revenue of $4 billion required to sustain MTA programs. The MTA would not experience a deficit over this period.

Any year with a projected deficit would require balancing with a combination of new revenue sources, use of the reserve funds, and/or expenditure reductions, the latter in accordance with FFGA requirements.

9.0 EVALUATION OF ALTERNATIVES

9.1 EVALUATION METHODOLOGY

The evaluation of alternatives provides local decision makers with guidance in selecting a Preferred Investment Strategy. The evaluation, as presented in this Chapter, is consistent with the Federal Transit Administration (FTA) New Starts Funding criteria. The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which was passed in August 2005, direct FTA to evaluate and rate candidate New Starts projects as an input to federal funding decisions and at specific milestones throughout each project's planning and development process. In May 2006, the FTA updated their guidance on policies and procedures for discretionary New Starts funding under Section 5309. These revised Section 5309 criteria reflect a comprehensive set of quantitative and qualitative measures:

- Mobility Improvements;
- Environmental Benefits;
- Operating Efficiencies;
- Cost Effectiveness;
- Transit Supportive Existing Land Use and Future Patterns;
- Other Factors (optional); and
- Local Financial Commitment.

FTA does not suggest that the local project evaluation (to determine the Preferred Investment Strategy) must be based entirely on the recommended performance measures, or that the federal government must limit its consideration of candidate projects to those same performance measures. Therefore, the evaluation includes measures based on the locally-defined goals and objectives discussed above, as well as FTA's recommended measures.

The local goals and objectives have been integrated into the FTA evaluation criteria categories. Project goals and objectives are presented in Section 1.4 of the SEIS/SEIR. For each FTA criteria, performance measures related to the FTA guidelines and local goals and objectives are evaluated. The resulting performance measures categorized by FTA New Starts criteria are presented in each section below.

9.1.1 TRANSIT OPTIONS EVALUATED

The evaluation compares the Central Subway Build Alternatives against the No Project/TSM Alternative. The No Project/TSM assumes that the T-Third line and associated bus changes described in Section 2.1 of this SEIS/SEIR are in place along with major transportation network improvements identified in the Regional Transportation Plan. The two Central Subway Build Alternatives include the Enhanced EIS/EIR Alignment and the Fourth/Stockton Alignment. The Enhanced EIS/EIR alignment has a surface/subway light rail line operating on segments of Third, Harrison, Kearny, and Geary Streets as well as Fourth and Stockton Streets. The alignment crosses Market Street in a shallow subway and includes a surface platform on Third Street at King Street and four Subway stations (Moscone, Market, Union Square and Chinatown). Enhancements to the 1998 FEIS/FEIR alternative include above-ground emergency ventilation shafts, off-sidewalk station entries where feasible, and the provision of a closed barrier fare system. The Fourth/Stockton Alignment would operate exclusively on Fourth and Stockton Streets with a deep tunnel crossing under Market Street. Two design options for this alternative are being evaluated. Option A (Locally Preferred Alternative or LPA) has a double-track portal on Fourth Street between Townsend and Brannan Streets and three subway stations (Moscone, Union Square/Market Street, and Chinatown). Option B (Modified LPA) has a double-track portal on Fourth Street between Bryant and Harrison Streets, a surface platform on Fourth Street at Brannan Street, and three subway stations (Moscone, Union Square/Market Street, and Chinatown). Option B includes semi-exclusive and mixed-flow suboptions for the surface portion of the light rail operation on Fourth Street. The Fourth/Stockton Alignment Options A and B also include a North Beach tunnel construction variant that would extend the tunnel to the north approximately 2,000 feet under Stockton Street and Columbus Avenue, just past Union Street, to allow for the removal of the TBM.

Detailed descriptions of the alternatives can be found in Section 2.1 of this SEIS/SEIR.

9.1.2 EVALUATION FRAMEWORK

The Section 5309 New Starts criteria provide FTA with a consistent framework for evaluating major transit investments seeking federal discretionary funding under the Section 5309 New Starts program. FTA uses an analytical method in which New Start projects are analyzed against several evaluation criteria and results are displayed and reported annually.[1]

[1] Updated analysis was prepared for Alternative 3B (Modified Locally Preferred Alternative) only and was included in the August 2007 New Starts Report.

This method is also used to evaluate the alternatives/transit options relative to local goals and objectives. No attempt has been made to provide an overall ranking or single index combining all measures. The community and its decision-makers can apply their own values in weighing the importance of the various measures and selecting a Preferred Investment Strategy. The evaluation completed for the SEIS/SEIR will not necessarily conform to the evaluation by FTA that compares New Start projects nationwide for purposes of recommending projects to Congress for funding.

The local evaluation is summarized by means of performance ratings assigned to the alternatives. Performance ratings were assigned to each alternative based on how well the alternative meets the objective. In some cases there is a clear distinction between alternatives, while in others no clear distinction may exist. The ratings may be adjusted in order to account for significant environmental impacts, or other criteria, which make a particular alternative significantly more or less desirable than the other.

9.2 MOBILITY IMPROVEMENTS

In general, mobility is improved by a transit project if individuals can complete the trips they currently make at reduced travel times or if they can and do make more trips in response to a lowered net cost of trip making. Costs, in this context, include the value of service quality differences, such as travel time and reliability.

The Travel and Mobility Goal is to improve transit service to, from, and within the Central Subway Corridor, thereby enhancing the mobility of Corridor residents, business people, and visitors. The specific supporting objectives and performance measures applied to each of the transit options for the Travel and Mobility Goal are presented in Table 9-1.

9.2.1 SUMMARY OF MOBILITY IMPROVEMENTS EVALUATION

Table 9-2 summarizes the evaluation of the alternatives with respect to achieving the Mobility Improvements criteria/objectives.

Alternative 1 - No Project/TSM

The No Project/TSM Alternative would not provide the same high-quality transit service to low income households and employment centers in the Central Subway corridor as would occur if the Project were implemented. It would have slower transit travel times than the Build Alternatives, as a direct exclusive transit right-of-way connection to Chinatown would not be provided. The No Project/TSM Alternative would not be compatible with the Transportation Authority's 1995 *Four Corridor Plan* because it would

TABLE 9-1

CRITERIA FOR EVALUATING MOBILITY IMPROVEMENTS

Criteria/Objective	Performance Measure
FTA Criteria	
Mobility Improvements	Hours of User Benefits Low Income Households Served Employment Near Stations
Local Criteria:	
Increase Transit Ridership	Comparison of Daily Linked Transit Trips
Improve Service Reliability	Exclusive Right-of-Way for Transit
Reduce 2030 Transit Travel Time	Travel Time Between Selected Origin-Destination Pairs
Enhance the Opportunity to Expand Muni's Light Rail System	Compatibility with San Francisco Transportation Authority's *Four Corridor Plan*

TABLE 9-2

SUMMARY OF MOBILITY IMPROVEMENTS EVALUATION

Performance Measures	No Project/TSM Alternative	Central Subway Alternatives		
		Enhanced EIS/EIR Alignment	Fourth/Stockton Alignment Option A	Fourth/Stockton Alignment Option B
FTA Performance Measures				
Hours of Transportation User Benefits	○	◑	~~◕~~●◕	~~●~~◕
Low Income Households Served	◑	●	◕	◕
Employment Near Stations	◑	●	◕	●
Local Performance Measures				
Daily Linked Transit Trips	◔	●	~~◕~~◕	~~◕~~◑
Exclusive ROW for Transit	○	●	●	●
Travel Time Between Selected Origins & Destinations	◔	◑	●	◕
Average Operating Speed for Transit	◑	◑	◕	◑
Compatibility with SFTA's *Four-Corridor Plan*	◔	●	●	●
●-High, ◕-Medium High, ◑-Medium, ◔-Medium Low, ○-Low				

not establish a rail connection to Chinatown as called for in the plan. The No Project/TSM Alternative would result in the greatest travel times for Muni passengers between Fourth and King Streets and Chinatown and transit ridership in the Corridor would be ~~about nine percent~~ at least 10 minutes slower than if the Central Subway was implemented. As buses would be operating on surface streets in non-exclusive right-of-way throughout the Corridor, average operating speeds of transit vehicles would be slower as they would be encountering vehicular congestion that occurs on surface streets. As a result of

these factors, the weekday transit ridership of ~~147,450~~ 124,200 passengers under the No Project/TSM Alternative would be the lowest of any alternative.

Alternative 2 - Enhanced EIS/EIR Alignment

The Enhanced EIS/EIR Alignment would have in-vehicle travel time savings of ~~6.1~~ 5.8 minutes from Fourth/King Streets to Third and Market Streets and 10.0 minutes from Fourth/King Streets to the Chinatown Station compared to the No Project/TSM Alternative due to the more direct route and the addition of 1.75 miles of exclusive right-of-way. The Enhanced EIS/EIR Alignment would improve service to the substantial number of low income households and employment centers along the Corridor resulting in an increase of ~~15,160~~ 21,000 transit riders over the No Project/TSM Alternative to a total of ~~162,610~~ 145,200 average daily transit riders, including ~~89,790~~ 76,300 rail passengers. The split of service between the Third and Fourth Street corridors in the South of Market would slightly extend the market reach to low income households. The Enhanced EIS/EIR Alignment would be fully compatible with citywide and area-specific plans.

Alternative 3 - Fourth/Stockton Alignment Option A (LPA)

The Fourth/Stockton Alignment Option A would have the greatest travel time savings (12.4 minutes over the No Project/TSM Alternative from Fourth/King to Chinatown Station and ~~7.3~~ 7.0 minutes to Market Street) and would add approximately 1.7 miles of exclusive right-of-way for transit. The Fourth/Stockton Alignment Option A would attract about ~~14,660~~ 19,000 new weekday riders over the No Project/TSM Alternative, for a total average weekday ridership of ~~162,110~~ 143,200, which would be slightly lower than the ridership increases achieved with the Enhanced EIS/EIR Alignment. This would include ~~88,840~~ 77,600 rail passengers. This alternative would see the greatest increase in rail ridership among the alternatives. While, the Fourth/Stockton Alignment Option A would not serve quite as many low income households and employment centers as the Enhanced EIS/EIR Alignment, the benefits in travel time savings would partially offset the potential negative of a smaller service area. This alternative would be fully compatible with the *Four Corridor Plan* and other citywide and area-specific plans.

Alternative 3 - Fourth/Stockton Alignment Option B (Modified LPA)

The Fourth/Stockton Alignment Option B would have a travel time savings of 10.7 minutes from Fourth/King Streets to Chinatown Station and ~~6.0~~ 5.6 minutes to Market Street when compared to the No Project/TSM Alternative. Similar to Option A, approximately 1.7 miles of new exclusive transit right-of-

way would be added to the Muni System and approximately ~~14,840~~ 18,400 new daily transit riders would be added to the Corridor, for an average daily ridership of ~~162,290~~ 142,600 passengers in the Corridor, including ~~99,230~~ 76,600 rail passengers. ~~This alternative would see the greatest increase in rail ridership among the~~

~~alternatives.~~ As with the other Build Alternatives, Fourth/Stockton Alignment Option B would improve transit service to the low income population along the Corridor and also enhance service to the employment centers as envisioned in citywide and area-specific plans and the *Four Corridor Plan*.

9.3 ENVIRONMENTAL BENEFITS

Environmental benefits of a transit project can cover a wide variety of topics, including reduced mobile emissions, energy savings, and opportunities for transit-oriented development that can positively affect the environment. The Environmental Goal is to provide transit improvements that enhance and preserve the social and physical environment and minimize direct or indirect construction or operation impacts. The specific supporting objectives and performance measures for the Environmental Goal are presented in Table 9-3.

TABLE 9-3

CRITERIA FOR EVALUATING ENVIRONMENTAL BENEFITS

Criteria/Objective	Performance Measure
FTA Criteria	
Environmental Benefits	Change in Regional Pollutant Emissions Change in Regional Energy Consumption EPA Air Quality Designation for Region
Local Criteria	
Minimize Permanent Displacement of Homes and Businesses	Number of Partial and Full Acquisitions & Relocations
Minimize Impacts on Parkland/Cultural Resources	Number of Affected Sites
Minimize Visual, Noise, and Vibration Impacts	Number of Negative Impacts
Minimize Adverse Construction Impacts	Displaced Parking and business disruption
Reduction in Greenhouse Gases	Lower emissions of greenhouse gases

9.3.1 SUMMARY OF ENVIRONMENTAL BENEFITS EVALUATION

Table 9-4 summarizes the evaluation of each alternative with respect to achieving the Environmental Benefits criteria/objectives. The EPA air quality designation for the region applies to present day measures and cannot be evaluated for the Project alternatives in the future.

Alternative 1 - No Project/TSM

The No Project/TSM Alternative would not require property acquisitions, affect parklands and cultural sites, have visual impacts, or displace parking during construction. However, it would also not reduce air pollution or contributions to greenhouse gases and would not reduce energy consumption. It would also likely result in more localized long-term traffic congestion along the Corridor.

TABLE 9-4

SUMMARY OF ENVIRONMENTAL BENEFITS EVALUATION

Performance Measures	No Project/TSM Alternative	Central Subway Alternatives		
		Enhanced EIS/EIR Alignment	Fourth/Stockton Alignment Option A	Fourth/Stockton Alignment Option B
FTA Performance Measures				
Change in Regional Air Pollutant Emissions	○	◕	◑	●
Change in Greenhouse Gases	○	◕	◑	●
Change in Regional Energy Consumption	◔	◕	◑	●
EPA Air Quality Designation	◔	◔	◔	◔
Local Performance Measures				
Partial and Full Property Acquisitions	●	~~◕~~ <u>◕</u>	~~◕~~ <u>◑</u>	◔
Affected Parkland/Cultural Sites	●	◑	◑	◕
Visual, Noise, and Vibration	●	◑	◕	◕
Displaced Parking During Construction	●	~~◑~~ <u>◔</u>	~~◔~~ <u>◕</u>	~~◔~~ <u>◑</u>

●-High, ◕-Medium High, ◑-Medium, ◔-Medium Low, ○-Low

Alternative 2 - Enhanced EIS/EIR Alignment

The Enhanced EIS/EIR would reduce emissions related to vehicular traffic and greenhouse gases, and would increase use of electric energy from renewable hydroelectric power. This would result in a small net decrease in energy consumption (-16 million BTU's annually) when compared to the No Project/TSM Alternative. Construction of the vent shafts and station entrances would result in visual changes to Union Square, but would not impact the character-defining features of the park. The subway construction would potentially impact 14 highly sensitive prehistoric archaeological sites, three highly sensitive historical archaeological sites, and three historical architectural properties. This alternative would cast minor shadows from the vent shaft on Willy "Woo Woo" Wong Playground, east of the Chinatown Station. The Enhanced EIS/EIR Alignment would require the displacement of 10 small businesses ~~and one to two residential units~~ in Chinatown for the station construction. The Enhanced EIS/EIR Alternative would also result in a physical take of parkland at Union Square plaza for the station entry, vent shafts, and emergency elevators, which requires Section 4(f) review and approval of a de minimis finding. This alternative would permanently displace a total of 59 off-street parking spaces in private and public garages. During the construction of the Enhanced EIS/EIR Alignment, most of the on-street parking spaces in the immediate work areas would be temporarily displaced. One building at 814-

828 Stockton Street in Chinatown would be demolished to build the proposed station. This building has been determined eligible for the National Register of Historic Places and is considered a contributor to

the Chinatown Historic District (the District has a total of 371 contributing buildings). An adverse effect is described for this impact to cultural resources.

Alternative 3 - Fourth/Stockton Alignment Option A (LPA)

The Fourth/Stockton Alignment Option A would reduce emissions related to vehicular traffic and greenhouse gases, and would increase use of electric energy from renewable hydroelectric power. The decrease in fossil fuel consumption would not be sufficient to completely offset the increased energy consumption associated with the increase in electricity used by the light rail system resulting in a slight increase in energy consumption (+243 million BTU's annually) when compared to the No Project/TSM Alternative. The double-portal entrance that would be visible along Fourth Street would affect the visual conditions of the block located between Townsend and Brannan Streets. The construction of vent shafts and station entrances would have a modest visual effect at Union Square and when viewed from Willy "Woo Woo" Wong Playground in Chinatown. Like Alternative 2, above, this alternative would cast minor shadows from the vent shaft on Willie "Woo Woo" Wong Playground.

Construction of the Fourth/Stockton Alignment Option A would potentially impact seven highly sensitive prehistoric archaeological resources, 11 highly sensitive historical archaeological sites, and three historical properties. This Alternative would displace one business to accommodate the Moscone Station construction and 10 small businesses ~~and one to two residential units~~ to accommodate the Chinatown station. The Fourth/Stockton Alignment Option A would result in the same physical take of parkland at Union Square plaza for the station entry, vent shafts, and emergency elevators as described for Alternative 2, which would require Section 4(f) review and approval of a de minimis finding. Removal of the building at 814-828 Stockton Street in Chinatown would have the same impacts as Alternative 2 to cultural resources. This alternative would permanently displace a total of 29 off-street parking spaces at the Union Square garage. During the construction of this Alternative, most of the on-street parking spaces in the immediate work areas would be displaced.

Alternative 3 - Fourth/Stockton Alignment Option B (Modified LPA)

The Fourth/Stock Alignment Option B would reduce emissions related to vehicular traffic and greenhouse gases, and would increase use of electric energy from renewable hydroelectric power. This would result in the greatest decrease in energy consumption of 1.05 billion BTUs annually when compared to the No Project/TSM Alternative. The double-portal entrance on Fourth Street would be visible along the block located between Bryant and Harrison Streets under the I-80 overpass. The construction of the station entrance would have a modest visual impact at Union Square along Geary

Street because it would be built into the terraced concrete edge of the plaza. The vent shafts for this alternative would be in the Ellis/O'Farrell garage, not in Union Square, further minimizing visual impacts to the plaza.

Construction of the Fourth/Stockton Alignment Option B would potentially impact seven highly sensitive prehistoric archaeological resources, 12 historic archaeological sites, and three historical properties. Removal of the building at 933-949 Stockton Street would have the same impact to the Chinatown Historic District as described for Alternatives 2 and 3A. This Alternative would displace one business to accommodate the Moscone Station construction and 8 small businesses and 17 residential units to accommodate the Chinatown station at Stockton and Washington Streets. The Fourth/Stockton Alignment Option B would also result in a physical take of parkland at Union Square plaza for the station entry and emergency elevators (but not the vent shafts), which would reduce the physical take of park property. Section 4(f) review and approval of a de minimis finding would be required. This alternative would permanently displace a total of 59 off-street parking spaces in the Union Square and Ellis/O'Farrell garages. During the construction of this Alternative, most of the on-street parking spaces in the immediate work areas would be temporarily displaced.

9.4 OPERATING EFFICIENCIES

Operating efficiencies represent the extent to which the proposed transit investment would produce future resource savings for transit operators relative to existing service or existing service forecasted into the future. The specific supporting objectives and performance measures applied to each of the transit options for the Operating Efficiencies evaluation criteria are presented in Table 9-5.

TABLE 9-5

CRITERIA FOR EVALUATING OPERATING EFFICIENCIES

Criteria/Objective	Performance Measure
FTA Criteria	
Operating Efficiencies	Operating Cost per Passenger Mile
Local Criteria	
Maximize Transit Operating Efficiency While Accommodating 2030 Demand	Operating Cost per Passenger Operating Cost per Revenue Bus Hour Operating Cost per Revenue Train Hour

9.4.1 SUMMARY OF OPERATING EFFICIENCIES EVALUATION

Table 9-6 presents a comparison of the systemwide Operations Efficiencies calculations for each alternative. Table 9-7 summarizes the evaluation with respect to achieving the Operating Efficiencies criteria/objectives.

TABLE 9-6

OPERATING EFFICIENCIES - 2030

Performance Measures	No Project/TSM Alternative	Central Subway Alternatives		
		Enhanced EIS/EIR Alignment	Fourth/Stockton Alignment Option A	Fourth/Stockton Alignment Option B
FTA Performance Measures				
Systemwide Operating Cost per Passenger Mile[1]	~~$0.57~~ $1.24	~~$0.58~~ $1.25	~~$0.57~~ $1.24	~~$0.57~~ $1.24
Local Performance Measures				
Systemwide Operating Cost per Passenger[1]	~~$1.82~~ $2.34	~~$1.63~~ $2.31	~~$1.56~~ $2.29	~~$1.52~~ $2.29
Bus Operating Cost per Revenue Bus Hour[2]	~~$254.00~~ $140.02	~~$209.00~~ $140.34	~~$209.00~~ $140.32	~~$209.00~~ $140.32
Light Rail Operating Cost per Revenue Train Hour[2,3]	~~$303.00~~ $248.20	~~$298.00~~ $260.32	~~$305.00~~ $259.98	~~$299.00~~ $259.84

Sources: 2030 base system ridership – San Francisco Model, January ~~2007~~ 2008, and ~~MTA, May 2007~~ AECOM Consult Inc., March 2008.

Notes: [1] Includes Cable Car mode.
[2] Excludes Cable Car mode
[3] Includes Historic Street Cars

TABLE 9-7

SUMMARY OF OPERATING EFFICIENCIES

Performance Measures	No Project/TSM Alternative	Central Subway Alternatives		
		Enhanced EIS/EIR Alignment	Fourth/Stockton Alignment Option A	Fourth/Stockton Alignment Option B
FTA Performance Measures				
Systemwide Operating Cost per Passenger Mile	◕	◑	◕	◕
Local Performance Measures				
Systemwide Operating Cost per Passenger	◔	◑	◕	~~●~~◕
Bus Operating Cost per Revenue Bus Hour	~~◕~~●	~~◕~~◑	◕	◕
Light Rail Operating Cost per Revenue Train Hour	~~◕~~●	~~●~~◔	~~◔~~◑	◕

●-High, ◕-Medium High, ◑-Medium, ◔-Medium Low, ○-Low

Alternative 1 - No Project/TSM

The No Project/TSM Alternative operating costs per passenger mile would be comparable to the Build Alternatives. The No Project/TSM Alternative would have the highest operating cost per passenger (~~$1.82~~ $2.34), ~~and~~ but would have the ~~highest~~ lowest operating cost per revenue bus hour (~~$254.00~~ $140.02) and per revenue train hour ($248.20) when compared to all the Build Alternatives ~~and would have a higher operating cost per train hour ($303.00) than the Enhanced EIS/EIR or Fourth/Stockton Option B alignments~~.

Alternative 2 - Enhanced EIS/EIR Alignment

The Enhanced EIS/EIR Alternative would provide faster and more reliable transit service than the No Project/TSM Alternative, ~~generally~~ with~~out a~~ some loss in operating efficiency. The operating costs per passenger (~~$1.63~~ $2.31) would go down, while the operating costs per revenue bus hour (~~$209.00~~ $140.34)~~,~~ and per revenue train hour (~~$298.00~~ $260.32) would ~~all go down~~ increase when

compared to the No Project/TSM. The service would be of higher quality and capacity compared to the No Project/TSM Alternative; however, the operating cost per passenger (~~$0.58~~ $1.25) would marginally increase.

Alternative 3 - Fourth/Stockton Alignment Option A (LPA)

The Fourth/Stockton Alignment Option A would provide some systemwide improvements in operational efficiency compared to both the No Project/TSM Alternative and the Enhanced EIS/EIR Alternative. The operating cost per passenger (~~$1.56~~ $2.29) would be lower, ~~and~~ the operating cost per passenger mile (~~$0.57~~ $1.24) about the same, and the operating cost per bus hour (~~$209.00~~ $140.32) would be ~~about the same~~ slightly lower than Alternative 2, though higher than the No Project/TSM Alternative, with no perceptible decrease in operating efficiency. ~~This alternative would have t~~The ~~highest~~ operating cost per revenue train hour would be $259.98, which falls between the other two Build Alternatives.

Alternative 3 - Fourth/Stockton Alignment Option B (Modified LPA)

The Fourth/Stockton Alignment Option B ~~has the greatest overall operating~~ efficiencies are comparable to Alternative 3A for passenger and passenger mile costs and for bus operating costs per revenue bus hour. ~~With the highest ridership, this alternative generates the lowest operating cost per passenger ($1.52). The operating costs per passenger mile ($0.57) and per bus hour ($209.00) are comparable to other Build Alternatives. The~~ This alternative has the lowest operating cost per revenue train hour (~~$299.00~~ $259.84) ~~falls just below the Enhanced EIS/EIR Alignment and is lower by $6.00 than for Option A~~ of all the Build Alternatives.

9.5 COST EFFECTIVENESS

Cost effectiveness, as applied to transportation capital projects, is defined as the extent to which an alternative returns benefits in relation to its costs in terms of incremental cost per hour of transportation system user benefits. Since the early 1980's FTA has used a cost-effectiveness index to evaluate and compare New Start transit projects. The cost-effectiveness index is an attempt to calculate the cost of attracting one new rider to transit. FTA has recently revised its cost effectiveness measure to exclude travel time savings from the calculation and to consider the user benefits. The Cost Effectiveness evaluation criteria are presented in Table 9-8.

TABLE 9-8

CRITERIA FOR EVALUATING COST EFFECTIVENESS

Criteria/Objective	Performance Measure
FTA Criteria	
Cost Effectiveness (FTA criteria)	Incremental Cost per Hour of Transportation System User Benefit

9.5.1 SUMMARY OF COST EFFECTIVENESS EVALUATION

Table 9-9 summarizes the evaluation of each alternative with respect to achieving the Cost Effectiveness criteria/objectives. The Table 9-9 incremental costs were calculated from Operations and Maintenance (O&M) forecasts developed in ~~2006~~ 2008 consistent with all of the evaluations performed for the SEIS/SEIR.[2]

TABLE 9-9

SUMMARY OF COST EFFECTIVENESS

Performance Measures	No Project/TSM Alternative	Central Subway Alternatives			
		Enhanced EIS/EIR Alignment	Fourth/Stockton Alignment Option A	Fourth/Stockton Alignment Option B	
		FY 200~~7~~9 New Starts	FY 200~~7~~9 New Starts	~~FY 2007 New Starts~~	FY 2009 New Starts
Incremental Cost per Hour of Transportation System User Benefit	--	~~$33.58~~ $30.37	~~$22.73~~ $21.12	~~$18.36~~	~~$20.60~~ $21.24
~~● High, ◕ Medium High, ◑ Medium, ◔ Medium Low, ○ Low~~					
Note: ~~An updated cost-effectiveness index was calculated for Alternative 3B as part of the Fiscal Year 2009 New Starts Report submitted to FTA in September 2007.~~ The cost-effectiveness index for all ~~other~~ alternatives is based on the Fiscal Year ~~2007~~2009 New Starts Report. ~~For the Final SEIS/SEIR, the cost-effectiveness index will be updated for all alternatives.~~					

Alternative 1 - No Project/TSM

The cost per hour of transportation system user benefit is not applicable to the No Project/TSM Alternative.

Alternative 2 - Enhanced EIS/EIR Alignment

Alternative 2 has the highest incremental cost per hour of transportation system-user benefit (~~$33.58~~ $30.37) of all of the build alternatives and would be assigned a low cost effectiveness rating based on the FTA criteria. The MTA 2030 projected systemwide ridership would be ~~higher~~ lower in Alternative 2 than in other alternatives, but the Central Subway Corridor ridership would be higher. ~~and t~~The MTA revenues generated from this alternative would ~~also~~ be ~~highest~~ lowest among alternatives; however, relative operating costs per revenue bus and train hour for this alternative are also ~~high~~ low, though without comparable user benefits. This alternative would generate a higher level of Central Subway

[2] ~~Updated Operations & Maintenance costs have been performed for Alternative 3B (Modified Locally Preferred Alternative) only and are included in the Fiscal Year 2009 New Starts Report. The Fiscal Year 2007 numbers used in Table 9-9 are to be only used for comparing one alternative against another. These are different from the numbers submitted in the Fiscal Year 2009 New Starts Report. The New Starts Report reflects the most current ridership numbers and cost-effectiveness for the modified LPA (Alternative 3B) and should be used for all other circumstances.~~ See Appendix H for ~~updated~~ further discussion of cost-effectiveness numbers.

ridership than either Alternative 3A or 3B, but would ~~generate lower ridership on the Central Subway line than under Alternative 3B and would~~ result in the highest travel time~~s~~ of all Build Alternatives.

Alternative 3 - Fourth/Stockton Alignment Option A (LPA)

Alternative 3A has an incremental cost per hour of transportation system-user benefit ~~($22.73~~ $21.12), which is an improvement over Alternative 2. This cost would receive a medium cost-effectiveness rating based on FTA criteria. This alternative would have the lowest projected ridership on the Central Subway line of all Build Alternatives~~, and would rank behind Alternative 2~~ but would rank the highest in systemwide MTA ridership and projected revenues. While travel times are the fastest for this alternative, by providing only three stations, the accessibility to the system is less with Alternative 3A.

Alternative 3 - Fourth/Stockton Alignment Option B (Modified LPA)

Alternative 3B has ~~the lowest~~ a slightly higher incremental cost per hour of transportation system-user benefit ~~($18.36~~ $21.24) than Alternative 3A, but would also achieve~~ing~~ a medium rating~~, but would rank above the other two Build Alternatives~~ with respect to the FTA cost-effectiveness criteria. This alternative achieves the second highest projected ridership of all Build Alternatives, falling just below Alternative 3A. It improves ~~by improving~~ travel times over the No Project/TSM Alternative and Alternative 2 and also provides~~ing~~ a high level of system accessibility. ~~The resulting user benefits offset the higher systemwide costs and lower systemwide revenues projected for Alternative 3B.~~These factors give Alternative 3B the best overall performance in operating efficiencies (refer to Table 9-6).

9.6 TRANSIT SUPPORTIVE EXISTING LAND USE AND FUTURE PATTERNS

It is difficult to evaluate land use in quantitative terms due to the subjective nature of the topic. The issue is how well (or how poorly) a transportation alternative reinforces local land use policies. For instance, if a given alternative provides improved accessibility to areas where the City wants to stimulate growth, it would support the City's land use policy. On the other hand, if it would intrude upon established neighborhoods or planned developments or worsen traffic congestion, it would not support the City's land use policy.

The Transit Supportive Land Use Goal is to ensure compatibility with City land use plans and policies and transportation improvements so that transit ridership can be maximized, the number of auto trips reduced, and opportunities for transit-oriented development pursued. The specific supporting objectives and performance measures used to evaluate the Transit Supportive Land Use Goal are presented in Table 9-10.

9.6.1 TRANSIT SUPPORTIVE LAND USE EVALUATION

Table 9-11 summarizes the evaluation of achieving the Transit Supportive Land Use and Future Patterns criteria/objectives.

Alternative 1 - No Project/TSM

While the land use conditions in the Study Area are very favorable to a high level of transit use, the No Project/TSM Alternative would not be as supportive of citywide and area-specific plans nor would it provide the same opportunities for economic revitalization centered on transit stations that would be

TABLE 9-10

CRITERIA FOR EVALUATING TRANSIT SUPPORTIVE LAND USE AND FUTURE PATTERNS

Criteria/Objective	Performance Measure
FTA Criteria	
Transit Supportive Land Use and Future Patterns	Existing Land Use Transit Supportive Plans and Policies Performance and Impacts of Policies Other Land Use Considerations
Local Criteria	
Support the Coordination of Land Use and Transportation Planning	Review Citywide and Area-specific Land Use Plans Related to the Corridor
Support Revitalization Opportunities along the Central Subway Corridor Adjacent to Transit Stops	Acres of Vacant or Underutilized Land Adjacent to Transit Stops/Stations
Project Serves Major Activity Centers in the Corridor	Number of Centers Having Access to Transit

TABLE 9-11

SUMMARY OF TRANSIT SUPPORTIVE LAND USE AND FUTURE PATTERNS

Performance Measures	No Project/TSM Alternative	Central Subway Alternatives		
		Enhanced EIS/EIR Alignment	Fourth/Stockton Alignment Option A	Fourth/Stockton Alignment Option B
FTA Performance Measures				
Existing Land Use	●	●	●	●
Transit Supportive Plans and Policies	●	●	●	●
Performance and Impacts of Policies	●	●	●	●
Other Land Use Considerations	●	●	●	●
Local Performance Measures				
Compatible with City and Area Plans	◔	●	●	●
Support Revitalization Opportunities along the Central Subway Corridor Adjacent to Transit Stops/Stations	◔	●	●	●
Project Serves Major Activity Centers	◑	●	◕	●
●-High, ◕-Medium High, ◑-Medium, ◔-Medium Low, ○-Low				

afforded by the Build Alternatives. The No Project/TSM Alternative would serve major activity centers in the Corridor, but light rail service on its own reserved right-of-way would provide higher quality and more reliable service.

Alternative 2 - Enhanced EIS/EIR Alignment

The Enhanced EIS/EIR Alignment would be fully supportive of citywide and area plans and would accommodate the growth anticipated in the Corridor with enhanced transit service. This Alternative would encourage revitalization in the Central Subway Corridor by providing more reliable and direct transit service to most of the major activity centers in the Corridor from the four stations proposed along the alignment. Transit-oriented development opportunities would be made available by MTA at the Chinatown Station.

Alternative 3 - Fourth/Stockton Alignment Option A (LPA)

The affects of the Fourth/Stockton Alignment Option B on transit supportive land use would be the same as those for Fourth/Stockton Alignment Option A, except that this alternative includes an additional surface station at Fourth and Brannan Streets, which enhances access to the transit system along the Fourth Street Corridor and has been supported in concept by the Citywide Section (long-range planning division) San Francisco Planning Department.

9.7 OTHER FACTORS

Other Factors is an optional criterion defined by FTA that focuses on local evaluation factors, rather than the FTA-defined evaluation criteria that are applied to all transit operators in the United States. The measures that are applied to each of the transit options for the "other factors" evaluation criteria are presented in Table 9-12. For the evaluation of alternatives, this criterion group includes local goals and objectives that cannot be easily categorized into FTA Section 5309 New Starts criteria.

9.7.1 OTHER LOCAL EVALUATION FACTORS

Table 9-13 summarizes the evaluation of each alternative with respect to achieving the Other Factors criteria/objectives.

Alternative 1 - No Project/TSM

The No Project/TSM Alternative would provide the slowest travel times from Fourth and King Streets to Market Street and Chinatown. The No Project/TSM Alternative would maintain the current on-street parking supply and would do nothing to relieve the impact of the heavily congested traffic that slows bus transit operations on the surface streets. While the No Project/TSM Alternative would not be as supportive of citywide and area-wide land use plans, it does have some community support as a low-cost alternative to a light rail investment in the Corridor.

TABLE 9-12

CRITERIA FOR EVALUATING OTHER FACTORS

Criteria/Objective	Performance Measure
Local Criteria	
Improve Access to Downtown Employment Centers and Chinatown (Equity Goal)	Comparison of Travel Time from Fourth/King to Market/Third/Fourth and Stockton/Washington
Maintain Adequate Auto & Truck Access along the Central Subway Corridor (Economic Revitalization Goal)	Curb Parking Supply and on-street loading zones on or near Third/Fourth Streets and Stockton Street
Enhance Urban Design/Streetscape Improvements along Third and Fourth Streets in South of Market (Economic Revitalization Goal)	New Areas for Landscape Treatments in the Third and Fourth Street commercial areas
Gain Community Support for Preferred Investment Strategy (Community Acceptance Goal)	Not quantifiable
Gain City Commissions, Mayor and Board of Supervisors Support for Preferred Investment Strategy (Community Acceptance Goal)	Not quantifiable
Gain Support from Appropriate Regional (MTC), State, and Federal Agencies (Community Acceptance Goal)	Not quantifiable

TABLE 9-13

SUMMARY OF OTHER LOCAL EVALUATION FACTORS

Performance Measures	No Project/TSM Alternative	Central Subway Alternatives		
		Enhanced EIS/EIR Alignment	Fourth/Stockton Alignment Option A	Fourth/Stockton Alignment Option B
Travel Time from Fourth/King to Market/Third/Fourth	◔	~~◕~~ ◕	●	~~◕~~ ◑
Travel Time from Fourth/King to Stockton/Washington	◔	◑	●	◕
Parking supply and on-street loading zones on or near Third/Fourth Streets and Stockton Street	●	◔	◕	◑
Community Acceptance and Political Support	◔	◑	◕	●
●-High, ◕-Medium High, ◑-Medium, ◔-Medium Low, ○-Low				

Alternative 2 - Enhanced EIS/EIR Alignment

The Enhanced EIS/EIR Alignment would reduce travel times from Fourth and King Streets to Market Street and Chinatown, but not to the same degree as would the Fourth/Stockton Alignment because surface alignments for the Enhanced EIS/EIR would use both Third and Fourth Streets and therefore would not be as direct. The Enhanced EIS/EIR would displace 111 on-street parking spaces along the Corridor and 59 off-street spaces at the Hearst and Union Square garages.

The Enhanced EIS/EIR Alignment would be compatible with citywide and area-specific plans and has generated some community acceptance and political support, however, comments received at the public

meetings suggest that the Fourth/Stockton Alignment Options A or B would have a greater degree of community support because of elimination of surface disruption along Third Street.

Alternative 3 - Fourth/Stockton Alignment Option A (LPA)

The Fourth/Stockton Alignment Option A would have the greatest travel time savings of any of the alternatives because travel is more direct on Fourth Street when compared to the Enhanced EIS/EIR Alignment and it has one fewer station than the Fourth/Stockton Alignment Option B. The Fourth/Stockton Alignment Option A would result in a net loss of 29 on-street parking spaces along the Central Subway Corridor and 29 off-street spaces at the Union Square garage. In terms of the community acceptance and political support objective, the Fourth/Stockton Alignment Option A would be superior to the No Project/TSM Alternative and the Enhanced EIS/EIR because it would provide shorter, more direct service into the Union Square retail area and Chinatown.

Alternative 3 - Fourth/Stockton Alignment Option B (Modified LPA)

The Fourth/Stockton Alignment Option B would have a greater travel time savings than the Enhanced EIS/EIR Alignment but slightly higher than the Fourth/Stockton Option A because it has one more station. The Fourth/Stockton Alignment Option B would result in a net loss of 82 on-street parking spaces along the Central Subway Corridor (79 with mixed-flow operations) and 59 off-street spaces at the Ellis/O'Farrell and Union Square garages. In terms of the community acceptance and political support objective, the Fourth/Stockton Alignment Option B likely have the greatest public support of the Build Alternatives as it provides the highest level of ridership, ~~and~~ the greatest level of accessibility by improving the direct connections between Visitacion Valley and Chinatown, and minimizes the impact on park lands. This alternative also offers cost savings not afforded by the Fourth/Stockton Alignment Option A.

9.8 LOCAL FINANCIAL COMMITMENT

This section discusses the financial feasibility of the alternatives and design options. Local financial commitment measures the local agency's contribution to the cost of constructing, operating and maintaining the Project, the stability and reliability of its capital financing plan, and the stability and reliability of its operating financing plan. The Financial Goal is to implement transit improvements that provide for the efficient use of limited financial resources. The specific supporting objectives and performance measures are presented in Table 9-14.

TABLE 9-14

CRITERIA FOR EVALUATING LOCAL FINANCIAL COMMITMENT

Criteria/Objective	Performance Measure
FTA Criteria	
Local Financial Commitment	Stability and Reliability of Capital Financing Plan Stability and Reliability of Operating Financing Plan Local Share of Project Costs
Local Criteria	
Develop Financial Plan to Cover Total Capital Costs	Capital Costs Compared with Available and Projected Capital Funds
Develop Financial Plan to Cover Total Annual Operating & Maintenance Costs (Systemwide)	Annual Operating & Maintenance Costs Compared with Available and Projected Local Funding

9.8.1 LOCAL FINANCIAL COMMITMENT EVALUATION

Table 9-15 summarizes the evaluation of each alternative with respect to achieving the Local Financial Commitment criteria/objectives.

Alternative 1 - No Project/TSM

Under the No Project/TSM Alternative, there would be no further capital investment in rail. Bus service would be added as required in the future to respond to increased demand. Operating costs under this alternative would be higher than for all Build Alternatives.

TABLE 9-15

SUMMARY OF LOCAL FINANCIAL COMMITMENT

Performance Measures	No Project/TSM Alternative	Central Subway Alternatives		
		Enhanced EIS/EIR Alignment	Fourth/Stockton Alignment Option A	Fourth/Stockton Alignment Option B
FTA Performance Measures				
Stability and Reliability of Capital Financing Plan	--	◕	◕	◕
Stability and Reliability of Operating Financing Plan	◔	◑	◑	◑
Local Share to Project Costs	--	●	●	●
Capital Costs Compared to Funding	--	◑	◑	◕●
Operating Costs Compared to Funding	◑	◕	◕	◕
●-High, ◕-Medium High, ◑-Medium, ◔-Medium Low, ○-Low				

Alternative 2 - Enhanced EIS/EIR Alignment

A total of $1.19 billion in combined federal, state, and local funds have been identified for implementation of the Project. The Enhanced EIS/EIR is projected to cost $1.31 billion (see Table 8-1) in 2007 dollars ($1.64 billion year of expenditure), so funding would fall short of the costs to implement.

Other funding sources would need to be identified to address funding shortfalls (including the 2030 Year of Expenditure escalation) and to implement this alternative. The local contribution to the full funding plan would be 36 percent, as for all Build Alternatives. The Central Subway is expected to result in a net operating surplus on a project-level with the operating cost per passenger mile comparable among all alternatives.

Alternative 3 - Fourth/Stockton Alignment Option A (LPA)

The capital cost of the Fourth/Stockton Alignment Option A is $1.13 billion in 2007 dollars ($1.41 billion year of expenditure), which falls below the total funds needed for the Project. Additional funds would be needed to cover the escalation costs in order to implement the Project (see Chapter 8.0, Financial Feasibility, for a more detailed discussion of the Project cost escalation factors). See operating cost discussion under Enhanced EIS/EIR Alignment.

Alternative 3 - Fourth/Stockton Alignment Option B (Modified LPA)

The capital cost of the Fourth/Stockton Alignment Option B is the lowest of all Build Alternatives at $1.01 billion in 2007 dollars ($1.24 billion year of expenditure). ~~Funding for this alternative would fall just short of the funds required to implement the Project. Additional funds would need to be secured to address escalation costs for implementation of the Project (see Chapter 8.0, Financial Feasibility, for a more detailed discussion of the Project cost escalation factors).~~ This alternative is the only alternative that is fully funded. See operating cost discussion under Enhanced EIS/EIR Alignment.

New Starts Evaluation Process Update

The Section 5309 "New Starts" program is the Federal government's primary program for providing financial support to locally-planned, implemented, and operated fixed guideway transit major capital investments. The New Starts evaluation process is used in conjunction with the evaluation process under the National Environmental Policy Act, for which this Environmental Impact Statement is being prepared. This section describes how FTA evaluates projects for its New Starts funding recommendations. The Central Subway project is seeking New Starts funding and, therefore, will be subject to this evaluation and rating process.

Each year FTA submits its Annual Report on New Starts to Congress as a companion document to the annual budget submitted by the President. The report provides recommendations for the allocation of New Starts funds under Section 5309 of Title 49 of the United States Code. As required by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), FTA uses the following project justification criteria to evaluate New Starts projects: mobility improvements; environmental benefits; cost effectiveness; operating efficiencies; transit-supportive existing land use; policies and future patterns; and other factors. FTA must also consider the local financial commitment for the proposed project. In total, the criteria are intended to measure the overall merits of the project and the sponsor's ability to build and operate it.

FTA reviews the project justification and local financial commitment criteria for each candidate project and assigns a rating for each criterion. For some of the project justification criteria, the proposed project is compared against a New Starts "baseline alternative." The New Starts baseline alternative consists of improvements to the transit system that are relatively low in cost and represent the "best that can be done" to improve transit without major capital investment in new guideway infrastructure. As such, it is usually different than the baseline (represented by the no-build condition) against which environmental impacts are measured in the NEPA document.

A candidate project is given an overall rating of "High," "Medium-High," "Medium," "Medium-Low" or "Low", based on ratings assigned by FTA to each of the project justification and local financial commitment criteria described above. These ratings are important, as FTA considers them in its decision to recommend projects for New Starts funding. Specifically, FTA will not recommend funding for projects which are rated "Medium-Low" or "Low." It is important to note, moreover, that a "High," "Medium-High" or "Medium" rating does not automatically translate into a funding recommendation, although the potential for receiving New Starts funding is much greater.

Project evaluation is an on-going process. FTA evaluation and rating occurs annually in support of budget recommendations presented in the Annual Report on New Starts and when projects request FTA approval to enter into preliminary engineering or final design. Consequently, as proposed New Starts projects proceed through the project development process, information concerning costs, benefits, and impacts is refined and the ratings are updated to reflect new information.

CURRENT RATINGS FOR THE CENTRAL SUBWAY PROJECT

Overall Rating: Medium-High

PROJECT JUSTIFICATION

Rating: Medium-High

MOBILITY IMPROVEMENTS

Rating: Medium-High

In its evaluation of the mobility improvements that would be realized by implementation of a proposed project, FTA reviews the following measures:

User benefits per project passenger mile

Number of current Low Income Households that would be served by the proposed New Starts investment.

Number of low income households and jobs served by the proposed New Starts project

User benefits essentially represent all the travel time savings to transit riders in the forecast year that result from the New Starts project as compared to not building the project (the baseline alternative). They include reductions in walk times, wait times, transfers, and, most importantly, in-vehicle times. In order to rate projects in comparison to other proposed New Starts, this measure is normalized by the annual passenger miles traveled on the New Starts project in the forecast year. The number of low income households and jobs served measure reflects the absolute number of low income households (defined as below the poverty level) and jobs located within ½ mile of the "boarding points," or stations, associated with the proposed project. The total number of low income households and jobs located within these ½ mile zones is then divided by the total number of stations to determine both the average number of low-income households and average number of jobs per station.

Table 9-2 presents the mobility improvement measures for the Central Subway project.

ENVIRONMENTAL BENEFITS

Rating: Medium-Low

In its evaluation of environmental benefits that would be realized through the implementation of a proposed project, FTA considers the current air quality designation by EPA. This measure is defined for each of the transportation-related pollutants (ozone, CO, and PM-10) as the current air quality designation by EPA for the metropolitan region in which the proposed project is located, indicating the severity of the metropolitan area's noncompliance with the health-based EPA standard (NAAQS) for the pollutant, or its compliance with that standard. New Starts project sponsors also submit information to FTA on the forecast reductions in emissions resulting from the New Starts project for each transportation-related pollutant. FTA has found that information submitted in support of the environmental benefits criterion does not distinguish with any meaning the merits of competing New Starts projects. While FTA reports the information submitted by project sponsors on environmental benefits to Congress and other stakeholders, it does not formally incorporate this measure in its evaluation of New Starts projects.

Table 9-4 presents the information used to determine the environmental benefits rating for the Central Subway project.

OPERATING EFFICIENCIES

Rating: Medium-High

FTA measures this criterion by evaluating the change in systemwide operating costs per passenger mile in the forecast year, comparing the Section 5309 New Start investment to the baseline alternative. FTA assigns a rating of "medium" to all projects that have information submitted for this measure. Like the environmental benefits measure, FTA has found that information submitted in support of the operating efficiencies criterion does not distinguish with any meaning the merits of competing New Starts projects. While FTA reports the information submitted by project sponsors on operating efficiencies to Congress and other stakeholders, it does not formally incorporate this measure into its evaluation.

COST EFFECTIVENESS

Rating: Medium

Significant among the project justification criteria is cost effectiveness, which is the annualized capital and operating cost per hour of user benefits for the forecast year. It captures the additional costs of the

New Starts project compared to the transportation benefits to transit riders. User benefits are defined identical to the measure used in the mobility improvements criterion.

New Starts projects must be rated "Medium" for cost effectiveness, in addition to receiving an overall "Medium" rating, in order to be considered by the Federal Transit Administration for New Starts funding.

TRANSIT SUPPORTIVE LAND USE

Rating: High

This criterion addresses the extent that transit-oriented development is likely to occur in the New Start project's corridor.

LOCAL FINANCIAL COMMITMENT

Rating: Medium

Proposed New Starts projects must be supported by evidence of stable and dependable financing sources to construct, operate and maintain the transit system. The measures FTA uses to evaluate local financial commitment are:

Local Share

Rating: High

FTA examines the proposed share of total project costs from sources other than Section 5309 New Starts, including Federal formula and flexible funds, the local match required by federal law, and any additional capital funding.

Strength of Capital Financing Plan

Rating: Medium

FTA looks at the stability and reliability of the proposed capital financing plan, including the current capital condition of the project sponsor, the level of commitment of capital funds to the project, the financial capacity of the project sponsor to withstand cost overruns or funding shortfalls, and the reliability of the capital cost estimates and planning assumptions.

Strength of Operating Financing Plan

Rating: Medium

FTA looks at the ability of the sponsoring agency to fund operation and maintenance of the entire system (including existing service) as planned, once the guideway project is built. This includes: an examination of the current operating condition of the project sponsor; the level of commitment of operating funds for the transit system; the financial capacity of the project sponsor to operate and maintain all proposed, existing and planned transit services; and the reliability of the operating cost estimates and planning assumptions.

The quantitative measures listed below represent some of what FTA relies on in rating a project's local financial commitment. The data listed below are for the Central Subway Project.

Measure (in Year of Expenditure Dollars)	**Cost**
Total Capital Cost	$1,289,750,000
Proposed Federal Section 5309 New Starts Share of Capital Costs	$762,200,000
Proposed Local Sources of Capital Funding	$527,550,000
Estimated Annual Incremental Operating Costs in the Forecast Year (2030)	$11,221,000

Additional information on the financial plan for this project can be found in Chapter 8.0 of this document.

SECTION 4(f)

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CENTRAL SUBWAY
THIRD STREET LIGHT RAIL PHASE 2

SECTION 4(F) REPORT

~~OCTOBER 2007~~ SEPTEMBER 2008

Prepared for:

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ACRONYMS

APE	Area of Potential Effect
BRT	Bus Rapid Transit
CEQA	California Environmental Quality Act
CRHR	California Register of Historic Places
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
FTA	Federal Transit Administration
MTA	Municipal Transportation Agency
Muni	San Francisco Municipal Railway
NEPA	National Environmental Preservation Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
RTP	Regional Transportation Plan
SEIR	Supplemental Environmental Impact Report
SEIS	Supplemental Environmental Impact Statement
SEM	Sequential Excavation Method
SHPO	State Historic Preservation Office
SXM	Special Excavation Method
TBM	Tunnel Boring Machine
TSM	Transportation Systems Management

1.0 BACKGROUND INFORMATION

1.1 SECTION 4(f)

Section 4(f) is a portion of a Federal Law enacted as part of the Department of Transportation (DOT) Act of 1966 and set forth in Title 49 United States Code (U.S.C.), Section 1653(f). The provisions of Section 4(f) apply only to agencies within the U.S. DOT. Any proposed transportation project that affects a Section 4(f) resource must include a Section 4(f) assessment.

The intent of Section 4(f) is to determine that there is no feasible and prudent alternative to the use of Section 4(f) land or resources and to take all measures to avoid or minimize harm to public parks or recreation areas, wildlife and waterfowl refuges and significant historic sites. Per Section 4(f), a transportation project that involves the use of Section 4(f) resources will only be approved if there is no prudent or feasible alternative to using those resources and if the Project includes all possible planning to minimize harm. To determine that there is no feasible and prudent alternative to the use of Section 4(f) land, an evaluation must be undertaken that addresses location and design of alternatives that would avoid these properties. Supporting information must demonstrate that such alternatives would result in unique problems or unusual factors such as costs, social, economic, or environmental impacts, or community disruption of an extraordinary magnitude.

A Section 4(f) resource "use" occurs when land is permanently incorporated into a transportation facility or when the Project causes an adverse impact to the enjoyment or use of a Section 4(f) resource. There are different types of use defined under the Section 4(f) statute, which vary according to permanence and significance of impact. Use occurs when there is a physical take of a 4(f) property as part of a transportation Project, or when a transportation agency acquires a permanent or temporary easement of the property. A "constructive use" of a property can also occur when a Project does not physically incorporate the resource, but is close enough to substantially impair and significantly impact activities, features, or attributes that qualify a resource for protection under Section 4(f). Substantial impairment occurs only when the protected activities, features or attributes of the resource are substantially diminished.

Section 4(f) applies to historic sites that are listed or considered eligible for listing on the National Register of Historic Places, and to publicly owned parks and recreation sites. Section 4(f) is related to Section 106 of the National Historic Preservation Act (NHPA) of 1966 in that Section 106 must also be considered during Section 4(f) evaluation. Section 4(f) takes into account only those cultural resources that are determined significant through the Section 106 process. Whereas Section 106 requires consideration be given to the effects of a Project on cultural resources, Section 4(f) requires that a special

effort be made to avoid the use of these significant historic resources. Section 4(f) does not apply to archeological sites where the transportation agency (Federal Transit Administration in this case), after consultation with the State Historic Preservation Office (SHPO) and the American Council on Historic Preservation determines that the archeological resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place. Under Section 4(f) all possible planning must be made to minimize harm to public parks, wildlife refuges and historic sites caused by the Project.

Section 4(f) compliance involves three distinct steps: 1) identifying Section 4(f) resources that could be impacted by the Project; 2) developing alternatives to avoid impacts to resources; and 3) the Section 4(f) evaluation. Significance is determined through consultation with the federal, state or local official who has jurisdiction over the property. After significance is determined, the way in which the alternatives affect 4(f) resources are analyzed, including whether the alternatives use Section 4(f) properties, whether they are prudent and feasible, and to what extent the alternatives harm the resource. If more than one alternative uses a Section 4(f) resource, the alternative which is prudent and feasible and that has the least overall impact on the resource—including all practicable mitigation measures—must be considered. The analysis must consider the effects of the impact after mitigation, the severity and location of the use, and the probability that the remainder of the property will continue to serve the same functions as before the Project. If and when a Section 4(f) property is used for a Project, documentation must be prepared that shows there would be unique problems or unusual factors involved by alternatives not using Section 4(f) resources or that the monetary costs and social, economic, and environmental impacts resulting from such alternatives would be substantial.

In 2005, the first substantive revision to Section 4(f) occurred under Section 6009(a) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The act was created to simplify the process and approval of Projects that have only de minimis, or minor, impacts on Section 4(f) properties. Under the new provisions, once the U.S. Department of Transportation determines that a transportation use of Section 4(f) property results in a de minimis impact, analysis of avoidance alternatives are not required and the Section 4(f) evaluation process is considered complete for that particular resource. “De minimis” impacts are those that would not adversely affect the activities, features and attributes of the Section 4(f) resource. Concurrence must be obtained from officials with jurisdiction over the park, recreation area, or wildlife or waterfowl refuge or from the applicable State Historic Preservation Office (SHPO) or tribal historic preservation officer.

The proposed Central Subway Project involves the following parkland/recreational and historic resources:

- Union Square (Park and parking garage)
- Willie "Woo Woo" Wong Playground (formerly Chinese Playground)
- Washington Square (Park)
- Historic resources (including individual properties and historic districts) adjacent to stations and tunnel portals along the Project alternative corridors

These park/recreation resources in relationship to the Project alternatives are shown in Figure 10-1 and are described in Chapter 4.3.3 of the SEIS/SEIR. Historic Properties within the Area of Potential Effect are described in Section 4.4.3 of the SEIS/SEIR.

This Section 4(f) evaluation includes a description of each Section 4(f) resource that may be impacted by the Central Subway alternatives. The description of each resource includes: information on the location and history, physical features and uses of the park/recreation property; impacts on the property from alternatives; alternatives evaluated to avoid using the resource; identification of measures to minimize harm to the resources; and coordination with the agency having jurisdiction over the resource.

The Section 4(f) report is a separate chapter of the SEIS/SEIR available for public review and comment. This report ~~will also be~~ has been reviewed by the San Francisco Planning Department-Major Environmental Analysis, the San Francisco Historic Preservation Officer, San Francisco Recreation and Parks Department, the State Historic Preservation Officer (SHPO), the Federal Transit Administration (FTA) ~~and the Department of Interior~~ before the Final SEIS/SEIR and the Record of Decision (ROD) ~~are~~ were issued on the Project.

1.2 PURPOSE AND NEED

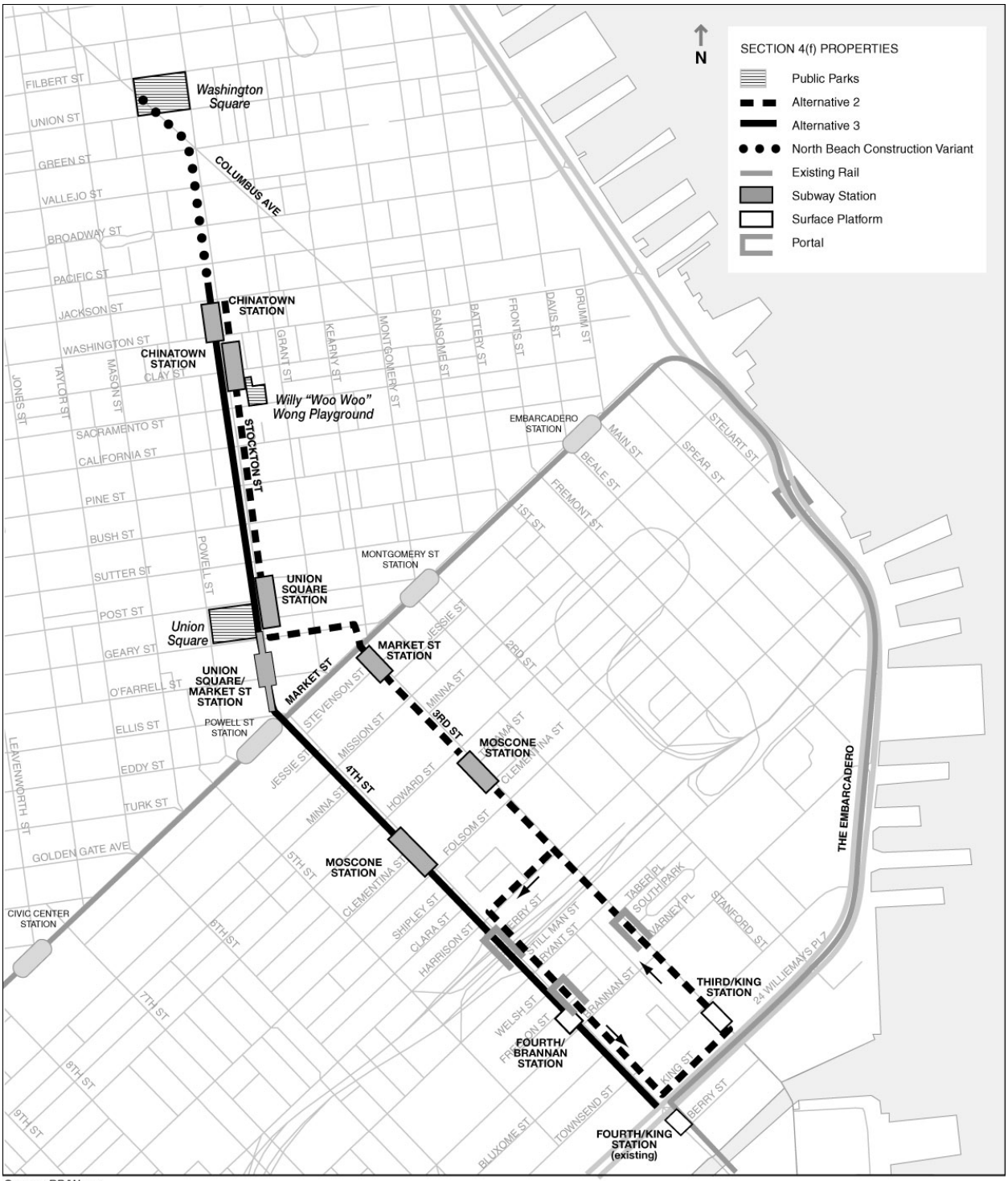
The Purpose and Need for the Central Subway Project is described in Section 1.0 of the SEIS/SEIR and is briefly summarized here:

The Federal Transit Administration makes major transit funding decisions through a process designed to aid in the selection of transit solutions for the region. Through this process, FTA identifies transit investments that:

- Achieve transit service and mobility goals while minimizing social, economic, and environmental impacts;
- Increase transit use and reduce travel time at a reasonable cost;

FIGURE 10-1

SECTION 4(f) PROPERTIES



Source: PB/Wong
Not to scale

- Link public transportation investments with land use planning and community revitalization;
- Have strong public and political support and compatibility with local, regional, and state planning initiatives; and
- Enhance and preserve the environment, particularly in terms of reduced air and noise pollution and congestion relief.

As the Project sponsor, the Municipal Transportation Agency's (MTA) objective for the proposed Central Subway Project is to address current and anticipated future (2030) mobility deficiencies in the transit system serving communities in the northeastern part of San Francisco and connecting to communities in the southeastern part of the City. The Project is intended to serve as a key infrastructure improvement to help ease congestion in the Project Corridor; improve transit service to the large transit dependent population that resides along the Corridor; serve mobility needs for the new jobs that are expected to be created in the Study Area; support economic and physical revitalization and improve Muni service reliability in the Project Corridor. Inadequate connectivity between corridor transit lines and other transit services, projected increases in 2030 transit and auto travel demand and transit travel times in the corridor, integration of transportation improvements with community revitalization, and air quality issues are other needs that the Project addresses.

Muni identified seven principal goals to guide the evaluation of the alternatives: 1) Improve Travel and Mobility; 2) Equity by Improved Access to Downtown and Chinatown; 3) Economic Revitalization; 4) Transit Supportive Land Use; 5) Environmental Protection; 6) Financial Feasibility and 7) Community Acceptance.

1.3 PROJECT DESCRIPTION

The proposed Central Subway Project is the second phase of the San Francisco Municipal Transportation Agency's (MTA) Third Street Light Rail Project. The San Francisco Planning Commission certified a joint Final FEIS/FEIR on December 3, 1998 and the FTA issued a Record of Decision (ROD) for the Project in 1999. The Supplemental EIS/EIR is evaluating potential changes to the Central Subway Project alignments since the FEIS/FEIR was certified including: the number and location of stations, the use of off-street station entries rather than station entries located within congested sidewalks, the provision for ventilation shafts, the use of a barrier type fare collection system, and the use of deep tunneling construction methods. The Phase 2 Central Subway Project would extend the existing T-Third line (Phase 1- Initial Operating Segment, IOS) from its current terminus at Fourth and King Streets to

Stockton and Clay or Washington Streets in Chinatown, with a possible tunnel extension for removing construction equipment under Stockton Street to Union Street and Columbus Avenue in North Beach.

The Draft Supplemental Environmental Impact Statement/Supplemental Environmental Impact Report (SEIS/SEIR) updates the FEIS/FEIR that was approved in 1998. The 1998 FEIS/FEIR analyzed the entire Third Street Light Rail Project, including the Phase 1 T-Third Initial Operating Segment (IOS) and the Phase 2 Central Subway Project. This Draft SEIS/SEIR updates the evaluation for the Phase 2 Central Subway Project Alternative 2 - Enhanced EIS/EIR Alignment, modified since its inclusion in the 1998 FEIS/FEIR and includes analysis of two additional build options – the Alternative 3 – Fourth/Stockton Alignment Option A Locally Preferred Alternative (LPA), and the Option B Modified LPA. Analysis of Alternative 1 - No Project/TSM (Transportation Systems Management) is also included in the SEIS/SEIR. Further discussion on the differences between the original and enhanced alternatives is described in Section 1.5.1.

The 1998 FEIS/FEIR did not include a separate Section 4(f) evaluation because it was determined that the original proposed alignment did not propose use of any Section 4(f) property as station entrance locations; but instead the original project proposed stations would have been accessed from public sidewalks and tunnel ventilation shafts would have been located in the street right-of-way. While the Project did include information on existing parkland and historic resources, these resources did not need to be evaluated as Section 4(f) properties.

Because City fire code requires that ventilation shafts be located adjacent to the tunnels and not at the pavement surface of streets and because locating stations and station access in the heavily used sidewalk space would be disruptive to pedestrian flows, changes were made to the station designs. Because these changes would potentially affect Section 4(f) resources, the Phase 2 Central Subway Project Draft SEIS/SEIR includes a Section 4(f) evaluation.

1.4 BUILD ALTERNATIVES

Build alternatives being evaluated as part of the Project include the following:

1.4.1 ALTERNATIVE 2 - ENHANCED EIS/EIR ALIGNMENT

The Alternative 2 - Enhanced EIS/EIR Alignment is the same alignment along Third, Fourth, Harrison, Kearny, Geary, and Stockton Streets, as presented in the 1998 FEIS/FEIR, with a shallow subway crossing at Market Street. The Enhanced FEIS/FEIR alignment would extend the T-Third line north of King Street on Third and Fourth Streets traveling north along King Street to Third Street where it would proceed in subway northbound under Market Street. The line would continue east under Geary Street and

then northbound under Stockton Street. The line would terminate in Chinatown at Stockton and Jackson Streets. The line would follow the same alignment southbound from Chinatown until the intersection of Third and Harrison Streets, where it would turn right on Harrison Street and left on Fourth Street before continuing to the King Street Station along Fourth Street.

The Enhanced EIS/EIR Alignment incorporates design changes to the 1998 FEIS/FEIR alternative to meet current fire codes and new Muni fare collection policy. To meet current fire codes, above-ground emergency ventilation shafts would be located in off-street right-of-way locations rather than the in-street ventilation system as originally planned. Station entries have been moved off crowded sidewalks to private or public property and combined wherever possible with vent shafts to address public concerns about pedestrian access and space constraints. The Enhanced EIS/EIR Alternative includes one surface platform station at King Street across from the Giants Ballpark and four subway stations at Moscone Center, Market Street, Union Square and Chinatown.

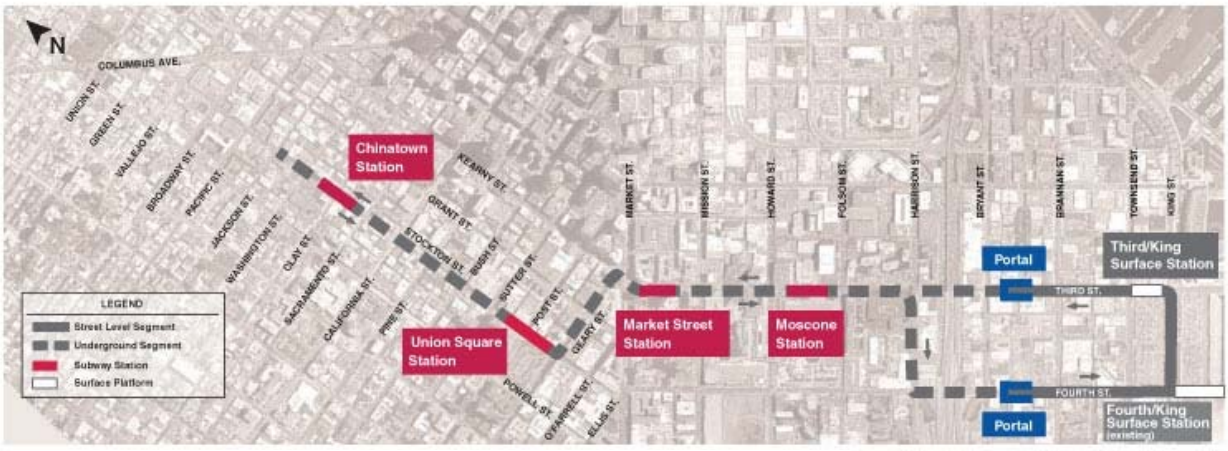
The Moscone Station would be located under Third Street with the station entrance located in the Tehama Pedestrian Way and vent shafts located in the northeast corner of the Moscone Garage. At the Union Square Station, two ventilation shafts would be integrated into the far eastern terraced edge of the Union Square plaza, and the main subway station entry would be located on the east side of the plaza in the middle of a stairway near an existing café. Two elevators would be located north of the station entrance and would be accessible from the sidewalk on Stockton Street. In Chinatown, the station would be located beneath Stockton Street between Sacramento and Washington Streets. Emergency ventilation shafts and the station entrance and elevators would be located between Clay and Sacramento Streets on the east side of Stockton Street on private property that Muni would acquire. The main station entry would be from Stockton Street; however, a second optional entry could be located on the east side of the station located adjacent to Hang Ah Alley, west of Willie “Woo Woo” Wong Playground; both properties are under the jurisdiction of the San Francisco Recreation and Parks Department (see Figure 10-2 for the Alternatives 2, 3A and 3B alignments).

1.4.2 ALTERNATIVE 3 – FOURTH/STOCKTON ALIGNMENT OPTION A (LOCALLY PREFERRED ALTERNATIVE-LPA)

Alternative 3 Option A would follow the same alignment beginning at Fourth Street and King Streets, continuing on and under Fourth Street (but not Third Street) and under Market Street in a deep tunnel, and continuing under Stockton Street before terminating in Chinatown. In Alternative 3A, the subway portal would be located on Fourth Street between Townsend and Brannan Streets. The trains would operate in semi-exclusive right-of-way for a block and a half south of the portal. This option would include three

FIGURE 10-2

CENTRAL SUBWAY BUILD ALTERNATIVES



ALTERNATIVE 2: Enhanced EIS/EIR Alignment

ALTERNATIVE 3 (Option A LPA): Fourth/Stockton Alignment

ALTERNATIVE 3 (Option B Modified LPA): Fourth/Stockton Alignment

Source: PB/Wong
Not to scale

subway stations: a Moscone Station on Fourth Street between Folsom and Howard Streets, a combined Union Square/Market Street Station on Stockton Street between Market and Geary Streets, and a Chinatown Station on Stockton Street between Sacramento and Clay Streets (same location as Alternative 2 above). The Moscone Station would be located under Fourth Street (not Third Street) with stairs and elevators in a property purchased by Muni on the west side of the street near Clementina Street. Union Square/Market Street Station, would be the same as described above for Alternative 2.

The ventilation shafts for Alternative 3A would be integrated into the Stockton Street side of the Union Square plaza terrace, which would also accommodate the main station entrance. As with Alternative 2, the Chinatown station ventilation shafts would be combined with the station entrance and located on private property, along the east side of Stockton Street, that Muni would acquire. This station location would be west of the Willie "Woo Woo" Wong Playground and Hang Ah/ Pagoda Alleys (refer to Figure 10-2 for the Fourth/Stockton Alternative 3A). The Alternative 3A also includes the provision for the North Beach Tunnel Construction Variant described below in Section 1.4.4 that would have a temporary construction portal for extracting the TBM from the tunnel adjacent to Washington Square park, in the center lanes of Columbus Avenue.

1.4.3 ALTERNATIVE 3 – FOURTH/STOCKTON ALIGNMENT OPTION B (MODIFIED LPA)

Generally this alignment would be the same as Alternative 3A described above; however, for park properties there are some substantial differences. In the Fourth/Stockton Alignment Option B, the subway portal would be located under the I-80 Freeway on Fourth Street between Bryant and Harrison Streets (refer to Figure 10-2). Three subway stations would be included in the alternative: a Moscone Station under Fourth Street between Folsom and Howard Streets; a combined Union Square/Market Station under Stockton Street and centered at O'Farrell Street, with Union Square and Market Street subsurface pedestrian walkways and street access; and a Chinatown Station beneath Stockton between Clay and Jackson Streets. A surface station would be located on Fourth Street, north of Brannan, and would be reconfigured to accommodate rail with two-way traffic between Bryant and Townsend Streets. South of the portal, the northbound and southbound trains could operate on the surface in either semi-exclusive or mixed-flow traffic for three and a half blocks. The Moscone Station would be the same as that described above for Alternative 3A, but the Union Square/Market Street Station would be different than the Fourth/Stockton Alignment Option A above. The Union Square station entrance would be integrated into the southeast corner of the terraced plaza of Union Square park, accessible from Geary Street rather than from Stockton Street, and the elevators to the concourse level of the station would be on the eastern edge of the plaza, accessible via Stockton Street. Ventilation shafts for Alternative 3B would be integrated into the Ellis/O'Farrell Garage rather then along the eastern edge of Union Square for

Alternatives 2 and 3A (refer to Figure 10-2 for the Fourth/Stockton Alignment Option B alignment). For the Chinatown Station, the ventilation shafts would be combined with the station entrance on private property that would be acquired by Muni, on the west side of Stockton Street at Washington Street. This station would be on a different parcel than that used for the Chinatown subway station entrance for Alternatives 2 and 3A, and would not be near Willie "Woo Woo" Wong Playground or Hang Ah Alley. The Fourth/Stockton Alignment Option B also includes the provision for the North Beach Tunnel Construction Variant with a temporary construction portal at Washington Square park in the middle of Columbus Avenue, the same as described for Alternative 3A.

1.4.4 NORTH BEACH TUNNEL CONSTRUCTION VARIANT

The North Beach Tunnel Construction Variant would extend the Central Subway tunnel approximately 2,000 feet north of the Chinatown Station. This construction variant would be part of both Alternatives 3A and 3B. The tunnel would extend north under Stockton Street and would terminate under Columbus Avenue between Union and Filbert Streets across from Washington Square park, where a temporary construction shaft would be built in the center two lanes of Columbus Avenue. The tunnel extension and shaft would allow the extraction of the Tunnel Boring Machines (TBMs) and could be used to deliver finish materials to the Chinatown Station site. The shaft would be about 35 to 60 feet wide by 30 feet long and would temporarily occupy two traffic lanes. Following excavation, one half of the footprint would be decked over permanently. The remainder would be temporarily decked so the cover could be removed for construction activities. After TBM extraction and material delivery, the shaft would be permanently decked over, leaving no surface impacts.

Shaft construction would be expected to last about six months. If the shaft was used for materials deliveries, those would be done on an irregular basis over a two to three year period. Between deliveries the shaft would be decked over for use as a roadway. Delivery of construction materials could include track and systems equipment. At the conclusion of the construction period, the TBM would be extracted during the course of a week and the shaft would be decked over permanently.

1.5 OTHER PROJECT ALTERNATIVES

1.5.1 ALTERNATIVE 1 - NO PROJECT/TSM

The No Project/TSM Alternative would not involve the construction of a Central Subway light rail line through the proposed Project Corridor but would include the following elements:

- Programmed Projects in the approved and financially constrained Regional Transportation Plan (RTP);

- Operation of the T-Third line (Third Street Light Rail IOS) which opened in April 2007, as an extension of the Castro Shuttle to Visitacion Valley;
- Extension of the N-Judah from the Caltrain Terminal at King and Fourth Streets to a turnaround loop at 18th, Illinois, and 19th Streets, to provide additional service to the University of California San Francisco and Mission Bay development;
- Extension of the 45-Union/Stockton trolley bus service from the Caltrain Terminal through Mission Bay and Potrero Hill to a new terminus at Third and 20th Streets and;
- In conjunction with the 45-Union/Stockton extension through Mission Bay, the rerouting of the 22-Fillmore trolley bus line along 16th, Third, and Mission Rock Streets to a terminus in Mission Bay.

The No Project/TSM Alternative is used for comparison to determine the impacts of the build alternatives in the Supplemental EIS/EIR, but it is not analyzed as part of the Section 4(f) evaluation because it would not affect Section 4(f) properties.

2.0 SECTION 4(f) RESOURCES

This section describes the Section 4(f) resources that would potentially be affected by the Project Alternatives. All Section 4(f) resources are grouped as either park and recreation resources or significant historic resources and are described from the southern end of the Project Corridor to the northern end. The Central Subway Area of Potential Effect (APE) boundaries were determined through evaluation of the Project Corridor during the Section 106 process. The Project APE boundaries generally follow the proposed Alternatives alignments and extend approximately one parcel away from the alignment in each direction except for in areas where there are no buildings; in those cases, the boundaries generally extend one block-length away from the alignment. The APE around station entries and tunnel portals included adjacent properties and a second row of buildings. The APE maps and detailed descriptions of significant historic architectural properties are incorporated by reference from Sections 4.4 and 5.4 of the Draft SEIR/SEIS and from the separate technical report "Historic Architectural Evaluation Report for the Central Subway" by Garcia and Associates, April 2007. The APE maps are included as Appendix C of the SEIS/SEIR.

2.1 PARK/RECREATIONAL RESOURCES

2.1.1 UNION SQUARE

Union Square is a 2.6-acre park located between Stockton, Powell, Post, and Geary Streets (see Figure 10-3). The park is an important open space and public plaza for residents and San Francisco visitors. The Union Square neighborhood is one of the main cultural and retail centers of the City and Union Square plaza serves as the focal point for the district. The park is under the San Francisco Recreation and Park Department's jurisdiction.

Union Square park serves as the heart of the Kearny-Market-Mason-Sutter Conservation District, and the park is a designated California State Landmark No. 623 (CHL 1996: 220). Union Square has been determined eligible for the National Register of Historic Places and has been proposed for designation as a San Francisco Landmark, but it has not been listed in either the California Register of Historical Resources or the local register. However, the San Francisco *Planning Code* describes the park as "an integral part of the District that ranks with the finest open spaces in the country" and explains how the Kearny-Market-Mason-Sutter Conservation District "is further defined by the location of Union Square in its heart. This square is, in many ways, the premiere open space in the City, as well as a primary public forum" (Article 11, Appendix E, Section 5).

The park dates from 1847. In 1850, Colonel John Geary transferred the title of the land to the City "with the stipulation it be held in perpetuity for the park purposes" (Hupman 40). The park was named during the Civil War for pro-Union rallies held there. In the middle-to-late 1870s, it became a formally landscaped City park. Prior to that, the park was used for a variety of purposes ranging from industrial fairs and musical events to public meetings. Buildings across from the park on the east side of Stockton Street were burned down in 1906 after the earthquake, and by 1913 the street was lined with commercial structures (Hupman 40).

According to the San Francisco Beautiful, Landmarks Preservation Advisory Board Nomination Form quoted in the Planning Department's Negative Declaration prepared for the Union Square Park Project in 1998, "the Square is significant because of its relationship to surrounding buildings and the urban setting, its history as one of San Francisco's first public squares, and the successful integration of an underground garage, which was the first of its kind in the world."[1]

[1] Copies of the primary-source materials are available for review in the Project case file (File No. 98.257E) Union Square Improvement Project, 1998, at the San Francisco Planning Department.

FIGURE 10-3

UNION SQUARE LOOKING WEST FROM MAIDEN LANE

Source: PB/Wong, 2007

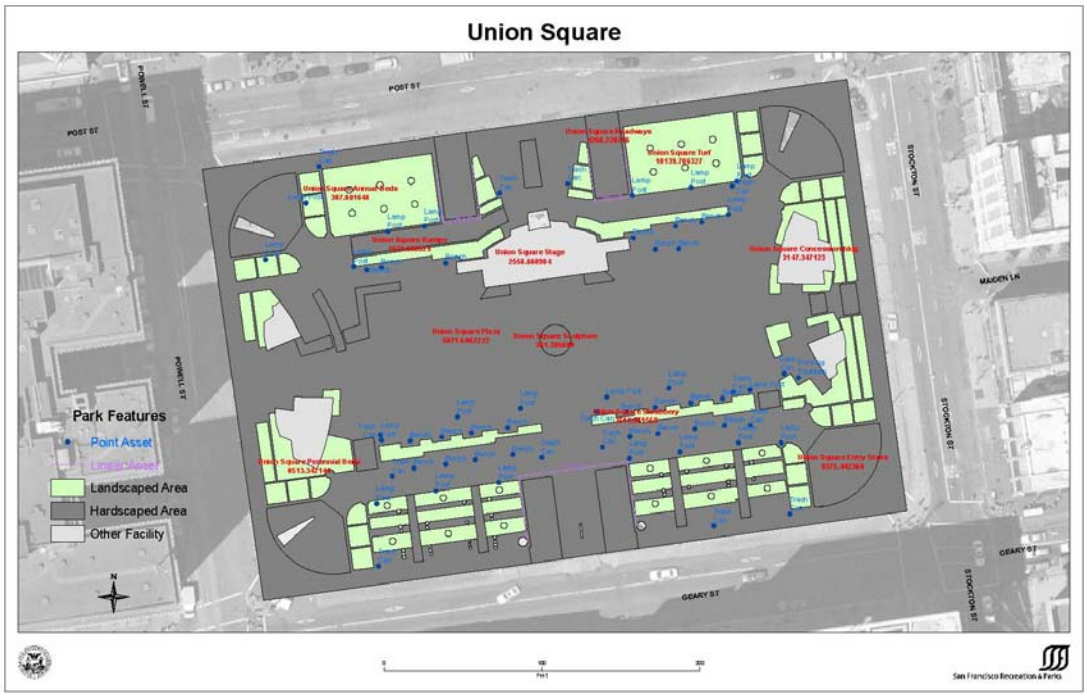
The underground garage was built in 1938 by the Union Square Garage Commission which was formed to build an underground garage at the site. Today, Union Square is elevated above street level to cover a 985-vehicle underground parking garage administered by the MTA.

In 2002, Union Square was renovated with private and public funds. Royston Hanamoto Alley and Abey was one of several firms that developed the Union Square Master Plan. Patri Merker and Michael Fotheringham were the two firms that won the international design competition and completed the park's redesign and renovation (Nelson 2006). The redesign transformed the area from an open grassy landscape to a completely redesigned hard-surface plaza with landscaped terraces above the historic underground parking garage (see Figure 10-4). The plaza is elevated above surface level at certain locations because of the parking garage and natural topography. Union Square contains terraced plazas and sitting areas as well as an area for staging outdoor exhibits and performances. The park has a fountain, memorial statue, a café with outdoor seating and a theater ticket office (see Figure 10-5).

The park is accessible from all corners and there are mid-block entries as well. The plaza is fully ADA accessible. Events on the plaza include occasional musical and dance performances. During the holiday season, a Christmas tree is displayed in the plaza. The Union Square Association estimates that

FIGURE 10-4

UNION SQUARE PARK SCHEMATIC PLAN



Source: San Francisco Recreation and Parks

FIGURE 10-5

UNION SQUARE SEATING AREA FOR OUTDOOR CAFÉ, LOOKING NORTH

Source: PB/Wong, 2007

approximately five events, including art shows and filming, occur at the park per week.[2] According to the Recreation and Parks Permits and Reservations Department records, approximately 79 permitted events were held at Union Square in 2006 (see Table 10-1).[3]

TABLE 10-1

PERMITTED EVENTS AT PROJECT AREA PARKS IN 2006

Location	Commercial Events	Non-Commercial Events	Art Shows	Filming
Union Square	25	54	103	10
Washington Square	1	10	27	4
Willie "Woo Woo" Wong Playground	0	4	-	-
(Source: San Francisco Recreation and Parks Department, 2007)				

Park usage figures for Union Square (or any of the City parks) are not maintained by any official agency or organization. However, the MJM Management Group has developed park usage estimates for Union Square.[4] According to MJM, the park receives 10,000 to 15,000 visitors per day in the summer months. In the winter months, the estimate is 8,000 to 10,000 visitors per day. MJM claims these visitor estimates do not include special events at the park, which, if added, would make the attendance figures higher. For example, the Christmas tree-lighting event at the park usually includes nearly 6,000 people.

2.1.2 WILLIE "WOO WOO" WONG PLAYGROUND

Willie "Woo Woo" Wong Playground (formerly "Chinese Playground") is a publicly owned park under the jurisdiction of the San Francisco Recreation and Parks Department. The park is one of the few open spaces in the highly developed, dense urban fabric of the Chinatown neighborhood and is the only open space in the Project Corridor on Stockton Street north of Union Square. The park has cultural significance, which is reflected in its namesake, Willie "Woo Woo" Wong, who was a local Chinese-American sports legend.

The park is located at 850 Sacramento Street in Chinatown at the intersection of Waverly and Sacramento Streets, east of a row of buildings along Stockton Street. The 35,724 square foot multi-level park was built in 1927 and includes a clubhouse with a recreation/meeting area with ping pong tables, a kitchen, and an office, as well as basketball, tennis and volleyball courts, a multi-use paved playfield and

[2] Retrieved December 7, 2006 from http://www.unionsquaresf.net. The Union Square Association is a private association of local businesses and merchants who plan and promote events in Union Square.

[3] Examples of recent permitted events at the three parks include a DVD Tour Mobile, a Star Wars promotion, a private conference reception, a Leukemia Society Walk-a-Thon, rallies for the AIDS Foundation, Falun Gong, and A.N.S.W.E.R. anti-war protesters, a San Francisco Women's Nike Marathon Expo, the City of Hope 5K Walk and a Cable Car Bell Ringing Contest.

[4] The MJM Management group is a private company that oversees operation and events for Union Square Park.

children's and tots' play areas (see Figure 10-6). According to a plaque on the wall of Hang Ah Alley (see Figure 10-7), the park's club house was demolished in 1977 and new facilities and the club house were constructed in 1980 under the direction of the Chinatown Better Parks and Recreation Committee (see Figure 10-8). Pagoda Alley is under the jurisdiction of the San Francisco Department of Public Works and serves pedestrian access to the businesses on the alley. Hang Ah Alley is under the jurisdiction of the San Francisco Recreation and Parks Department and provides pedestrian access to Willie "Woo Woo" Wong playground.

2.1.3 WASHINGTON SQUARE

Washington Square park is a 2.26 acre publicly-owned park that was built in 1900. The park is under the Recreation and Park Department's jurisdiction.

Washington Square is located off Columbus Avenue and is bordered by Stockton, Filbert and Union Streets in the North Beach neighborhood of the City. Strolling paths, small gathering areas, grassy open space, public seating, historic sculptures, restrooms and a children's playground are features of the park. Washington Square park is one of San Francisco's three original parks and is located in a place that has served as a village green and civic space since 1850. The park has a number of mature trees that lend to the historic character of the park landscape. The park was designated as a local landmark in 1999, requiring it to undergo specific reviews for any future potential changes to the park. The square was designed by William Eddy (see Figure 10-9).

Across from Washington Square park is the small, triangular Marini Plaza. Marini Plaza was originally part of Washington Square park, but was severed from it in the 1870s after the construction of Columbus Avenue which cut through the southwest corner of Washington Square. The 2,730 square foot Marini Plaza is bounded by Columbus Avenue and Union and Powell Streets. Since 1905 it has served as a visual garden and break from the urban fabric, featuring trees, sculpture and a pond (San Francisco 2005).

Between 2003 and 2004, renovations were made to Washington Square park where root expansion had made certain paths uneven and unstable. The pathways were repaved using pervious concrete, and the southeast corner entrance was reconfigured to protect established Stone Pine trees (San Francisco 2005).

The park is used by local Tai Chi practitioners on mornings, and all-day and evening by local residents for activities including sitting in the sun, playing catch and walking their dogs. The park has a children's play area that includes swings and climbing bars, and a restroom on the east side along Columbus Avenue. There are several mature trees in the park, as well as paved pathways and benches.

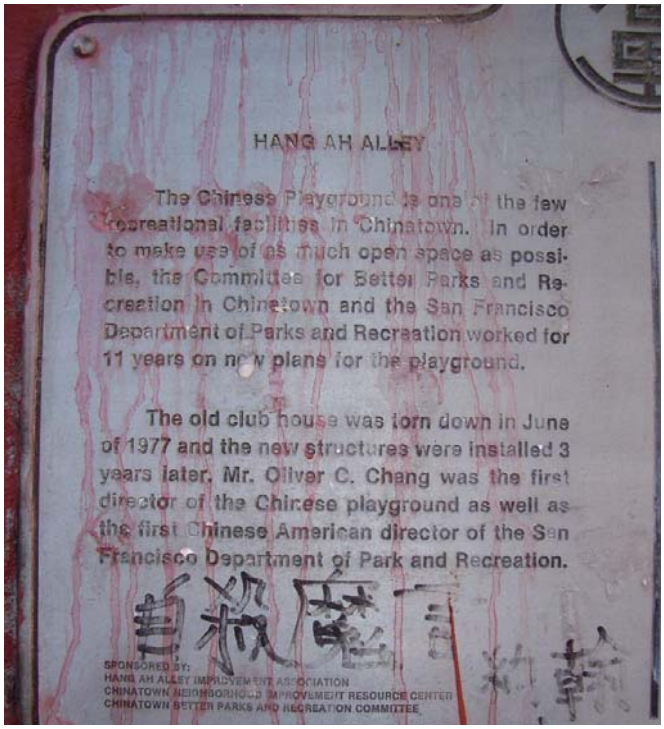
FIGURE 10-6

WILLIE "WOO WOO" WONG PLAYGROUND LOOKING NORTH

Source: PB/Wong, 2007

FIGURE 10-7

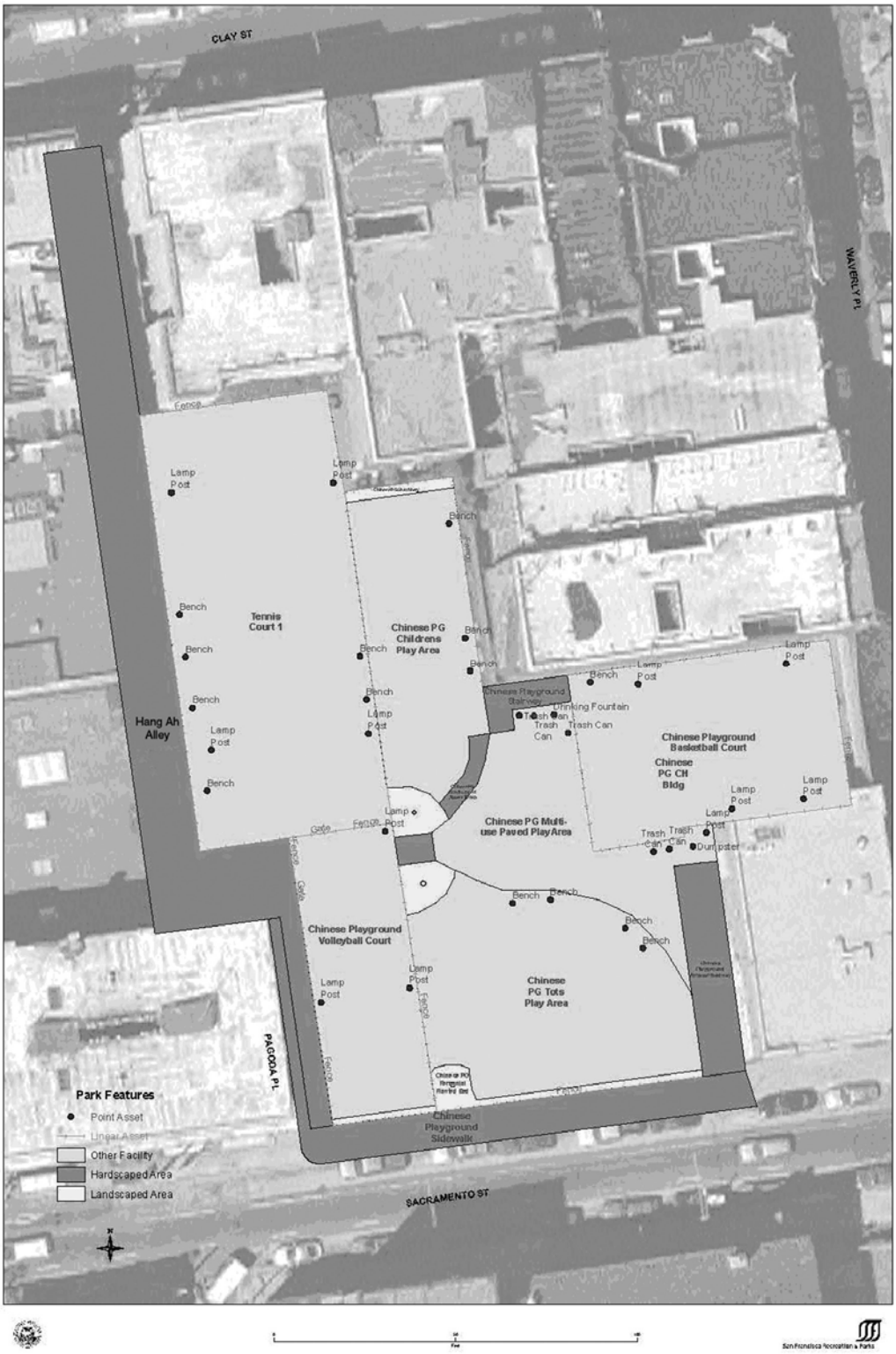
PLAQUE ON THE WALL OF PAGODA/HANG AH ALLEY



Source: PB/Wong, 2007

FIGURE 10-8

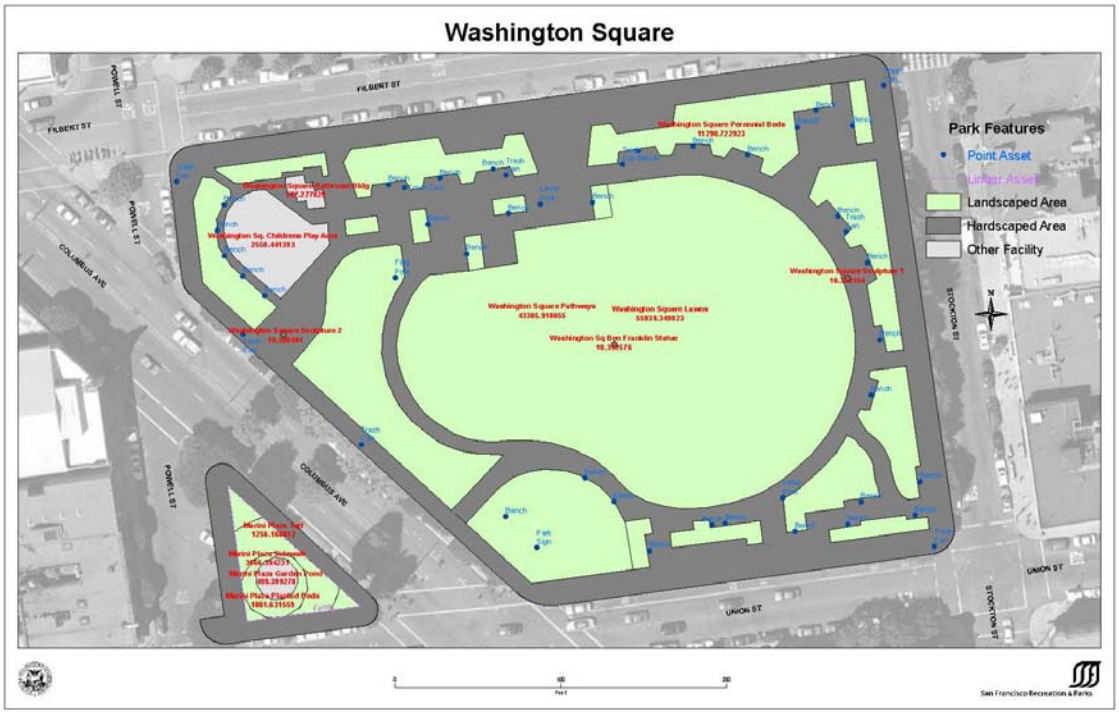
WILLIE "WOO WOO" WONG PLAYGROUND SCHEMATIC PLAN



Source: San Francisco Recreation and Parks

FIGURE 10-9

WASHINGTON SQUARE PARK SCHEMATIC PLAN



Source: San Francisco Recreation and Parks

2.2 HISTORIC RESOURCES

Section 4.4.3 of the SEIS/SEIR describes the historic resources identified in the Area of Potential Effect (APE) for the Central Subway Project and is incorporated by reference into this Section 4(f) Report. The following Table 10-2 summarizes the Historic Districts in the APE by Alternative.

There are eight existing or proposed historic districts of local or national importance and one local conservation district that would be crossed by the Central Subway alternatives (see Table 10-2). A historic district is a group of buildings that share a common history, visual character-defining features or development that meet the criteria for listing on the National Register of Historic Places. Historic districts include a cohesive collection of buildings that represent a particular period or architectural style that serves to characterize a neighborhood. Locally established conservation districts are groupings of buildings based on their architectural quality and contribution to the built urban environment.

There are 376 properties located within the APE, including buildings, structures (e.g., Lotta's Fountain), and linear features (e.g., street lights, Stockton Tunnel). Of the 376 properties, 161 of the properties and

TABLE 10-2

HISTORIC DISTRICTS IN THE APE CROSSED BY ALTERNATIVE ALIGNMENTS

District	Enhanced EIS/EIR Alignment	Fourth/Stockton Alternative 3A	Fourth/Stockton Alternative 3B	Reference
South End Historic District	X			San Francisco Planning Code, Article 10, 1990
Rincon Point/South Beach Industrial District	X			CRHR 1998
South Park Historic District	X			Newly Proposed by Garcia and Associates
Kearny-Market-Mason-Sutter Conservation District	X	X	X	San Francisco *Planning Code*, Section 1103.1 of Article 11
Lower Nob Hill Apartment Hotel District	X	X	X	NRHP listed 1991
Chinatown Historic District	X	X	X	CRHR, 1998
North Beach Historic District[1]		X	X	Bloomfield 1982
Washington Square Historic District[1]		X	X	Bloomfield 1982
Powell Street Shops Historic District		X	X	Bloomfield 1982

[1] Proposed districts; not presently on any city, state, or federal lists.

eight historic districts were included in the Study Area previously evaluated by Corbett et al. in 1997 for the Central Subway segment of the Third Street Light Rail Project.

The Central Subway Historic Architectural Evaluation Report (as summarized in this SEIS/SEIR) has updated the findings of the Corbett et al. (1997) study by conducting evaluations on those additional properties included in the 1997 study that have become historic (45 years of age) in the intervening years ("newly historic") and eliminating from further study those previously evaluated properties that were demolished between 1997 and 2006. It was also necessary to reevaluate properties in close proximity to the proposed station locations that were previously assigned a NRHP code of 4S (might become eligible for a separate listing in the National Register when more historical or architectural research is performed on the property) or 4D (might become eligible as contributor to a fully documented district when more historical or architectural research is performed on the district), so an explicit determination could be made about eligibility. As a result, 218 additional properties have been identified and categorized within the APE (see Table 10-3).

TABLE 10-3

HISTORIC ARCHITECTURAL RESOURCES WITHIN THE APE IN ADDITION TO THOSE EVALUATED IN CORBETT ET AL. (1997)

Item No.	NRHP Evaluation	Results
1	Properties previously listed on the NRHP	49
2	Properties previously determined to be ineligible	10
3	Properties not evaluated (less than 45 years of age, moved, altered, or other)	51
4	Properties demolished and replaced after 1997	4
5	"Newly historic" properties determined to be eligible in this study	42
6	"Newly historic" properties determined to be ineligible	62
	Total	**218**

Source: Garcia and Associates, February 2007.

The remaining 218 properties in the APE of the Central Subway Project are the main focus of the SEIS/SEIR and this Section 4(f) Report. A review of the *Directory of Historic Properties in the Historic Property Data File for San Francisco* (OHP 2006) revealed 59 properties out of the 218 have been evaluated prior to the start of this SEIS/SEIR. Of those, 49 properties were evaluated as eligible for the NRHP; nine properties were evaluated as ineligible for the NRHP; and one property was determined to be eligible for local listing only.

Another 55 properties have been eliminated from consideration because they have been identified as being less than 45 years of age and do not appear to possess exceptional significance to qualify them as eligible for the NRHP/CRHR. These include 42 buildings and nine vacant parcels or parking lots that did not require evaluation and another four properties that have been demolished since the previous study. After eliminating these 114 properties from further review; 104 properties of the 218 properties required further evaluation for historic significance for the SEIS/SEIR. It was determined that 42 of the properties appear eligible for listing on the NRHP and the remaining 62 properties appear to be ineligible. Of particular relevance to this Section 4(f) evaluation are the two historic districts (KMMS and Chinatown Districts) that include the character-defining features of Union Square (in KMMS) and the building at 814-828 Stockton Street and the building at 933-949 Stockton Street (Chinatown) proposed as alternative station locations for the Central Subway Project.

3.0 IMPACTS TO SECTION 4(f) RESOURCES

Section 4(f) parks affected by the Central Subway Project are briefly summarized in Table 10-4.

TABLE 10-4

SECTION 4(f) PARK PROPERTIES

Property	Type	Size	Ownership	Function/Activities
Union Square	Park/plaza	2.6 acres (112,256 square feet)	City (under Recreation and Parks jurisdiction)	Open space; public space; a primary public forum; seating areas and outdoor exhibits and performances, café with outdoor seating, ticket office (theater and tourist attractions)
Willie "Woo Woo" Wong Playground and Hang Ah Alley	Park	35,724 square feet	City (under Recreation and Parks jurisdiction)	Public playground in highly urbanized area; clubhouse; basketball, tennis and volleyball courts; playfield; children and tots' areas
Washington Square	Park	2.26 acres (95,762 square feet)	City (under Recreation and Parks jurisdiction)	Village green and civic plaza; strolling paths; gathering areas; greensward; seating; restrooms; children's playground
Source: PB/Wong, 2007				

Union Square is the only Section 4(f) resource proposed for actual physical 'take' by the Project for a stairway/escalator and elevator entry to the subway station below Stockton Street and for ventilation shafts. The other two parks (Willie "Woo Woo" Wong and Washington Square) would have potential indirect "constructive use" because of adjacent construction-related activities that would last 5.5 to 6 years. Potential Project impacts to Section 4(f) resources are described in this section.

Of the historic properties evaluated during both phases of work, 36 properties in the previous study and 34 identified during the current study were determined to have some potential for temporary, construction-related indirect impacts from vibration or visual impacts from the presence of construction equipment within the Historic District under either the Enhanced EIR/EIS Alternative 2, Alternative 3A, or Alternative 3B alignments. Mitigation measures have been described to reduce potential vibration effects to less-than-significant or minor adverse effects. Some of these properties are within the listed or proposed historic districts and others are located outside established district boundaries. The station alternatives in Chinatown would have direct impacts to the Chinatown Historic District related to the demolition of the character-defining building at either 814-818 Stockton Street or at 935-949 Stockton Street. The removal of either of these buildings would result in a visual break in an otherwise contiguous

block of historic buildings that would adversely affect the District. (There are 371 contributory buildings in the Chinatown Historic District.)

3.1 UNION SQUARE

3.1.1 ALTERNATIVE 2 - CONSTRUCTION IMPACTS

Construction for Alternative 2 would be expected to last an estimated 66 months (5.5 years) and work on the Union Square Station would last for about 36 months. (See also, Section 6.0 Central Subway Construction Methods in the SEIS/SEIR.) During that time, access to Union Square plaza and park uses would be maintained. Access to the Union Square parking garage on Geary Street would not be obstructed. Pedestrian access along the west sidewalk on Stockton Street between Geary and Post Street would be closed for the entire duration of the station construction. Pedestrian access along the other three sides of the plaza would not be affected.

Noise, dust, and vibration would temporarily affect the recreational enjoyment of the eastern portion of Union Square until the initial station excavation is decked over and construction activities can occur below the surface. It would take approximately two months for the ~~station to be excavated and~~ excavation to be ~~-~~decked over.

The decked cut and cover excavation of the subway station at Union Square would require the closure of two lanes (out of four) on Stockton Street for the duration of station construction, approximately ~~66~~36 months. Spoils generated from excavation of Union Square Station and the guideway tunnels north of Union Square would be hauled to surface streets for off-site disposal. Overall construction at Union Square for Alternative 2 is ~~66~~48 months. No portion of the park would be used as a construction staging area.

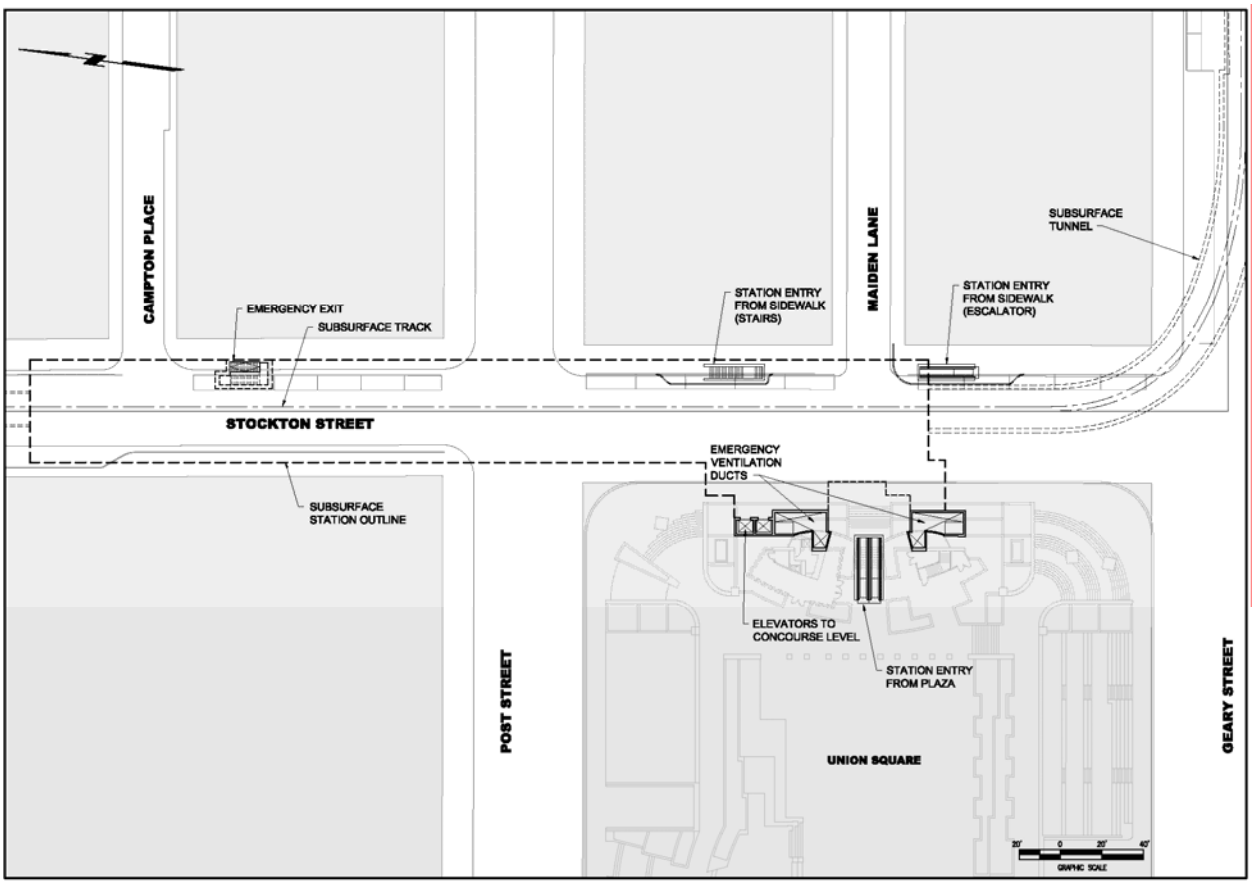
3.1.2 ALTERNATIVE 2 – OPERATION IMPACTS

Approximately 1,517 square feet of Union Square (1.35 percent of the total plaza area) would require a long-term encroachment permit from the Department of Recreation and Parks to MTA for the station entrance escalator, elevators and emergency ventilation shafts under Alternative 2 (see Figure 10-10). The station entrance would be located in the center of the stairway to the upper plaza, along the eastern edge of the square, near an outdoor seating area for a café. The café and outdoor seating would remain in operation.

The stairway provides access to the plaza from Stockton Street. Two ventilation shafts would be integrated into the terraced planters on the eastern side of the plaza south of the elevators. The ventilation shafts would be approximately 11 feet high and would use approximately 763 square feet of the plaza

FIGURE 10-10

PLAN DRAWING OF UNION SQUARE STATION FOR PROPOSED ALTERNATIVE 2



Source: PB Wong
Not to Scale

terraced edge on the east side of the park. A reduction in both hard-surface and landscaped planters would occur. Elevators would be located to the northeast of the station entrance escalator off Stockton Street. The elevators would replace approximately 303 square feet of the landscaped terrace on the eastern side of the plaza.

The mid-block entrance stairs on the eastern side of the plaza would remain operational and accessible despite the placement of the station entrance escalator and stairs (451 square feet) at that location. The other park entrances would remain accessible as well. The station would displace 29 (of the 985) parking spaces in the Union Square garage below the plaza. MTA manages the Union Square garage on behalf of the Recreation and Parks Department and the revenue the City receives from parking fees is returned to the Recreation and Parks Department and is partially used to repay the revenue bonds for the Union Square renovation Project. Loss of revenue would not be expected to effect the debt service payment on the revenue bond as revenues exceed the debt service obligation. Transit access to Union Square would

be improved with the subway station, and increased foot traffic on the Stockton Street sidewalks on the east side of Union Square would be likely due to the introduction of the new subway station.

Visual impacts are discussed in Section 5.5 of the SEIS/SEIR and it was concluded that the proposed changes to Union Square would not significantly detract from the dominant design features of the park or surrounding landscape or result in adverse visual impacts to the park. Nor would the proposed physical changes to the park substantially change the character-defining features of the KMMS Historic District. Union Square park was substantially changed in 1998 with the renovation of the Plaza. Because of the location and scale of the proposed elevators and ventilation shafts in the plaza terraces on the east side of the park, there would be no shadow impacts from Central Subway structures on Union Square.

Project-related changes to Union Square would not cause an adverse change to the historic integrity of Union Square or to the Kearny-Market-Mason-Sutter Conservation District, particularly since Union Square's significance is derived more from its function as an open space and public square rather than its design or any specific physical attributes (San Francisco 1998). The open space and recreational function would remain in tact and would not be significantly affected by the station entrance or the additional foot traffic induced by its location.

Despite the use of a limited portion (about 1.35 percent) of park property for the Central Subway station facilities, the impacts on the park are considered de minimis under Section 4(f). ~~The San Francisco Parks and Recreation Department will need to concur with this finding.~~

3.1.3 ALTERNATIVE 3 OPTION A - CONSTRUCTION IMPACTS

Temporary construction impacts to Union Square plaza would occur under Alternative 3 Option A the same as those discussed above for Alternative 2, however some differences related to the underground station location and construction methods would further reduce impacts and duration of construction.

Noise, dust, and vibration may temporarily affect the use of the eastern portion of the park until the excavation is decked over and construction activities occur below the surface. It is expected that it would take approximately two months for the excavation to be decked over. During that time, construction impacts would temporarily interfere with the use, enjoyment and recreational function of Union Square.

Access to Union Square under Alternative 3 Option A would be affected in several ways:

- The sidewalk on the western side of Stockton Street along the Square would be closed for the duration of station construction (~~66~~54 months).

- Pedestrian access along both sidewalks on Stockton Street between Geary Boulevard and Market Street would require protective cover for about 18 months.
- The cut and cover sections of Union Square/Market Street Station would require two lanes of Stockton Street to be closed to traffic for the duration of construction.
- A 7,600 square foot staging area for the Union Square station would be required on Stockton Street adjacent to Union Square.
- Construction of the North and South Cavern Access Shafts would require the temporary use of at least two lanes of Stockton Street to accommodate a crane and trucks for muck hauling.
- After construction of the shaft, intermittent use of Stockton Street would be needed for removal of the microtunneling machines.

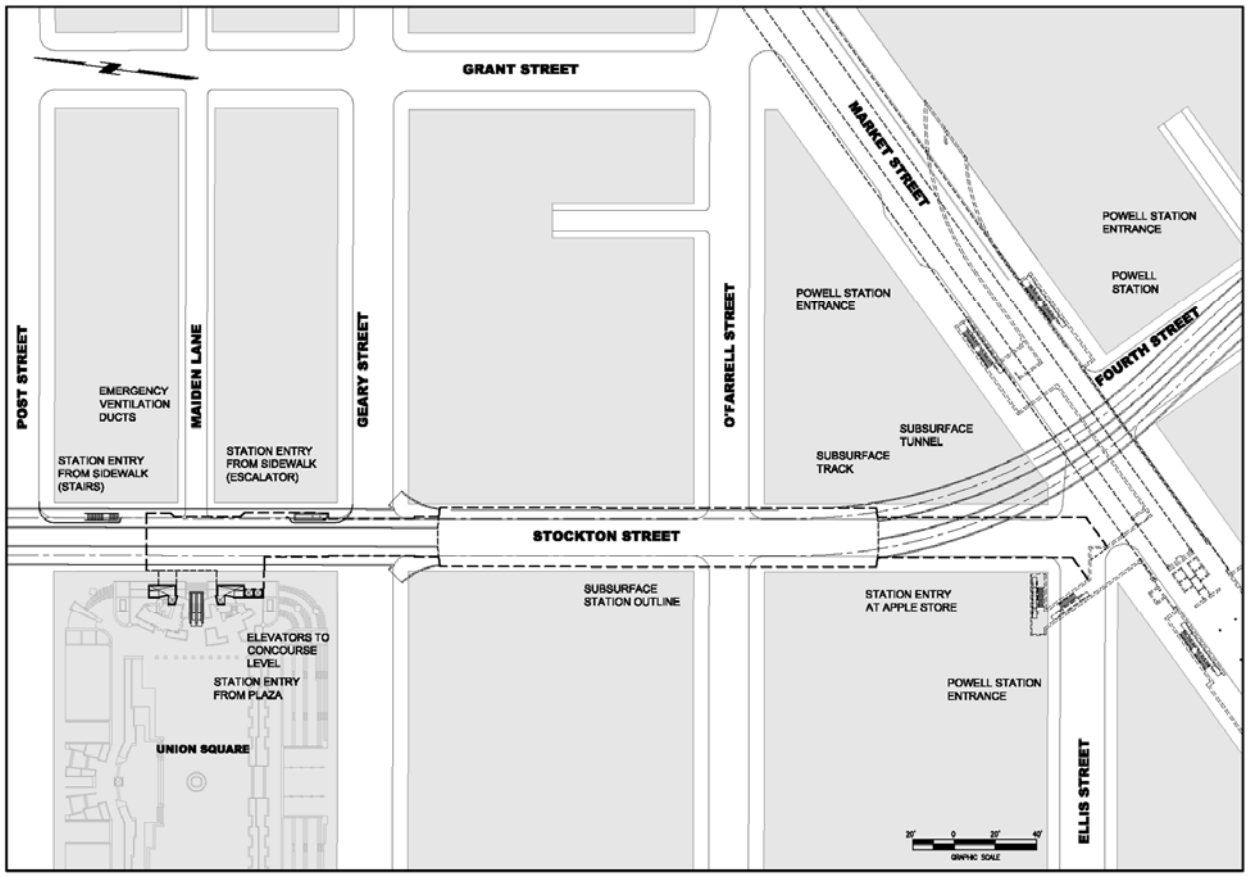
Spoils generated from the excavation of the station would be hauled to the surface through off-street shafts at the Union Square Station before being hauled off site for permanent disposal. Spoils removal, excavation, and ground support for the guideway tunnels and stations would require approximately 20 months. The structural works would require approximately 24 months. The entire duration of construction for this alternative would be 66 months.

3.1.4 ALTERNATIVE 3 OPTION A – OPERATION IMPACTS

The Union Square/Market Street Station entrance escalator would be located in the middle of the stairway on the eastern edge of the Union Square plaza along Stockton Street in Alternative 3 Option A (see Figure 10-11), the same as where the station entrance would be located in Alternative 2. However, in Alternative 3 Option A, the elevators to the station's upper concourse would be accessed from the plaza level and would be located directly south of the escalator. Two 11 feet tall ventilation shafts would flank the entrance escalator and, as in Alternative 2, would be integrated into the terraced landscaping on the eastern edge of the plaza. The ventilation shafts would be the same height as the existing structures they would be placed in front of and would not rise above the plaza because of their location on the terrace grade. The same as Alternative 2, Alternative 3 Option A would require approximately 1,525 square feet of plaza property (1.36 percent of the total plaza area) for use under a long-term encroachment permit from the Department of Recreation and Parks. Although there are slight design modifications between the two alternatives, the designs are similar enough that Alternative 3 Option A would have the same operational impacts as Alternative 2.

FIGURE 10-11

PLAN DRAWING OF UNION SQUARE STATION FOR PROPOSED ALTERNATIVE 3 OPTION A



Source: PB Wong

Not to Scale

Despite the limited use of the park for the Central Subway facilities, the impacts on the park are considered de minimis under Section 4(f). ~~The San Francisco Parks and Recreation Department will need to concur with this finding.~~

3.1.5 ALTERNATIVE 3 OPTION B – CONSTRUCTION IMPACTS

Noise, dust, and vibration would temporarily affect the use and enjoyment of the eastern portion of Union Square until the excavation is decked over and construction activities occur below the surface, which would be expected to occur within six months. The relocation of utilities ahead of station construction would be required on Stockton Street between Post Street and Market Street and would generate noise and dust as well and would last approximately six months.

Access to Union Square would be affected in several ways during construction:

- The sidewalk on the northern side of Geary Street adjacent to Union Square would be closed for the duration of station construction.
- The relocation of utilities ahead of station construction would be required on Stockton Street between Post Street and Market Street and would disrupt traffic near Union Square for 6 months.
- To accommodate traffic flow, curb parking on Stockton Street across from Union Square would be eliminated during utility work.
- Traffic operations would be affected by the cut-and-cover sections of the station, which would require two lanes of Stockton Street to be closed to traffic for the installation of shoring and construction of the main platform box decking.
- Pedestrian access along both sidewalks of Stockton Street between Geary and Market Street just south of Union Square would require protective cover for the entire 12-month duration of shoring installation.

Spoils generated from the station excavation would be hauled to the surface through off-street shafts at Ellis Street and at Union Square before being hauled off-site for permanent disposal. Excavation and ground support for guideway tunnels and stations would require approximately 18 months. The overall construction duration for the alternative is ~~52~~60 months.

3.1.6 ALTERNATIVE 3 OPTION B – OPERATION IMPACTS

Approximately 1,690 square feet (1.51 percent of the total plaza area) of the southeast corner of Union Square along Geary Street would be used for the subway station entrance in Alternative 3 Option B and would require a long-term encroachment permit from the Department of Recreation and Parks for physical use of the park (see Figures 9-12 and 9-13). The station entrance would replace a portion of terraced concrete seating (about 1,378 square feet) along the southeastern corner of the park, as well as landscaping. A palm tree planted in the affected plaza corner would be moved several feet to the south to allow room for the station entrance.

All entrances to the plaza would remain operational. Thirty-four parking spaces (of a total 985 spaces) in the garage below would be removed for station facilities. As previously noted, this would not be expected to impact the debt service repayment on the revenue bond for the Union Square renovation Project. Public access to the plaza itself and to the proposed Retail Historic Shopping District would be enhanced for public transit users because of the subway station location. Overall, the reduction in parking spaces would not be a significant impact on Union Square accessibility.

FIGURE 10-12

UNION SQUARE LOOKING EAST, POTENTIAL SITE OF FUTURE STATION

Source: PB/Wong, 2007

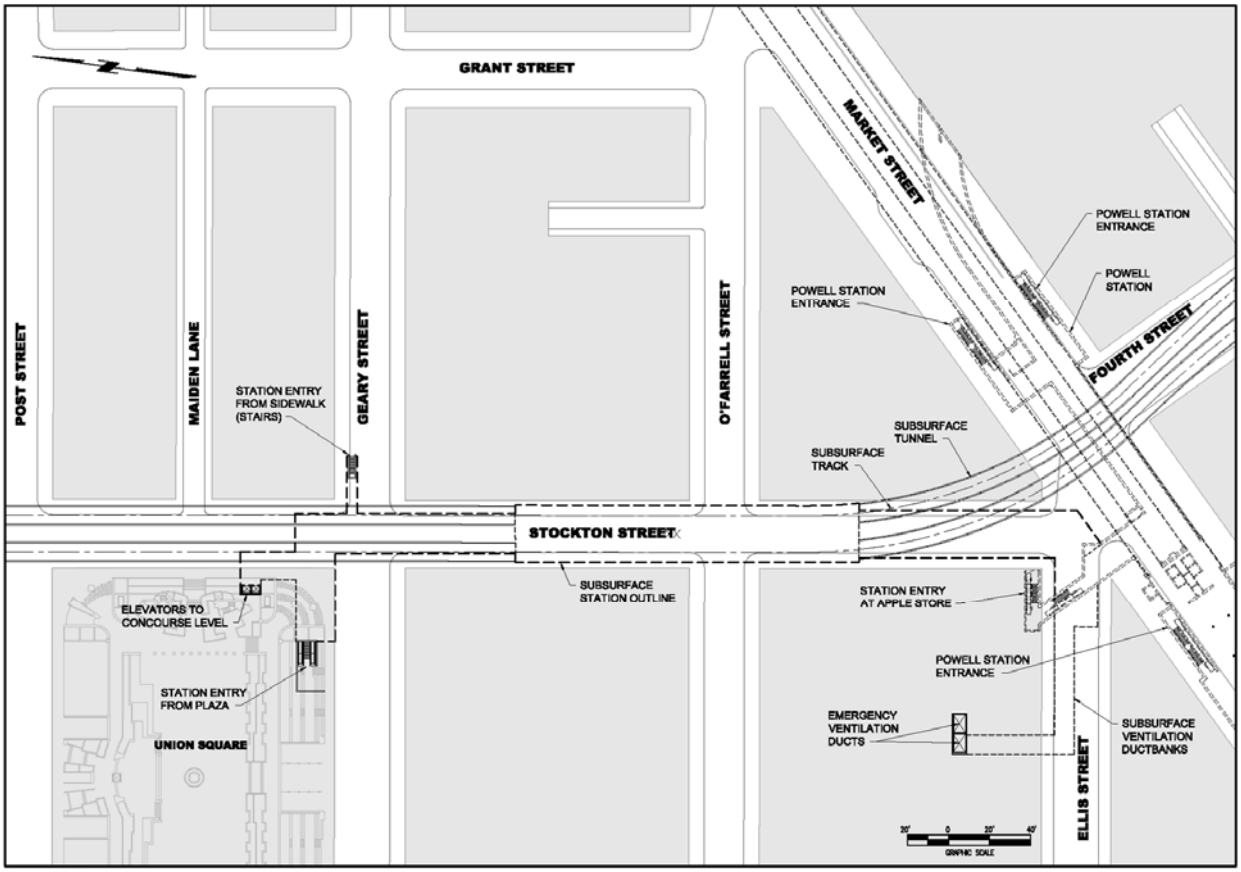
Union Square could experience increased foot traffic from subway users needing to cross the plaza to gain access from the north or northwest sides of Union Square or to exit onto streets on those sides of the plaza. There would not be as much increased foot traffic for Alternative 3B as under Alternatives 2 or 3A, because subway riders using the station entrance would not be required to enter the plaza to access the station.

The landscaping and design of the plaza would be altered by the possible introduction of a protective canopy and stair/escalator on the southeast corner of the park but this would not detract from the dominant visual features and landscape character of the plaza and would not result in adverse visual impacts. The canopy design would blend with the design features of the existing café and ticket booth. No new shadows would be created by the new station entrance.

An elevator to the platform level would be located to the northeast of the station entrance off Stockton Street. The elevator would replace approximately 303 square feet of the landscaped terrace on the eastern edge of the plaza. Vent shafts for this alternative would be located in the Ellis/O'Farrell garage rather than the eastern edge of Union Square, further minimizing use of the park.

FIGURE 10-13

PLAN DRAWING OF UNION SQUARE STATION FOR PROPOSED ALTERNATIVE 3 OPTION B



Source: PB Wong
Not to Scale

Changes to Union Square would not cause a substantial adverse change to the character-defining features of the Kearny-Market-Mason-Sutter Conservation District, particularly since Union Square'ssignificance is derived from its function as an open space and public plaza rather than its design. The recreational function of Union Square would not be substantially impacted and the park's appearance and activities would not be negatively affected. Despite the use of the park for station entry, the impacts are considered de minimis under Section 4(f). The San Francisco Parks and Recreation Department ~~will need to~~has concurred with this finding (see Appendix J).

3.2 WILLY "WOO WOO" WONG PLAYGROUND

3.2.1 ALTERNATIVE 2 – CONSTRUCTION IMPACTS

The Chinatown Station would be mined using Sequential Excavation Method (SEM) methods and all station work would be installed from the surface through the off-street shaft on the parcel adjacent to

Hang Ah Alley and Willie "Woo Woo" Wong Playground. Spoils from the station, crossover cavern and tail track tunnel excavation would be removed from the Chinatown Station shaft on Stockton Street for approximately 10 months. Excavation, ground support, and structural work would require approximately ~~66~~36 months.

No portion of Hang Ah Alley or Willie "Woo Woo" Wong Playground would be used for construction staging, and all staging would be located on the private parcel that is being acquired for the station entrance. The north elevation wall of the demolished building would be left in tact or a sound wall would be constructed to minimize noise and dust effects on the adjacent alley and playground. Construction activity would not alter or hinder access to the park from Pagoda and Hang Ah Alleys or from Sacramento Street. These construction-related impacts would be temporary, lasting approximately 36 months, and would not significantly impact the recreational function or enjoyment of the alley or park. No constructive use of park property would result from the temporary construction activities.

3.2.2 ALTERNATIVE 2 – OPERATION IMPACTS

There would be no direct use of the Willy "Woo Woo" Wong Playground under Alternative 2 because the subway station entrance would not physically encroach on the playground or on Hang Ah or Pagoda Alleys (see Figure 10-14).

An optional station entry is proposed to open onto Hang Ah Alley. Access to the park from Hang Ah or Pagoda Alleys or from Sacramento Street would not be affected by the Project. Additional foot traffic around the park could result from the location of a subway entrance adjacent to the alleyway and park.

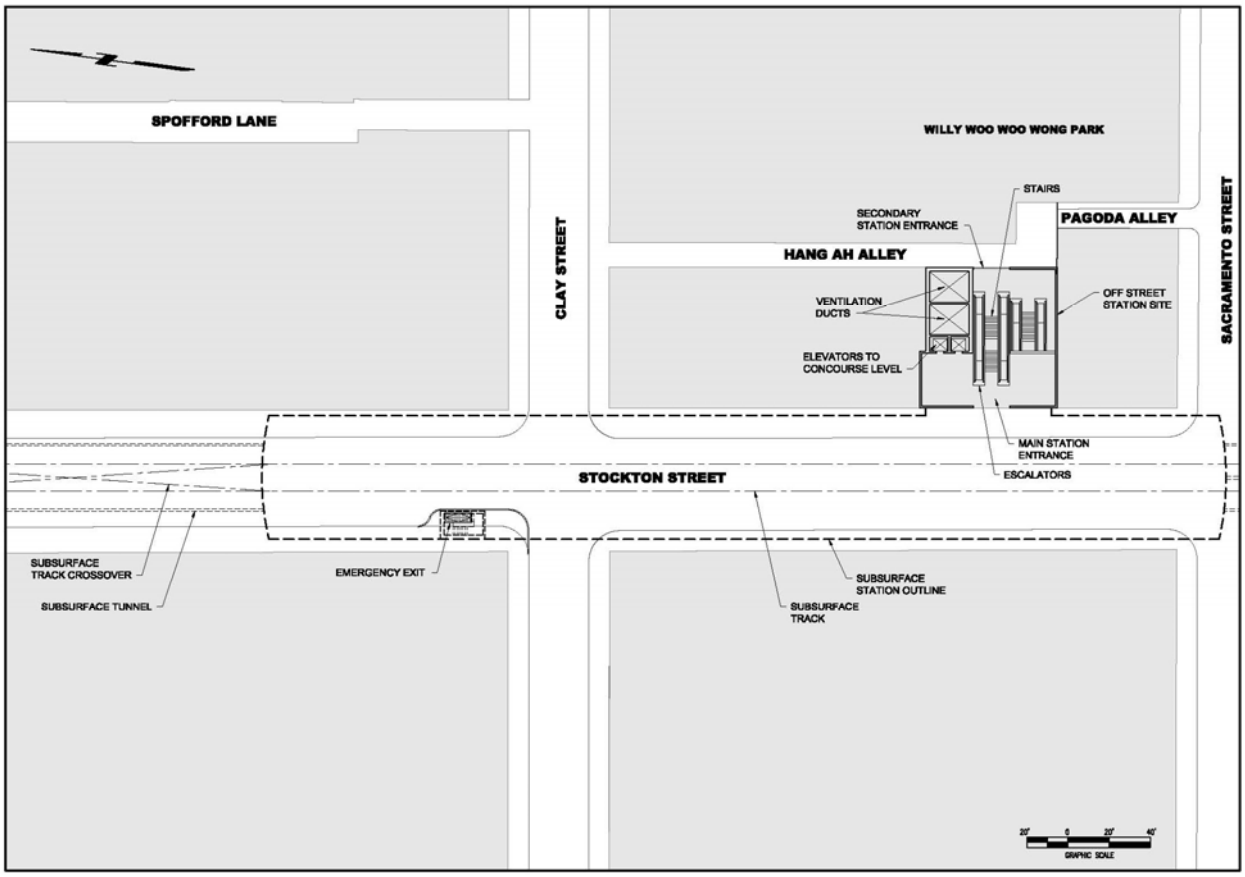
The existing building would be replaced by a new building that would be similar in height to the existing building. The new Central Subway station would be designed to be less than 40 feet tall to meet Prop K requirements and to avoid or minimize shadows cast on the park. The ventilation shafts would rise 10 feet above the station roofline and would be placed on the roof to minimize shadows to the playground. Both the building and the ventilation shafts would cast some shadows on the playground tennis courts, however, this would be minor in comparison to the adjacent four-story buildings that already cast shadows on the park.[5]

The vent shaft shadows would not substantially affect the use and enjoyment of the park (see Figure 10-15). Existing shadows would increase by 3 percent in March, 1 percent in June, 4 percent in September,

[5] The Muni facility would require only one story. However, for the purpose of this analysis it is assumed that a 40-foot high building would be constructed on the site. The maximum allowable height for this property is 65-feet, but Muni would restrict the building height on the site to 40 feet to avoid casting shadows on the park.

FIGURE 10-14

PLAN DRAWING OF CHINATOWN STATION FOR PROPOSED ALTERNATIVE 2



Source: PB/Wong
Not to scale

and 3 percent in December. The park's recreational uses would not be substantially affected. These impacts would not constitute a "constructive use" of the park for Section 4(f) and would meet the definition of "de minimis".

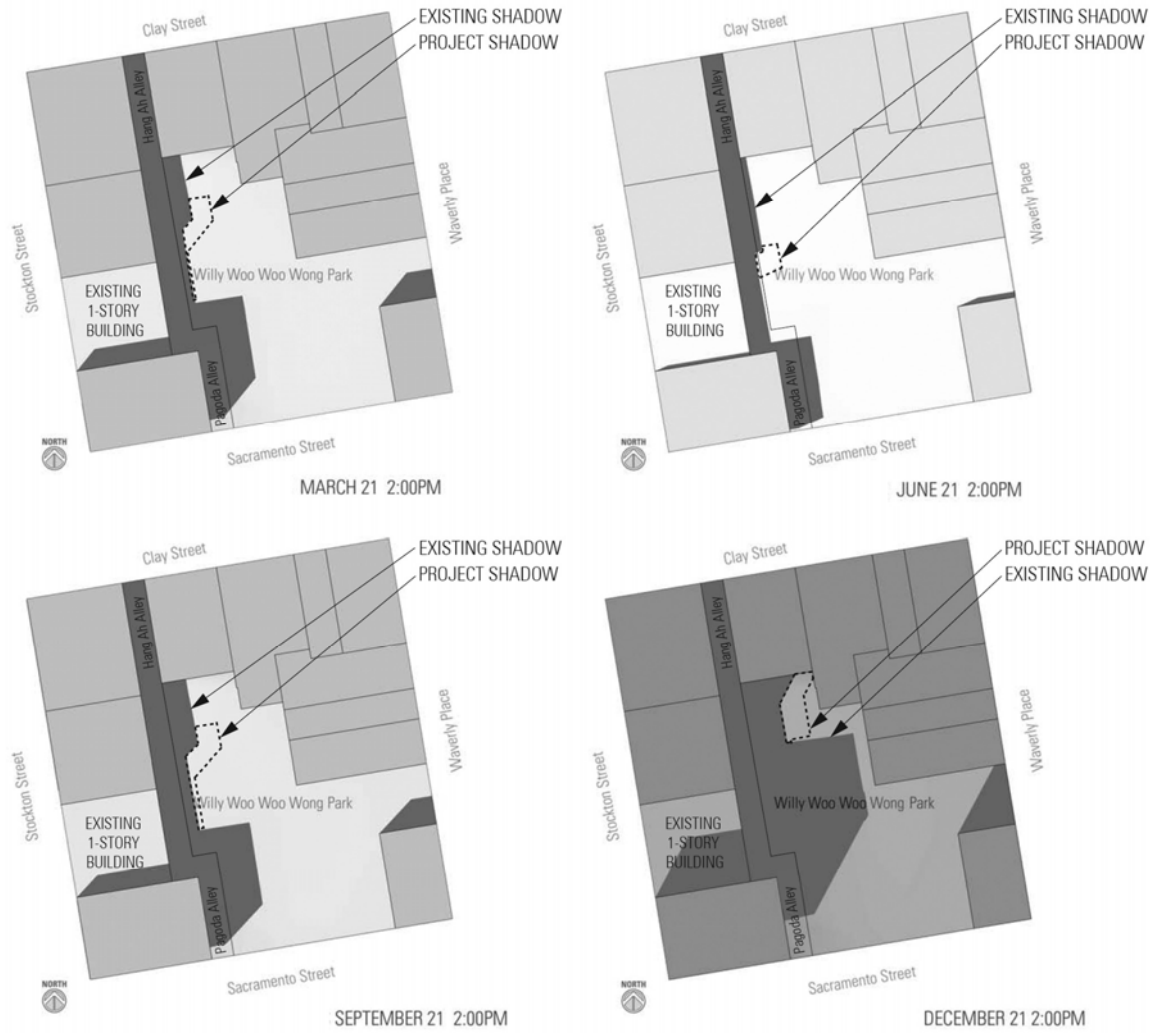
3.2.3 ALTERNATIVE 3 OPTION A – CONSTRUCTION IMPACTS

The proposed station entrance building footprint would be the same as under Alternative 2, but construction impacts under Alternative 3 Option A would be different because of different construction methods.

The Chinatown Station would be a SEM-mined excavation similar to the method used in Alternative 2. All construction activities for the alternative would be conducted from the off-street shaft. The off-street portion of the station access/head house shaft would be partially decked over and used as a staging area. A crane would be required for station and shaft excavation and construction. Temporary (one to two

FIGURE 10-15:

SHADOW ANALYSIS - WILLIE "WOO WOO" WONG PLAYGROUND



Source: Kwan Kenmi

weeks) use of a higher capacity crane would be required to hoist the TBMs if they are retrieved through the Chinatown access shaft. Spoils generated from the station would be hauled to the surface through off-street shafts at each of the station locations for approximately 6 months and would be hauled off site for permanent disposal. Curb parking on Stockton Street would be used to accommodate trucks. Construction of the Chinatown Station and tail track tunnel would require approximately ~~66~~36 months. The structural work would require approximately 24 months.

The ~~north~~ east elevation wall of the demolished building would be left in tact or a temporary noise barrier would be constructed during the subway station construction to minimize noise and dust effects on the

adjacent alleyway and playground. Construction activity would not alter or hinder access to the park. Construction impacts would be temporary and would not significantly impact the recreational function of the park.

3.2.4 ALTERNATIVE 3 OPTION A - OPERATIONAL IMPACTS

The operational impacts of this alternative would be the same as for Alternative 2 despite the slightly different configuration of the escalators, ventilation and elevator shafts under the two alternatives. As designed, a secondary station entrance would open to Hang Ah Alley, but would not encroach on the playground property. The same as Alternative 2 above, the new Central subway station would be designed to be less than 40 feet tall and the ventilation shafts would rise 10 feet above the development roofline.[6] Both the building and the ventilation shafts would cause some minor shadows to fall on the playground tennis courts during some times of the year. As shadows already currently fall on the tennis courts from taller buildings along the eastern side of Stockton Street, the shadows from the vent shafts would not substantially impair the use and enjoyment of the park or alley way. Additional foot traffic on sidewalks and the alley way near the park could result from the optional location of a secondary subway entrance adjacent to the alley. The recreational function of the park would not be disrupted, and the activities and appearance of the park would not be affected. These impacts would not constitute a 'constructive use' of the park for Section 4(f) and would meet the definition of "de minimis."

3.2.5 ALTERNATIVE 3 OPTION B – CONSTRUCTION AND OPERATION IMPACTS

The Alternative 3 Option B station entrance would be on the west side of Stockton Street at Washington Street, and would not require the use of the parcel adjacent to the Willie "Woo Woo" Wong Playground and Hang Ah Alley; therefore, no operational or construction impacts to the Park or alley (Hang Ah Alley) would occur under this alternative.

3.3 WASHINGTON SQUARE PARK

3.3.1 ALTERNATIVE 2 - CONSTRUCTION AND OPERATION IMPACTS

Alternative 2 does not include the North Beach Construction Variant for TBM retrieval and would not have any impacts on Washington Square park.

3.3.2 ALTERNATIVES 3 OPTION A AND 3 OPTION B – CONSTRUCTION IMPACTS

The proposed construction of the TBM retrieval shaft, which would occur in the middle lanes of Columbus Avenue, is expected to last six months. During construction of the shaft, traffic operations would be temporarily altered and increased traffic congestion on Columbus Avenue would occur. The

[6] See above footnote.

construction would affect vehicle and transit access to the park from the southwestern side of Washington Square, but the park would be accessible via the other three sides of the Park. A construction method involving vertically-oriented shoring relative to the curb line would allow sidewalks adjacent to the park to remain passable during construction, and pedestrian access would remain possible during construction of the shaft. The shoring would be inclined to avoid potential impacts to tree roots along the Columbus Avenue side of the Park. The shaft would be decked over permanently after the TBM extraction. The duration of the TBM extraction would be approximately five days for each of the two TBMs.

Spoils generated from the excavation of the TBM retrieval shaft would be hauled to the surface at the shaft location for approximately 6 months before being hauled off site for permanent disposal. The TBM retrieval shaft would not be used for tunnel construction or tunnel spoils removal, but the shaft could be used periodically for night time delivery of materials to the tunnels. If the shaft were to be used for material delivery, materials could be delivered on an irregular basis over a two to three year period for several days at a time. Between deliveries the shaft would be decked over for use as a roadway. Materials delivery could include track and systems equipment. Construction deliveries would require cordoning off an area at the shaft about 40 feet by 100 feet and would cause traffic disruptions (see Figure 10-16).

Temporary increases in dust, vibration and noise levels could occur during construction of the shaft and during excavation spoils removal and materials delivery. During these times use and enjoyment of the west side of the Park would be temporarily impacted, but because of their temporary nature would be considered “de minimis”.

3.3.3 ALTERNATIVES 3 OPTION A AND OPTION B – OPERATION IMPACTS

The tunnel under Columbus Avenue would not be used for the Central Subway during operation of the Project. Neither the appearance nor the activities and recreational uses of the Park would be affected during operation of the Central Subway.

3.4 HISTORIC RESOURCES

Demolition of one of the two properties in Chinatown for a station entry and vent shaft (814-828 Stockton Street or 933-949 Stockton Street) would adversely affect the character-defining features of the two-block area of the Chinatown Historic District. (There are a total of 371 contributing buildings within the Chinatown Historic District.) Where known historic resources or resources appearing to be eligible for the National Register of Historic Places are affected, SHPO ~~concurrence is required~~ has concurred.

A summary of impacts on 4(f) resources by alternative is shown in Table 10-5.

FIGURE 10-16

WASHINGTON SQUARE LOOKING NORTHEAST ACROSS COLUMBUS AVENUE

Source: PB/Wong, 2007

4.0 AVOIDANCE ALTERNATIVES

Section 4(f) requires that an alternatives analysis be developed if a Project proposes to use a Section 4(f) resource. The alternatives analysis must show that the alternatives considered to avoid the use of 4(f) resources are not feasible and prudent and would result in unique problems or unusual factors such as costs or community disruption of an extraordinary magnitude. To determine that there is no feasible and prudent alternative to the use of a Section 4(f) property, an evaluation has been undertaken that addresses location alternatives and design shifts that would avoid the use of the Section 4(f) resource. Supporting information demonstrates that such alternatives would result in unique problems or unusual factors.

The discussion of avoidance alternatives focuses on Union Square, a parkland resource that would constitute a physical take for the Project and Chinatown where removal of an existing building to develop a station would potentially adversely affect the character-defining features of the Chinatown Historic District. ~~Concurrence from the SHPO of "de minimis" effects has been requested.~~

While temporary construction-related impacts to Willie "Woo Woo" Wong playground and Washington Square park are discussed, a physical take of either park for the purpose of the Project would not occur

TABLE 10-5

SUMMARY OF IMPACTS BY BUILD ALTERNATIVE

Potential Resource	Potential Impact	Alternative 2 Enhanced FEIS/FEIR	Alternative 3 Option A	Alternative 3 Option B
Union Square (112,256 square feet)	Between 1,517-1,690 square feet used for station entrance. Temporary dust, vibration and noise impacts associated with construction; access restricted on east side only; recreational function temporarily diminished.	(de minimis) % "take" 1.35%	(de minimis) % "take" 1.36%	(de minimis) % "take" 1.51%
Willie "Woo Woo" Wong Playground and Hang Ah Alley	Shadows falling on tennis courts during certain hours of the day. Temporary dust, vibration and noise impacts associated with construction; use and enjoyment the of park temporarily diminished.	Less-than-significant (de minimis) Minimized with wall between station and Park during construction	Less-than-significant (de minimis) Minimized with wall between station and Park during construction	None
Washington Square	Temporary dust, vibration and noise impacts associated with construction.	None	Less-than-significant (de minimis)	Less-than-significant (de minimis)
Chinatown Historic District	Demolition of building for station at 814-828 Stockton Street or 933-949 Stockton Street.	Potentially Adverse	Potentially Adverse	Potentially Adverse
Source: PB/Wong, 2006				

and measures to minimize construction impacts have been included in the Project. Therefore, avoidance alternatives for those properties are not described. If impacts to a resource have been determined "de minimis," the Section 4(f) evaluation process is considered complete for that resource once concurrence is obtained from officials with jurisdiction over the Park, recreation area~~, and from the SHPO [concurrence is needed]~~. The evaluation of avoidance alternatives would not be necessary for the Central Subway Project, if the impacts were determined "de minimis."

The following avoidance alternatives include those that avoid a physical take of the Union Square Section 4(f) resource with a new alignment location or through design modifications.~~ These avoidance alternatives would be deleted from this section of the Final SEIS/SEIR if concurrence for "de minimis" impacts occurs between Draft and Final SEIS/SEIR.~~ The Recreation and Parks Commission concurred with the de minimis finding on February 21, 2008 (see Appendix J), therefore the following avoidance alternatives are not applicable.

4.1 EVALUATION OF AVOIDANCE ALTERNATIVES

4.1.1 LOCATION ALTERNATIVES

1998 Final FEIS/FEIR Preferred Alternative

In the 1998 Final FEIS/FEIR preferred alternative, the Union Square station entrances were located on the sidewalks on Stockton Street adjacent to Union Square rather than on any portion of the Park itself. The design was determined not prudent because it would not provide adequate space for pedestrians and did not include ventilation structures that would meet the Fire code. The preferred alternative was also reviewed with the Union Square Association and the Union Square Merchants Association, and at public meetings. A workshop held in October 2003 with Muni staff and Central Subway Project team members, Parking and Traffic Department and San Francisco Planning Department evaluated the preferred alternative. Results from the workshop were published in the March 2004 *Working Paper: Station Location and Access Recommendations – Union Square Station*. In addition to the sidewalk, pedestrian and ventilation issues identified, the report also concluded that the entrance escalators that faced away from Union Square would negatively affect way-finding for transit users.

Union Square Station Entries North of the Park on Stockton

Another station entrance alternative considered at the October 2003 workshop was locating the station entrance on Stockton Street north of Union Square near the entrance to the Hyatt Hotel. The alternative was rejected as not practicable or feasible and the report concluded that the alternative would be too costly because of the right-of-way that would have to be purchased from the hotel for the entrance location.

Alternative 1 - No Project/TSM Alternative

Although the No Build alternative would avoid Section 4(f) resources, the No Project/TSM Alternative does not meet the Project purpose and need and cannot be considered an avoidance alternative for Section 4(f) purposes because it is not feasible and prudent. The alternative would not significantly improve transit service to, from, or within the Corridor; nor would it enhance mobility in the Central Subway Corridor. The alternative would not bring transit service to the level and quality of service available in other sections of the City, nor would it support economic revitalization and development initiatives in the corridor. The No Project/TSM alternative would not maximize transit ridership or reduce the number of auto trips in the corridor and would therefore not support Muni's Transit-first Land Use Goal.

Eliminate the Union Square Station

Elimination of the Union Square Station would avoid impacts to Union Square but would not meet the transit accessibility goals for the retail district of the City or the future transit connection goals of the adopted *Four Corridors Plan*.

4.1.2 DESIGN ALTERNATIVES

Alternative 3 Option B

MTA staff met with Recreation and Parks Department staff and representatives of the Union Square Merchants Association to discuss designs for a station access in Union Square and consensus was reached on the two design options for the escalator, vents shafts and elevator location to minimize impacts to the Park while providing improved transit access.

As discussed previously in the report, the station location and design of Alternative 3 Option B would not be as disruptive on the recreational uses of Union Square as would the station location proposed under Alternatives 2 and 3 Option A. Alternative 3B would locate the two vent shafts in the Ellis/O'Farrell garage rather than on the eastern edge of Union Square, thus minimizing the extent of the use of the Park to only one station entry escalator/stair located on the Geary Street corner and elevators on the Stockton Street sidewalk. Further suggestions for the Union Square Station design by the Recreation and Parks staff included: reducing or eliminating the protective canopy over the escalator; reducing the size of the Muni sign; and, reducing the scale of the retaining wall leading to the top of Union Square for Alternative 3B. Because it was determined that Alternative 3 Option B would have the least impacts ("de minimis") on Union Square, Alternative 3 Option B would be a prudent and feasible design alternative for the use of the Park. Design alternatives ~~would~~ are not be required ~~if~~ because impacts are determined to be "de minimis."

Elevator Access to Station and Ventilation Shafts Routed to Sutter/Stockton Garage

The October 2003 Workshop members looked at an alternative that would use elevators for access to the station rather than escalators because they would be less expensive and require less space. The elevators would require a 115-foot long vertical cut-and-cover box compared to 213 feet required for the escalators. Glass elevators were considered because they could provide visibility and ease safety concerns. Ventilation would be provided at the city-owned Sutter/Stockton parking garage. Although the combination of the design variations would eliminate the use of Union Square, the additional tunneling that would be required to construct the ventilation shafts and connect them to the Sutter/Stockton parking garage was found to be prohibitively expensive, and the elevators are viewed as problematic because they

could not provide adequate or efficient access for the volume of transit users to the station. The design alternative would not be feasible or prudent.

5.0 MEASURES TO MINIMIZE HARM TO SECTION 4(f) RESOURCES

The Secretary of Transportation may approve a Project that involves the use of Section 4(f) resources only if there is no feasible or prudent alternative to using those resources and if the Project includes all possible planning to minimize harm to the park or historic site resulting from use. This section describes potential measures that could be used to minimize harm to the affected resource. Measures to minimize harm to Section 4(f) resources will be ~~finalized~~ included in the Final SEIS/SEIR and will be included in the Mitigation and Monitoring Plan and in construction specifications and plans for the project.

Although it was found that impacts would not substantially diminish the recreational uses or activities of the parks, measures to minimize indirect impacts to Willie "Woo Woo" Wong Playground and Washington Square Park are also discussed in this section.

5.1 UNION SQUARE

~~Before either Alternative 2 or Alternative 3 Option A or Option B is selected as the preferred alternative, and before issuance of the Final SEIS/SEIR and Record of Decision,~~ Conditions of approval will ~~need to~~:

a) Support a finding that use can be minimized by planning to reduce potential harm, including: minimizing the footprint of the entrance and all ventilation shafts and elevators to the greatest extent possible to minimize the physical take of Union Square; ensuring the subway entrance is located where disruptions to the Park are minimized to the greatest extent possible, as agreed on by Recreation and Park Department Commission or Department Director; ensuring station design is visually integrated with existing Park design features; minimize light and glare with direction shading of security lights; minimize noise, dust and vibration impacts to users of the park (particularly patrons of the outdoor café during construction); relocate and enhance outdoor seating or design an alternative location for café seating area effected by construction activity; and ensuring that subway access points in the plaza are regularly maintained around the station entry by MTA to keep them free of litter and graffiti in perpetuity.

Measures to minimize harm associated with construction impacts would include: using temporary construction barriers along sidewalks to control noise and dust; controlling dust and particulate matter by spraying water or the use dust palliatives in construction areas and covering dump truck loads with canvas or tarps; ensuring access to the park is maintained during construction; ensuring no part of the Park is used as a staging area for construction purposes ensuring Park access is maintained and proper signage is posted to alert park users about construction and any necessary re-routing.

Table 10-6 summarizes the evaluation of avoidance alternatives.

5.2 WILLIE "WOO WOO" WONG PLAYGROUND

Measures to minimize harm to the playground and Hang Ah Alley under Alternatives 2 and 3 Option A could include ensuring that activities in the Park are not disrupted by its proximity to the subway station entrance, including making it difficult to use the Park as a shortcut to the station entrance. Shadow impacts would be minimized by maintaining a building height less than 40 feet, and locating the vent shaft to the west of the playground. Shadow impacts caused by the ventilation structures could be minimized through their design, location and orientation.

Measures to minimize harm to Willie "Woo Woo" Wong Playground and Hang Ah Alley during construction for both alternatives could include controlling dust, noise and vibration during construction with temporary construction walls and muffling construction equipment. Excessive idling of non-electric construction equipment could be avoided to minimize temporary increases in pollutant emissions. Construction crews could spray water or use dust palliatives in construction areas to control dust and particulate matter (PM 10 and PM 2.5). Air quality impacts could also be minimized by covering dump truck loads with canvas or tarps and washing truck tires. Air quality would be monitored in the playground during construction to make sure that established air quality standards are maintained. Construction would be halted if violations of air quality standards are exceeded. Monitoring reports would be provided quarterly to the City. Access to the Park would be maintained during construction.

Impacts from operation would be minimized by MTA providing trash and litter pickup in the Hang Ah Alley and providing regular security checks to monitor unauthorized use of the alley. Elimination of the second station entry on the alley side could be considered, if necessary.

5.3 WASHINGTON SQUARE PARK

For Alternatives 3 Option A and Option B, measures to minimize harm to Washington Square park could include controlling noise and vibration during construction with temporary construction walls and muffling construction equipment. Pollutant emissions from work trucks would be reduced with the use of electric equipment when possible. Excessive idling of non-electric construction equipment could be avoided to minimize temporary increases in pollutant emissions. Construction crews could spray water or use dust palliatives in construction areas to control dust and particulate matter. Air quality impacts could also be minimized by covering dump truck loads with canvas or tarps and washing truck tires. Access to the park would be maintained during construction. Tree root damage could be avoided through a technique using vertically-orienting shoring relative to the curb line. A certified arborist would be present during excavation to ensure that no tree roots for historic trees in Washington Square park are impacted.

TABLE 10-6

EVALUATION OF AVOIDANCE ALTERNATIVES

Current Name (Historic Name)	Historic Designation	Potential Effects	Potential Feasible and Prudent Alternatives	Planning to Minimize Effects
Union Square	California State Landmark No. 623	Used for station entrance and vent shafts in garage	Eliminate the vent shaft at this location and locate in Ellis/O'Farrell garage Alternative 3B entry on Geary Street.	Design to minimize scale of entry and retaining walls and use of Plaza area. Maximize visual compatibility with park features.
Construction Impacts				
Union Square	California State Landmark No. 623	Air quality, vibration and noise impacts associated with construction. Access restricted temporarily. Recreational function on east side temporarily diminished.	Use south end of station at Market Street for excavation of spoils.	Off-haul during non-peak hours and screen construction site from public use area
Willie "Woo Woo" Wong Playground	N/A	Air quality, vibration and noise impacts associated with construction. Diminished use and enjoyment of Hang Ah Alley.	Alternative 3B station location at Washington Street and Stockton Street	Screen construction area from park; minimize idling of equipment
Washington Square	Local landmark	Air quality, vibration and noise impacts associated with construction. Access limited temporarily on the Columbus Avenue side of Park.	Consider relocation of ~~Relocate~~ excavation shaft to the North or South of park along Columbus Avenue	Minimize noise and dust impacts with buffer walls; off-haul during non-peak hours
Chinatown Historic District	Historic District	Demolition of existing character-defining feature.	Retain as much as possible of existing building exterior for station.	Incorporate character-defining architectural features into station design. Fully document historic information on buildings and display in station.

Source: PB/Wong, 2006

The arborist would have the authority to stop construction if roots are observed. The shoring would be inclined at an angle to minimize potential impacts to tree roots near the park. Locating the shaft in a slightly different location on Columbus Avenue than the existing location would be possible if the area was found to be less harmful to tree and root systems.

5.4 HISTORIC RESOURCES

Station design for Alternatives 2, 3A, and 3B in Chinatown will require design review and input by an architectural historian to include character-defining features compatible with adjacent buildings or using a portion of the existing building façade for the station to minimize contrasts with existing building materials, design features, and historic character of the Chinatown Historic District. Because there are 371 contributing buildings in the Chinatown Historic District and Grant Street, not Stockton Street, is the primary street that defines Chinatown's historic character, removal of one building for the Chinatown station may be considered de minimis for Section 4(f) because neither of these buildings on Stockton Street are significant historic resources. ~~Concurrence with this finding by the SHPO and City Historic Preservation Officer has been requested.~~

6.0 COORDINATION AND DETERMINATION

Potential impacts on publicly owned parks and historic sites were identified based on Project design plans, field visits and findings from the Section 106 process detailed further in Section 5.4. Properties identified as potential Section 4(f) resources were analyzed to determine whether they were indeed Section 4(f) resources and whether Project impacts would meet the criteria of a use according to Section 4(f) regulations. Impacts to Park properties as a result of the Project were discussed in meetings and correspondence with the San Francisco Recreation and Parks Department, which has jurisdiction over Union Square, Willie "Woo Woo" Wong Playground and Hang Ah Alley, and Washington Square park and with Gordon Lau School officials regarding the Gordon Lau School playground on Washington Street. The discussions included use of the parks, the significance of the parks and potential impacts to the parks.

Impacts to historic resources were evaluated as part of the Section 106 process. Findings from the Section 106 consolidation process with the SHPO are summarized for the historic resources. Detailed measures to minimize harm to historic resources ~~will be developed during~~ are part of the Final Section 106 Memorandum of Agreement (Appendix C) ~~and SEIS/SEIR phase~~.

As described in *Chapter 3.0 Impacts to Section 4(f) Resources*, Union Square is the only park property that would have a physical take for the Project. For a de minimis finding, the officials with jurisdiction

over a park or recreation area must also provide written concurrence that the Project will not adversely affect the activities, features and attributes that qualify the property for protection under Section 4(f).

On July 12, 2007, MTA submitted to the San Francisco Recreation and Parks Department a letter requesting concurrence for the de minimis finding for impacts to the Union Square Section 4(f) resource. A copy of this correspondence is included at the end of this section. A "de minimis" resolution was passed by the Recreation and Parks Commission for Alternative 3B on February 21, 2008 (see Appendix J).

FTA's rule establishing procedures for determining that the use of a Section 4(f) property has a de minimis impact on the property is found at 23 CFR Parts 771 and 774. In accordance with the provisions of 23 CFR Part 774.7(b), FTA has determined there is sufficient supporting documentation to demonstrate that the impacts to Section 4(f) property, after avoidance, minimization, mitigation, or enhancement measures are taken into account, are de minimis as defined in Part 774.17 and the coordination required in Part 774.5(b) has been completed.

7.0 REFERENCES

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11.0 COORDINATION AND CONSULTATION

11.1 NOTICE OF PREPARATION

A combined Notice of Preparation (NOP) and Notice of Scoping Meeting was mailed in June 2005. In September 2006, a revised Notice of Preparation was mailed. A revised NOP was sent out because a number of property owners did not receive the June 2005 notice and the Project description had changed. To ensure that the NOP was received by the appropriate recipients, the notice was mailed to the following:

- All residents within the 300-foot boundary of the proposed Project alignment, including the North Beach construction variant;
- All property owners within the 300-foot alignment, including the North Beach construction variant as listed with the San Francisco Assessor's Office;
- The citywide Central Subway mailing list; and
- The San Francisco Department of Planning's Standard Environmental Impact Report mailing list.

A Public Scoping meeting was held in June 2005 and public meetings were held again in October 2006 to inform the public of the Project changes and learn about issues of concern. Tables 11-1 and 11-2 summarize comments received the 2005 during public scoping and in response to the 2006 second NOP.

TABLE 11-1

SUMMARY OF PUBLIC COMMENTS RECEIVED DURING THE 2005 SCOPING PROCESS

Public Comment	Action
Construction will cause negative impacts to buildings in the vicinity of the portal between Townsend and Brannan.	Parking, noise, vibration, air quality, and utility access will be addressed in the SEIS/SEIR.
Need extra entries near the Union Square/Market Street Station.	Patronage forecasts show that proposed access facilities are adequate to meet 2030 demand and code requirements.
Add pedestrian tunnel between the Powell Street Station and Mission Street, as well as between Union Square and Mission Street.	Opening a pedestrian connection between Powell Street Station and Mission Street will be addressed, but direct connection from Union Square to Mission Street is not feasible.
Move the portal to under the I-80 freeway. Add a station between Brannan and Bryant Streets.	Both suggestions will be evaluated in the Fourth/Stockton Alignment Option B (Modified LPA).
Construction staging area under the freeway is problematic because it adds impacts to Stillman Street for businesses currently suffering from the Caltrans I-80 Freeway seismic upgrade construction project.	The SEIS/SEIR will look at construction impacts in the vicinity of the proposed staging area under the freeway.
Extend the subway to North Beach.	Service beyond the Chinatown Station in the vicinity of Washington Street will be considered as part of a future project, not part of the current Central Subway Project. The SEIS/SEIR will evaluate a tunnel extension from the Chinatown terminus to the vicinity of Washington Square on Columbus Avenue to facilitate construction.

TABLE 11-1 (CONT.)

SUMMARY OF PUBLIC COMMENTS RECEIVED DURING THE 2005 SCOPING PROCESS

Public Comment	Action
Delete further evaluation of Moscone Station on Fourth Street between Harrison and Folsom Streets because it would not be convenient to Yerba Buena businesses or Moscone Convention Center. Move Moscone Station to a new location on Fourth Street between Mission and Howard Streets.	Various Moscone Station location options were evaluated during preparation of the SEIS/SEIR. The document analyzes the Moscone location on Fourth Street between Folsom and Howard Street (Alternative 3).
Add an entrance to the Moscone Station at the northwest corner of Fourth and Howard Streets.	Moscone entries at Fourth and Howard Streets will be further evaluated
Change name of Moscone Station to Yerba Buena.	The name change will be considered by Muni.
Connect Powell and Montgomery BART/Muni Metro Stations with a pedestrian passageway	This change is not feasible or within the Project budget.
Time construction to limit impact on businesses.	The construction effort will respect the holiday moratorium and permit restrictions.
Maintain sub-basement storage that many property owners have along Stockton Street.	Sub-basement storage areas will be identified and maintained to the extent possible.
Ensure the feasibility of a future Geary Subway connection to the Central Subway.	A Geary Subway connection will not be precluded by the Central Subway.
Concern about property owners receipt of the Notification of Preparation (NOP) of the SEIS/SEIR and the Scoping Meeting.	Muni has ensured that property owners along the EIS/EIR and Fourth Street alignments received an NOP.
Concern about lack of access to 601 Fourth Street garage next to the portal between Townsend and Brannan Street.	Local access issues at proposed portal locations will be addressed in the SEIS/SEIR.
Concern about removal of a loading zone in front of the 601 Fourth Street building next to the portal between Townsend and Brannan Street. Where will disabled residents/visitors access the building?	Local access issues at proposed portal locations will be addressed in the SEIS/SEIR. This evaluation will include ADA impacts.
Consider escalators operating at all times in ***both*** directions—better for riders with limited mobility.	Elevators and escalators will be built to code. Bi-directional operation of escalators will be evaluated.
Evaluate a cross platform transfer between the BART/Muni Metro Market Street Subway at Powell Street and the Central Subway.	A cross platform transfer between subways does not appear feasible but the two subways will be connected at Powell Station.
Chinatown Station will add to pedestrian congestion and will require relocation of residents and businesses.	Access to the Chinatown Station is proposed off-street, not in existing or expanded sidewalks. Any relocations required by the acquisition of property for station entries will be addressed in the SEIS/SEIR and will adhere to adopted relocation regulations.
What are the construction risks to existing buildings and their foundations?	All construction impacts will be evaluated in the SEIS/SEIR
What about loss of parking during construction and after the project is built?	Construction and operational impacts on parking will be described in the SEIS/SEIR.
Consider reducing the number of traffic lanes on Fourth Street to accommodate pedestrian flow.	The Fourth/Stockton Alignment assumes a reduction in the number of traffic lanes on Fourth Street south of the portal, limiting the number of lanes that pedestrians must cross and creating refuge areas at additional intersections.
Need to compare the proposed project to existing conditions with respect to transit and vehicular trip time, patronage, and capital and operating costs.	The Central Subway Alternatives (Enhanced EIS/EIR and Fourth/Stockton Alignment Options A and B) will be compared to the existing transportation conditions and to a No Project/TSM Alternative for future (2030) conditions.
Vibration from trains will cause harm to building structure.	Vibration during operation of Central Subway project alternatives will be evaluated in the SEIS/SEIR.

TABLE 11-1 (CONT.)

SUMMARY OF PUBLIC COMMENTS RECEIVED DURING THE 2005 SCOPING PROCESS

Public Comment	Action
Acquisition of property to accommodate station entries and vent shaft will have negative impacts at the proposed portal locations.	The Central Subway Alternatives (Enhanced EIS/EIR and Fourth/Stockton Alignment Options A and B) do not propose acquisition of property at the portals for vent shafts. Property acquisition would be associated with off-street subway station access only. Relocations at subway stations will be addressed in the SEIS/SEIR.
Fire and Life Safety access on the east side of Fourth Street, near the Brannan Street portal location, would be severely limited.	Fire and Life Safety access will be evaluated in the SEIS/SEIR and will meet all code requirements.
The Fourth/Stockton Alignment portal between Townsend and Brannan Streets will require the removal of street trees.	Impacts of the proposed project on street trees will be addressed in the SEIS/SEIR.
The acquisition of a 601 Fourth Street condo unit may be proposed to provide secondary access to the building's garage. This could negatively affect condo owners who bought particular units to avoid the noise and vibration associated with the existing garage entry.	Acquisition of building units to provide secondary garage access is not currently proposed; if considered, its impact would have to be evaluated and mitigated if negative.
Move portal location on Fourth Street a block further south.	It may be possible to move the portal to the north a few blocks. It is not technically feasible to move the portal a block south.
Will commercial property owners be compensated for loss of business?	The City compensates businesses for physical damage but not for loss of commercial activity, which is a result of many factors.
What about loss of sunlight at the portals.	There is no loss of sunlight associated with the portals. They are low wall-like structures in the middle of the street.
Will the subway be vulnerable to earthquake activity?	Seismic activity will be addressed in the SEIS/SEIR and the Project construction will meet all applicable seismic codes.
Purpose and Need statement needs to justify spending funds for the project. No need to go past Market Street.	The Central Subway is Phase 2 of a project approved in 1999 to extend light rail service from Visitacion Valley to Chinatown. It is not a new stand alone project. Phase 1, 5.4-miles of surface rail, opened for revenue service in April 2007. The Purpose and Need for the project has not changed since the Third Street Light Rail Final EIS/FEIR was published in 1998.
Consider Bus Rapid Transit (BRT) as an Alternative.	Muni evaluated the need for a Transit Systems Management (TSM) low cost alternative, including BRT. The Third Street FEIS/FEIR had a TSM alternative with increased bus service, but not in a separate BRT right-of-way. BRT is not feasible in the congested and narrow Stockton corridor. Since two-thirds of the entire project has been built, the No Project was considered to be equivalent to a TSM Alternative.
Analyze Proof-of-Payment (POP) fare collection for all alternatives.	POP fare collection was originally assumed for subway stations, but Muni has since issued a policy directive that requires fare gates for the Project.

TABLE 11-2

SUMMARY OF PUBLIC COMMENTS RECEIVED DURING THE 2006 NOP PROCESS

Public Comment	Action
Question need for surface platform at Fourth and Brannan Streets. Prefer Fourth and Bryant Streets.	Ridership projections will evaluate the demand for a surface platform on Fourth Street. There are more safety and security concerns associated with the Fourth/Bryant location due to the I-80 off-ramps and elevated freeway structure at that intersection.
Concern about Project cost. Wait until funds are available to build the project and extend service to North Beach.	Project funding will be addressed in the SEIS/SEIR. A full funding plan is required for the project to move into final design and construction. The extension of rail service to North Beach is not included in the MTA long range plan and will not be evaluated in the SEIS/SEIR. The document will evaluate the impacts of extending construction tunnels from the Chinatown Station to Columbus Avenue at Filbert Street, where a temporary construction shaft would be located. The shaft would be used for extraction of Tunnel Boring Machines and would be permanently decked over after construction was completed.
Concern about diminished capacity for trucks to make left turns onto Stillman Street if the portal is located under I-80 and has only one 14-foot easterly southbound lane. Added there would also be a problem for buses entering and exiting Stillman Street to the proposed Transbay Terminal bus parking and storage facility, east of Fourth Street.	The SEIS/SEIR will evaluate traffic and circulation impacts of two portal locations. Entrance to and exit from the proposed Transbay Terminal bus facility east of Fourth Street will be addressed.
There are still access issues for residents of the building at 601 Fourth Street on the Fourth/Stockton Alignment (Option B) including the elimination of a loading zone on the east side of Fourth Street and the loss of access to Bluxome Street.	Meetings will be held with residents of 601 Fourth Street and other residents/business owners as requested to discuss access issues.
Fourth/Stockton Alignment Option B, with two-way traffic on Fourth Street, changes the pattern of entries and exits to the garage at 601 Fourth Street. The new surface operation on Fourth Street would eliminate direct access to the King Street freeway on-ramps.	The SEIS/SEIR will evaluate traffic and circulation impacts of each alternative and how local and freeway access is affected.
The semi-exclusive operation of trains in Fourth/Stockton Alignment Option B will result in the removal of mature trees near the 601 Fourth Street building.	No removal of trees is required for the Fourth/Stockton Alignment Option B.
Concern about vibration effects to the 100-year old 601 Fourth Street building during construction and operation of Option B.	Vibration impacts of construction equipment and light rail operation will be analyzed in the SEIS/SEIR.
Concern about noise during construction and operation of Option B.	Noise impacts of construction equipment and light rail operation will be analyzed in the SEIS/SEIR.
Concern about the loss of the loading zone on Fourth Street near Brannan Street next to the 601 Fourth Street building.	The SEIS/SEIR will evaluate the impacts on loading zones and other access issues.
The project needs to get an encroachment permit from Caltrans to do work on state right-of-way, such as the staging area or portal below the I-80 Freeway at Fourth and Bryant Streets.	The SEIS/SEIR will identify and secure all permits that are required for completion of the project.
An archaeological record search and cultural resource report must be done for any ground disturbing activities required within state right-of-way.	The SEIS/SEIR will include an archaeological record search and report as background for the cultural resources impact assessment. Copies will be sent to Caltrans.

TABLE 11-2

SUMMARY OF PUBLIC COMMENTS RECEIVED DURING THE 2006 NOP PROCESS

Public Comment	Action
The SEIS/SEIR needs to include a detailed transit analysis of the number of riders transferring between the Central Subway and BART lines, the number of people entering Powell Street Station to access the Union/Square Market Street Station, and the location of access points between the two stations.	The engineering team will evaluate the capacity constraints, access needs, and emergency access requirements at the Central Subway Union Square/Market Street Station and the BART/Muni Metro Powell Street Station and will coordinate with BART during design development. Estimates of passenger activity at each station will be included in the SEIS/SEIR.

11.2 PUBLIC INVOLVEMENT PROGRAM

The Central Subway Outreach Team is primarily responsible for the following major outreach components:

- Creating and maintaining a public information database;
- Developing and distributing informational and marketing materials that are available in English, Chinese, and Spanish;
- Scheduling and coordinating community meetings and public presentations to existing stakeholders and all requests by interested parties;
- ~~Coordinate~~ Coordinating all meetings for the Community Advisory Group; and
- Facilitating all logistics for any presentation or event related to the Central Subway and as requested by ~~SF~~MTA staff.

Over the past several years, many public meetings have been held to solicit input to the Project. Table 11-3 lists the Project meetings. In October 2006, a series of community meetings were held along the alignment to update the public on the new Fourth/Stockton Alignment as the Central Subway Locally Preferred Alternative (LPA). (Refer Table 11-2 for a summary of the comments from those meetings.) These community meetings were anchored by the Community Advisory Group (CAG) meeting held on November 1, 2006. The ~~Community Advisory Group (~~CAG~~)~~, a body of neighborhood representatives, has met since the planning process to provide public comments, discuss technical findings and make recommendations on the Project.

Since the mailing of the NOP, the Central Subway team has held over a dozen community meetings in addition to the stakeholder meetings conducted by the executive team members and staff.

TABLE 11-3

COMMUNITY OUTREACH PRESENTATIONS & BRIEFINGS

Group/Organization	Date	Location
Community Advisory Group Meeting	12-04-2003, 7:00pm	San Francisco State University, Downtown Campus
Chinatown CDC Board of Directors (subcommittee)	02-18-2004	777 Broadway, Community Room
Chinatown CDC Board of Directors	02-25-2004	777 Broadway, Community Room
Yerba Buena Alliance (Board Meeting)	02-26-2004	Fifth & Mission Garage, Minor Miracle Room
District 3 Townhall Meeting	02-28-2004	Jean Parker Elementary School, 850 Broadway
Bicycle Advisory Committee	03-17-2004	City Hall, Room 408
Stockton Street Commercial Corridor Task Force	03-18-2004	1524 Powell Street, Second Floor
Market Street Association	03-29-2004	One California Street
Chinatown Economic Development Group Board of Directors	03-30-2004	Holiday Inn, Pearl Room
Chinese American Association of Commerce	04-01-2004	778 Clay Street
Union Square Association, Public Affairs Committee	04-06-2004	Grand Hyatt Union Square, Tiburon Room
Chinese American Citizen Alliance	04-07-2004	1044 Stockton Street
Chinese Chamber of Commerce , Board of Directors	04-13-2004	730 Sacramento Street
Chinatown Station Community Meeting	04-29-2004	Gordon J. Lau Elementary School, Multipurpose Room
Union Square Association, Public Affairs Committee	05-04-2004	323 Geary
Union Square Station Community Meeting	05-04-2004	Renaissance Parc 55 Hotel
Community Advisory Group Meeting	05-17-2004	Gordon J. Lau Elementary School, Multipurpose Room
Market Street Station Meeting	05-25-2004, 6:30pm	San Francisco Chamber of Commerce, 235 Montgomery Street
Urban Solutions Staff Meeting	06-08-2004	1083 Mission Street, 2nd Floor
Moscone Station Community Meeting	06-15-2004, 6:30pm	Pacific Energy Center, 851 Howard Street
Union Square Association Board Meeting	06-17-2004	Location is specified
Community Advisory Group Meeting	06-21-2004, 6:30pm	San Francisco Chamber of Commerce, 235 Montgomery
San Francisco Chamber of Commerce	06-30-2004	235 Montgomery Street, Conference Board Room
Portals and Construction Community Meeting	08-17-2004, 6:30pm	Pacific Energy Center, 851 Howard Street
Fourth Street Alignment Meeting	12-14-2004, 6:30pm	Pacific Energy Center, 851 Howard Street
Community Advisory Group Meeting	01-06-2005, 6:30pm	Yerba Buena Center for the Arts, 701 Mission Street
Museum Parc Homeowners Association	03-16-2005	Harrison Street between Third & Fourth
Yerba Buena Alliance	03-21-2005	Location not specified
SFCTA Citizens Advisory Committee	03-23-2005	25 Van Ness Avenue
General Community Meeting	03-29-2005, 6:30pm	Pacific Energy Center, 851 Howard Street
SFCTA Plans & Programs Committee	04-12-2005	City Hall
SOMA Advisory Committee	04-20-2005	ARC Building, 11th Street at Howard
Yerba Buena Alliance	04-28-2005	Marriott Hotel, Pacific Room
Rescue MUNI	04-29-2005	Location not specified
Community Advisory Group Meeting	05-10-2005, 6:30pm	Parc 55 Hotel, 55 Cyril Magnin (Fifth Street at Market)
MTA Board of Directors	05-24-2005	City Hall

TABLE 11-3

COMMUNITY OUTREACH PRESENTATIONS & BRIEFINGS

Group/Organization	Date	Location
Union Square Association	05-26-2005	312 Sutter Street
BART Staff Meeting	05-27-2005	Location not specified
Public Scoping Meeting	06-21-2005	
Union Square Association, Public Affairs Committee	08-08-2006	Stockton/Ellis Street Garage, Conference Room
SPUR/ Transit Advocates	08-23-2006	SFMTA Offices
Chinatown Community Development Center, Board of Directors	09-20-2006	777 Broadway
Transit Advocates Monthly Update	09-27-2006	SFMTA Offices
Chinese Chamber of Commerce, Board of Directors	10-10-2006	730 Sacramento
North Beach Community Pre-meeting	10-11-2006	Clay Street at Montgomery
SFMTA Press Briefing for Central Subway	10-12-2006	City Hall
Chinatown Community Meeting	10-17-2006	Gordon J. Lau Elementary School, Multipurpose Room
North Beach Community Meeting	10-19-2006	Jean Parker Elementary School, 850 Broadway
Union Square/Downtown Community Meeting	10-24-2006	SPUR, 312 Sutter
South of Market Community Meeting	10-26-2006	Salvation Army, Yerba Buena Corps, 360 Fourth Street
Community Advisory Group Meeting	11-01-2006	SFMTA Offices, 2nd Floor Atrium
Chinese Chamber of Commerce General Meeting	11-14-2006	730 Sacramento
Renew SF Community Meeting	11-15-2006	North Beach Athletic Club
Transbay Coordinating Meeting	11-27-2006	SFMTA Offices
Bayview Rotary Presentation	12-06-2006	Location not specified
San Francisco County Transportation Authority (SFCTA) Outreach Update	12-06-2006	SFCTA Offices, 100 Van Ness
SF Transit Effectiveness Open House (Richmond District)	12-09-2006	Richmond/Outer Geary Senior Center
SF Transit Effectiveness Open House (Civic Center)	12-11-2006	Bill Graham Civic Auditorium
Transportation Authority Plans & Programs Committee	12-12-2006	City Hall
SF Transit Effectiveness Open House (Bayview)	12-12-2006	
San Francisco Planning & Urban Research Association - Executive Meeting	02-02-2007	SPUR, 312 Sutter
San Francisco Planning & Urban Research Association - Executive Meeting	02-09-2007	SPUR, 312 Sutter
Meeting with Supervisor Peskin	02-12-2007	City Hall
Rescue MUNI General Meeting & Project Briefing	02-13-2007	SPUR, 312 Sutter
Signature/Petition Drive Press Conference	02-15-2007	Organized by the Chinese Chamber of Commerce
601 Fourth Street Homeowners Project Update	02-20-2007	601 Fourth Street
Asian Heritage Street Celebration	05-1-2007	Folsom Street near Fourth Street
S.F. Arts Commission Civic Design Committee	05-21-2007	25 Van Ness Avenue, Suite 70
S. F. Arts Commission Visual Arts Committee	06-11-2007	25 Van Ness Avenue, Suite 70
SPUR	06-20-2007	312 Sutter Street, 5th Fl
Market Street Association, Board of Directors	06-25-2007	SMWM Offices, 989 Market, 3rd Fl
Metropolitan Transportation Commission	06-27-2007	MTC Offices

TABLE 11-3

COMMUNITY OUTREACH PRESENTATIONS & BRIEFINGS

Group/Organization	Date	Location
Transportation Forum with Mayor Newsom	06-30-2007	Jean Parker Elementary School 840 Broadway at Powell Street
Sierra Club Executive Board	07-16-2007	SPUR 312 Sutter Street, Suite 500
Senior Action Network, Pedestrian Safety Committee	07-18-2007	965 Mission Street
Mayor's Pedestrian Safety Advisory Council	07-23-2007	City Hall, Room 408
Women's Transportation Seminar	7-26-2007	Atrium, 101 California
Building Owners & Managers Association – Gov't & Public Affairs Committee	08-01-2007	233 Sansome Street, 8th Floor
SF Chamber of Commerce-Public Policy Forum	08-09-2007	235 Montgomery, 12th Fl
Chinatown Station Location Site Meeting	08-09-2007	City Hall
Bayview District Advisory Council Meeting	08-10-2007	Bayview Police Station 201 Williams St.
S.F. Recreation & Park Commission	08-16-2007	City Hall , Room 416
Central Subway Community Advisory Group Meeting	08-22-2007	SFMTA, One S. Van Ness Ave., 3rd Floor
District 3 Democratic Club Transportation Forum	09-10-2007	Bocce Café 478 Green Street at Grant
North Beach Chamber of Commerce, Board of Directors Meeting	09-11-2007	Citibank Building, 580 Green St, Mezzanine
Telegraph Hill Dwellers	09-11-2007	TBD
S.F. Convention & Visitors Bureau Executive Staff	09-14-2007	Central Subway Project Office
SF Immigration Rights Summit	09-15-2007	Bill Graham Civic Center Auditorium
Live Chinese Radio Interview with Nat Ford	09-18-2007	
SFMTA Board of Directors Meeting	09-18-2007	City Hall, Room 400
Autumn Moon Festival	09-23-2007	Booth is in Chinatown
RENEWSF Board of Directors (Revitalize and Energize the Northeast and Waterfront of San Francisco)	10-04-2007	Central Subway Project Office
Mary Peters, US DOT Secretary Project Briefing	10-16-2007	TBA
Transportation Authority, Plans & Programs Committee	10-16-2007	City Hall, Room 263
SF Landmarks Preservation Advisory Board	10-17-2007	City Hall, Room 400
Environmental Document Release Press Conference	10-17-2007	Four Seas Restaurant 731 Grant Avenue
SOMA/Union Square/Downtown Community Meeting	10-30-2007	Pacific Energy Center 851 Howard Street
Yerba Buena Alliance (Community Meeting)	11-01-2007	UCB Extension 965 Third Street
SF Planning Commission	11-01-2007	City Hall, Room 400
Chinatown Families Economic Self-Sufficiency Coalition	11-02-2007	17 Walter Lum Place (the alleyway facing Portsmouth Square).

TABLE 11-3

COMMUNITY OUTREACH PRESENTATIONS & BRIEFINGS

Group/Organization	Date	Location
SF Landmarks Preservation Advisory Board	11-07-2007	City Hall, Room 400
Chinatown Station Site Workshop	11-07-2007	City Hall
Chinatown/North Beach Community Meeting	11-08-2007	Gordon J. Lau Elementary School 950 Clay Street
Central Subway Community Advisory Group Meeting	11-13-2007	SFMTA Office One South Van Ness, 3rd Main Conference
SF Convention & Visitors Bureau Board of Directors Meeting	11-14-2007	Firehouse, At Fort Mason Entrance at Marina Blvd & Buchanan Street
SF Planning Commission Meeting	11-15-2007	City Hall, Room 400
Senator Boxer's Aide Project Visit	11-16-2007	
Chinese Consolidated Benevolent Association	12-01-2007	843 Stockton Street
Chinatown Presbyterian Church	12-02-2007	
Central Subway Art Program Presentation	12-12-2007	Chinese Cultural Foundation

11.3 COMMUNITY ADVISORY GROUP

The MTA established a Community Advisory Group (CAG) early in the planning process to provide input to the identification and selection of design options for the Third Street Light Rail Project and to help select the options to carry forward for environmental review. The CAG is composed of a broad cross-section of stakeholder groups from the six primary neighborhoods in the Third Street Corridor: Visitacion Valley, Bayview Hunters Point, Potrero Hill, South of Market, and Chinatown/Downtown. The CAG has meet six times since December of 2003 to discuss the Central Subway phase of the project.

Members of the CAG are listed below:

Visitacion Valley
Samson Wong – Visitacion Valley Baptist Church
Fran Martin – Visitacion Valley Planning Alliance

Bayview Hunters Point
Dorris M. Vincent - Bayview Hunters Point Project Area Committee,
SFMTA Citizens Advisory Committee
Pauline Peele – Residents of the Southeast Sector (ROSES)

Potrero Hill
~~Janet Carpinelli – Dogpatch Neighborhood Association~~
Dick Millet – Potrero Boosters

South of Market
Diane Wong – Campus Planning, UCSF Mission Bay
Chi-Hsin Shao – Yerba Buena Alliance
Michael Kwok – Planning for Elders
Peter Hartman – Museum PARC
Charles Segalas – South Park Improvement Association

Chinatown
Rose Pak – Chinese Chamber of Commerce
Tan Chow – Chinatown Community Development Center
Peter Ho – Chinatown TRIP
David Chiu – Grassroots Enterprise

Union Square/Downtown
~~Lynn Valente~~ Carolyn Diamond – Market Street Association
Linda Mjellem – Union Square Association
Leigh Ann Baughman – Union Square Business Association

North Beach
Wells Whitney – RENEW SF
Joan Woods – Friends of Washington Square

At-Large
Norman Rolfe - San Francisco Tomorrow
Art Michel – San Francisco Planning & Urban Research
Andy Thornley – San Francisco Bicycle Coalition
Jackie Sachs – San Francisco Transportation Authority CAC

11.4 AGENCY CONSULTATION

While preparing this SEIS/SEIR, FTA and the City consulted with the State Historic Preservation Officer for cultural resources, Section 106 analysis (see Appendix F) and with the San Francisco Recreation and Parks Department for Impacts to City parks and Section 4(f) consultation. In addition, as described in the Section 11.5, several agencies were consulted during the development of the environmental documents. Agencies and City departments actively consulted included: Caltrans, the San Francisco Transportation Authority, the San Francisco Redevelopment Agency, the Department of Parking and Traffic, BART, and the Department of Public Works. A list of persons and agencies consulted is provided below.

11.5 PERSONS AND ORGANIZATIONS CONSULTED (SEIS/SEIR DISTRIBUTION)

11.5.1 DRAFT SEIS/SEIR RECIPIENTS

The following agencies, organizations, and individuals received copies of the SEIS/SEIR.

AGENCIES AND ORGANIZATIONS

Northwest Information Center
Attn: Leigh Jordan, Coordinator
Sonoma State University
1303 Maurice Avenue
Rohnert Park, CA 94928

State Office of Intergovernmental Management (15 copies)
State Clearinghouse
1400 Tenth Street, Room 121
P.O. Box 3044
Sacramento, CA 95812-3044

Office of Historic Preservation
Attn: Milford Wayne Donaldson FAIA, SHPO
California Department of Parks and Recreation
P.O. Box 942896
Sacramento, CA 94296-0001

California Department of Transportation
Attn: Tim Sable, IGR CEQA Branch
Office of Transportation Planning - B
P.O. Box 23660
Oakland, CA 94623-0660

Association of Bay Area Governments
Attn: Suzan Ryder
P.O. Box 2050
Oakland, CA 94604-2050

Regional Water Quality Control Board
Attn: Judy Huang
San Francisco Bay Region
1515 Clay St., Suite 1400
Oakland, CA 94612

Bay Area Air Quality Management District
Attn: Joseph Steinberger
939 Ellis Street
San Francisco, CA 94109

Bay Area Rapid Transit District (BART) (2 copies)
Attn: Val Menotti & Marianne Payne
300 Lakeside Dr., 16th Floor
Oakland, CA 94612

Board of Supervisors (12 copies)
City Hall, Room 244
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102-4689

Major Environmental Analysis (3 copies)
Attn: VirnaLiza Byrd
1650 Mission St., Ste. 400
San Francisco, CA 94103

Metropolitan Transportation Commission
Attn: Craig Goldblatt
101 8th Street
Oakland, CA 94607

Mr. Alan Zahradnik
Director of Planning and Policy Analysis
Golden Gate Bridge, Highway and Transportation District
1011 Andersen Drive
San Rafael, CA 94901

San Francisco Architectural Heritage
Attn: Executive Director
2007 Franklin Street
San Francisco, CA 94109

MTA
Traffic Engineering Division (3 copies)
Attn: Bond M. Yee, Tony Young, Jarad Mirabdal
1 South Van Ness Avenue, 7th Floor
San Francisco, CA 94103

Recreation & Park Department
McLaren Lodge, Golden Gate Park
Attn: Daniel LaForte
501 Stanyan St.
San Francisco, CA 94117

Bill Mitchell, Captain
Bureau of Fire Prevention & Investigation
1660 Mission Street, 2nd Floor
San Francisco, CA 94103

Svetlana Karasyova, Park Planner
San Francisco Recreation and Park Department
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501 Stanyan Street
San Francisco, CA 94117-1898

AIA
San Francisco Chapter
Attn: Bob Jacobvitz
130 Sutter Street
San Francisco, CA 94104

City and County of San Francisco Planning Dept.
Attn: Janice Shambray (10 copies)
1650 Mission St., Ste. 400
San Francisco, CA 94103

San Francisco Planning Commission (8 copies)
1650 Mission St., Ste. 400
San Francisco, CA 94103
Attn: Linda Avery, Commission Secretary
Dwight S. Alexander – President
Christina Olague – Vice President
Michael J. Antonini
M. Sue Lee
William L. Lee
Kathrin Moore
Hisashi Sugaya

Federal Transit Administration (5 copies)
201 Mission Street, Room 1650
San Francisco, CA 94105

San Francisco Department of Public Works
Bureau of Street Use and Mapping
Attn: Barbara Moy
875 Stevenson Street, Room 465
San Francisco, CA 94103

Georgia Brittan
San Franciscans for Reasonable Growth
460 Duncan Street
San Francisco, CA 94131

San Francisco Fire Department
Attn: Barbara Schultheis, Fire Marshall
698 Second Street, Room 109
San Francisco, CA 94107-2015

DKS Associates
1956 Webster Street, #300
Oakland, CA 94612

Recreation & Parks Commission (8 copies)
McLaren Lodge, Golden Gate Park
501 Stanyan Street
San Francisco, CA 94117

MTA
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1 South Van Ness Avenue, 7th Floor
San Francisco, CA 94103

James W. Haas, Chairman
Civic Pride!
555 Montgomery Street, Suite 850
San Francisco, CA ~~94110~~94111

Chinatown Resource Center
1525 Grant Avenue
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Yerba Buena Consortium
Attn: John Elberling
182 Howard Street, #519
San Francisco, CA 94105

San Francisco Chamber of Commerce
235 Montgomery Street, 12th Floor
San Francisco, CA 94104-2902

San Francisco Planning & Urban Research Association
Attn: Gabriel Metcalf, Executive Director
312 Sutter Street
San Francisco, CA 94108

San Francisco Group
Sierra Club
85 2nd Street, Floor 2
San Francisco, CA 94105-3441

San Francisco Bay Guardian
Attn: Gabe Roth, City Editor
135 Mississippi Street
San Francisco, CA 94107-2536

Ms. Tawanna M. Glover (10 copies)
Office of Human and Natural Resources, TPE-30
Federal Transit Administration, Room 9413
400 7th Street, SW
Washington, DC 20590

Mary Anne Miller
San Francisco Tomorrow
1239 42nd Avenue
San Francisco, CA 94122

San Francisco Architectural Heritage
Attn: Executive Director
2007 Franklin Street
San Francisco, CA 94109

San Francisco Tomorrow
Attn: Jane Morrison, President
44 Woodland Ave.
San Francisco, CA 94117

Tenants and Owners Development Corp.
Attn: John Elberling
230 - Fourth Street
San Francisco, CA 94103

Leland S. Meyerzone
KPOO - FM
P.O. Box 6149
San Francisco, CA 94101

San Francisco Business Times
275 Battery Street, Suite 940
San Francisco, CA 94111

Associated Press
Attn: Bill Shiffman
303 2nd Street, #680 North
San Francisco, CA 94107-1366

Patrick Hoge
City Hall Bureau
San Francisco Chronicle
901 Mission Street
San Francisco, CA 94103

The Sun Reporter
1791 Bancroft Avenue
San Francisco, CA 94124-2644

Institute of Government Studies
109 Moses Hall
University of California
Berkeley, CA 94720

Government Information Services (3 Copies)
San Francisco Main Library, Civic Center
100 Larkin Street
San Francisco, CA 94102

Government Publications Department
San Francisco State University Library
1630 Holloway Avenue
San Francisco, CA 94132

Landmarks Preservation Advisory Board (6 copies)
Attn: Sonya Banks
1650 Mission Street, Suite 400
San Francisco, CA 94103

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Pier 9, The Embarcadero
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Chinatown Library
1135 Powell Street
San Francisco, CA 94108

North Beach Library
2000 Mason Street
San Francisco, CA 94133

Chan Norman Inc.
1817 Leimert Blvd.
Oakland, CA 94602

San Francisco Chronicle
901 Mission Street
San Francisco, CA 94103

San Francisco Examiner
Attn: Melanie Carroll
450 Mission St., 5th Fl.
San Francisco, CA 94105

Stanford University Libraries
Jonsson Library of Government Documents
State & Local Documents Division
Stanford, CA 94305

Hastings College of the Law - Library
200 McAllister Street
San Francisco, CA 94102-4978

Johanna Street
Carey & Co., Inc.
460 Bush Street
San Francisco, CA 94108

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100 Larkin Street
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San Francisco, CA 94117

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San Francisco, CA 94108

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Burlingame, CA 94010

Moraya Khan
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San Francisco, CA 94108

Peter Hartman
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San Francisco, CA 94107

Ron Lee
819 Stockton Street, 2nd Floor
San Francisco, CA 94108

John Tsang
Hop-Sun Yung Benevolent Association
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Other Interested Parties

District 3 Democratic Club
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San Francisco, CA 94126

Edaw Inc.
Tammy Chan
150 Chestnut Street
San Francisco, CA 94111

Friends of Washington Square
June Osterberg
722 Filbert Street
San Francisco, CA 94133

Levine & Baker LLP
Richard E. Levine
1 Maritime Plaza, Suite 400
San Francisco, CA 94111

Madison Marquette
Tory Hill
909 Montgomery Street Ste 200
San Francisco, CA 94133

San Francisco Architectural Heritage
Executive Director
2007 Franklin Street
San Francisco, CA 94109

San Francisco Chamber of Commerce
235 Montgomery Street
San Francisco, CA 94104

San Francisco Convention & Visitors Bureau
Dale Hess, Executive Director
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San Francisco, CA 94103

San Francisco Planning & Urban Research Association
Gabriel Metcalf, Executive Director
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San Francisco Tomorrow
Jane Morrison, President
44 Woodland Ave
San Francisco, CA 94117

Speedway Printing
Harry B. Newhall, President
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San Francisco, CA 94107

Telegraph Hill Dwellers
Nan Roth
1436 Kearny Street
San Francisco, CA 94133

Telegraph Hill Dwellers
Nancy Shanahan
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Telegraph Hill-Friends of Washington Square
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Davis, CA 95616

Howard Chabner
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San Francisco, CA 94108

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Inna Chen
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San Francisco, CA 94108

Chinatown Community Development Center
Cindy Wu
1525 Grant Avenue
San Francisco, CA 94133

Visitacion Valley Parent Association
Bonnie Shiu
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San Francisco, CA 94108

Chinese Affirmative Action
Ronnie Rhoe
17 Walter Lum Place
San Francisco, CA 94108

Donaldina Cameron House
Doreen Der-McLeod
920 Sacramento Street
San Francisco, CA 94108

North Beach Merchants Association
Tony Gantner
235 Chestnut Street
San Francisco, CA 94133

Ping Yuen Resident Improvement Association
Guang Wu-Chen
799 Pacific Ave
San Francisco, CA 94133

Presbyterian Church in Chinatown
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San Francisco, CA 94108

San Francisco Chinese Progressive Association
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San Francisco Planning and Urban Research Association
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Visitacion Valley Agents Alliance
Marlene Tran
San Francisco, CA

Visitacion Valley Community Development Corporation
Ken Nim
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San Francisco, CA 94134

Ellman, Burke, Hoffman & Johnson
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San Francisco Planning & Urban Research (SPUR)
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Market Street Association
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San Francisco, CA 94102

South Park Improvement Association
Charles Segalas
3 Los Conejos
Orinda, CA 94563

Yerba Buena Alliance
Chi-Hsin Shao 1
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San Francisco, CA 94104

Grassroots Enterprise
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UCSF Mission Bay
Diane Wong
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San Francisco, CA 94118

Potrero Boosters
Dick Millet
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Bayview Hunters Point Project Area Committee (BVHP PAC)
Dorris M.Vincent
1661 Palou Avenue
San Francisco, CA 94124

Visitacion Valley Planning Alliance
Fran Martin
186 Arleta Avenue
San Francisco, CA 94134

San Francisco County Transportation Authority - Citizen Advisory Committee
Jackie Sachs
2698 California Street #404
San Francisco, CA 94115

Union Square Business Association
Leigh Ann Baughman
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San Francisco, CA 94102

Union Square Association
Linda Mjellem
323 Geary Street, Suite 408
San Francisco, CA 94102

Planning for Elders
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San Francisco, CA 94103

San Francisco Tomorrow
Norman Rolfe
2233 Larkin Street
San Francisco, CA 94109

Residents of the Southeast Sector (ROSES)
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San Francisco, CA 94124

Museum PARC, Yerba Buena Resident
Peter Hartman
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Chinese Chamber of Commerce
Rose Pak
730 Sacramento Street
San Francisco, CA 94108

Visitacion Valley Baptist Church
Samson Wong
61 Leland Avenue
San Francisco, CA 94134

RENEW SF
Wells Whitney
1308 Montgomery Street
San Francisco, CA 94133

11.5.4 OTHER NOTIFICATION

Two public meetings will be held to review findings of the SEIS/SEIR. Notification of these meetings was mailed to property owners and tenants within 300 feet of the Central Subway Corridor and to the general Central Subway mailing list.

APPENDICES

A. LIST OF PREPARERS

B. NOTICE OF PREPARATION

C. PROGRAMMATIC AGREEMENT WITH STATE HISTORIC PRESERVATION OFFICE (SHPO)
2008 MEMORANDUM OF AGREEMENT

D. FTA LETTER TRANSMITTING APE 2007 MAPS
SHPO LETTER APPROVING APE 2007MAPS
SHPO LETTER OF CONCURRENCE WITH FINDINGS OF EFFECT

E. TRANSPORTATION BACKUP

F. HISTORICAL ARCHITECTURAL RESOURCES

G. HAZARDOUS MATERIALS BACKGROUND

H. 2009 NEW STARTS COST EFFECTIVENESS

I. MITIGATION MONITORING AND REPORTING PROGRAM

J. SECTION 4(F) "DE MINIMIS" CONCURRENCE LETTERS FROM RECREATION AND PARKS DEPARTMENT

K. SHADOW ANALYSIS, ALTERNATIVE 3B, CHINATOWN STATION

APPENDIX A

LIST OF PREPARERS

A. LIST OF PREPARERS

FEDERAL TRANSIT ADMINISTRATION (FTA)
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Donna Turchie
Renee Marler
James Barr
Alex Smith

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John Funghi, ~~Senior Project~~ Program Manager
Albert Hoe, Project Engineer
Bill Neilson, Project Engineer
David Greenaway, Environmental Liaison
Dan Rosen, Transit Analysis

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Bill Wycko, Transportation
Randall Dean, Archaeology

Neighborhood Planning
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Tim Frye, Historic Architecture
Ericka Jackson, Jim Miller, Sue Exline; SEIR Reviewers

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Audrey Williams Pearson, Deputy City Attorney

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Kevin Keck, Traffic Analysis
Dustin White, Bicycle Analysis

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Daniel LaForte, Park Planner

EIS/EIR CONSULTANTS

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Rebecca Kohlstrand, SEIS/SEIR Manager

PB/WONG TEAM
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Cliff Wong, Project Engineer
Sue Olive, Alternatives, Purpose and Need; Alternatives; Community Resources
Marilyn Duffey, Environmental Lead, Visual Resources
Matt Fowler, Alternatives, Engineering, Construction Methods
Joe O'Carroll, Construction Costs
Mitch Fong, Geology, Hydrology
Steven Wolfe and Kevin Keller, Noise and Vibration
Ivy Edmonds-Hess, Air Quality, Energy
Tara Cok, Section 4(f)
Liz Fowler, Socioeconomics
Rob Malone, Land Use
Joe Castiglione, Travel Demand Forecasting
Jackie Mancuso, Graphics
~~Robert Jensen~~ Mona Tamari, Architectural Simulations
Susan MacKenzie, Document Control
Terry Seaborn, Word Processing
Harriet Dietz, Outreach
Nia Crowder, Outreach
Betty Chau, Outreach
Robert Jansen, Architecture

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Jose Farran, Traffic and Travel Demand

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Oakland, CA 94612

Peggy Peischl, Hazardous Materials

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Joe Drennan, Biology
Carole Garcia

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Rohnert Park, CA 94928

Adrian Praetzellis, Archaeology
Michele Meyers

APPENDIX B

NOTICE OF PREPARATION

PLANNING DEPARTMENT

City and County of San Francisco • 1660 Mission Street, Suite 500 • San Francisco, California • 94103-2414

MAIN NUMBER	DIRECTOR'S OFFICE	ZONING ADMINISTRATOR	PLANNING INFORMATION	COMMISSION CALENDAR
(415) 558-6378	PHONE: 558-6411	PHONE: 558-6350	PHONE: 558-6377	INFO: 558-6422
	4TH FLOOR	5TH FLOOR	MAJOR ENVIRONMENTAL	INTERNET WEB SITE
	FAX: 558-6426	FAX: 558-6409	FAX: 558-599	WWW.SFGOV.ORG/PLANNING

September 20, 2006

To: Responsible Agencies, Trustee Agencies, and Interested Parties

Important Please Read: This revised Notice of Preparation (NOP) is similar to a previous combined NOP and Notice of Scoping Meeting sent out in June 2005. The Scoping Meeting regarding the proposed project was held on June 21, 2005. This revised NOP is being sent out because: (1) a number of property owners said that they did not receive the June 2005 combined notice and (2) because the project description has changed (see below). Issuing this revised NOP with the current project description to the property owners, tenants and other interested persons, assures that everyone has received the required notice regarding preparation of a Supplemental EIS/EIR and is acquainted with the current description of the proposed project. Please be aware that the proposed project may affect your property. There will NOT be a second Scoping Meeting; however, there will be a series of five community meetings to describe the changes to the proposed project. (Dates and locations for these meetings are listed on the back of the notice). If you have comments on the content and/or scope of the proposed Draft Supplemental Environmental Impact Report, please send a written letter to Paul Maltzer, the Environmental Review Officer at the address above. The revised NOP is below.

RE: CASE NO. 96.281E – CENTRAL SUBWAY, PHASE 2 OF THE THIRD STREET LIGHT RAIL PROJECT: NOTICE OF PREPARATION OF A SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

A Notice of Preparation (NOP) of a Supplemental Environmental Impact Report (SEIR) for the above-referenced project, described below, has been issued by the Planning Department. Information regarding the environmental process for this project is available by contacting **Joan A. Kugler**, whom you may reach at **(415) 575-6925** or at the above address. For questions about the Central Subway Project, sponsored by the San Francisco Municipal Transportation Agency (SFMTA), contact **John Funghi** at **(415) 701-4299**.

Project Description: The proposed project is the second phase of SFMTA's Third Street Light Rail Project. The Planning Commission certified both phases of the project in a joint FEIS/FEIR on December 3, 1998. In response to public input during and subsequent to the 2005 public scoping process, SFMTA has created an additional alternative, the Fourth/Stockton Alignment Option B. As part of the SEIR, SFMTA will be evaluating potential changes to the 1998 FEIS/FEIR Alternative including: changes to the number and location of subway stations, the use of off-street station entries, the provision for ventilation shafts, and the use of a barrier type fare collection system. SFMTA is also proposing two options for a Fourth/Stockton Alignment running exclusively on Fourth Street, south of Market. It would operate on the surface of Fourth Street, from King Street north, to a double track portal between Townsend and Brannan Streets (Option A) or between Bryant and Harrison Streets (Option B) where it would go underground and operate in both directions along Fourth Street (south of Market) and Stockton Street (north of Market) to a terminus in the vicinity of Stockton and Jackson Streets in Chinatown. The depth of the tunnel at subway stations would range from approximately 60 feet to 100 feet. The new alignment would reduce transit trip time, surface traffic and parking impacts along Third Street, along with construction impacts and duration when compared to the 1998 FEIS/FEIR project.

Under the Fourth/Stockton Alignment, the number of subway stations would be reduced from four to three and the surface station at Third/King Streets would be eliminated. Option B would add an additional surface station on Fourth between Bryant and Brannan Streets. In both options, the Moscone Station would be located between Howard and Folsom, with entrances to the north in the sidewalks and to the south in property that would be acquired and made available for Transit Oriented Development. The Market Street and Union Square subway stations would be combined at one location on Stockton between Geary and Ellis Streets, with connections to the

north in the Union Square plaza and connections to the south using the Powell Station entrances to the BART/Muni Market Street Subway. The station in Chinatown would be located in the vicinity of Stockton and Clay Streets in Option A and in the vicinity of Stockton and Washington Streets in Option B, with proposed off-street entrances in property to be acquired by SFMTA. The Chinatown Station and Moscone Station subway entries would also accommodate above ground vent shaft structures that are necessary for emergency ventilation. For the Union Square/Market Street Station, these vent shafts would be integrated into the east terrace of Union Square in Option A and in the Ellis/O'Farrell Garage in Option B. The Fourth/Stockton Alignment would include a construction variant to extend the running tunnels another 2,000 feet north of the Chinatown Station to facilitate construction and provide for a future extension to North Beach. Other proposed changes include the use of Tunnel Boring Machine technology to reduce surface impacts and construction time, and the introduction of a barrier type fare collection system now required by SFMTA in subway operations. The SEIR will also update the project operating plan, including car requirements.

These Project Changes May Have A Significant Effect On The Environment. The Planning Department has determined that a Supplemental EIR (SEIR) must be prepared for the proposed project prior to any final decision regarding whether to approve project changes. This determination is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15063 (Initial Study), 15064 (Determining Significant Effect), and 15065 (Mandatory Findings of Significance). The Federal Transit Administration has also determined that a Supplemental Environmental Impact Statement (SEIS) must be prepared and a joint document will be issued. The purpose of the SEIS/SEIR is to provide information about potential significant physical environmental effects of the revised project that were not previously presented, to update the environmental setting as required, to identify possible ways to minimize the significant project effects, and to describe and analyze possible alternatives to the proposed project. Preparation of an NOP or environmental document does not indicate a decision by the City to approve or to disapprove the project changes. However, prior to making any such decision, the decision makers must review and consider the information contained in the environmental document.

Probable Project Environmental Impacts: The revised project would need to be analyzed for potential land use, air quality, noise, transportation, biology, hydrology, visual, geology, hazardous materials, cultural resources, and construction impacts. The Fourth/Stockton Street Alignment Options A and B and the North Beach construction tunnel variant would affect buildings not previously evaluated for historic, land use, noise, vibration, visual and construction impacts. The proposed acquisition of property to accommodate Central Subway station entries and ventilation shafts outside the public right-of-way could have visual, neighborhood, land use, noise, vibration, cultural resources, and construction impacts. At Chinatown and Moscone Stations the acquisition of property would require business and residential relocation and create opportunities for Transit Oriented Development. At the Union Square/Market Street Station the provision of an entry in Union Square would require an analysis (Section 4(f) federal evaluation) of the impact of the project on a public park.

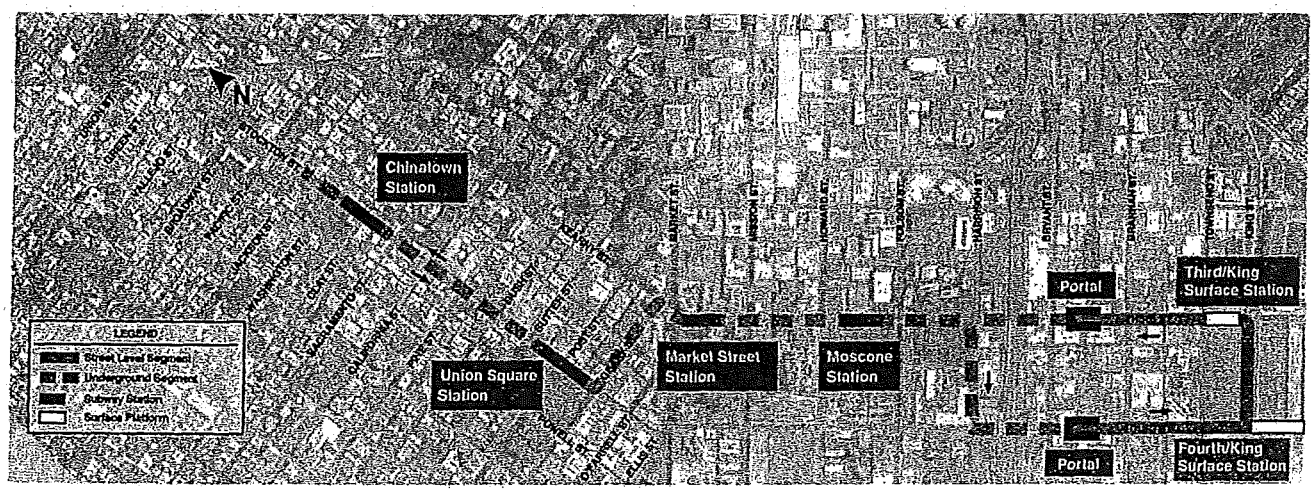
The SEIS/SEIR will analyze the proposed project changes described above relative to the original Central Subway project cleared in the 1998 Final EIS/EIR. The original FEIS/FEIR project included a shallow subway crossing above the Muni/BART tunnels at Third and Market Streets, and single-track portals between Brannan and Bryant Streets on Third and Fourth Streets. The SEIS/SEIR will also evaluate a No Project Alternative, which would include the newly completed Third Street Light Rail Initial Operating Segment and associated bus changes.

Written comments on the scope and content of the future Supplemental EIS/EIR should be sent to Paul Maltzer, Environmental Review Officer, San Francisco Planning Department, 1660 Mission Street, Suite 500, San Francisco, CA 94103. Comments are due to Mr. Maltzer by **November 10, 2006.**

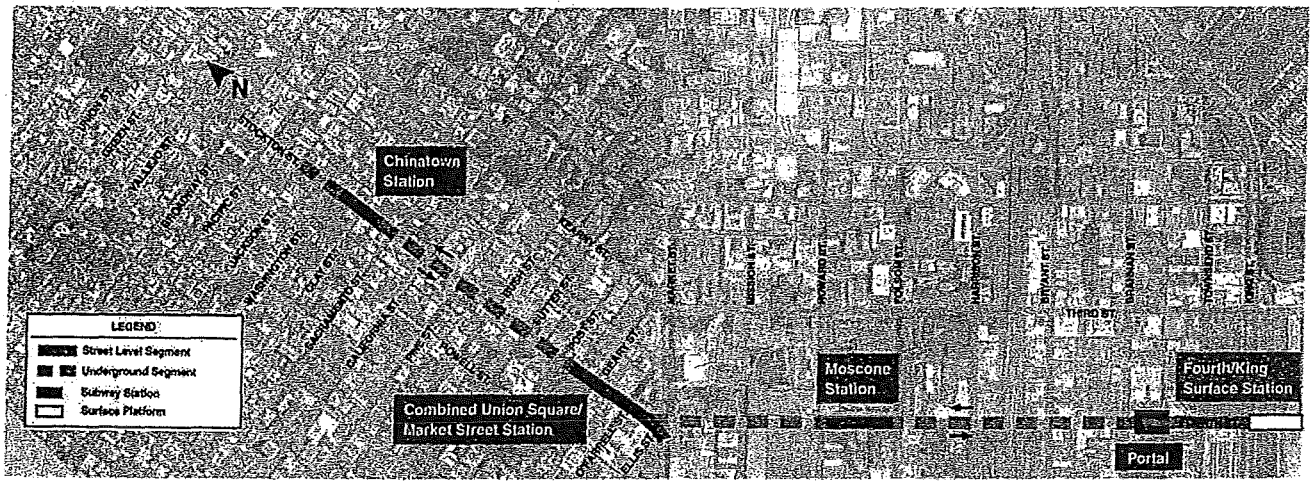
Documents relating to the proposed project are available for review, by appointment, at the Planning Department's Major Environmental Analysis office, 30 Van Ness Avenue, Suite 4150. Please call Joan A. Kugler at (415) 575-6925 for an appointment. Documents can also be viewed at the SFMTA Web Site: www.sfmta.com/central.

If you have questions concerning environmental review of the proposed project or would like to be placed on the environmental mailing list, please contact Joan A. Kugler at (415) 575-6925 or in writing at the address above.

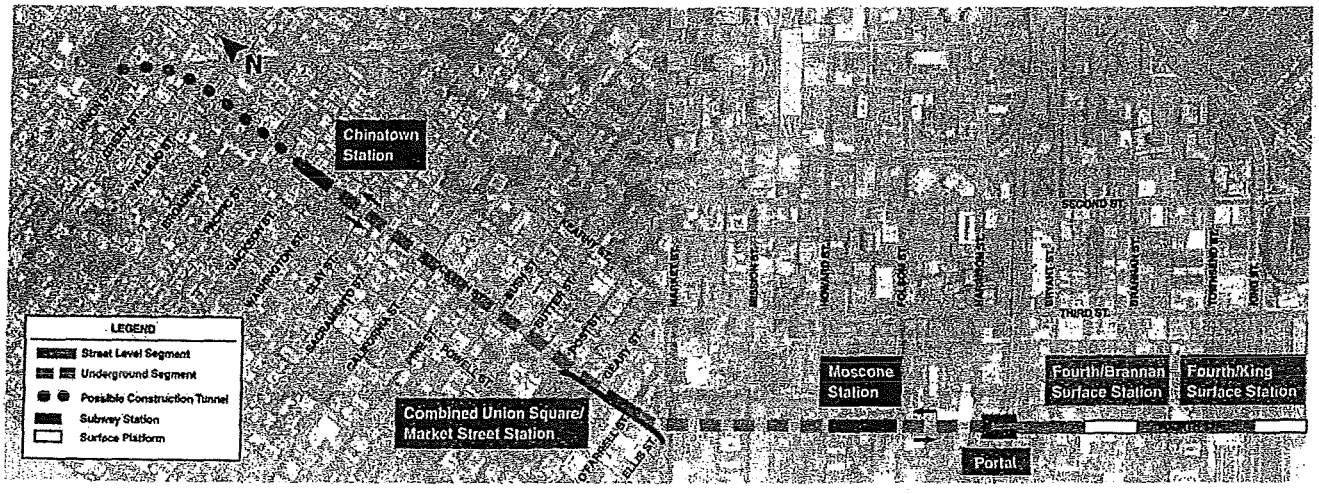
Central Subway Alignments



1998 FEIS/FEIR Alignment



Proposed Fourth/Stockton Alignment (Option A LPA)



Proposed Fourth/Stockton Alignment (Option B Modified LPA)

Upcoming Central Subway Meetings

CHINATOWN MEETING
Tuesday, October 17, 2006 (6:30 - 8:30 pm)
Gordon J. Lau Elementary School
Multipurpose Room
950 Clay Street (between Stockton and Powell)

NORTH BEACH MEETING
Thursday, October 19, 2006 (6:30 - 8:30 pm)
Jean Parker Elementary School
Multipurpose Room
840 Broadway (between Powell and Mason)

UNION SQUARE/DOWNTOWN MEETING
Tuesday, October 24, 2006 (6:30 - 8:30 pm)
SPUR
312 Sutter Street, 5th Floor (between Stockton and Grant)

SOUTH OF MARKET MEETING
Thursday, October 26, 2006 (6:30 - 8:30 pm)
Salvation Army, Yerba Buena Corps
360 Fourth Street (between Harrison and Folsom)

CENTRAL SUBWAY COMMUNITY ADVISORY GROUP MEETING
Wednesday, November 1, 2006 (6:30 - 8:30 pm)
SF Municipal Transportation Agency
1 South Van Ness, 3rd Floor Main Conference Room
(corner of Market Street)

CENTRAL SUBWAY
THIRD STREET LIGHT RAIL PHASE 2

PRESORTED
FIRST-CLASS MAIL
U.S. POSTAGE PAID
SAN FRANCISCO, CA
PERMIT NO. 925

HOW TO REACH US

PLANNING DEPARTMENT FOR ENVIRONMENTAL QUESTIONS:
Joan A. Kugler
Planning Department
1660 Mission Street, Suite 500
San Francisco, CA 94103
Phone: (415) 575-6925
Email: jakugler-planning@sbcglobal.net

SFMTA FOR PROJECT DESIGN QUESTIONS:
John Funghi
Municipal Transportation Agency
1 South Van Ness, 3rd Floor
San Francisco, CA 94103
Phone: (415) 701-4299
Email: central.subway@sfmta.com

Website: www.sfmta.com/central
Project Info: (415) 701-4371

San Francisco Municipal Railway
A Division of the Municipal Transportation Agency

PLANNING DEPARTMENT

City and County of San Francisco • 1660 Mission Street, Suite 500 • San Francisco, California • 94103-2414

MAIN NUMBER	DIRECTOR'S OFFICE	ZONING ADMINISTRATOR	PLANNING INFORMATION	COMMISSION CALENDAR
(415) 558-6378	PHONE: 558-6411	PHONE: 558-6350	PHONE: 558-6377	INFO: 558-6422
	4TH FLOOR	5TH FLOOR	MAJOR ENVIRONMENTAL	INTERNET WEB SITE
	FAX: 558-6426	FAX: 558-6409	FAX: 558-5991	WWW.SFGOV.ORG/PLANNING

June 3, 2005

To Responsible Agencies, Trustee Agencies, and Interested Parties:

RE: CASE NO. 96.281E – CENTRAL SUBWAY PHASE 2 OF THE THIRD STREET LIGHT RAIL PROJECT NOTICE OF PREPARATION OF A SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT AND NOTICE OF PUBLIC SCOPING MEETING

A Notice of Preparation (NOP) of a Supplemental Environmental Impact Report (SEIR) and a Notice of Public Scoping Meeting for the above-referenced project, described below, has been issued by the Planning Department. The NOP/Notice of Public Scoping Meeting is either attached or is available upon request from **Joan A. Kugler**, whom you may reach at **(415) 558-5983** or at the above address. The NOP/Notice of Public Scoping Meetings will also be available on-line at www.sfmuni.com/central, by approximately June 7. For questions about the Central Subway Project, sponsored by the San Francisco Municipal Railway, contact John Thomas at (415) 554-0719

Project Description: The proposed project is the second phase of Muni's Third Street Light Rail Project. The Planning Commission certified both phases of the project in a joint FEIS/FEIR on December 3, 1998. In response to public input, Muni is evaluating potential changes to the rail alignment between Fourth/King Streets and Stockton/Geary Streets, the number and location of subway stations, the use of off-street station entries, the provision for ventilation shafts, the use of a barrier type fare collection system, and the use of deep tunneling construction methods. Rather than operating on both Third and Fourth Streets south of Market Street, Muni is proposing a new alignment exclusively on Fourth Street. It would operate on the surface of Fourth Street, from King Street north, to a double track portal between Townsend and Brannan Streets where it would go underground and operate in both directions along Fourth Street (south of Market) and Stockton Street (north of Market) to a terminus in the vicinity of Stockton and Clay Streets in Chinatown. The depth of the tunnel at subway stations ranges from approximately 60 feet to 100 feet. The new alignment would reduce transit trip time, surface traffic and parking impacts along Third Street, construction duration and overall project cost when compared to the original EIS/EIR project.

The number of subway stations would be reduced from four to three and the surface station at Third/King Streets would be eliminated. The Moscone Station is proposed on Fourth Streets at several possible locations. The Base Case would be located between Howard and Folsom, with an entrance to the north in a public plaza and to the south in property that would be acquired and made available for Transit Oriented Development. One option would locate the station between Folsom and Harrison Streets. Another option would add an additional subway station on Fourth between Bryant and Brannan in combination with the Base Case Moscone Station location. The Market Street and Union Square subway stations would be combined at one location on Stockton between Geary and O'Farrell Streets, with connections to the north in the Union Square plaza and connections to the south using the Powell Street Station entrances to the BART/Muni Market Street Subway. The station in Chinatown would be located in the vicinity of Stockton/Clay Streets, with proposed off-street entrances in property to be acquired by Muni. The Chinatown and Moscone subway entries would also accommodate aboveground vent shaft structures that are necessary for emergency ventilation. At Union Square these vent shafts would be integrated into the east terrace of the square. Other proposed changes include the use of Tunnel Boring Machine technology to reduce surface impacts and construction time, and the introduction of a barrier type fare collection system now

required by Muni in subway operations. The SEIR will also update the project operating plan, including car requirements.

These Project Changes May Have A Significant Effect On The Environment. The Planning Department has determined that a Supplemental EIR (SEIR) must be prepared for the proposed project prior to any final decision regarding whether to approve project changes. This determination is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15063 (Initial Study), 15064 (Determining Significant Effect), and 15065 (Mandatory Findings of Significance). The Federal Transit Administration has also determined that a Supplemental Environmental Impact Statement (SEIS) must be prepared and a joint document will be issued. The purpose of the SEIS/SEIR is to provide information that was not previously provided about potential significant physical environmental effects of the revised project, to update the environmental setting as required, to identify possible ways to minimize the significant project effects, and to describe and analyze possible alternatives to the proposed project. Preparation of an NOP or environmental document does not indicate a decision by the City to approve or to disapprove the project changes. However, prior to making any such decision, the decision makers must review and consider the information contained in the environmental document.

Probable Project Environmental Impacts: The revised project would need to be analyzed for potential land use, air quality, noise, traffic, visual, geology, hazardous materials, historical resources, and construction impacts. The Fourth/Stockton Street alignment, with a double track portal between Townsend and Brannan Streets, would affect buildings not previously evaluated for historic, land use, noise, vibration, visual and construction impacts. The proposed acquisition of property to accommodate Central Subway station entries and ventilation shafts outside the public right-of-way would have visual, neighborhood, land use, noise, vibration, and construction impacts. At Chinatown and Moscone Stations the acquisition of property would require business and residential relocation and create opportunities for transit oriented development. At the Union Square/Market Street Station the provision of an entry in Union Square would require an analysis (Section 4(f) federal evaluation) of the impact of the project on a public park.

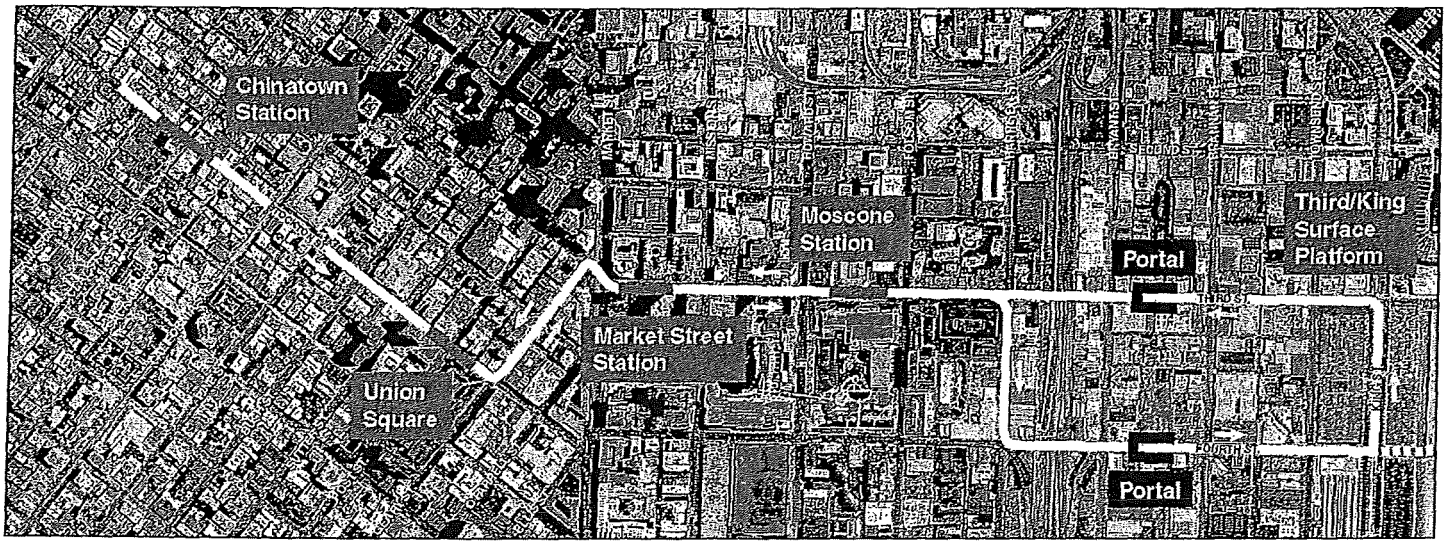
The SEIS/SEIR will analyze the proposed project changes described above relative to the original Central Subway project cleared in the 1998 Final EIS/EIR. The original FEIS/FEIR project included a shallow subway crossing above the Muni/BART tunnels at Third and Market Streets, and single-track portals between Brannan and Bryant Streets on Third and Fourth Streets. The SEIS/SEIR will also evaluate a No Project Alternative, which would include the newly completed Third Street Light Rail Initial Operating Segment and associated bus changes.

The Planning Department will hold one (1) **PUBLIC SCOPING MEETING**, at the time and location indicated in the NOP/Notice of Public Scoping Meeting. The purpose of this meeting is to receive oral comments to assist the Planning Department in reviewing the scope and content of the environmental impact analysis and information to be contained in the SEIR for the project. Written comments will also be accepted at this meeting and until the close of business on **July 13, 2005.** Written comments should be sent to Paul Maltzer, San Francisco Planning Department, 1660 Mission Street, Suite 500, San Francisco, CA 94103.

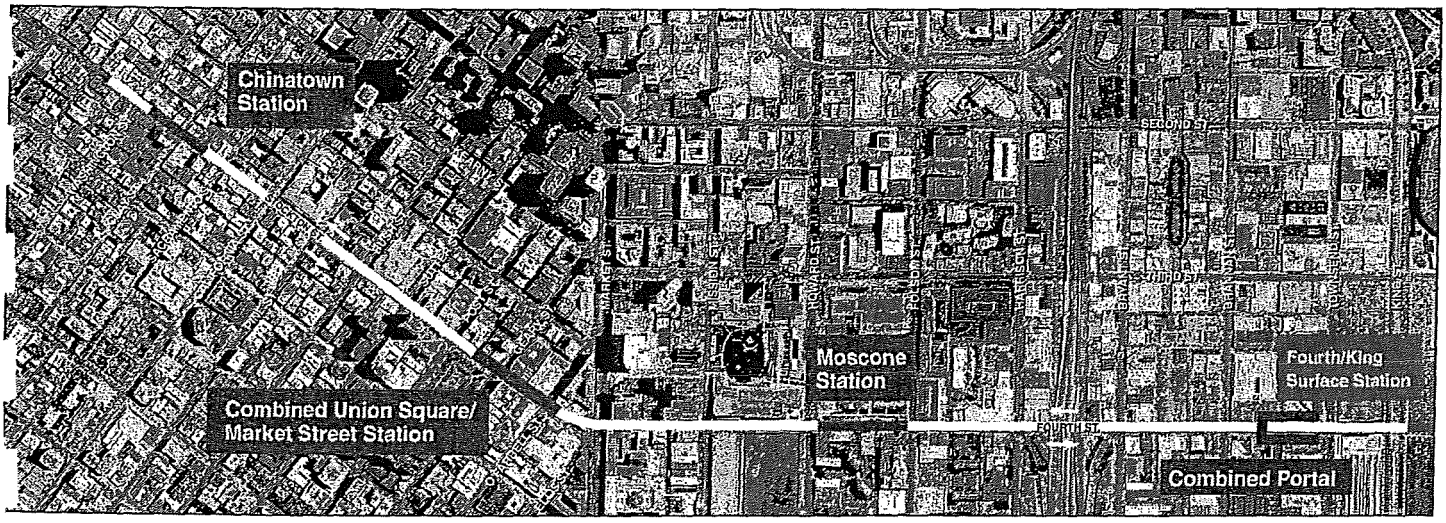
Documents relating to the proposed project are available for review, by appointment, at the Planning Department's Major Environmental Analysis office, 30 Van Ness Avenue, Suite 4150. Please call Joan A. Kugler at (415) 558-5983. Documents can also be viewed at Muni's Web Site: www.sfmuni.com/central.

If you work for an agency that is a responsible or a trustee agency, we need to know the views of your agency as to the scope and content of the environmental information that is relevant to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the SEIR when considering a permit or other approval for this project. We will also need the name of the contact person for you agency. If you have questions concerning environmental review of the proposed project, please contact Joan A. Kugler at (415) 558-5983.

Central Subway Alignment Options



Original EIS/EIR Third/Fourth Street Alignment



Proposed Fourth/Stockton Street Alignment

Notice of Public Scoping Meeting for the Central Subway Supplemental Environmental Impact Report

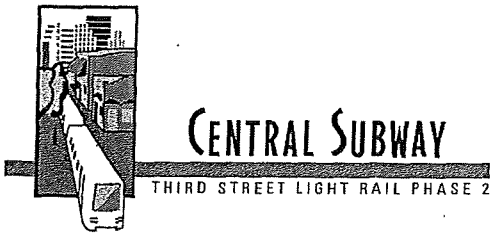
Date: June 21, 2005

Time: 6:30 PM to 8:30 PM

Place: PG&E Pacific Energy Center, 851 Howard Street (between Fourth and Fifth Streets)

The Planning Department of the City and County of San Francisco and the Municipal Railway are hosting a Public Scoping Meeting for the Central Subway Project. The purpose of the meeting is to solicit public input on the potential environmental effects of proposed project changes described in the attached Notice of Preparation. The meeting will satisfy criteria of the State of California Public Resources code 21083.9 and the California Environmental Quality Act (CEQA) Guidelines Section 15206.

Note: The meeting facilities are wheelchair accessible. Individuals who will need special assistance, such as listening enhancements or sign language interpreters, should request those services by calling 415-554-1803 (for relay assistance, call California Relay service) 72 hours prior to the public workshop.



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HOW TO REACH US

PLANNING DEPARTMENT FOR ENVIRONMENTAL QUESTIONS:

Joan A. Kugler
Planning Department
1660 Mission Street, Suite 500
San Francisco, CA 94103
Phone: 415-558-5983
Planning Department Email: joan.kugler@sfgov.org

MUNI FOR PROJECT DESIGN QUESTIONS:

John Thomas
Muni Third Street Light Rail
1145 Market Street, 5th Floor
San Francisco, CA 94103
Phone: 415-554-0719
Project Email: central.subway@sfmta.com

Muni Web Page: http//www.sfmuni.com/central
Muni Third Street Project Hotline: (415) 703-6655

APPENDIX C

PROGRAMMATIC AGREEMENT WITH STATE HISTORIC PRESERVATION OFFICE (SHPO)

2008 MEMORANDUM OF AGREEMENT

STATE OF CALIFORNIA — THE RESOURCES AGENCY PETE WILSON, Governor

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO 94296-0001
(916) 653-6624
FAX: (916) 653-9824

October 9, 1998

REPLY TO: FTA980703A

Robert Hom, Director
Office of Planning and Program Development
Federal Transit Administration
Region IX
201 Mission Street
SAN FRANCISCO CA 94105-1839

Re: MUNI Third Street Light Rail EIS/EIR Finding of No Adverse Effect Report, San Francisco, San Francisco County.

Dear Mr. Hom:

Thank you for submitting to our office your October 8, 1998 letter and supporting documentation regarding the Finding of No Adverse Effect (FONAE) documentation for the proposed extension of the San Francisco Municipal Railway (MUNI) Third Street Light Rail project in San Francisco, San Francisco County. The project will involve the construction an Initial Operating Segment (ISO) – Phase I consisting of a construction of a surface light rail system, and a potential New Central Subway – Phase II which will be a 1.75 mile subsurface tunnel that will begin north of King Street and extend to a terminus at Stockton and Clay Streets. The entire extension, if constructed, will serve the area running south from the downtown area to the Bayview-Hunters Point community. The Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR) considered three alternatives for the MUNI light rail project. The San Francisco Public Transportation Commission (Commission) selected the bi-directional design option over the Fourth Street Bridge as the Locally Preferred Alternative for the Initial Operating Segment (IOS) – Phase I portion of the project. The Fourth Street Bridge has been determined, by consensus, to be eligible for inclusion on the National Register of Historic Places (NRHP). This eliminated from consideration the use of the Third Street Bridge as a directional alternative for the proposed project.

In accordance with 36 CFR 800, regulations implementing Section 106 of the National Historic Preservation Act, we have reviewed the DEIS/DEIR for information regarding the effects of the IOS - Phase I/New Central Subway - Phase II project on the 4th Street Bridge and on potential archaeological properties that may be affected as a result of a the potential New Central Subway. Funding for the second phase of the project, and its feasibility as a viable alternative, have not been established at this time. However, the l

effect the New Central Subway could have on historic resources prompts us to request your consideration of the development of a programmatic agreement (PA), in consultation with our office, that would outline the process and procedures by which any potential historic properties would be treated in the event of their discovery. We have reviewed an initial draft of the PA and request that the following language be inserted into the text:

PROGRAMMATIC AGREEMENT
AMONG THE FEDERAL TRANSIT ADMINISTRATION
THE CALIFORNIA HISTORIC PRESERVATION OFFICER
AND
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
FOR THE CONSTRUCTION OF THE THIRD STREET LIGHT RAIL/
NEW CENTRAL SUBWAY
SAN FRANCISCO, CALIFORNIA

WHEREAS, the Federal Transit Administration (FTA) has determined that construction of the of the Third Street Light Rail Project [Initial Operating Segment (IOS) – Phase I/New Central Subway (NCS) – Phase II] (Undertaking) may have an effect on the 4th Street Bridge and may have an effect on archeological properties potentially eligible for inclusion on the National Register of Historic Places (NRHP), and has consulted with the California State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (Council) pursuant to 36 CFR 800.13 of the regulations implementing Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. 470f); and

WHEREAS, the consulting parties to this Programmatic Agreement (PA) agree that although construction of the IOS-Phase I of the Undertaking will have an effect on the 4th Street Bridge, this effect will not be adverse; and

WHEREAS, the signatories agree that any archeological resources found during construction that are determined eligible for inclusion in the NRHP are likely to be important primarily for their data recovery potential and would be difficult to preserve in place; and

WHEREAS, upon full execution of this PA, the San Francisco Municipal Railway (MUNI), which has participated in this consultation and has been invited to concur in this PA, will administer the Undertaking under the authority of FTA; and

WHEREAS, the San Francisco Planning Department has participated in this consultation and has been invited to concur in the PA;

NOW, THEREFORE, the FTA, the SHPO, and the Council agree that upon FTA's decision to proceed with either phase of the Undertaking, the FTA shall ensure that the following stipulations are implemented as indicated below, in order to take into account the effects of the Undertaking on historic properties.

Stipulations

FTA shall ensure that the following stipulations are carried out:

The following stipulation applies only to the IOS phase of the Undertaking, if implemented:

I. IOS

The only historic property affected by the IOS phase of the Undertaking is the Fourth Street Bridge. The signatories agree that the proposed design of the IOS will not adversely affect the Bridge and that no further actions that would

take this effect into account are necessary.

The following stipulations apply only to the NCS phase of the Undertaking, if implemented:

II. Research Design Treatment Plan and Implementation

1. A comprehensive archival Research Design-Treatment Plan (RD-TP) shall be developed by a consultant retained by MUNI. Based on information described in the Final Environmental Impact Statement/Environmental Impact Report (FEIS/FEIR) 1998, and information in the Archeological Resources Investigation for the Third Street Light Rail Project, October 1997, by Jan M. Hupman and David Chavez, two recorded archaeological sites (CA-SFr-114 and CA-SFr-2) and seven sections of the New Central Subway require pre-construction subsurface testing. The RD-TP shall describe the specific field methodologies and testing locations within the Area of Potential Effect (APE) in accordance *with Treatment of Archaeological Properties: A Handbook* (ACHP 1990) *and Archaeology and Historic Preservation: the Secretary of the Interior's Standards and Guidelines* (48FR 44716-44742).

a. Supplemental archival research will be completed by MUNI's consultant in order to obtain adequate information for the development of the historic context and prediction of potentially historic archaeological properties that may be present within the APE of the NCS. This supplemental research will augment and complete the historic context and type of property information that was developed in those documents. The archival research will include, at a minimum, block and parcel-specific research using documents such as the U.S. Census, historic maps, city directories, and tax and real estate records.

b. The RD-TP describes the specific field methodologies to be utilized, including procedures to be followed if prehistoric archaeological resources are encountered. The RD-TP shall meet the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-44740), take into account the Council's publication, *Treatment of Archaeological Properties: A Handbook* (Advisory Council on Historic Preservation 1980) as well as standards and guidelines established by the SHPO.

c. Upon completion in draft form, MUNI will submit the RD-TP to all other parties to this PA for a fifteen (15) working day review period. MUNI will incorporate any comments received during this review period into the final RD-TP. If any party fails to submit their comments within fifteen (15) working days or receipt, MUNI shall assume that party's concurrence with the draft RD-TP.

2. Archaeological monitoring during Construction of the New Central Subway shall be conducted for four locations:

- On Stockton Street, between Washington and Clay Streets and between Clay and Sacramento Streets, where unidentified circa 1850 wood-framed structures once stood;
- Third Street, between market and Mission Streets, where Happy Valley 49er Camp remains could be present; and
- The crossover, between Third and Fourth Streets, immediately south of Harrison Street, where features, deposits, and artifacts associated with post-1850s commercial and residential use of the area may exist.

3. All activities regarding history and archaeology that are carried out pursuant to this section of the PA shall be carried out by or under the direct supervision of a person or persons who meet or exceed the "Secretary of the Interior's Professional Qualifications Standards" in these disciplines.

4. If at any time during implementation of the RD-TP or of the NCS, archaeological resources are encountered, which MUNI or its consultant, in consultation with the San Francisco Planning department, determines do not possess enough integrity to qualify for inclusion in the NRHP, FTA will promptly notify the SHPO of its determination and at its discretion, may terminate any further consideration of such resources.

5. If at any time during implementation of the NCS archaeological remains are encountered which MUNI and the San Francisco Planning department determine possess integrity, MUNI will evaluate the remains using the

NRHP Criteria of Eligibility established in the RD-TP. The identification, evaluation and treatment phases will be integrated into a single operation consistent with the RD-TP. When archaeological deposits are determined eligible, MUNI will notify FTA and SHPO of the determination and then proceed with treatment I accordance with the RD-TP. All archaeological material appropriate for curation as determined by MUNI and its consultant, in consultation with the SHPO, shall be placed with and appropriate local repository, if feasible.

6. Upon completion of field investigations, comprehensive technical reports resulting from implementation of the RD-TP and from the treatment of resources not specifically addressed in the RD-TP (if any are encountered) shall be prepared that integrate the important archaeological data recovered through excavation with the information gathered through archival research, and address relevant research considerations. MUNI shall ensure that all technical reports prepared pursuant to this PA are provided to the consulting parties and shall ensure that all such reports meet the published standards of the California Office of Historic Preservation, specifically *Preservation Planning Bulletin* Number 4(a), "Archaeological Resources Management Reports (ARMR): Recommended Contents and Format" (December 1989). Reports will be submitted in draft form by MUNI to FTA, the San Francisco Planning Department and the SHPO for a review period not to exceed fifteen (15) working days. Any comments received during this time frame will be incorporated into final reports by MUNI or its consultant. MUNI or its consultant will ensure that all reports are responsive to the *"Secretary of the Interior's Standards and Guidelines for Archaeological Documentation"* (48 FR 44734-37) and to relevant SHPO publications. Upon completion, copies of all final reports will be provided to the SHPO, the Council, FTA, and others identified in the RD-TP.

III. Confidentiality

Confidentiality regarding the nature and location of any archaeological sites in this PA shall be maintained on a "need to know" basis limited to appropriate personnel and consultants of the FTA, MUNI, the San Francisco Planning Department, the SHPO and the Council involved in the planning, reviewing and implementing of this PA consistent with Section 304 of the NHPA.

The following stipulations apply to both phases of the Undertaking, if implemented:

IV. Amendment or Addendum to this Agreement

Any party to the PA may request that it be amended or recommend an addendum, whereupon the parties shall consult to consider such amendment or addendum. Any amendment or addendum shall be executed in the same manner as the original PA.

V. Dispute Resolution

Unless otherwise specified in this PA, should any party object within thirty (30) days to actions pursuant to this PA, FTA shall consult with the objecting party to resolve the objection. If FTA determines that the objections cannot be resolved, FTA shall forward all documentation relevant to the dispute to the Council. Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

a) provide the FTA with recommendations, which FTA will take into account in reaching a final decision regarding the dispute; or

b) Notify the FTA that it will comment pursuant to 36 CFR 800.6(b), and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FTA in accordance with 36 CFR 800.6(c)(2) with reference to the subject of the dispute.

Any recommendation or comments provided by the Council will be understood to pertain only to the subject of the dispute; FTA's responsibility to carry out all actions under the PA that are not the subject of the dispute will remain unchanged.

VI. Public Objection

At any time during the implementation of the measures stipulated in this PA, should an objection to any such measure or its manner or implementation be raised by a member of the public, FTA shall take the objection into account and consult as needed with the objecting party, the SHPO and the Council to resolve the objection.

VII. Termination of this Programmatic Agreement

(A) If the FTA determines that it cannot implement the terms of this PA or if the SHPO or the Council determines that the PA is not being properly implemented, the FTA, the SHPO or the Council may propose to the other consulting parties that this Programmatic Agreement be terminated.

(B) The party proposing to terminate this PA shall notify all consulting parties to this explaining the reasons for termination and affording them at least 30 calendar days, but not more than 60 calendar days, to consult and seek alternatives to termination.

(C) Should such consultation fail and the PA be terminated, the FTA shall either:

(1) Consult in accordance with Section 106 o the NHPA to develop a new PA; or
(2) Request the comments of the Council in accordance with Section 106 of the NHPA.

Execution of this Programmatic Agreement and implementation of its terms evidence that the FTA has afforded the Council an opportunity to comment on the Undertaking, and on the Undertaking's effects on historic properties, and that the FTA has taken into account the effects of the Undertaking on historic properties.

Please insert the aforementioned text into the body of your PA and re-submit to our office for review and/or signature.

Thank you again for seeking our comments on your project. If you have any questions, please contact staff historian Clarence Caesar at (916) 653-8902.

Sincerely,

Daniel Abeyta, Acting
State Historic Preservation Officer

PROGRAMMATIC AGREEMENT

Pursuant to Section 106 of the National Historic Preservation Act of 1966

The following Programmatic Agreement has been reviewed and tentatively agreed to by the Federal Transit Administration and the California State Historic Preservation Officer, two of the parties that will sign the document, and the San Francisco Municipal Railway and the San Francisco Planning Department. Subsequent review and agreement will be requested from the Advisory Council on Historic Preservation, the third signatory of the document. The Programmatic Agreement, which is presently being circulated for signature by all parties, will be signed prior to the Record of Decision for this project.

PROGRAMMATIC AGREEMENT
AMONG THE FEDERAL TRANSIT ADMINISTRATION,
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER,
AND
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
FOR THE CONSTRUCTION OF THE THIRD STREET LIGHT RAIL/
NEW CENTRAL SUBWAY PROJECT
SAN FRANCISCO, CALIFORNIA

WHEREAS, the Federal Transit Administration (FTA) has determined that construction of the Third Street Light Rail Project [Initial Operating Segment (IOS)- Phase I and the New Central Subway (NCS)- Phase II] (Undertaking) may have an effect on the 4th Street Bridge and may have an effect on archaeological properties potentially eligible for inclusion on the National Register of Historic Places (NRHP), and has consulted with the California State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (Council) pursuant to 36 CFR Part 800.13 of the regulations implementing Section 106 of the National Historic Preservation Act (NHPA)(16 U.S.C. 470f); and

WHEREAS, the consulting parties to this Programmatic Agreement (PA) agree that construction of the IOS-Phase I of the Undertaking will not have an adverse effect on the historic character of the 4th Street Bridge; and

WHEREAS, the signatories agree that any archaeological resources found during construction of the Undertaking that are determined eligible by SHPO for inclusion in the NRHP are likely to be important primarily for their data recovery potential and would be difficult to preserve in place; and

WHEREAS, upon full execution of this PA, the San Francisco Municipal Railway (MUNI), which has participated in this consultation, will administer the Undertaking under the authority of FTA; and

WHEREAS, the San Francisco Planning Department has participated in this consultation in the PA, and whereas, MUNI and the San Francisco Planning Department have concurred in the terms and conditions of this PA;

NOW, THEREFORE, the FTA, the SHPO, and the Council agree that upon FTA's decision to proceed with either Phase of the Undertaking, the FTA shall ensure that the following stipulations are implemented, as indicated below, in order to take into account the effects of the Undertaking on historic properties.

Stipulations

FTA shall ensure that the following stipulations are carried out:

The following stipulation applies only to the IOS Phase of the Undertaking, if implemented;

I. Initial Operating Segment-IOS

The only historic property affected by the IOS Phase of the Undertaking is the Fourth Street Bridge. The signatories agree that the proposed design of the IOS will not adversely affect the Bridge and that no further actions that would take this effect into account are necessary.

The following stipulations apply only to the New Central Subway (NCS) Phase of the Undertaking, if implemented:

II. Research Design-Treatment Plan and Implementation

1. A comprehensive archival Research Design-Treatment Plan (RD-TP) shall be developed by a consultant retained by MUNI. Based on information described in the Final Environmental Impact Statement/Environmental Impact Report (FEIS/ FEIR) 1998, and information in the *Archaeological Resources Investigation for the Third Street Light Rail Project, October 1997,* by Jan M. Hupman and David Chavez, two recorded archaeological sites (CA-SFr-114 and CA-SFr-2) and seven sections of the New Central Subway require pre-construction subsurface testing for archaeological remnants. The RD-TP shall describe the specific field methodologies and testing locations within the Area of Potential Effect (APE) in accordance with *Treatment of Archaeological Properties: A Handbook (ACHP 1990) and Archaeology and Historic Preservation: the Secretary of the Interior's Standards and Guidelines, (48 FR 44716-44742).*

    a. Supplemental archival research will be completed by MUNI's consultant in order to obtain adequate information for the development of the historic context and prediction of potentially historic archaeological properties that may be present within the APE of the NCS. This supplemental research will augment and complete the historic context and type of property information that was developed in these documents. The archival research will include, at a minimum, block and parcel-specific research using documents such as the U.S. Census, historic maps, City directories, and tax and real estate records.
    b. The RD-TP will describe the specific field methodologies to be utilized, including procedures to be followed if prehistoric archaeological resources are encountered. The RD-TP shall meet the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-44740), take into account the Council's publication, *Treatment of Archaeological Properties: A Handbook (Advisory Council on Historic Preservation 1980)* as well as standards and guidelines established by the SHPO.
    c. Upon completion in draft form, MUNI will submit the RD-TP to all other parties to this PA for a fifteen (15) working day review period. MUNI will incorporate any comments received during this review period into the final RD-TP. In any party fails to submit their comments within fifteen (15) working days or receipt, MUNI shall assume that party's concurrence with the draft RD-TP.

2. Archaeological Monitoring during construction of the New Central Subway shall be conducted for four locations:

- On Stockton Street, between Washington and Clay Streets, where unidentified circa 1850 wood-framed structures once stood;
- On Stockton Street, between Clay and Sacramento Streets, where unidentified circa 1850 wood-framed structures once stood;
- Third Street, between Market and Mission Streets, where Happy Valley 49er Camp remains could be present; and
- The crossover, between Third and Fourth Streets, immediately south of Harrison Street, where features, deposits, and artifacts associated with post-1850s commercial and residential use of the area may exist.

3. All activities regarding history and archaeology that are carried out pursuant to this section of the PA shall be carried out by or under the direct supervision of a person or persons who meet or exceed the "Secretary of Interior's Professional Qualification Standards" in these disciplines.

4. If at any time during implementation of the RD-TP or of the NCS, archaeological resources are encountered, which MUNI or its consultant, in consultation with the San Francisco Planning Department, determines do not possess enough integrity to qualify for inclusion in the NRHP, FTA will promptly notify the SHPO of its determination and at its discretion, may terminate any further consideration of such resources.

5. If at any time during implementation of the NCS archaeological remains are encountered which MUNI and the San Francisco Planning Department determine possess integrity, MUNI will evaluate the remains using the NRHP Criteria of Eligibility established in the RD-TP. The identification, evaluation and treatment Phases will be integrated into a single operation consistent with the RD-TP. When archaeological deposits are determined eligible, MUNI will notify FTA and the SHPO of the determination and then proceed with treatment in accordance with the RD-TP. All archaeological material appropriate for curation as determined by MUNI and its consultant, in consultation with the SHPO, shall be placed with an appropriate local repository, if feasible.

6. Upon completion of field investigations, comprehensive technical reports resulting from implementation of the RD-TP and from the treatment of resources not specifically addressed in the RD-TP (if any are encountered) shall be prepared that integrate the important archaeological data recovered through excavation with the information gathered through archival research, and address relevant research considerations. MUNI shall ensure that all technical reports prepared pursuant to this PA are provided to the consulting parties and shall ensure that all technical reports prepared pursuant to this PA are provided to the consulting parties and shall ensure that all such reports meet the published standards of the California Office of Historic Preservation, specifically *Preservation Planning Bulletin* Number 4(a), " Archaeological Resources Management Reports (ARMR): Recommended Contents and Format" (October 1989). Reports will be submitted in draft form by MUNI to FTA, the San Francisco Planning Department, and the SHPO for a review period not to exceed fifteen (15) working days. Any comments received during this time frame will be incorporated into final reports by MUNI or its consultant. MUNI or its consultant will ensure that all reports are responsive to the *"Secretary of the Interior's Standards and Guidelines for Archaeological Documentation"* (48 FR 44734-37) and to relevant SHPO guidelines. Upon completion, copies of all final reports will be provided to the SHPO, the Council, FTA, and others identified in the RD-TP.

III. Confidentiality

Confidentiality regarding the nature and location of any archaeological sites in this PA shall be maintained on a "need to know" basis limited to appropriate personnel and consultants of the FTA, MUNI, the San Francisco Planning Department, the SHPO and the Council involved in the planning, reviewing and implementing of this PA consistent with Section 304 of the NHPA.

The following stipulations apply to both Phases of the Undertaking, if implemented:

IV. Amendment or Addendum to this Agreement

Any party to the PA may request that it be amended or recommend an addendum, whereupon the parties shall consult to consider such amendment or addendum. Any amendment or addendum shall be executed in the same manner at the original PA.

V. Dispute Resolution

Unless otherwise specified in this PA, should any party object within thirty (30) days to actions pursuant to this PA, FTA shall consult with the objecting party to resolve the objection. If FTA determines that the objections cannot be resolved, FTA shall forward all documentation relevant to the dispute to the Council. Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

a) provide FTA with recommendations, which FTA will take into account in reaching a final decision regarding the dispute; or
b) notify FTA that it will comment pursuant to 36 CFR Part 800.6(b), and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FTA in accordance with 36 CFR Part 800.6(c)(2) with reference to the subject dispute.

Any recommendation or comments provided by the Council will be understood to pertain only to the subject of the dispute; FTA's responsibility to carry out all actions under the PA that are not the subject of the dispute will remain unchanged.

VI. Public Objection

At any time during the implementation of the measures stipulated in this PA, should an objection to any such measure or its manner or implementation be raised by a member of the public, FTA shall take the objection into account and consult as needed with the objecting party, the SHPO and the Council to resolve the objection.

VII. Termination of this Programmatic Agreement

a) If the FTA determines that it cannot implement the terms of this PA or if the SHPO or the Council determines that the PA is not being properly implemented, the FTA, the SHPO or the Council may propose to the other consulting parties that this Programmatic Agreement be terminated.
b) The party proposing to terminate this PA shall notify all consulting parties to this explaining the reasons for termination and affording them at least 30 calendar days, but not more than 60 calendar days, to consult and seek alternatives to termination.
c) Should such consultation fail and the PA be terminated, the FTA shall either:

1). Consult in accordance with Section 106 of the NHPA to develop a new PA; or
2). Request the comments of the Council in accordance with Section 106 of the NHPA.

Execution of this Programmatic Agreement and implementation of its terms evidence that the FTA has afforded the Council an opportunity to comment on the Undertaking, and on the Undertaking's effects on historic properties, and that the FTA has taken into account the effects of the Undertaking on historic properties.

MEMORANDUM OF AGREEMENT

between the
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL TRANSIT ADMINISTRATION
and the
CALIFORNIA STATE HISTORIC PRESERVATION OFFICER
and the
CITY AND COUNTY OF SAN FRANCISCO
MUNICIPAL TRANSPORTATION AGENCY
regarding the
CENTRAL SUBWAY/THIRD STREET LIGHT RAIL PHASE 2,
IN THE CITY AND COUNTY OF SAN FRANCISCO, CALIFORNIA

WHEREAS, A Programmatic Agreement among the Federal Transit Administration, the California Historic Preservation Officer and the Advisory Council on Historic Preservation for the construction of the Third Street Light Rail/New Central Subway was included as part of the Record of Decision for the 1998 Final EIS/EIR; and

WHEREAS, The Federal Transit Administration (FTA) plans to assist the San Francisco Municipal Transportation Agency (SFMTA) to implement the Central Subway, Phase 2 of the Third Street Light Rail (undertaking) pursuant to the New Starts Funds process under Section 5309 of Title 49 of the United States Code, and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU); and

WHEREAS, 36 CFR 800 et seq. requires that federal agencies take into account the effects of their projects on historic properties; and

WHEREAS, The undertaking consists of the construction of an underground subway, one surface station and three subway station facilities, to connect the existing T-Third light rail system at Fourth and King Streets with the Bay Area Rapid Transit District (BART) at Market Street and under Stockton Street into Chinatown; and

WHEREAS, FTA and SFMTA have thoroughly considered alternatives to the Undertaking, including a No-Build Alternative (Alternative 1) and three Build Alternatives (2, 3A, and 3B) that have been analyzed in the Draft and Final Supplemental Environmental Impact Statement/Environmental Impact Report (SEIS/SEIR); and

WHEREAS, On February 19, 2008, the SFMTA Board of Directors selected Alternative 3B as the Locally Preferred Alternative; and

WHEREAS, FTA has defined the undertaking's Area of Potential Effects (APE) as described in Attachment A; and

WHEREAS, FTA has determined that the undertaking may have an adverse effect on the historic properties described in Attachment B, several of which are listed in and others eligible for listing in the National Register of Historic Places, as well as additional archaeological properties as yet unidentified, and has consulted with the California Historic Preservation Officer (SHPO) pursuant to 36 CFR 800 of the regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f). One historic architectural resource (814-828 Stockton Street for Alternative 3A or 933-949 Stockton Street for Alternative 3B- the Locally Preferred Alternative), identified as a contributor to the NRHP-eligible Chinatown Historic District, would be demolished, constituting an adverse effect to historic properties; and

WHEREAS, Upon full execution of this MOA, SFMTA will administer the undertaking with the guidance and approval of FTA; and

WHEREAS, SFMTA and the San Francisco Planning Department Major Environmental Analysis section (SF-MEA) have participated in this consultation and have been invited to sign this MOA as concurring parties; and

WHEREAS, SF- MEA has consulted with the San Francisco Architectural Heritage Commission, the San Francisco Landmarks Preservation Advisory Board, and the Chinatown Community Development Center regarding the effects of the undertaking on historic properties; and

WHEREAS, In accordance with 36 CFR 800.6(a)(1), FTA has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination with specified documentation and has invited the ACHP to participate in the consultation pursuant to 36 CFR 800.6(a)(1)(iii). The ACHP has declined to participate.

NOW, THEREFORE, FTA, the SHPO and SFMTA agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the adverse effect of the Undertaking on historic properties and further agree that these Stipulations shall govern the Undertaking and all of its parts until this MOA expires or is terminated.

STIPULATIONS

FTA shall ensure that the following measures are carried out:

I. ADMINISTRATIVE PROVISIONS

A. STANDARDS

1. **Definitions.** The definitions provided at 36 CFR 800.16 are applicable throughout this MOA.
2. **Professional Qualifications**. All activities regarding history, historic preservation, historic architecture, architectural history, historical archaeology, and prehistoric archaeology that are performed pursuant to this MOA will be carried out by or under the direction of persons meeting, at a minimum, the Secretary of the Interior's Professional Qualification Standards (48 FR 44738-9) in the appropriate discipline.
3. **Documentation Standards**. Written documentation of activities regarding history, historic preservation, historic architecture, architectural history, historical archaeology, and prehistoric archaeology that are carried out pursuant to this MOA will conform to the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716-44740) as well as to the applicable standards and guidelines established by the ACHP and the California Office of Historic Preservation.
4. **Archaeological Curation and Curation Standards**. Records and archaeological materials resulting from all archaeological investigations and other treatments that are carried out pursuant to this MOA will be curated in accordance with Curation of Federally-Owned and Administered Archeological Collections (36 CFR 79).

II. TREATMENT OF HISTORIC PROPERTIES

FTA shall ensure that the adverse effects of the Undertaking on archaeological resources and historic buildings and structures are resolved by implementing the Mitigation Measures and Historic Properties Treatment Plan (HPTP) specified in the Final Supplemental Environmental Impact Statement/Environmental Impact Report (SEIS/SEIR) and included as Attachment C to this MOA. FTA or SFMTA will not authorize the execution of any Undertaking activity that may affect (36 CFR Section 800.16(i)) historic properties in the Area of Potential Effects (APE) prior to the completion of

the processes that the HPTP in Attachment C of this MOA prescribes. Future changes to the HPTP would not require an amendment to this MOA.

III. NATIVE AMERICAN CONSULTATION

FTA or designee shall ensure that all State and federal laws and regulations regarding Native American concerns are strictly enforced. Prior to construction, FTA or its designee shall initiate consultation with a representative of the Native American group having traditional authority over the APE. The goal of this consultation will be to come to agreement on protocols to be followed if prehistoric resources are discovered. A consultant from this Native American group shall be solicited and, if possible, engaged to monitor all testing and excavation on prehistoric archaeological sites. Though there is no federally recognized tribe whose traditional territory includes San Francisco, the area was traditionally Ohlone. The practice for projects in San Francisco is to contact an individual who is listed as Ohlone on the State of California Native American Heritage Commission's contact list.

IV. TREATMENT OF HUMAN REMAINS

The MOA parties agree that the treatment of human remains and associated or unassociated funerary objects discovered during any project activity shall comply with applicable State (Section 7050.5(b) of the California Health and Safety Code) and Federal laws. This shall include immediate notification to the Coroner of the City and County of San Francisco if human remains are discovered. In the event the Coroner determines that the human remains are Native American, the Coroner shall notify the California State Native American Heritage Commission, which shall appoint a Most Likely Descendant (MLD) (Pub. Res. Code Sec. 5097.98). The archeological consultant, FTA or its designee, and the MLD shall make all reasonable efforts to develop an agreement for the treatment of, with appropriate dignity, human remains and associated or unassociated funerary objects (CEQA Guidelines. Sec. 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects.

V. CONFIDENTIALITY

The MOA parties acknowledge that the historic properties covered by this MOA are subject to the provisions of Section 304 of the National Historic Preservation Act of 1966 and Section 6254.10 of the California Government code (Public Records Act), relating to the disclosure of archaeological site information and, having so acknowledged, will ensure that

all actions and documentation prescribed by this MOA are consistent with said sections.

VI. POST REVIEW DISCOVERIES

If previously unidentified historic properties are discovered or unanticipated effects on known historic properties are found, FTA shall implement the Post-Review Discovery Plan described in Appendix C.

VII. MONITORING AND REPORTING

FTA or designee shall provide all parties to this MOA a summary report detailing work undertaken pursuant to its terms annually on the anniversary of the execution of this MOA until it expires or is terminated. This report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in FTA's efforts to carry out the terms of this MOA.

VIII. DISPUTE RESOLUTION

Should any signatory or concurring party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, FTA shall consult with such party to resolve the objection. If FTA determines that such objection cannot be resolved, FTA will:

A. Forward all documentation relevant to the dispute, including FTA's proposed resolution, to the ACHP. The ACHP shall provide FTA with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, FTA shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. FTA will then proceed according to its final decision.

B. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, FTA may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, FTA shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response.

C. FTA's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

IX. AMENDMENTS

Any signatory party to this MOA may propose that this MOA be amended, whereupon all signatory parties shall consult for no more than thirty (30) days to consider such amendment. The amendment will be effective on the date a copy signed by all of the original signatories is filed with the ACHP. If the signatories cannot agree to appropriate terms to amend the MOA, any signatory may terminate the agreement in accordance with Stipulation X below. Potential changes to the HPTP described in Appendix C would not require an amendment to this MOA.

X. TERMINATION

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation IX, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing on the undertaking, FTA must either (a) execute an MOA pursuant to 36 CFR 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR 800.7. FTA shall notify the signatories as to the course of action it will pursue.

Execution of this MOA by the FTA and SHPO and implementation of its terms evidence that FTA has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

XI. ANTI-DEFICIENCY ACT

FTA's obligations under this MOA are subject to the availability of appropriated funds, and the stipulations of this MOA are subject to the provisions of the Anti-Deficiency Act. FTA will make reasonable and good faith efforts to secure the necessary funds to implement this MOA in its entirety. If compliance with the Anti-Deficiency Act alters or impairs FTA's ability to implement the stipulations of this agreement, FTA will consult in accordance with the amendment and termination procedures found at Stipulations IX and X of this agreement.

XII. BUDGET AND FISCAL PROVISIONS

SFMTA's obligations under this MOA are subject to the budget and fiscal provisions of the Charter of the City and County of San Francisco. SFMTA will make reasonable and good faith efforts to secure the necessary funds to implement this MOA in its entirety. If compliance with the Charter alters or impairs SFMTA's ability to implement the stipulations of this agreement, SFMTA will consult in accordance with the amendment and termination procedures found at Stipulations IX and X of this agreement.

XIII. EFFECTIVE DATE AND DURATION

This MOA will take effect on the date that it has been executed by FTA, SFMTA and the SHPO. Execution of this MOA and filing with the ACHP in accordance with 36 CFR 800.6(b)(1)(iv), and subsequent implementation of its terms, shall evidence, pursuant to 36 CFR 800.6(c), that FTA intends this MOA as the vehicle by which adverse effects of the Undertaking are to be resolved, and shall further evidence that FTA has afforded the ACHP an opportunity to comment on the Undertaking and its effect on historic properties, and that SFMTA has taken into account the effect of the Undertaking on historic properties. This MOA will be null and void if its terms are not carried out within fifteen (15) years from the date of execution.

SIGNATORIES:

FEDERAL TRANSIT ADMINISTRATION

_____ **Date**
Leslie T. Rogers
Regional Administrator

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER

_____ **Date**
Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

CITY AND COUNTY OF SAN FRANCISCO
San Francisco Municipal Transportation Agency

_____ **Date**
Nathaniel P. Ford, Sr.
Chief Executive Officer/CEO

Approved as to Form:
Dennis J. Herrera, City Attorney

_____
Robin M. Reitzes
Deputy City Attorney

ATTACHMENTS

ATTACHMENT A: HPSR (including APE maps) *HPSR available for review at Planning Department (APE maps in Appendix D)*
ATTACHMENT B: Finding of Adverse Effect *Findings of Effect available for review at Planning Department*
ATTACHMENT C: Historic Properties Treatment Plan
ATTACHMENT D: SHPO's letter concurring with FTA's evaluations of historic properties within the APE (11/5/07) and SHPO's letter concurring with FTA's Finding of Adverse Effect (7/9/08) *11/5/07 letter in Appendix F*

.ATTACHMENT A: HPSR (including APE maps)

ATTACHMENT B: Finding of Adverse Effect

ATTACHMENT C: Historic Properties Treatment Plan

This Historic Properties Treatment Plan (HPTP) is summarized from the Central Subway Final Supplemental Environmental Impact Statement/Environmental Impact Report describing mitigation measures for potential adverse impacts to historic buildings and structures and to archaeological resources within the Area of Potential Effects (APE) for the Undertaking.

This HPTP includes provision for: post-review discovery of previously unknown archaeological resources during construction; implementation of an archaeological monitoring program; implementation of a program-level archaeological research design and treatment plan; implementation of an archaeological testing program; implementation of an archaeological data recovery program; and preparation of a Final Archaeological Resources Report at the conclusion of construction of the Central Subway Undertaking.

I. MITIGATION MEASURES FOR EFFECTS ON BUILDINGS AND STRUCTURES

OHP has concurred with FTA that the APE contains 97 buildings and structures that are either individually eligible to be included in the NRHP or are eligible as contributors to a historic district. NRHP-eligible and listed historic properties adjacent to the tunnel portal and station area may be affected by vibration and visual impacts. One historic architectural resource (814-828 Stockton Street for Alternative 3A or 933-949 Stockton Street for Alternative 3B- the Locally Preferred Alternative), identified as a contributor to the NRHP-eligible Chinatown Historic District, would be demolished, constituting an adverse effect to historic properties. Demolition and removal of the proposed building would also create a visual break in the cohesive grouping of related historic buildings and visually impact NRHP-eligible properties on the adjacent block.

A. Mitigation Measures for Vibration Impacts

The potential effects of vibration on historic properties within the APE—such as ground settlement caused by construction-related activities—was addressed through consultation with a noise and vibration specialist. The following mitigation measures will be carried out to minimize the potential for vibration impacts to historic properties during construction and to avoid having an adverse impact on certain properties:

- Potential effects of vibration during construction will be reduced by pre-drilling for pile installation in areas that would employ secant piles with ground-supporting walls in the cut-and-cover technology.

- Vibration monitoring will be specified in construction documents to ensure that historic properties do not sustain damage during construction. A good faith plan to ensure that vibration impacts to historic buildings would be mitigated will include a provision that the construction contractor will be responsible for the protection of vibration-sensitive historic building structures that are within 200 feet of any construction activity. The maximum peak particle vibration (PPV) velocity level, in any direction, at any of these structures should not exceed 0.12 inches/second for any length of time. An independent Environmental Compliance Monitor (ECM) will be retained to monitor construction to make sure that environmental conditions are met. The ECM will be required to perform periodic vibration monitoring at the closest structure to any construction activities using approved seismographs. If at any time the construction activity exceeds this level, that activity will immediately be halted until such time as an alternative construction method can be used that would result in lower vibration levels.

- The ECM will conduct a training program at the start of construction to educate the construction contractor and consultants about the sensitivity of historic properties to construction-related vibration. In addition, the ECM will retain the services of a City-approved preservation architect or architectural historian to monitor construction effects to historic properties in the APE.

According to the Noise and Vibration Impact Analysis in the project SEIS/SEIR, vibration caused by the operation of passenger trains on the Central Subway will not impact adjacent historic properties.

B. Mitigation Measures for other Vibration-related Construction Impacts

To ensure that the historic Triangular Street Lights and the Washington Street streetlights are not impacted by vibration and construction equipment, SFMTA will implement a mitigation plan that will include the following: The contractor will ensure that vibration-sensitive historic street lights within 50 feet of any construction activity are protected; the plan will include temporary removal and storage of glass globes during construction in a specific area and installation of construction barriers adjacent to the light poles.

C. Mitigation Measures for Visual Impacts

As most of the undertaking consists of underground facilities, visual impacts will primarily be limited to the duration of construction. These impacts will be addressed during the construction and design phase. Prior to construction, the design for each of the stations will be reviewed for compliance with the Secretary of the Interior's Standards based on their compatibility with the character-defining features of each of the districts. New building designs will reinforce the established character of the historic district and visual continuity of the streetscape.

D. Mitigation Measures for Demolition of Contributing Elements to a NRHP-eligible District

Contributing elements to an NRHP-eligible district located within the APE will be demolished. Mitigation measures are presented below:

Construction of the Chinatown Station would result in the complete or partial demolition of a contributing property in the Chinatown Historic District (one of 371 contributing buildings in the Chinatown District). The following mitigation measures will be carried out:

- Partial preservation through rehabilitation, in compliance with the Secretary of the Interior's Standards, and reuse of the building as the Chinatown Station.
- Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) documentation will be prepared. The level of documentation will conform to HABS/HAER standards as determined through consultation with the City Landmarks Board and SHPO.
- The expertise of an architectural historian will be employed in the development phase of the station to develop a design that is culturally appropriate to the setting and to the Chinatown community, representatives of which will be consulted regarding the design.
- Salvaged architectural features from the demolished building will be used in an educational exhibit inside the new station or utilized for the repair and rehabilitation of other historic buildings. The architectural elements will be disassembled in a manner that minimizes damage.
- In consultation with the City Landmarks Board and SHPO, SFMTA will design and construct a permanent interpretive display for public use on the entire route. The

display may be placed within the subway cars or on the walls of the subway stations. This display would include information about the demolished buildings as well as historic information about the buildings, historic districts, neighborhoods, important individuals, and businesses surrounding the alignments through which the Central Subway will pass. Before preparing the display, a historian will undertake contextual research to elucidate the role of the building in the events and for which it is significant. The historian or other qualified individual will conduct oral history interviews to gather data to enhance the display.

II. MITIGATION MEASURES FOR EFFECTS ON ARCHAEOLOGICAL SITES

Effects on archaeological resources within the APE may include direct construction impacts on known archaeological sites that are currently deeply buried and effects on as yet undiscovered sites that may be inadvertently exposed during the construction process. Potential effects on archaeological resources of each undertaking alternative are summarized below:

- No known prehistoric archaeological resources will be affected by this Undertaking. However, geoarchaeological analysis has identified six locations of moderate or high sensitivity for prehistoric archaeological remains. One recorded historical archaeological site, CA-SFR-137H, is within the horizontal APE and will be impacted by construction. In addition, geoarchaeological and historical analysis has identified 13 to 15 locations that have moderate or high sensitivity for historic-era archaeological resources.

Additional prehistoric and historic archaeological resources recorded nearby may extend into the project APE. These resources may be historic properties. Identification and evaluation of archaeological resources will be deferred until construction has begun because of the potential for buried deposits in this urban environment.

A. Mitigation Measures for Effects on Archaeological Resources

Prehistoric Archaeological Properties. Construction impacts will not affect any known prehistoric resources. However, geoarchaeological and historical analysis, described in detail in the Historic Context and Archaeological Survey Report (ASC 2007), identified at least six locations of prehistoric archaeological sensitivity in the proposed alignment. As no test investigations have been undertaken, there is no solid evidence confirming that subsurface prehistoric cultural deposits are present at these locations. The Post Review

Discovery Plan, outlined below, will be implemented if subsurface prehistoric archaeological resources are uncovered during construction.

Historic-era Archaeological Properties. One known historical archaeological resource may be affected by project activities within this alternative. CA-SFR-137H consists of the buried remains of a historic city block (bounded by Fourth, Fifth, Harrison, and Bryant streets, and intermediate streets). The location will be used for a construction yard. Resources include the archaeological remains of residential and commercial buildings, 1906 earthquake/fire debris, intact ground surfaces, and hollow-filled features from the 1870s. The site is eligible to the NRHP under Criterion D.

The block-by-block historic overview, developed in the HCASR to predict areas of potential historical archaeological sensitivity, identified at least 15 locations at which archaeological resources may be encountered.

The Post Review Discovery Plan, outlined below, will be implemented if subsurface historic-era archaeological resources are uncovered during construction.

Mitigation Measures for Archaeological Resources

Based on a reasonable presumption that archeological resources may be present within the APE, the following measures shall be undertaken to mitigate the project's potential adverse effects on important, buried archaeological properties:

- SFMTA shall retain the services of a qualified archeological consultant having expertise in California prehistoric and urban historical archeology.
- The archeological consultant shall undertake an archaeological testing program as specified herein. In addition, the consultant shall be available to conduct an archaeological monitoring and/or data recovery program if required pursuant to this measure.
- An Archaeological Monitoring Plan (AMP), described below, shall be prepared and implemented. The document shall specify that areas of moderate and high archaeological sensitivity will be monitored by a qualified archaeologist;
- Post-review discoveries shall be treated according to the Post-Review Discovery Plan, below;
- A Program Level Archaeological Research Design and Treatment Plan (ARDTP) and the other documents described below, shall be prepared and implemented;
- The archaeological consultant's work shall be conducted in accordance with this measure at the direction of FTA's and SFMTA's designee—the Environmental Review Officer (ERO) of the City and County of San Francisco. All plans and

reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO.

- Archaeological monitoring and/or data recovery programs required by this measure could suspend construction for up to a maximum of four weeks. At the direction of the ERO (in consultation with SFMTA), the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce to a less-than-significant level potential effects on a significant archaeological resource.

SFMTA or the ERO as the FTA designee will implement these principles by implementing the following actions to identify, evaluate, and treat important archaeological properties.

Post-Review Discovery Plan

Previously unknown archaeological resources discovered during project construction will be treated according to the requirements of 36 CFR 800.13. The following actions will be taken to ensure that post-review discoveries will be treated appropriately:

- FTA or its designee will ensure that archaeological resources discovered during construction that may constitute historic properties will be protected in place until they can be evaluated with regard to their eligibility to NRHP;
- Construction may continue around the resources during the evaluation process to the degree that the resources' values are not affected;
- FTA or its designee shall inform SHPO and ACHP of the discovery within 48 hours;
- Resources shall be evaluated by applying the NRHP Criteria for Evaluation at 36 CFR 60.4 and, if prehistoric, in consultation with an Ohlone Native American representative;
- The evaluation process shall employ and be guided by the program level Archaeological Research Design and Treatment Plan described below;
- FTA shall consider such resources eligible for NRHP for the purposes of Section 106 compliance until a formal evaluation has been completed;
- FTA or its designee shall consult with SHPO concerning the appropriate treatment strategy for resources determined to be historic properties including, as appropriate, archaeological data recovery, the creation of technical and popular reports, and other public outreach products;
- FTA or its designee shall provide SHPO and ACHP with a report on the treatment of NRHP-eligible resources;
- Human remains will be treated according to the protocol described above, the consultation with the appropriate Ohlone Native American representative as

required under this MOA, and the ACHP's 2007 Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects.

Prepare and Implement an Archaeological Monitoring Program

Monitoring during construction by an archaeologist will be carried out within project sections identified as moderately or highly sensitive for prehistoric and/or historical archaeological deposits, as identified in the HCASR and through pre-construction exploration, and as determined through consultation with a qualified archaeologist. Identified resources will be evaluated and treated in accordance with the requirements of this MOA.

An Archaeological Monitoring Plan (AMP) shall be prepared that will establish policies (including an artifact collection policy), protocols (including a protocol to follow when archaeological remains are discovered), schedules, and reporting requirements that will govern the monitoring program. The archaeologist, FTA, and ERO shall meet and consult on the scope of the AMP reasonably prior to the commencement of any project-related soils disturbing activities. The plan shall take into account the results of consultation with the appropriate Native American group reported in the ARDTP.

The ERO, in consultation with the archeological consultant, shall determine which project activities shall be archeologically monitored. In most cases, soils-disturbing activities—such as demolition, foundation removal, excavation, grading, utilities installation, foundation work, driving of piles (foundation, shoring, etc.), site remediation, etc.—will require archeological monitoring because of the risk these activities pose to potential archaeological resources and to their depositional context.

The AMP shall contain the following provisions:

- The archeological consultant shall advise SFMTA and the Construction Management team to advise all project contractors to be on the alert for evidence of the presence of the expected resource(s), of how to identify the evidence of the expected resource(s), and of the appropriate protocol in the event of apparent discovery of an archeological resource;
- The archeological monitor(s) shall be present on the project site according to a schedule agreed upon by the archeological consultant and the ERO until the ERO has, in consultation with the project archeological consultant, determined that project construction activities could have no effects on significant archeological deposits;

- The archeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis;
- If an intact archeological deposit is encountered, all soils-disturbing activities in the vicinity of the deposit shall cease. The archeological monitor shall be empowered to temporarily redirect demolition/excavation/pile driving/construction activities and equipment until the deposit is evaluated. If in the case of pile driving activity (foundation, shoring, etc.), the archeological monitor has cause to believe that the pile driving activity may affect an archeological resource, the pile driving activity shall be terminated until an appropriate evaluation of the resource has been made in consultation with the ERO. The archeological consultant shall immediately notify the ERO of the encountered archeological deposit. The archeological consultant shall make a reasonable effort to assess the identity, integrity, and significance of the encountered archeological deposit, and present the findings of this assessment to the ERO;
- Whether or not significant archeological resources are encountered, the archeological consultant shall submit written reports of the findings of the monitoring program to the ERO and to FTA.

Resources discovered in this way shall be treated according to the Post-Review Discovery Plan, described above.

Prepare and Implement a Program Level Archaeological Research Design and Treatment Plan (ARDTP)

FTA or designee shall retain a qualified archaeologist to create a program level ARDTP. The purpose of this document is to establish the methodological and theoretical groundwork for archaeological investigations that will be carried out under this MOA. The ARDTP will the first product to be created after the approval of this MOA and before the initiation of project ground-disturbing activities. Using data from the Historic Context and Archaeological Survey Report (ASC 2007) and other sources as necessary, the ARDTP will present an overall strategy for the identification, evaluation, and treatment of archaeological properties. Portions of the document may be taken verbatim from the HSCASR.

The ARDTP shall present:

- The project's regulatory context;

- Archaeological overviews, context statements, and property types for prehistoric and historical archaeology that can be used by investigations carried out under this MOA;
- Archaeological research issues and data requirements to be used in assessing sites' research potential;
- Criteria for evaluation as well as techniques to assist in evaluation, such as archaeological data thresholds;
- Field, analysis, and laboratory methods that will be employed;
- Identification of an archaeological collections facility that is willing to curate materials discovered and developed as the result of the implementation of this MOA;
- Structure of the various reports defined in this MOA;
- Strategies to disseminate the results to professional and public audiences;
- Products to be developed for public engagement and outreach;
- Results of consultation with the appropriate Native American group required under this MOA; and
- Sequence and timing of the various programs described below as well as coordination of these programs with the overall project construction schedule;
- Recommendations for next steps.

The ERO shall provide a draft to the SHPO, who shall be given the opportunity to comment.

Prepare and Implement an Archaeological Testing Program.

The purpose of the archeological testing program will be to determine the presence or absence of archeological resources and to evaluate whether any archaeological resource encountered constitutes a historic property. FTA and SFMTA shall direct a qualified archaeologist to prepare an Archaeological Testing Plan (ATP) that will formulate and guide the archaeological testing program. The Plan shall be submitted to the ERO for review and approval.

Using the HSCSR and the ARDTP, the ATP shall identify the property types of the expected archeological resource(s) that potentially could be adversely affected by the proposed Project, the testing methods to be used, and the locations recommended for testing. The plan shall take into account the results of consultation with the appropriate Native American group reported in the ARDTP. The feasibility and scope of the testing program shall be determined through consultation among FTA, SFMTA, the ERO, and the

consulting archaeologist. The program will be conducted once a final alignment has been identified.

The goal of testing shall be to determine the presence or absence of cultural deposits, site boundaries (within the APE), and the potential for project impacts to resources. If archaeological deposits are discovered, the program may be expanded to determine site structure and content, integrity, and potential NRHP eligibility. ATPs may be developed to intensively investigate individual locations—such as a broad expose at a proposed station site—or several locations project-wide (such as the use of trenching and/or Geoprobe to confirm the existence of archaeologically sensitive paleosols).

Despite high potential for archaeological resources within the project APE, it is not certain that resources will be affected or where this may occur. Engineering and other logistical concerns constrain most forms of pre-construction archaeological testing. However, limited subsurface testing using a push sampling device—such as a Geoprobe—may be feasible for determining whether archaeological deposits are present within the horizontal and vertical APE in certain especially sensitive locations identified in the HCASR. A field program of geoarchaeological exploration, conducted in conjunction with project-related geotechnical investigations as described in the HCASR, may help refine subsurface sensitivity assessments and rule out unproductive geologic units.

At the completion of the archeological testing program, the archeological consultant shall submit a written report of the findings to the ERO. If, based on the archeological testing program, the archeological consultant finds that significant archaeological resources may be present, the ERO in consultation with the archeologist shall determine what additional measures are warranted. Additional measures that may be undertaken include archaeological testing, evaluation, data recovery, or archaeological monitoring.

If the ERO determines that a significant archaeological resource is present and that the resource could be adversely affected by the undertaking, at the discretion of FTA either: (1) The undertaking shall be re-designed so as to avoid or minimize any adverse effect on the significant archeological resource; or (2) a data recovery program shall be implemented, unless the ERO determines that the archaeological property is of greater interpretive than research significance and that interpretive use of the property is feasible.

Prepare and Implement an Archaeological Data Recovery Program

If important archaeological resources are discovered that will be disturbed by project activities, an archeological data recovery program shall be conducted in accord with an Archaeological Data Recovery Plan (ADRP). The purpose of the ADRP is to describe how the important values contained in an archaeological property that is to be subjected to data recovery will be extracted, analyzed, and documented. An ADRP will be prepared for each archaeological site subjected to data recovery. The archeological consultant, FTA, and ERO shall consult on the scope of the ADRP prior to preparation of a draft ADRP. FTA shall submit a draft ADRP to the ERO, who will give the SHPO the opportunity to comment on its provisions.

The ADRP shall identify how the proposed data recovery program will preserve the significant information and other values the site is expected to contain. That is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research issues. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project. Destructive data recovery methods shall not be applied to portions of the archaeological resources if nondestructive methods are practical. The Plan shall take into account the results of consultation with the appropriate Native American group reported in the ARDTP.

The ADRP shall include the following elements:

- Field Methods and Procedures. Descriptions of proposed field strategies, procedures, and operations;
- Native American coordination;
- Cataloguing and Laboratory Analysis. Description of selected cataloguing system and artifact analysis procedures;
- Discard and Deaccession Policy. Description of and rationale for field and post-field artifact discard and deaccession policies;
- Interpretive Program. Consideration of an on-site/off-site public interpretive program during the course of the archeological data recovery program;
- Security Measures. Recommended security measures to protect the archeological resource from vandalism, looting, and non-intentionally damaging activities;
- Final Report. Description of proposed report format and distribution of results;
- Curation. Description of the procedures and recommendations for the curation of any recovered artifacts and records having potential research value, identification of

an appropriate curation facility, and a summary of the accession policies of the curation facility.

Prepare Final Archaeological Resources Report

The archeological consultant shall submit a Draft Final Archeological Resources Report (FARR) to the ERO that evaluates the significance of any discovered archeological resource and describes the archeological and historical research methods employed in the archeological testing/monitoring/data recovery program(s) undertaken. Information that may put at risk any archeological resource shall be provided in a separate removable insert within the final report.

Once approved by the ERO, copies of the FARR shall be distributed as follows: SHPO shall receive one (1) copy. Northwest Information Center (NWIC) of the California Historical Resources Information System shall receive one (1) copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The Major Environmental Analysis division of the San Francisco Planning Department shall receive three copies of the FARR (one copy will be in PDF OCR converted searchable text format), along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places. In instances of high public interest in or the high interpretive value of the resource, the ERO may require a different final report content, format, and distribution than that presented above. FTA or designee shall submit a draft FARR to the ERO and the SHPO and to ACHP, who shall be given the opportunity to comment.

ATTACHMENT D: SHPO's letter concurring with FTA's evaluations of historic properties within the APE (11/5/07) and SHPO's letter concurring with FTA's Finding of Adverse Effect (7/9/08)

APPENDIX D

FTA LETTER TRANSMITTING APE 2007 MAPS

SHPO LETTER APPROVING APE 2007 MAPS

SHPO LETTER OF CONCURRENCE WITH FINDINGS OF EFFECT

U.S. Department of Transportation
Federal Transit Administration

REGION IX
Arizona, California, Hawaii, Nevada, Guam
American Samoa, Northern Mariana Islands

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JAN 29 2007

Milford Wayne Donaldson, FAIA
Office of Historic Preservation
California Department of Parks and Recreation
1416 9th Street, Room 1442-7
P.O. Box 942896
Sacramento CA 94296-0001

Re: APE maps for MUNI Central Subway

Dear Mr. Donaldson:

The Federal Transit Administration (FTA) is submitting this revised APE for your review and approval as part of the Section 106 consultation process. Recall, in 1997, FTA sent a letter to the Office of Historic Preservation transmitting maps showing the proposed Area of Potential Effect (APE) for the Third Street Light Rail project in San Francisco. The project included two phases: the Initial Operating Segment (IOS) funded with local funds and a later phase (not yet funded) referred to as the Central Subway.

A Final EIS/EIR for the two phase project was approved by FTA and the City of San Francisco Planning Commission and Municipal Transportation Agency (MTA) Commission in 1998. A Programmatic Agreement for the project was signed by the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, the Federal Transit Administration, and the San Francisco Public Transportation Department in early 1999. (copy attached)

The IOS Phase 1 has been constructed from Visitation Valley along Bayshore Boulevard and Third Street to Fourth and Townsend Streets near the Caltrain Depot. The Phase 2 Central Subway project would extend the light rail project from the current terminus at Fourth and King Streets, primarily via subway, to a terminus in Chinatown on Stockton between Washington and Jackson Streets. The Supplemental EIS/EIR being prepared for this phase of the project will evaluate three alternatives to the approved project that was evaluated in the 1998 EIS/EIR, now referred to as the Base Case.

1. No-Project/TSM: Projects programmed in the financially constrained long range plan including the Third Street Light Rail Initial operating Segment, with associated bus improvements.
2. Enhanced EIS/EIR Alignment: The Phase 2 Build Alternative presented in the 1998 EIS/EIR with a shallow subway crossing of Market Street (Base Case), plus above-ground emergency ventilation shafts, off-sidewalk station entries where feasible, and the provision of a closed barrier fare system.

3. Fourth/Stockton Alignment: The Phase 2 Build Alternative with an alignment exclusively on Fourth and Stockton Streets and a deep subway crossing of Market Street, including two design options that assume variants of portal and station locations, and a possible tunnel extension to Columbus Street north of Union Street for extraction of tunneling equipment during construction.

These alternatives are further described and illustrated in the attached newsletter that was used for informational meetings. The key differences between the alternatives for the Central Subway phase of the project, and what was analyzed in the 1998 environmental document, are: the depth of the subway under Market Street, the addition of above-ground emergency ventilation shafts in lieu of the in-street pavement grids, station access located off sidewalks on property to be acquired by MUNI, a double subway under Fourth Street rather than a single subway under Third Street and Fourth Streets, and a possible extension of the tunnel to Columbus Street just north of Union Street to extract the construction equipment in a less constrained location than Chinatown.

The original APE for the Central Subway portion of the Third Street Light Rail project has been modified to include these changes to the project features. The revised APE has been approved by the San Francisco Planning Department, Office of Historic Preservation and Major Environmental Analysis cultural resource specialists.

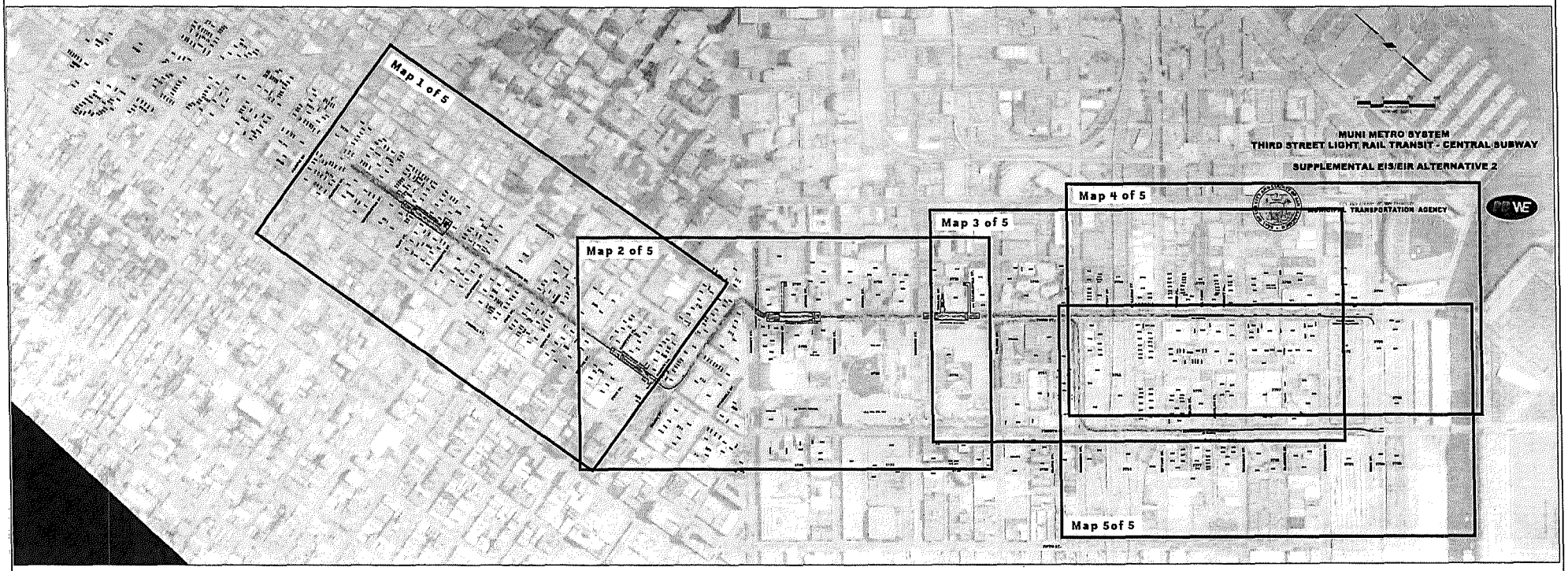
Please contact Donna Turchie at (415) 744-2737 or Carole Denardo of Garcia and Associates at (805) 350-3134 if you have any questions, or if you need further information.

Sincerely,

Leslie T. Rogers
Regional Administrator

Enclosures

cc: Joan Kugler, San Francisco Department of City Planning, MEA



MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY

Alternative 2
Area of Potential Effects (APE)
Archaeology and Arcitectural APE

Alternative 2 - Index Map

GANDA

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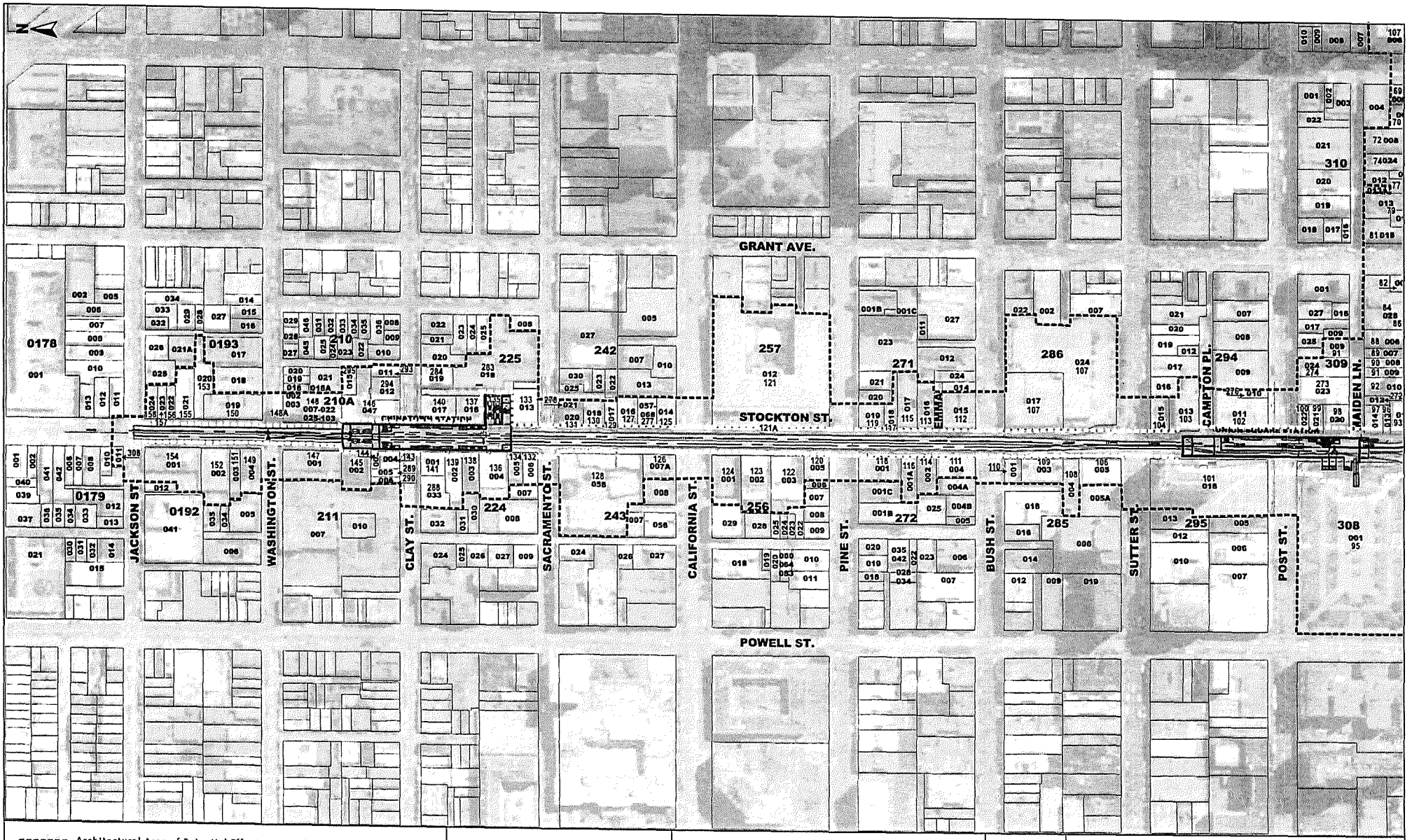

Architectural Area of Potential Effect

Archaeological Area of Potential Effect

128 Previously Surveyed

128 New Survey

200 100 0 200 Foot

HORIZONTAL SCALE

MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY

Alt 2
Map 1 of 5

GANDA ASC

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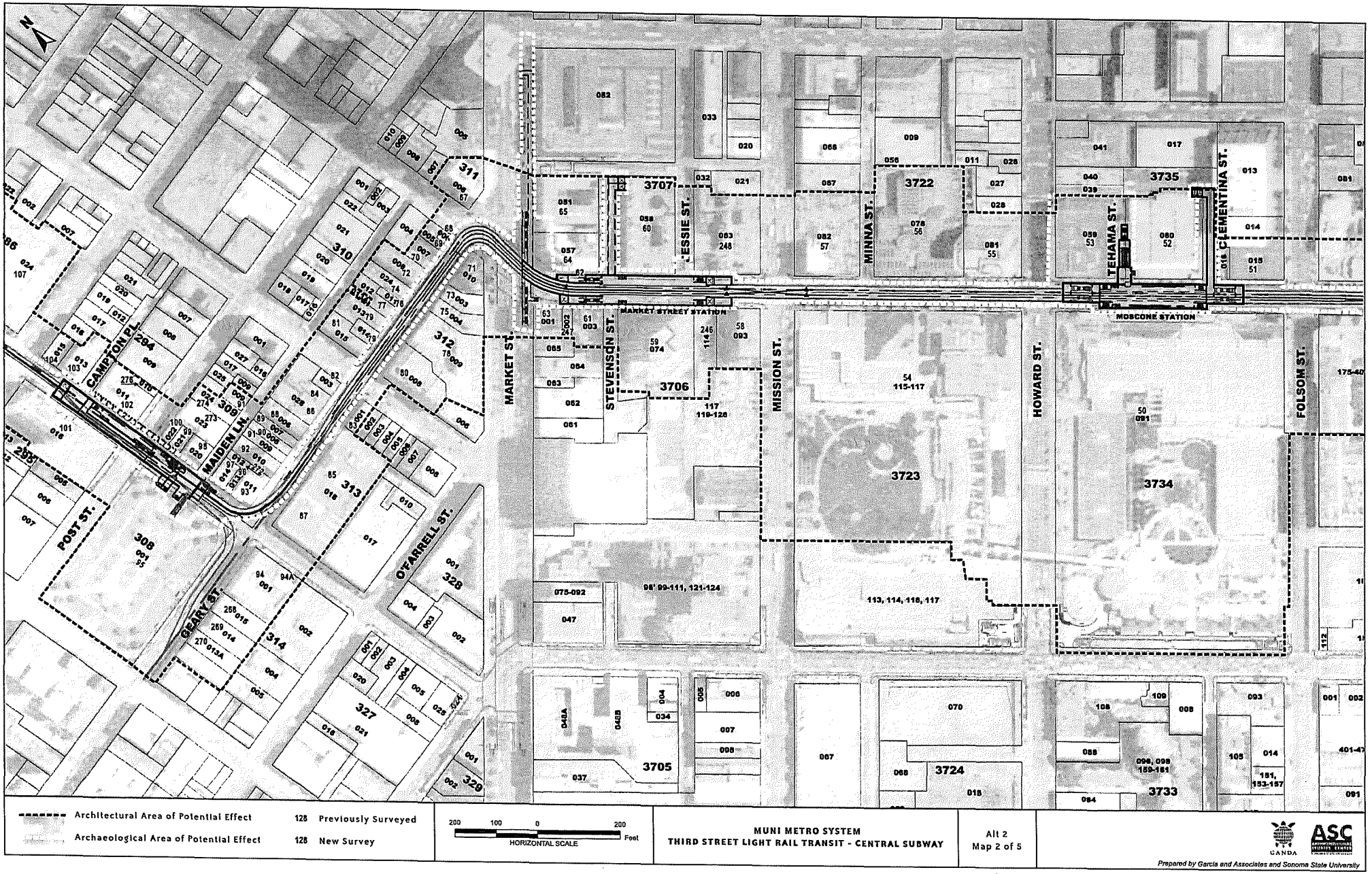
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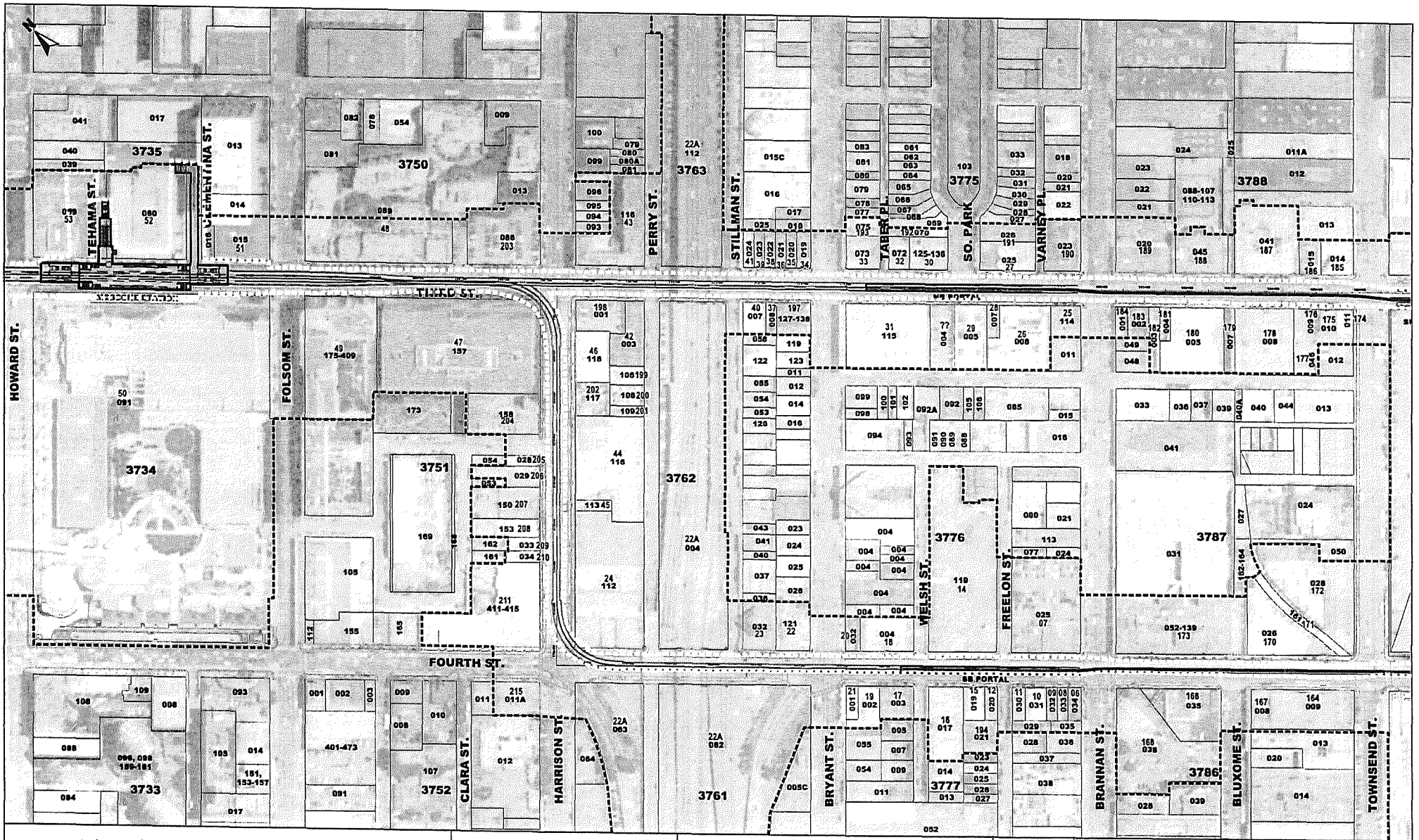
Architectural Area of Potential Effect
Archaeological Area of Potential Effect
128 Previously Surveyed
128 New Survey
200 100 0 200 Feet
HORIZONTAL SCALE
MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY
Alt 2
Map 2 of 5
GANDA
ASC
Prepared by Garcia and Associates and Sonoma State University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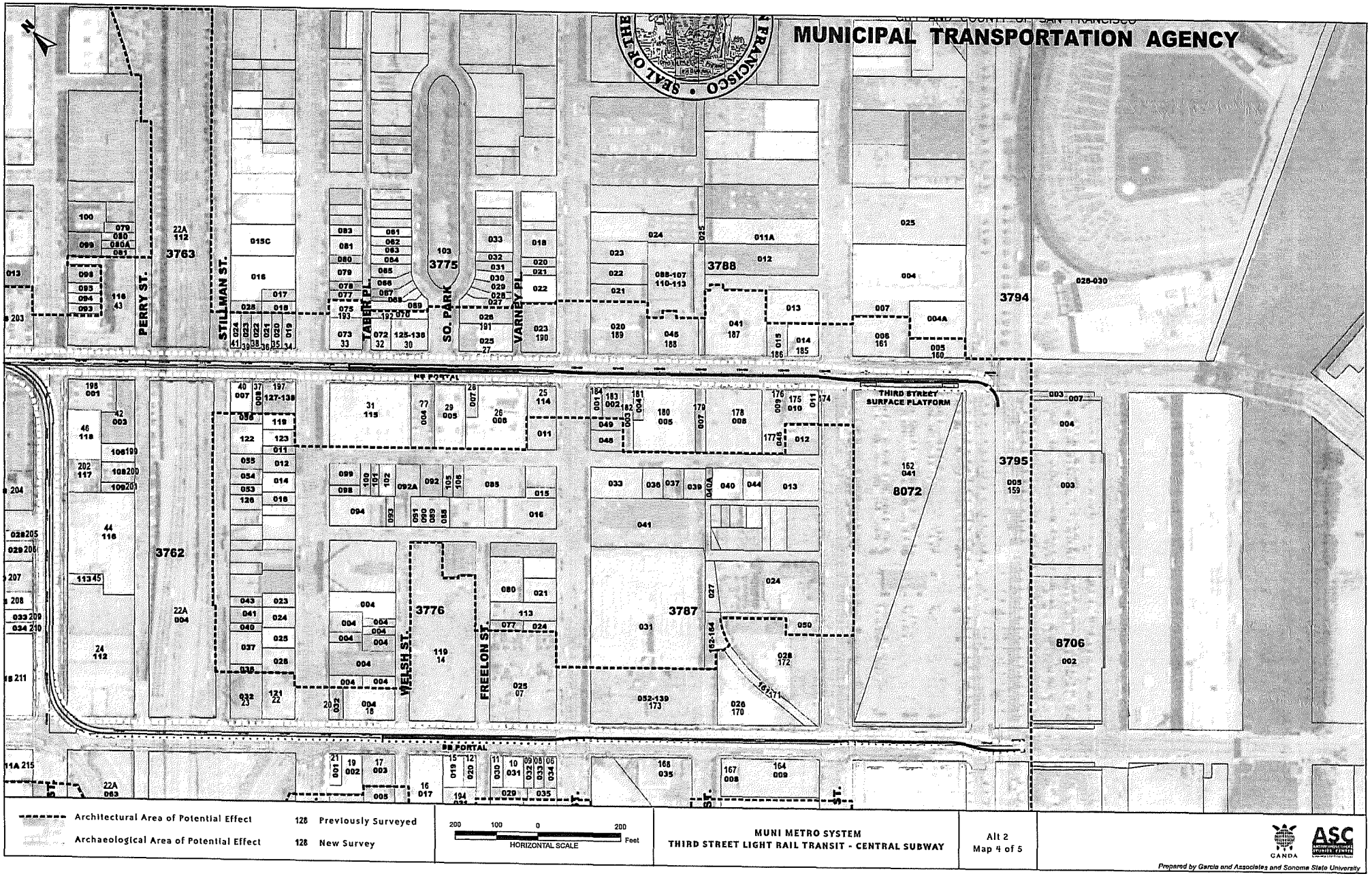
Architectural Area of Potential Effect
Archaeological Area of Potential Effect
128 Previously Surveyed
128 New Survey
200 100 0 200 Foot
HORIZONTAL SCALE
MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY
Alt 2
Map 3 of 5
GANDA
ASC
Prepared by Garcia and Associates and Sonoma State University


MUNICIPAL TRANSPORTATION AGENCY
CITY AND COUNTY OF SAN FRANCISCO
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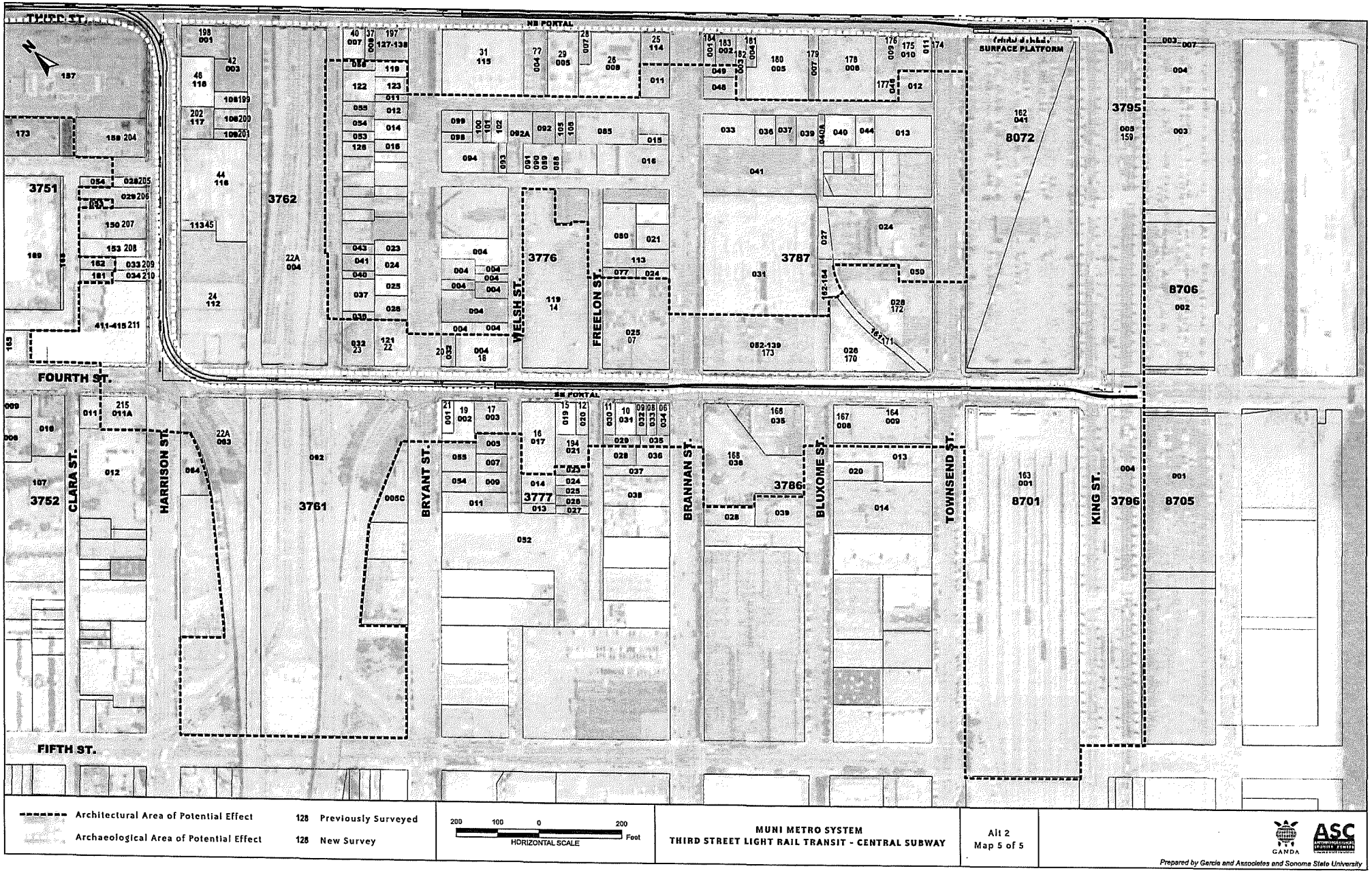
VARNEY PL.
THIRD STREET SURFACE PLATFORM
WELSH ST.
FREELON ST.
Architectural Area of Potential Effect
Archaeological Area of Potential Effect
128 Previously Surveyed
128 New Survey
200 100 0 200 Feet
HORIZONTAL SCALE
MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY
Alt 2
Map 4 of 5
GANDA
ASC
Prepared by Garcia and Associates and Sonoma State University


THIRD ST.
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Architectural Area of Potential Effect
Archaeological Area of Potential Effect
128 Previously Surveyed
128 New Survey
200 100 0 200 Foot
HORIZONTAL SCALE
MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY
Alt 2
Map 5 of 5
GANDA
ASC
Prepared by Garcia and Associates and Sonoma State University

MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY

Alternative 3A
Area of Potential Effects (APE)
Archaeology and Arcitectural APE

Alternative 3A - Index Map

GANDA

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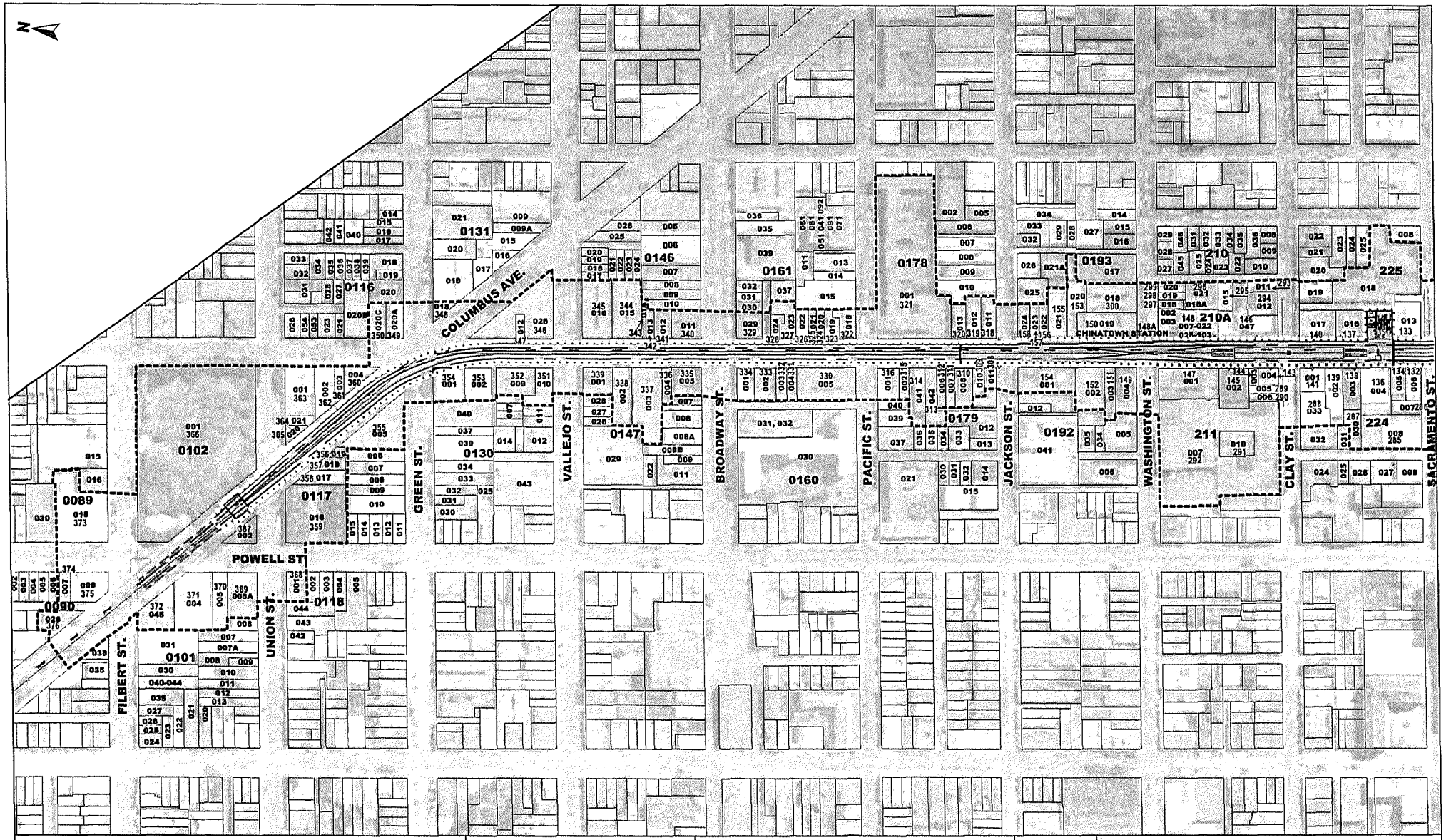

Architectural Area of Potential Effect

Archaeological Area of Potential Effect

128 Previously Surveyed

128 New Survey

200 100 0 200 Feet

HORIZONTAL SCALE

MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY

Alt 3A
Map 1 of 4

GANDA

ASC

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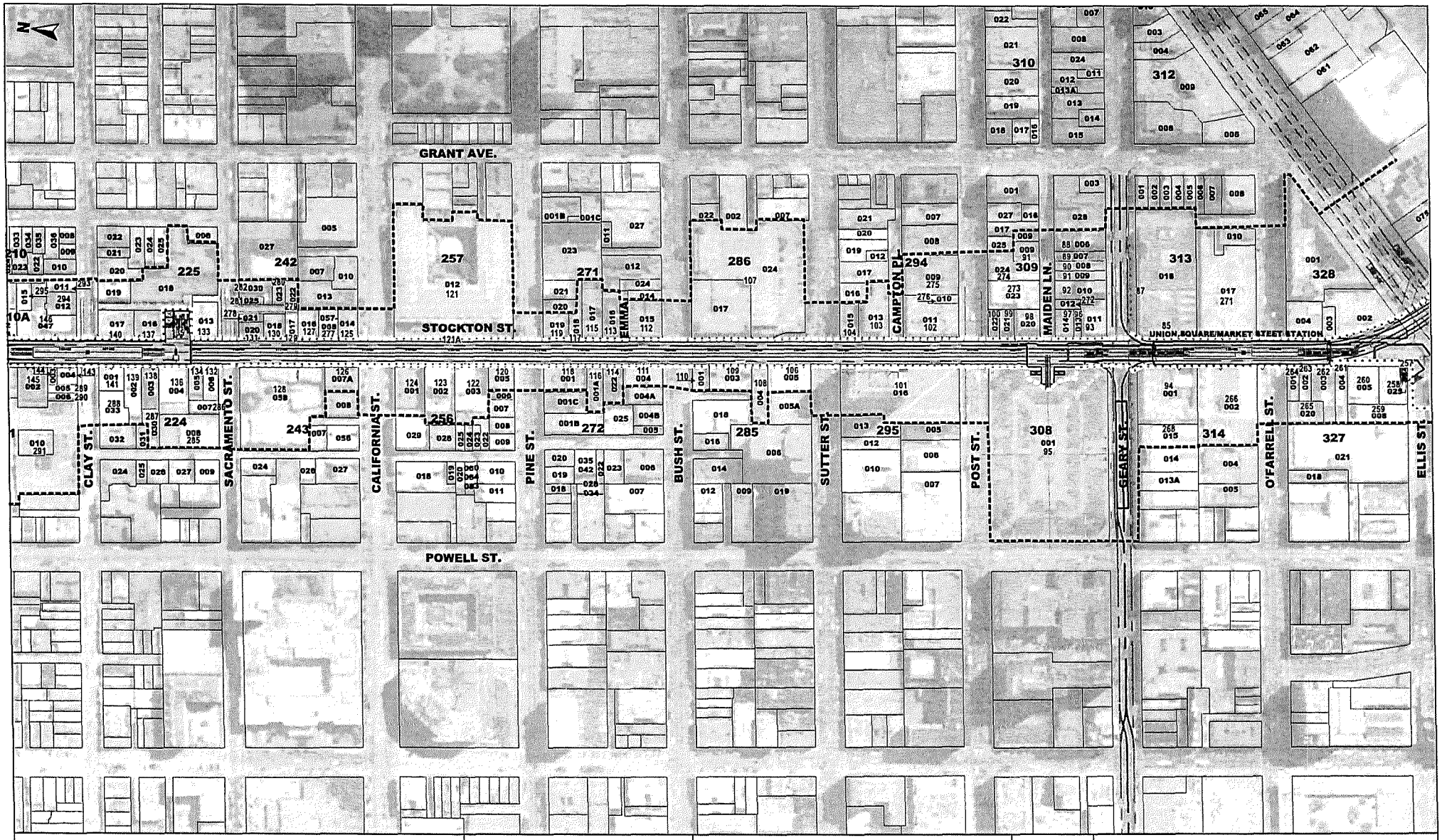

Architectural Area of Potential Effect

Archaeological Area of Potential Effect

128 Previously Surveyed

128 New Survey

200 100 0 200 Feet

HORIZONTAL SCALE

MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY

Alt 3A
Map 2 of 4

GANDA ASC

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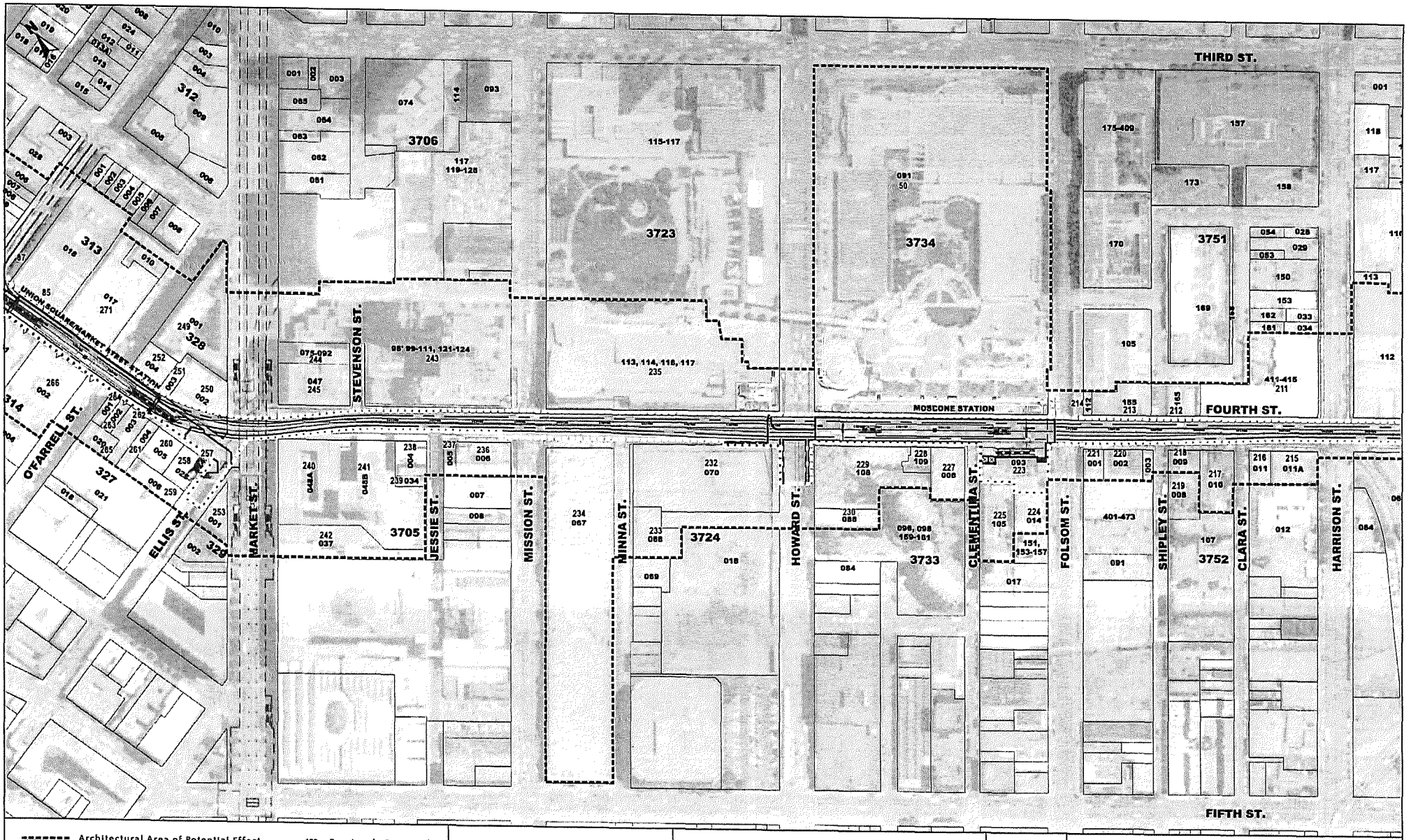
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Architectural Area of Potential Effect
Archaeological Area of Potential Effect
128 Previously Surveyed
128 New Survey
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HORIZONTAL SCALE
MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY
Alt 3A
Map 3 of 4
GANDA
ASC
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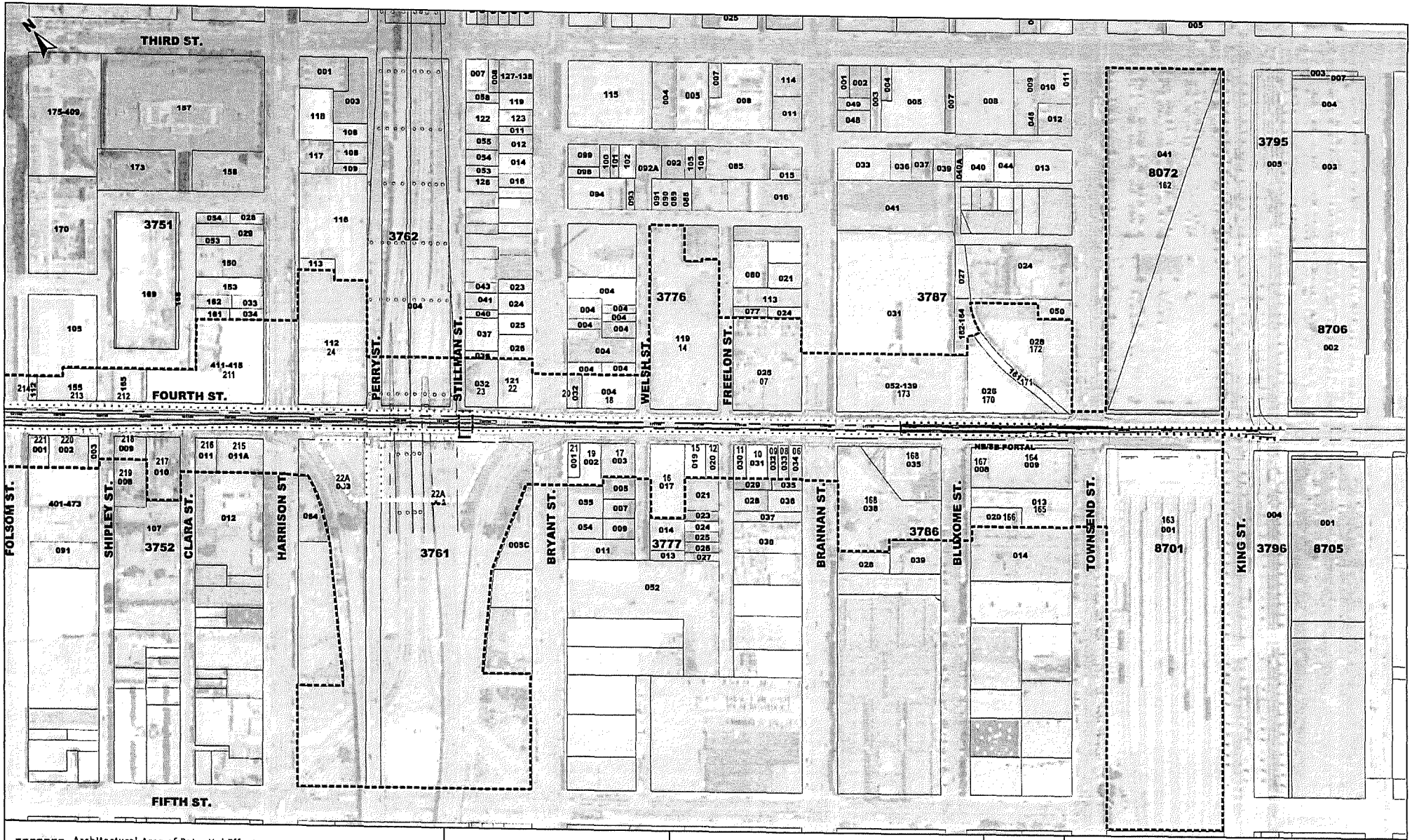
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Archaeological Area of Potential Effect
128 Previously Surveyed
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HORIZONTAL SCALE
MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY
Alt 3A
Map 4 of 4
GANDA
ASC
Prepared by Garcia and Associates and Sonoma State University

MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY

Alternative 3B
Area of Potential Effects (APE)
Archaeology and Arcitectural APE

Alternative 3B - Index Map

GANDA

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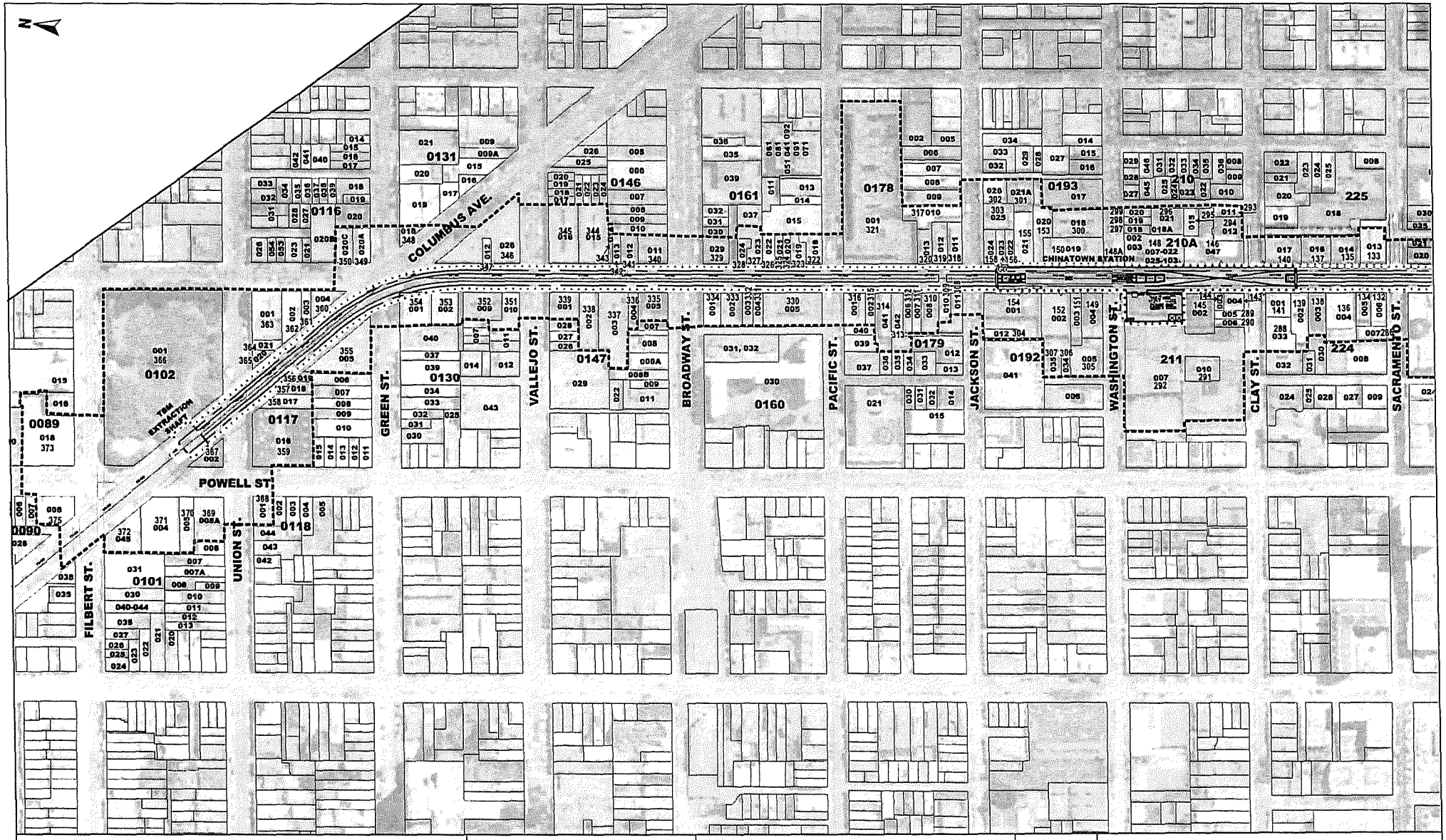
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Architectural Area of Potential Effect
Archaeological Area of Potential Effect
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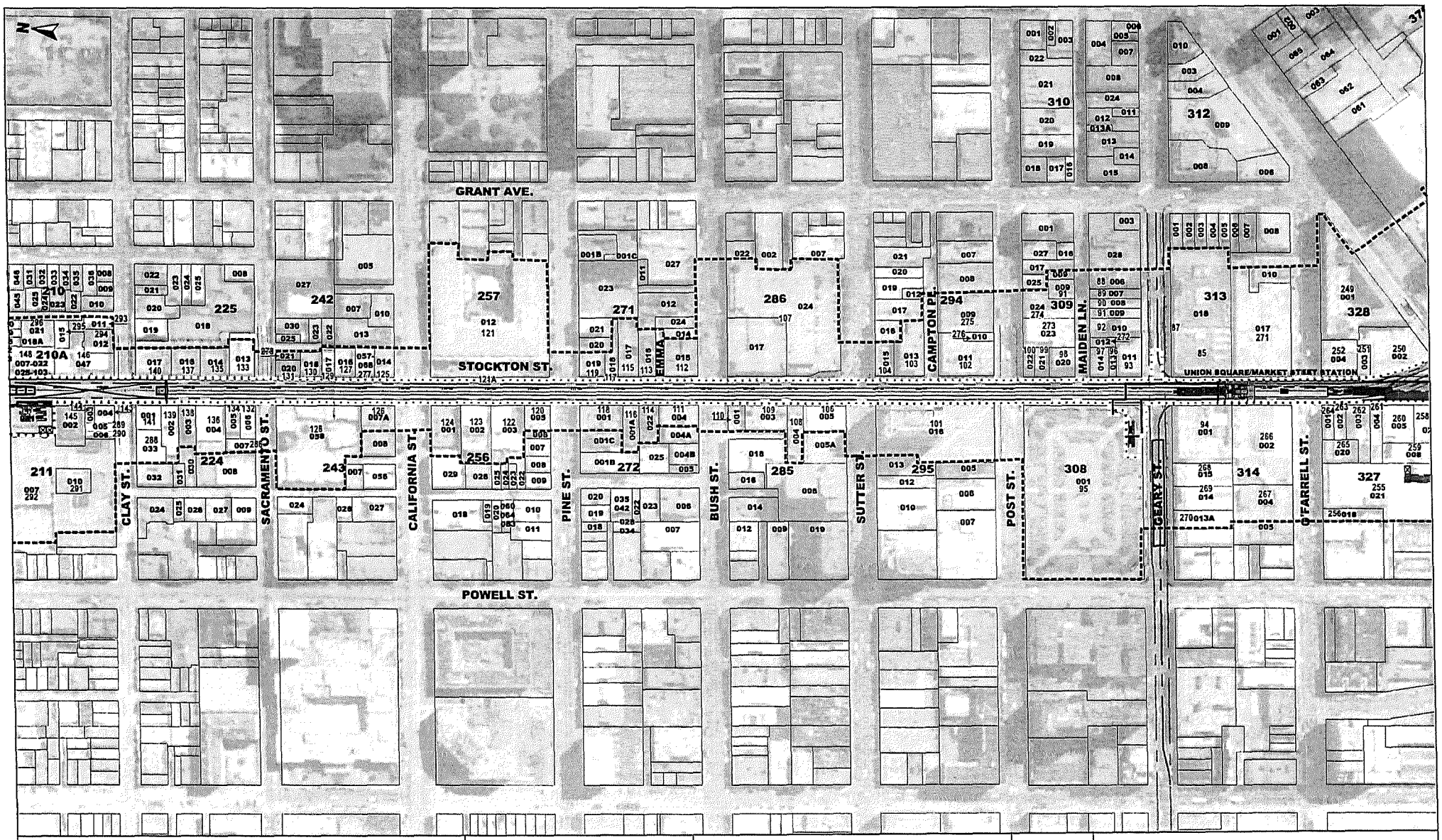
HORIZONTAL SCALE
MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY
Alt 3b
Map 1 of 4
GANDA
ASC
Prepared by Garcia and Associates and Sonoma State University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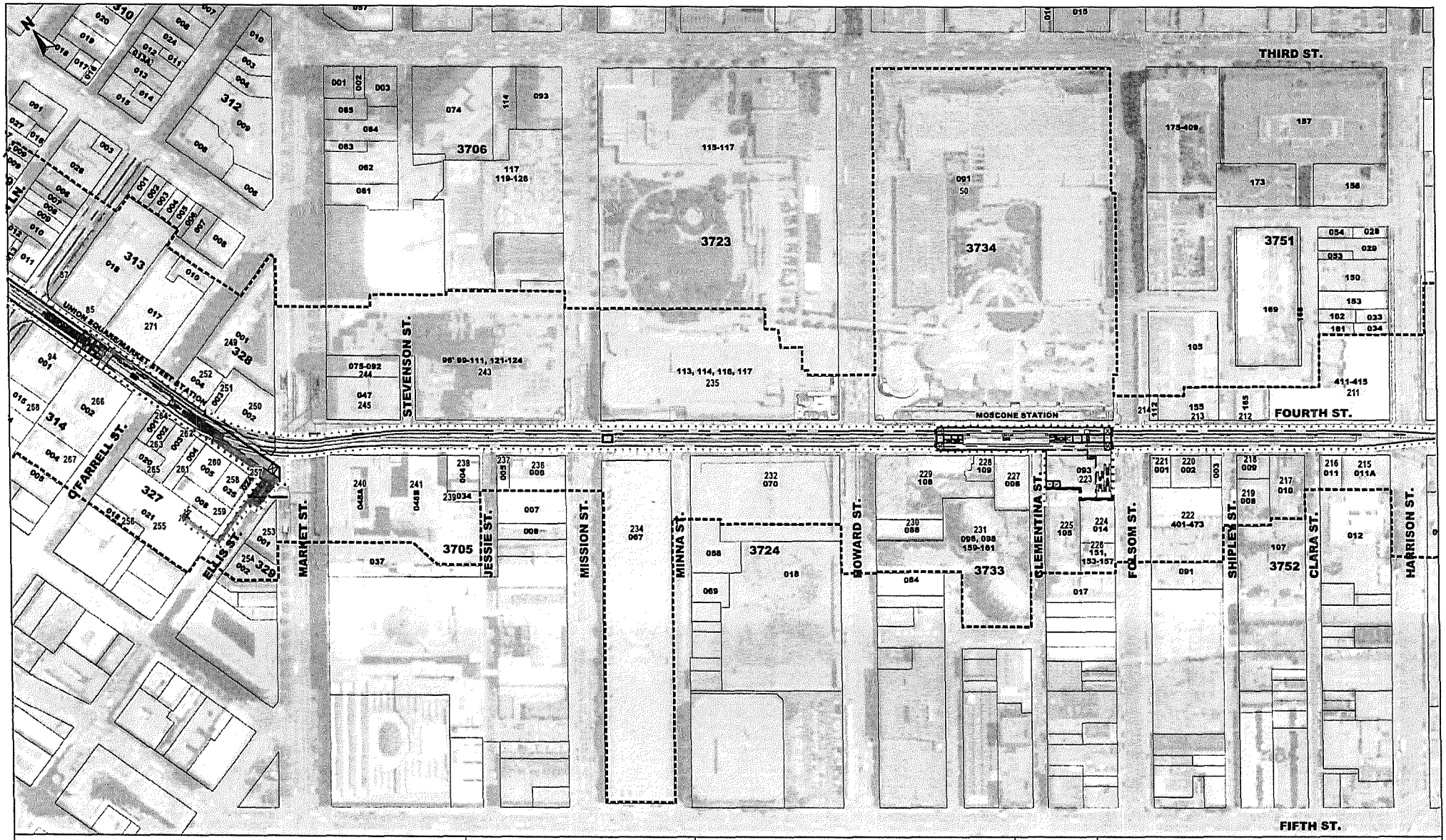
HORIZONTAL SCALE
MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY
Alt 3b
Map 2 of 4
GANDA
ASC
Prepared by Garcia and Associates and Sonoma State University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HORIZONTAL SCALE
MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY
Alt 3b
Map 3 of 4
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ASC
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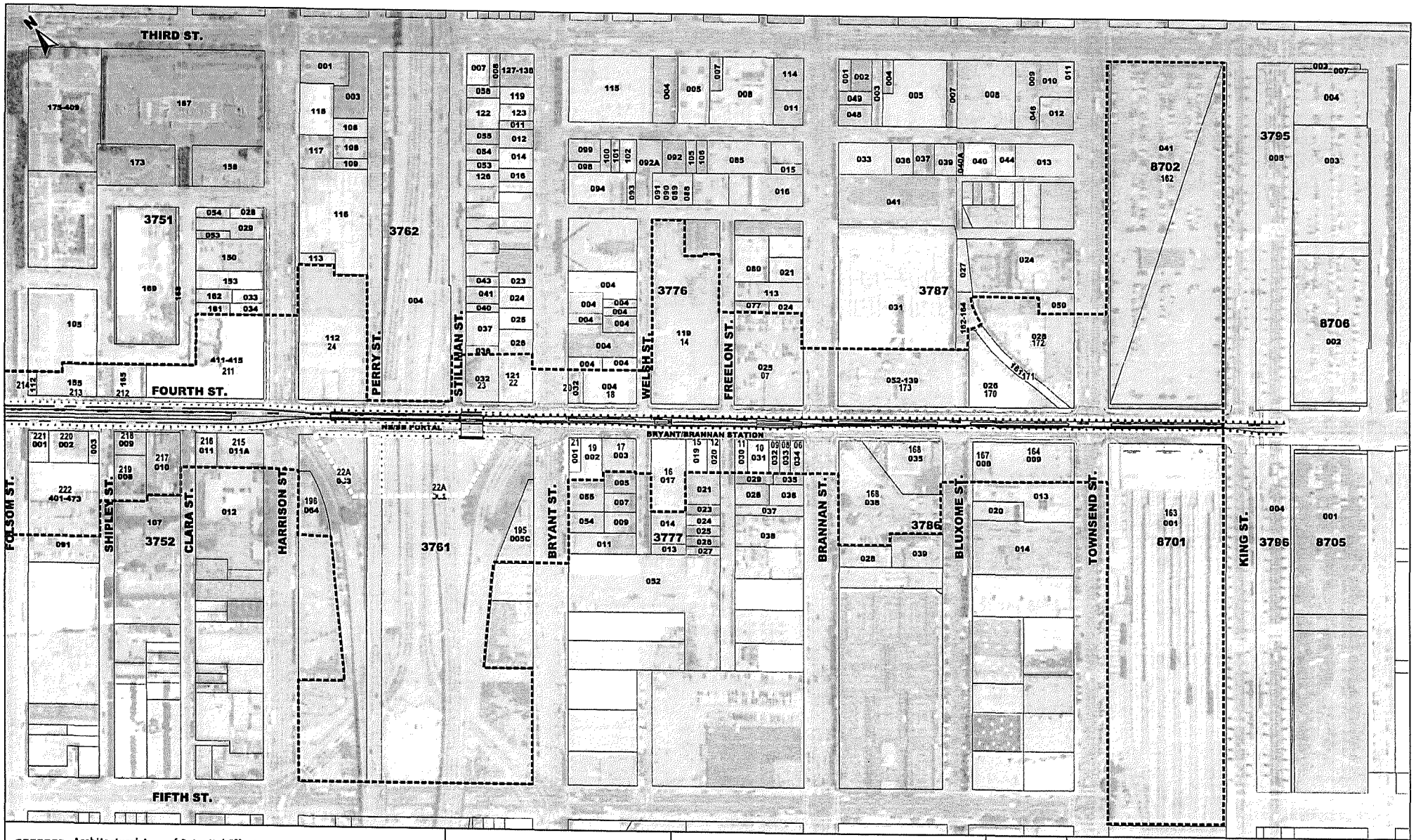
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Architectural Area of Potential Effect
Archaeological Area of Potential Effect
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128 New Survey
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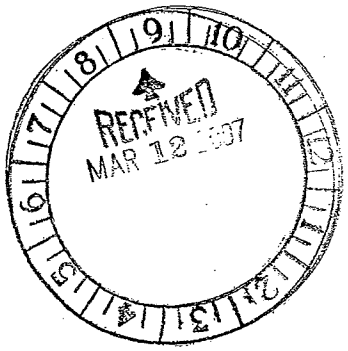
HORIZONTAL SCALE
Feet
MUNI METRO SYSTEM
THIRD STREET LIGHT RAIL TRANSIT - CENTRAL SUBWAY
Alt 3b
Map 4 of 4
GANDA
ASC
Prepared by Garcia and Associates and Sonoma State University

LE

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov
www.ohp.parks.ca.gov



9 March 2007

Reply To: FTA970609A

Leslie Rogers, Regional Administrator
US Department of Transportation
Federal Transit Administration, Region IX
201 Mission Street, Suite 1650
San Francisco, CA 94105-1839

Re: APE Determination for the 3rd Street Light Rail, Initial Operating Segment, San Francisco, San Francisco County, CA

Dear Mr. Rogers:

Thank you for initiating consultation with me pursuant to Section 106 of the National Historic Preservation Act as amended and the implementing regulations codified in 36 CFR 800 with regards to the above referenced undertaking. You are requesting I review and comment on the revised APE for this undertaking.

As I presently understand it, the undertaking consists of extension of the light rail from the current terminus at Fourth and King Streets, primarily via subway, to a terminus in Chinatown on Stockton between Washington and Jackson Streets.

FTA had modified the APE for the undertaking as shown in the maps attached to your letter. After reviewing these maps, I find the determination of the APE satisfactory pursuant to 36 CFR 800.4(a)(1).

I look forward to continued consultation on this project. If you have any questions, please contact Amanda Blosser of my staff at (916) 653-9010 or e-mail at ablosser@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

MWD:ab

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov
www.ohp.parks.ca.gov

July 9, 2008 Reply To: FTA080501A

Leslie T. Rogers, Regional Administrator
Federal Transit Administration
201 Mission Street, Suite 1650
San Francisco, CA 94105-1839

RE: Finding of Effect for the Proposed San Francisco Municipal Transportation Agency Third Street Light Rail – Central Subway, San Francisco, CA

Dear Mr. Rogers:

You have provided me with the results of your efforts to determine whether the project described above may involve or affect historic properties. You have done this, and are consulting with me, in order to comply with Section 106 of the National Historic Preservation Act and implementing regulations codified at 36 CFR Part 800.

The Federal Transit Administration (FTA) has found that the proposed project will have an adverse effect on historic properties. I concur with this finding.

Thank you for considering historic properties as part of your project planning. If you have any questions, please contact Natalie Lindquist of my staff at your earliest convenience at (916) 654-0631 or e-mail at nlindquist@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

APPENDIX E

TRANSPORTATION BACKUP

APPENDIX E

TRANSPORTATION ANALYSIS TECHNICAL MEMORANDUM

Tables E-1 through E-13 provide existing and 2030 Level of Service information, transit ridership, and parking conditions in the Central Subway Corridor. Figures E-1 through E-12 indicate proposed construction-related detours and truck restrictions in the Corridor.

TABLE E-1

ESTIMATED WEEKDAY A.M. PEAK HOUR TRANSIT RIDERSHIP COMPARISON

LRT/BUS LINE	2000	2030 NO PROJECT /TSM	2030 Enhanced EIS/EIR ALIGNMENT	2030 FOURTH / STOCKTON ALIGNMENT OPTION A (LPA)	2030 FOURTH / STOCKTON ALIGNMENT OPTION B (MODIFIED LPA)
CORRIDOR BOARDINGS					
RAIL					
T Long Line (1)	n/a	~~8,050~~ 5,650	~~8,400~~ 6,350	~~8,370~~ 6,460	~~9,120~~ 6,320
T Short Lline	n/a	n/a	~~5,050~~ 3,240	~~4,670~~ 3,200	~~5,520~~ 3,190
T Very Short Line	n/a	n/a	2,900	2,850	2,850
Subtotal		**~~8,050~~ 5,650**	**~~13,450~~ 12,490**	**~~13,040~~ 12,510**	**~~14,640~~ 12,360**
BUS					
Line 15[2]	~~3,680~~ 3,930	n/a	n/a	n/a	n/a
Lines 9X, 9AX, 9BX	~~1,620~~ 1,720	~~5,100~~ 3,320	~~5,540~~ 3,290	~~5,090~~ 2,970	~~3,880~~ 3,070
Lines 30, 45[3]	~~12,700~~ 7,220	~~5,010~~ 10,950	~~3,170~~ 5,070	~~3,310~~ 5,060	~~3,220~~ 5,060
Subtotal	**~~14,320~~ 12,870**	**~~10,110~~ 14,270**	**~~8,710~~ 8,360**	**~~8,400~~ 8,030**	**~~7,100~~ 8,130**
TOTAL IN CORRIDOR:	**~~14,320~~ 12,870**	**~~18,160~~ 19,920**	**~~22,160~~ 20,850**	**~~21,440~~ 20,540**	**~~21,740~~ 20,490**
Increase Over Existing:	0	~~3,840~~ 7,050	~~7,840~~ 7,980	~~7,120~~ 7,670	~~7,420~~ 7,620
Increase Over No Project/TSM:	0	0	~~4,000~~ 930	~~3,280~~ 620	~~3,580~~ 570
SYSTEM BOARDINGS					
RAIL	~~20,590~~ 19,620	~~32,360~~ 26,690	~~35,650~~ 36,760	~~37,060~~ 37,540	~~38,180~~ 37,390
BUS	~~61,350~~ 70,200	~~68,500~~ 76,720	~~65,590~~ 70,530	~~64,060~~ 70,460	~~62,740~~ 70,480
TOTAL SYSTEM:	**~~81,940~~ 89,820**	**~~98,160~~ 103,710**	**~~101,240~~ 107,290**	**~~101,120~~ 108,000**	**~~100,920~~ 107,870**
Increase Over Existing:	0	~~16,220~~ 13,980	~~19,300~~ 17,470	~~19,180~~ 18,180	~~18,980~~ 18,050
Increase Over No Project/TSM:	0	0	~~3,080~~ 3,580	~~2,960~~ 4,290	~~2,760~~ 4,160

n/a Not Applicable

Source: San Francisco Model, January 2007. Revised January 2008.

Notes: [1] Central Subways T-Third long-line to Visitacion Valley and T-Third short-line to 18th and Third Streets.

[2] 15-Third Line shifts to 9X-San Bruno or to the T-Third line.

[3] 45 Union/Stockton extended into Mission Bay.

TABLE E-2

ESTIMATED WEEKDAY P.M. PEAK HOUR TRANSIT RIDERSHIP COMPARISON

LRT/BUS LINE	2000	2030 NO PROJECT /TSM	2030 Enhanced EIS/EIR ALIGNMENT	2030 FOURTH / STOCKTON ALIGNMENT OPTION A (LPA)	2030 FOURTH / STOCKTON ALIGNMENT OPTION B (MODIFIED LPA)
CORRIDOR BOARDINGS					
RAIL					
T Long Line (1)	n/a	~~6,720~~ 4,290	~~7,370~~ 4,980	~~7,270~~ 5,040	~~7,850~~ 4,960
T Short line	n/a	n/a	~~4,530~~ 2,630	~~4,080~~ 2,640	~~4,810~~ 2,620
T Very Short Line	n/a	n/a	2,370	2,350	2,350
Subtotal		**~~6,720~~ 4,290**	**~~11,900~~ 9,980**	**~~11,350~~ 10,030**	**~~12,660~~ 9,930**
BUS					
Line 15(2)	~~3,500~~ 7,510	n/a	n/a	n/a	n/a
Lines 9X, 9AX, 9BX	~~1,300~~ 3,180	~~3,160~~ 1,980	~~3,190~~ 1,820	~~3,630~~ 1,730	~~2,490~~ 1,770
Lines 30, 45(3)	~~11,190~~ 5,020	~~4,710~~ 8,560	~~2,550~~ 3,860	~~2,640~~ 3,810	~~2,500~~ 3,790
Subtotal	**~~12,490~~ 15,170**	**~~7,870~~ 10,540**	**~~5,740~~ 5,680**	**~~6,270~~ 5,540**	**~~4,990~~ 5,560**
TOTAL IN CORRIDOR:	**~~12,490~~ 15,170**	**~~14,590~~ 14,830**	**~~17,640~~ 15,660**	**~~17,620~~ 15,570**	**~~17,650~~ 15,490**
Increase Over Existing:	0	~~2,100~~ 2,340	~~5,150~~ 3,170	~~5,130~~ 3,080	~~5,160~~ 3,000
Increase Over No Project/TSM:	0	0	~~3,050~~ 830	~~3,030~~ 740	~~3,060~~ 660
SYSTEM BOARDINGS					
RAIL	~~18,780~~ 16,690	~~27,130~~ 21,780	~~30,840~~ 29,600	~~31,350~~ 30,120	~~32,620~~ 30,120
BUS	~~49,950~~ 51,400	~~56,100~~ 58,830	~~57,650~~ 52,250	~~54,750~~ 52,310	~~53,340~~ 52,260
Increase Over Existing:	0	~~14,510~~ 12,520	~~19,760~~ 13,760	~~17,370~~ 14,430	~~17,230~~ 14,290
Increase Over No Project/TSM:	0	0	~~5,250~~ 1,240	~~2,860~~ 1,910	~~2,720~~ 1,770

n/a Not Applicable

Source: San Francisco Model, January 2007. Revised January 2008.

Notes: [1] Central Subways T-Third long-line to Visitacion Valley and T-Third short-line to 18th and Third Streets.

[2] 15-Third Line shifts to 9X-San Bruno or to the T-Third line.

[3] 45 Union/Stockton extended into Mission Bay.

~~TABLE E-3~~

~~ESTIMATED DAILY TRANSIT RIDERSHIP~~

~~SUMMARY OF ORIGIN-DESTINATION PATTERNS FOR 15-THIRD BUS LINE~~

		~~Vis Valley–Crocker-Amazon~~	~~Bayview-Hunters Point~~	~~Mission–Bernal~~	~~Potrero-Mission Bay~~	~~SOMA~~	~~Financial District–Civic Center~~	~~Chinatown–North Beach~~	~~Superdistrict 2~~	~~Superdistrict 3~~	~~Superdistrict 4~~	~~South Bay~~	~~East Bay~~	~~North Bay~~	~~Total~~
~~FROM~~	~~Vis Valley–Crocker-Amazon~~	~~744~~	~~754~~	~~79~~		~~762~~	~~262~~	~~476~~	~~101~~	~~262~~	~~187~~	~~284~~			~~3,911~~
	~~Bayview-Hunters Point~~	~~640~~	~~1,010~~	~~9~~	~~163~~	~~1,775~~	~~945~~	~~666~~	~~139~~	~~110~~	~~121~~	~~94~~	~~27~~		~~5,701~~
	~~Mission–Bernal~~	~~115~~	~~264~~		~~28~~	~~37~~				~~27~~	~~48~~				~~520~~
	~~Potrero-Mission Bay~~		~~155~~		~~32~~	~~107~~	~~260~~	~~75~~	~~39~~	~~24~~					~~692~~
	~~SOMA~~	~~250~~	~~825~~		~~182~~	~~57~~	~~230~~	~~553~~	~~74~~	~~24~~	~~116~~	~~75~~	~~88~~		~~2,473~~
	~~Financial District–Civic Center~~	~~289~~	~~543~~		~~195~~	~~74~~	~~48~~	~~566~~	~~44~~			~~207~~	~~59~~	~~28~~	~~2,054~~
	~~Chinatown–North Beach~~	~~200~~	~~700~~	~~408~~	~~136~~	~~976~~	~~909~~	~~935~~	~~107~~	~~112~~	~~45~~	~~314~~	~~112~~		~~4,954~~
	~~Superdistrict 2~~	~~305~~	~~312~~			~~61~~		~~321~~				~~61~~			~~1,060~~
	~~Superdistrict 3~~	~~24~~	~~370~~			~~135~~		~~184~~	~~27~~			~~58~~			~~797~~
	~~Superdistrict 4~~	~~243~~	~~99~~			~~28~~		~~14~~							~~384~~
	~~South Bay~~	~~91~~	~~139~~			~~192~~	~~230~~	~~43~~	~~27~~	~~64~~	~~16~~	~~75~~			~~878~~
	~~East Bay~~	~~529~~	~~174~~		~~28~~							~~75~~			~~805~~
	~~North Bay~~	~~30~~							~~30~~						~~60~~
	~~Total~~	~~3,460~~	~~5,346~~	~~496~~	~~764~~	~~4,204~~	~~2,885~~	~~3,832~~	~~589~~	~~623~~	~~533~~	~~1,243~~	~~286~~	~~28~~	~~24,289~~

TABLE E-4

ESTIMATED DAILY TRANSIT RIDERSHIP

SUMMARY OF ORIGIN-DESTINATION PATTERNS FOR ALL CORRIDOR ROUTES

(9AX, 9BX, 9X, 15, 30, 45)

FROM	TO: Vis Valley–Crocker-Amazon	Bayview Hunters Point	Mission–Bernal	Potrero-Mission Bay	SOMA	Financial District–Civic Center	Chinatown–North Beach	Superdistrict 2	Superdistrict 3	Superdistrict 4	South Bay	East Bay	North Bay	Total
Vis Valley–Crocker-Amazon	1,935	821	263	45	1,587	1,064	1,684	252	434	295	335	116	-	8,831
Bayview Hunters Point	694	1,010	9	163	2,268	1,064	1,356	155	232	121	94	27		7,194
Mission–Bernal	211	264		54	219		246		91	48				1,133
Potrero-Mission Bay	82	155	64	42	347	519	551	39	105					1,905
SOMA	1,070	883	7	601	1,324	1,433	2,791	282	915	116	356	148		9,926
Financial District–Civic Center	568	658		560	337	237	1,487	94	1,750	22	261	59	28	6,061
Chinatown–North Beach	2,783	758	674	280	4,012	2,633	3,273	276	2,904	251	387	173		18,405
Superdistrict 2	356	312			247		530		147		88			1,681
Superdistrict 3	135	580	330	134	2,220	2,768	7,404	48	841	115	281	292		15,149
Superdistrict 4	276	99			103		133		16					626
South Bay	141	139		16	485	404	321	27	153	16	82			1,782
East Bay	594	174		28			339		196		75			1,406
North Bay	30						109	30						169
Total	8,874	5,855	1,347	1,924	13,150	10,122	20,223	1,203	7,784	983	1,959	815	28	74,268

TABLE E-5

LEVEL OF SERVICE DESCRIPTIONS

FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	CONTROL DELAY / VEHICLE (s/veh)	DESCRIPTION
A	≤ 10.0	Free flow and insignificant delays. No approach phase is fully used by traffic and no vehicle waits longer than one red signal indication.
B	> 10 – 20	Stable operation and minimum delays. An occasional approach phase is fully used. Many drivers begin to feel somewhat restricted.
C	> 20 – 35	Stable operation and acceptable delays. Major approach phases are fully used. Most drivers feel somewhat restricted.
D	> 35- 55	Approaching unstable and tolerable delays. Drivers may have to wait through more than one red signal indication. Vehicle queues may develop, but dissipate rapidly, without excessive delays.
E	> 55 – 80	Unstable operation and significant delays. Vehicles may wait through several signal cycles. Long queues sometimes form upstream from intersection.
F	> 80	Forced flow and excessive delays. Represents jammed conditions. Intersection operates below capacity with low volumes. Vehicles queues may block upstream intersections.
Source: Highway Capacity Manual 2000, Transportation Research Board, 2004.		

TABLE E-6

LEVEL OF SERVICE DESCRIPTIONS

FOR CLASS IV URBAN STREETS

LEVEL OF SERVICE	AVERAGE OPERATING SPEED (mph)	DESCRIPTION
A	> 25	Primarily free-flow operations at average travel speeds. Vehicles are unimpeded in their ability to maneuver within the traffic stream. Stopped delay at signalized intersections is minimal.
B	> 19-25	Reasonably unimpeded operations at average travel speeds. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome.
C	> 13-19	Stable operations; but ability to maneuver and change lanes midblock may be more restricted. Longer queues and/or adverse signal coordination may contribute to lower travel speeds.
D	> 9-13	Range in which small increases in flow cause substantial increases in delay due to adverse signal progression, inappropriate signal timing, and/or high volumes.
E	> 7-9	Combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.
F	≤ 7	Extremely low speeds. Intersection congestion is likely at critical signalized locations, with high delays and extensive queuing. Adverse progression is frequently a contributor to this condition.

Source: Highway Capacity Manual 2000, Exhibit 15-2.

Note: Class IV Urban Streets are those with speeds in the range of 25 to 35 miles per hour.

TABLE E-7

A. M. PEAK HOUR INTERSECTION PERFORMANCE COMPARISON

INTERSECTION	EXISTING CONDITIONS	2030 NO PROJECT / TSM ALTERNATIVE	2030 ENHANCED EIS/EIR ALTERNATIVE	2030 FOURTH / STOCKTON ALTERNATIVE OPTION A (LPA)	2030 FOURTH / STOCKTON ALTERNATIVE OPTION B (MODIFIED LPA)
Third Street / King Street	D	~~D~~ E	**F**	**F**	**F**
Fourth Street / King Street	E	E	~~D~~ E	E	E
Fourth Street / Harrison Street	B	~~E~~ C	C	C	**F**
Sixth Street / Brannan Street	F	F	F	F	F
Fourth Street/ Bryant Street	B	B	C	C	D

Note: Shaded cells indicate intersections where the Project would contribute more than five percent to the overall growth of an intersection with cumulative significant impacts.

Bold indicates a project-specific impact.

Source: San Francisco Department of Parking and Traffic, March and May 2007. Revised January 2008.

TABLE E-8

P. M. PEAK HOUR INTERSECTION PERFORMANCE COMPARISON

INTERSECTION	EXISTING CONDITIONS	2030 NO PROJECT / TSM ALTERNATIVE	2030 ENHANCED EIS/EIR ALTERNATIVE	2030 FOURTH / STOCKTON ALTERNATIVE OPTION A (LPA)	2030 FOURTH / STOCKTON ALTERNATIVE OPTION B (MODIFIED LPA)
Third Street / King Street	F	F	F	F	F
Fourth Street / King Street	F	F	F	F	F
Fourth Street / Harrison Street	B	C	D	E	F
Sixth Street / Brannan Street	F	F	F	F	F
Fourth Street / Bryant Street	~~C~~ B	C	B	~~D~~ C	D

Note: Shaded cells indicated intersections where the Project would contribute more than five percent to the overall growth of an intersection with cumulative significant impacts.

Bold indicates a project-specific impact.

Source: San Francisco Department of Parking and Traffic, March 2007. Revised January 2008.

TABLE E-9

EXISTING PARKING CONDITIONS

SEGMENT	APPROXIMATE NUMBER OF ON-STREET PARKING SPACES			NUMBER AND PERCENTAGE OCCUPIED		NOTES
	WEST	EAST	TOTAL	NO.	%	
Third Street:						
King to Townsend Streets	13	10	23	20	87	
Townsend to Brannan Streets	19	16	35	20	57	
Brannan to Bryant Streets	21	13	34	25	74	
Subtotal (Third Street)	53	39	92	65	71	
Fourth Street:						
King to Townsend Streets	0	0	0	0	0	
Townsend to Brannan Streets	5	15	20	14	70	
Brannan to Bryant Streets	20	16	36	30	83	
Bryant to Harrison Streets[1]	17	12	29	N/A	N/A	
Subtotal (Fourth Street)	42 (25)	43 (31)	85 (56)	-- (44)	-- (79)	With Bryant and Harrison (Without Bryant and Harrison)
Stockton Street:						
Geary to Post Streets	0	10	10	4	40	
Clay to Washington Streets	11	3	14	11	79	
Washington to Jackson Streets	8	12	20	18	90	
Subtotal (Stockton Street)	~~11~~ 19	~~13~~ 25	~~24~~ 44	~~15~~ 33	~~63~~ 75	
TOTAL CORRIDOR[2]	~~106~~ 114 ~~(89)~~ (97)	~~95~~ 107 ~~(83)~~ (95)	~~201~~ 221 ~~(172)~~ (192)	-- ~~(109)~~ (142)	-- (74)	With Bryant and Harrison (Without Bryant and Harrison

Source: San Francisco Department of Parking and Traffic, October 2006 and May 2007. Revised January 2008.

[1] This segment of Fourth Street was under construction during the recent counts. Therefore, no parking occupancy data was available.

TABLE E-10

2030 PARKING CONDITIONS

SEGMENT	APPROXIMATE NUMBER OF ON-STREET PARKING SPACES			
	NO PROJECT / TSM ALTERNATIVE	ENHANCED EIS/EIR ALTERNATIVE	FOURTH / STOCKTON ALTERNATIVE OPTION A (LPA)	FOURTH / STOCKTON ALTERNATIVE OPTION B (MODIFIED LPA)
Third Street:				
King to Townsend Brannan Streets	23	0	23	23
Townsend to Brannan Streets	35	35	35	35
Brannan to Bryant Streets	34	0	34	34
Subtotal (Third Street)	92	35	92	92
Fourth Street:				
King to Townsend Streets	0	0	0	0
Townsend to Brannan Streets	20	20	2	Semi-Exclusive ~~0~~ 2 Mixed-Flow 5
Brannan to Bryant Streets	36	0	36	Semi-Exclusive 7 Mixed-Flow ~~3~~ 7
Bryant to Harrison Streets	29	29	29	Both 0
Subtotal (Fourth Street)	85	49	67	Semi-Exclusive ~~7~~ 9 Mixed-Flow ~~8~~ 12
Stockton Street:				
Geary to Post Streets	10	2	5	10
Clay to Washington Streets	14	4	8	10
Washington to Jackson Streets	20	20	20	18
Subtotal	~~24~~ 44	~~6~~ 26	~~13~~ 33	~~20~~ 38
TOTAL CORRIDOR	~~201~~ 221	~~90~~ 110	~~172~~ 192	Semi-Exclusive ~~119~~ 139 Mixed-Flow ~~120~~ 142

Source: San Francisco Department of Parking and Traffic, October 2006 and May 2007. Revised January 2008.

NOTE: Under Alternative 3B up to three parking spaces would potentially be removed on the north side of Ellis Street to accommodate the expansion of One Stockton Street (the Apple Store) access/egress into the public sidewalk area.

TABLE E-11

ESTIMATED PM PEAK PERIOD RIDERSHIP BY CENTRAL SUBWAY STATION 2030 CONDITIONS

STATION	2030 NO PROJECT /TSM	2030 ENHANCED EIS/EIR ALIGNMENT	2030 FOURTH / STOCKTON ALIGNMENT OPTION A (LPA)	2030 FOURTH / STOCKTON ALIGNMENT OPTION B (MODIFIED LPA)
Fourth and King	---	~~9,580~~ 8,200	~~9,750~~ 9,800	~~9,400~~ 8,900
Fourth and Brannan	---	---	---	~~3,840~~ 1,500
Third (between King and Townsend)	---	~~1,880~~ 1,800	---	---
Moscone	---	~~2,830~~ 2,400	~~1,800~~ 1,700	~~1,740~~ 1,300
Market Street	---	~~7,130~~ 6,500	~~8,370~~ 7,000	~~8,960~~ 6,700
Union Square	---	~~1,140~~ 800		
Chinatown	---	~~2,510~~ 2,700	~~3,350~~ 3,900	~~3,130~~ 3,700
TOTAL IN CORRIDOR:	---	**~~25,070~~ 22,400**	**~~23,270~~ 22,400**	**~~27,070~~ 22,100**

Source: San Francisco Model, January 2007, Revised January 2008.

NOTE: Under Alternative 3B up to three parking spaces would potentially be removed on the north side of Ellis Street to accommodate the expansion of the One Stockton Street (the Apple Store) access/egress into the public sidewalk area.

TABLE E-12

TRAFFIC VOLUME PROJECT CONTRIBUTIONS

WEEKDAY AM PEAK HOUR

Intersection	Northbound			Southbound			Eastbound			Westbound			Total
	L	T	R	L	T	R	L	T	R	L	T	R	
1. Fourth/King													
Existing	4	26	22	75	321	281	53	1805	32	48	779	24	3470
2030 No Project	11	149	88	158	922	406	63	1531	36	150	1232	78	4824
2030 Enhanced EIR/EIS	0	149	88	158	922	406	83	1536	36	150	1243	78	4849
Change from 2030 No Project	-11	0	0	0	0	0	20	5	0	0	11	0	25
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	24.1%	0.3%	0.0%	0.0%	0.9%	0.0%	0.5%
Change as % of Growth Existing to EIR/EIS	275.0%	0.0%	0.0%	0.0%	0.0%	0.0%	66.7%	-1.9%	0.0%	0.0%	2.4%	0.0%	1.8%
2030 4th-Stockton Option A	0	149	88	0	922	376	63	1531	36	150	1243	78	4636
Change from 2030 No Project	-11	0	0	-158	0	-30	0	0	0	0	11	0	-188
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	0.0%	-8.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	-4.1%
Change as % of Growth Existing to Option A	275.0%	0.0%	0.0%	210.7%	0.0%	-31.6%	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	-16.1%
2030 4th-Stockton Option B	0	299	88	0	872	306	63	1531	36	150	1293	78	4716
Change from 2030 No Project	-11	150	0	-158	-50	-100	0	0	0	0	61	0	-108
Contribution to Total 2030 Volume	0.0%	50.2%	0.0%	0.0%	-5.7%	-32.7%	0.0%	0.0%	0.0%	0.0%	4.7%	0.0%	-2.3%
Change as % of Growth Existing to Option B	275.0%	54.9%	0.0%	210.7%	-9.1%	-400.0%	0.0%	0.0%	0.0%	0.0%	11.9%	0.0%	-8.7%
4. Fourth/Bryant													
Existing	0	0	0	127	595	0	0	1425	171	0	0	0	2318
2030 No Project	0	0	0	188	1095	0	0	1625	671	0	0	0	3579
2030 Enhanced EIR/EIS	0	0	0	188	1095	0	0	1625	621	0	0	0	3529
Change from 2030 No Project	0	0	0	0	0	0	0	0	-50	0	0	0	-50
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-8.1%	0.0%	0.0%	0.0%	-1.4%
Change as % of Growth Existing to EIR/EIS	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-11.1%	0.0%	0.0%	0.0%	-4.1%
2030 4th-Stockton Option A	0	0	0	188	1015	0	0	1625	541	0	0	0	3369
Change from 2030 No Project	0	0	0	0	-80	0	0	0	-130	0	0	0	-210
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	-7.9%	0.0%	0.0%	0.0%	-24.0%	0.0%	0.0%	0.0%	-6.2%
Change as % of Growth Existing to Option A	0.0%	0.0%	0.0%	0.0%	-19.0%	0.0%	0.0%	0.0%	-35.1%	0.0%	0.0%	0.0%	-20.0%
2030 4th-Stockton Option B	0	0	155	188	845	0	0	1775	421	0	0	0	3384

Change from 2030 No Project	0	0	155	0	-250	0	0	150	-250	0	0	0	-195
Contribution to Total 2030 Volume	0.0%	0.0%	100.0%	0.0%	-29.6%	0.0%	0.0%	8.5%	-59.4%	0.0%	0.0%	0.0%	-5.8%
Change as % of Growth Existing to Option B	0.0%	0.0%	100.0%	0.0%	-100.0%	0.0%	0.0%	42.9%	-100.0%	0.0%	0.0%	0.0%	-18.3%
5. Fourth/Harrison													
Existing	0	0	0	0	1276	171	0	0	0	137	1034	0	2618
2030 No Project	0	0	0	0	1595	179	0	0	0	379	2295	0	4448
2030 Enhanced EIR/EIS	0	0	0	0	1595	179	0	0	0	379	2295	0	4448
Change from 2030 No Project	0	0	0	0	0	0	0	0	0	0	0	0	0
Contribution to Total 2030 Volume	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%
Change as % of Growth Existing to EIR/EIS	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%
2030 4th-Stockton Option A	0	0	0	0	1515	179	0	0	0	379	2295	0	4368
Change from 2030 No Project	0	0	0	0	-80	0	0	0	0	0	0	0	-80
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	-5.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-1.8%
Change as % of Growth Existing to Option A	0.0%	0.0%	0.0%	0.0%	-33.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-4.6%
2030 4th-Stockton Option B	0	0	0	0	1495	179	0	0	0	229	2295	0	4198
Change from 2030 No Project	0	0	0	0	-100	0	0	0	0	-150	0	0	-250
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	-6.7%	0.0%	0.0%	0.0%	0.0%	-65.5%	0.0%	0.0%	-6.0%
Change as % of Growth Existing to Option B	0.0%	0.0%	0.0%	0.0%	-45.7%	0.0%	0.0%	0.0%	0.0%	-163.0%	0.0%	0.0%	-15.8%
6. Third/King													
Existing	50	389	185	0	0	0	640	1250	12	187	773	16	3502
2030 No Project	142	401	296	0	0	0	419	1304	29	431	1318	32	4372
2030 Enhanced EIR/EIS	153	401	296	0	0	0	399	1304	29	431	1318	32	4363
Change from 2030 No Project	11	0	0	0	0	0	-20	0	0	0	0	0	-9
Contribution to Total 2030 Volume	7.2%	0.0%	0.0%	0.0%	0.0%	0.0%	-5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.2%
Change as % of Growth Existing to EIR/EIS	10.7%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%	0.0%	0.0%	0.0%	0.0%	0.0%	-1.0%
2030 4th-Stockton Option A	153	401	296	0	0	0	419	1304	29	431	1318	32	4383
Change from 2030 No Project	11	0	0	0	0	0	0	0	0	0	0	0	11
Contribution to Total 2030 Volume	7.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%
Change as % of Growth Existing to Option A	10.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%
2030 4th-Stockton Option B	153	251	296	0	0	0	419	1254	29	431	1368	32	4233
Change from 2030 No Project	11	-150	0	0	0	0	0	-50	0	0	50	0	-139
Contribution to Total 2030 Volume	7.2%	-59.8%	0.0%	0.0%	0.0%	0.0%	0.0%	-4.0%	0.0%	0.0%	3.7%	0.0%	-3.3%
Change as % of Growth Existing to Option B	10.7%	108.7%	0.0%	0.0%	0.0%	0.0%	0.0%	-1250.0%	0.0%	0.0%	8.4%	0.0%	-19.0%

8. Sixth/Brannan													
Existing	0	1456	925	0	871	138	0	348	242	261	314	149	4704
2030 No Project	0	1722	894	0	1201	225	0	214	354	468	668	138	5884
2030 Enhanced EIR/EIS	0	1722	894	0	1201	225	0	214	354	468	668	138	5884
Change from 2030 No Project	0	0	0	0	0	0	0	0	0	0	0	0	0
Contribution to Total 2030 Volume	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%
Change as % of Growth Existing to EIR/EIS	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%
2030 4th-Stockton Option A	0	1722	894	0	1231	225	0	214	354	468	668	138	5914
Change from 2030 No Project	0	0	0	0	30	0	0	0	0	0	0	0	30
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%
Change as % of Growth Existing to Option A	0.0%	0.0%	0.0%	0.0%	8.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.5%
2030 4th-Stockton Option B	0	1722	894	0	1276	225	0	214	354	468	668	138	5959
Change from 2030 No Project	0	0	0	0	75	0	0	0	0	0	0	0	75
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	5.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%
Change as % of Growth Existing to Option B	0.0%	0.0%	0.0%	0.0%	18.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.0%

Note: Shaded cells indicate intersection critical approaches where the Project contribution exceeds five percent of projected growth.

TABLE E-13

TRAFFIC VOLUME PROJECT CONTRIBUTIONS

WEEKDAY PM PEAK HOUR

Intersection	Northbound			Southbound			Eastbound			Westbound			Total
	L	T	R	L	T	R	L	T	R	L	T	R	
1. Fourth/King													
Existing	43	57	43	63	235	577	178	2045	18	8	1151	47	4465
2030 No Project	88	177	104	80	423	629	249	2194	27	53	1325	78	5427
2030 Enhanced EIR/EIS	0	177	104	80	423	629	269	2164	27	53	1413	78	5417
Change from 2030 No Project	-88	0	0	0	0	0	20	-30	0	0	88	0	-10
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.4%	-1.4%	0.0%	0.0%	6.2%	0.0%	-0.2%
Change as % of Growth Existing to EIR/EIS	204.7%	0.0%	0.0%	0.0%	0.0%	0.0%	22.0%	-25.2%	0.0%	0.0%	33.6%	0.0%	-1.1%
2030 4th-Stockton Option A	0	177	104	80	423	629	99	2464	27	53	1413	78	5547
Change from 2030 No Project	-88	0	0	0	0	0	-150	270	0	0	88	0	120
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-151.5%	11.0%	0.0%	0.0%	6.2%	0.0%	2.2%
Change as % of Growth Existing to Option A	204.7%	0.0%	0.0%	0.0%	0.0%	0.0%	189.9%	64.4%	0.0%	0.0%	33.6%	0.0%	11.1%
2030 4th-Stockton Option B	0	247	104	186	313	399	269	2424	27	53	1473	78	5573
Change from 2030 No Project	-88	70	0	106	-110	-230	20	230	0	0	148	0	146
Contribution to Total 2030 Volume	0.0%	28.3%	0.0%	0.0%	-35.1%	-57.6%	7.4%	9.5%	0.0%	0.0%	10.0%	0.0%	2.6%
Change as % of Growth Existing to Option B	204.7%	36.8%	0.0%	86.2%	-141.0%	129.2%	22.0%	60.7%	0.0%	0.0%	46.0%	0.0%	13.2%
4. Fourth/Bryant													
Existing	0	0	0	164	684	0	0	948	135	0	0	0	1931
2030 No Project	0	0	0	226	1013	0	0	1458	223	0	0	0	2920
2030 Enhanced EIR/EIS	0	0	0	226	1013	0	0	1508	223	0	0	0	2970
Change from 2030 No Project	0	0	0	0	0	0	0	50	0	0	0	0	50
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.3%	0.0%	0.0%	0.0%	0.0%	1.7%
Change as % of Growth Existing to EIR/EIS	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.9%	0.0%	0.0%	0.0%	0.0%	4.8%
2030 4th-Stockton Option A	0	0	0	226	933	0	0	1578	223	0	0	0	2960
Change from 2030 No Project	0	0	0	0	-80	0	0	120	0	0	0	0	40
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	-8.6%	0.0%	0.0%	7.6%	0.0%	0.0%	0.0%	0.0%	1.4%

Change as % of Growth Existing to Option A	0.0%	0.0%	0.0%	0.0%	-32.1%	0.0%	0.0%	19.0%	0.0%	0.0%	0.0%	0.0%	3.9%
2030 4th-Stockton Option B	0	0	85	276	583	0	0	1458	143	0	0	0	2545
Change from 2030 No Project	0	0	85	50	-430	0	0	0	-80	0	0	0	-375
Contribution to Total 2030 Volume	0.0%	0.0%	100.0%	18.1%	-73.8%	0.0%	0.0%	0.0%	-55.9%	0.0%	0.0%	0.0%	-14.7%
Change as % of Growth Existing to Option B	0.0%	0.0%	100.0%	44.6%	425.7%	0.0%	0.0%	0.0%	-1000.0%	0.0%	0.0%	0.0%	-61.1%
5. Fourth/Harrison													
Existing	0	0	0	0	1500	268	0	0	0	232	1569	0	3569
2030 No Project	0	0	0	0	1939	455	0	0	0	182	1626	0	4202
2030 Enhanced EIR/EIS	0	0	0	0	1939	455	0	0	0	182	1626	0	4202
Change from 2030 No Project	0	0	0	0	0	0	0	0	0	0	0	0	0
Contribution to Total 2030 Volume	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%
Change as % of Growth Existing to EIR/EIS	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%
2030 4th-Stockton Option A	0	0	0	0	1859	615	0	0	0	182	1626	0	4282
Change from 2030 No Project	0	0	0	0	-80	160	0	0	0	0	0	0	80
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	-4.3%	26.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%
Change as % of Growth Existing to Option A	0.0%	0.0%	0.0%	0.0%	-22.3%	46.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.2%
2030 4th-Stockton Option B	0	0	0	0	1559	775	0	0	0	182	1626	0	4142
Change from 2030 No Project	0	0	0	0	-380	320	0	0	0	0	0	0	-60
Contribution to Total 2030 Volume	0.0%	0.0%	0.0%	0.0%	-24.4%	41.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-1.4%
Change as % of Growth Existing to Option B	0.0%	0.0%	0.0%	0.0%	-644.1%	63.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-10.5%
6. Third/King													
Existing	107	642	224	0	0	0	1032	1039	37	130	1153	45	4409
2030 No Project	199	1583	506	0	0	0	1178	1088	112	498	1257	64	6485
2030 Enhanced EIR/EIS	287	1553	536	0	0	0	1138	1098	112	498	1257	64	6543
Change from 2030 No Project	88	-30	30	0	0	0	-40	10	0	0	0	0	58
Contribution to Total 2030 Volume	30.7%	-1.9%	5.6%	0.0%	0.0%	0.0%	-3.5%	0.9%	0.0%	0.0%	0.0%	0.0%	0.9%
Change as % of Growth Existing to EIR/EIS	48.9%	-3.3%	9.6%	0.0%	0.0%	0.0%	-37.7%	16.9%	0.0%	0.0%	0.0%	0.0%	2.7%
2030 4th-Stockton Option A	287	1513	506	0	0	0	1428	1108	112	498	1257	64	6773
Change from 2030 No Project	88	-70	0	0	0	0	250	20	0	0	0	0	288
Contribution to Total 2030 Volume	30.7%	-4.6%	0.0%	0.0%	0.0%	0.0%	17.5%	1.8%	0.0%	0.0%	0.0%	0.0%	4.3%
Change as % of Growth Existing to Option A	48.9%	-8.0%	0.0%	0.0%	0.0%	0.0%	63.1%	29.0%	0.0%	0.0%	0.0%	0.0%	12.2%
2030 4th-Stockton Option B	287	1513	506	0	0	0	1514	1088	112	498	1317	64	6899
Change from 2030 No Project	88	-70	0	0	0	0	336	0	0	0	60	0	414

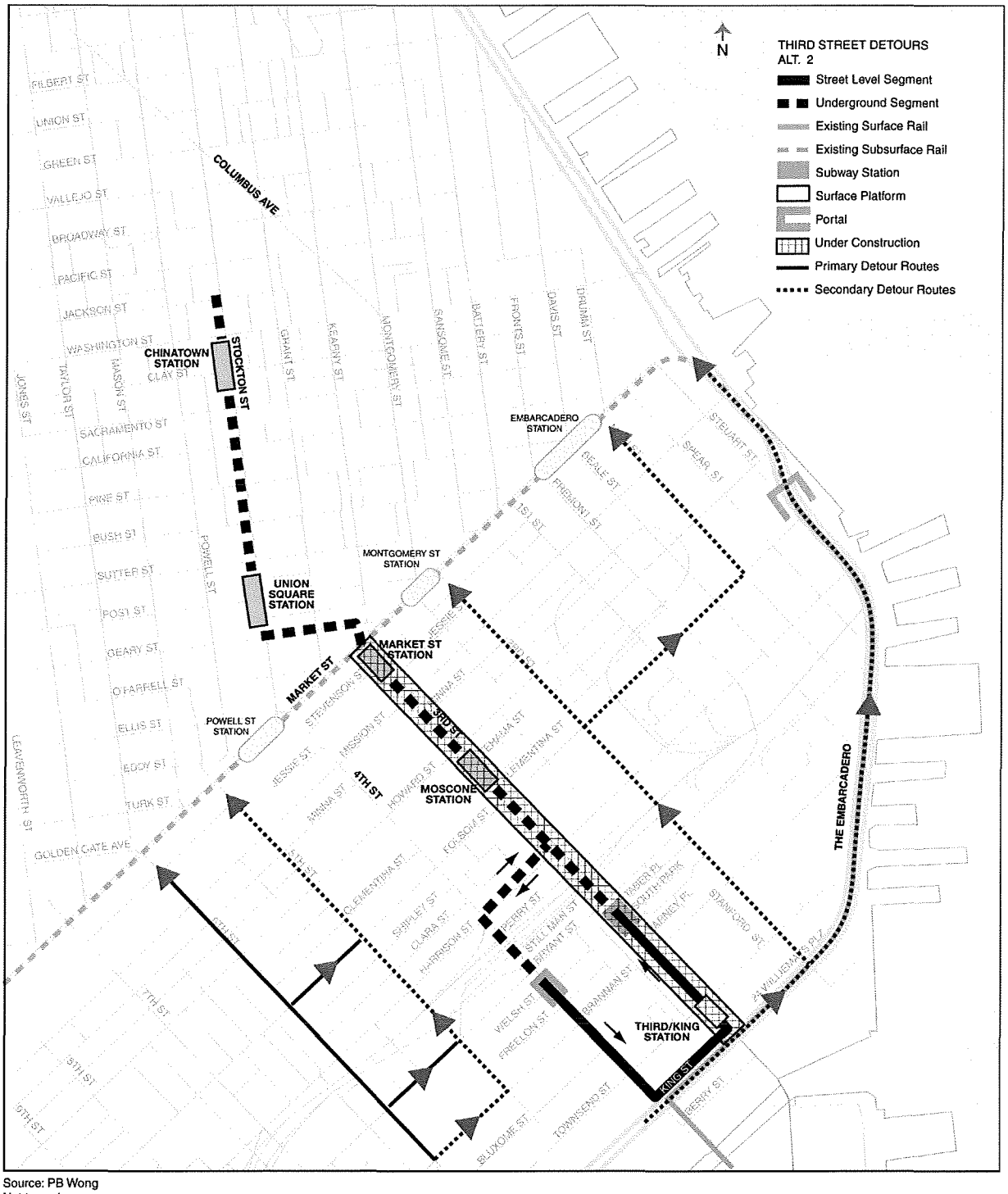
Contribution to Total 2030 Volume	30.7%	-4.6%	0.0%	0.0%	0.0%	0.0%	22.2%	0.0%	0.0%	0.0%	4.6%	0.0%	6.0%
Change as % of Growth Existing to Option B	48.9%	-8.0%	0.0%	0.0%	0.0%	0.0%	69.7%	0.0%	0.0%	0.0%	36.6%	0.0%	16.6%
8. Sixth/Brannan													
Existing	0	1476	610	0	1611	84	0	331	486	769	684	42	6093
2030 No Project	0	1607	838	0	1948	263	0	404	541	569	769	18	6957
2030 Enhanced EIR/EIS	0	1657	898	0	1948	263	0	404	541	569	769	18	7067
Change from 2030 No Project	0	50	60	0	0	0	0	0	0	0	0	0	110
Contribution to Total 2030 Volume	0.0%	3.0%	6.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%
Change as % of Growth Existing to EIR/EIS	0.0%	27.6%	20.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.3%
2030 4th-Stockton Option A	0	1607	838	0	1948	263	0	404	541	569	769	18	6957
Change from 2030 No Project	0	0	0	0	0	0	0	0	0	0	0	0	0
Contribution to Total 2030 Volume	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%
Change as % of Growth Existing to Option A	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%
2030 4th-Stockton Option B	0	1537	808	0	2138	263	0	404	541	569	709	18	6987
Change from 2030 No Project	0	-70	-30	0	190	0	0	0	0	0	-60	0	30
Contribution to Total 2030 Volume	0.0%	-4.6%	-3.7%	0.0%	8.9%	0.0%	0.0%	0.0%	0.0%	0.0%	-8.5%	0.0%	0.4%
Change as % of Growth Existing to Option B	0.0%	-114.8%	-15.2%	0.0%	36.1%	0.0%	0.0%	0.0%	0.0%	0.0%	-240.0%	0.0%	3.4%

Note: Shaded cells indicate intersection critical approaches where the Project contribution exceeds five percent of projected growth.

FIGURE E-1

PROPOSED TRAFFIC DETOURS FOR THIRD STREEET CONSTRUCTION

ALTERNATIVE 2 – ENHANCED EIS/EIR ALIGNMENT

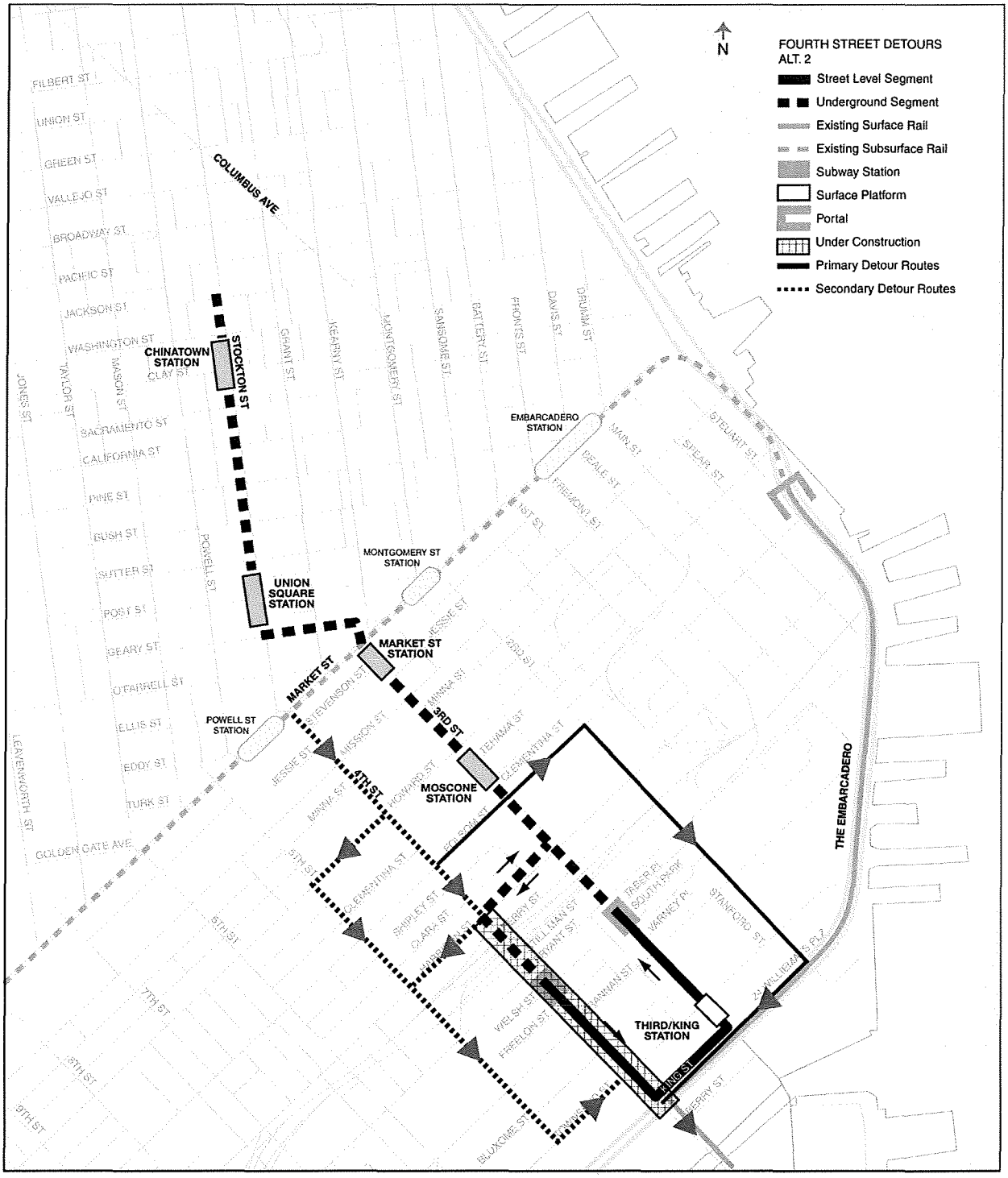


Source: PB Wong
Not to scale

FIGURE E-2

PROPOSED TRAFFIC DETOURS FOR FOURTH STREET CONSTRUCTION

ALTERNATIVE 2 – ENHANCED EIS/EIR ALIGNMENT

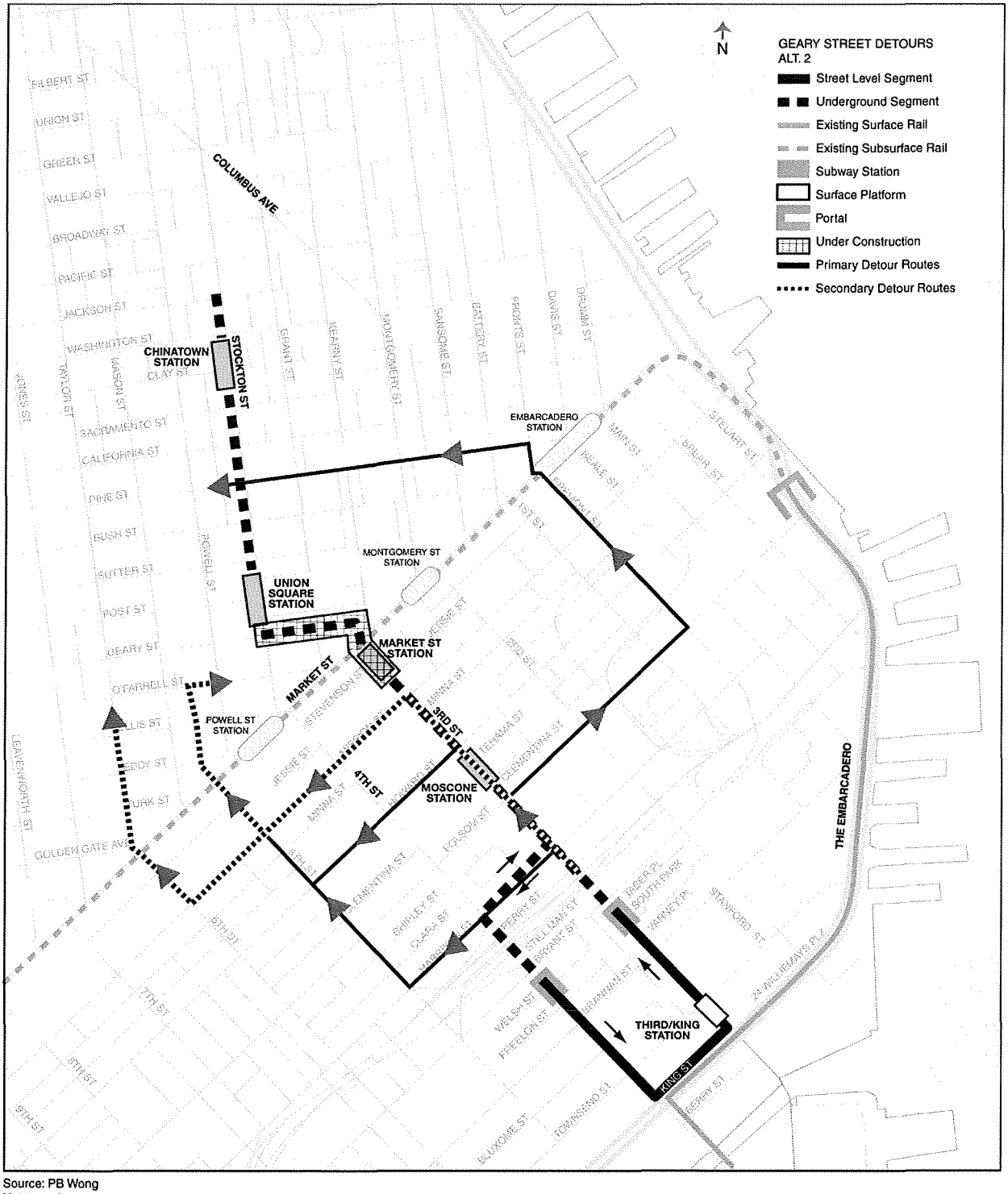


Source: PB Wong
Not to scale

FIGURE E-3

PROPOSED TRAFFIC DETOURS FOR GEARY STREET CONSTRUCTION

ALTERNATIVE 2 – ENHANCED EIS/EIR ALIGNMENT

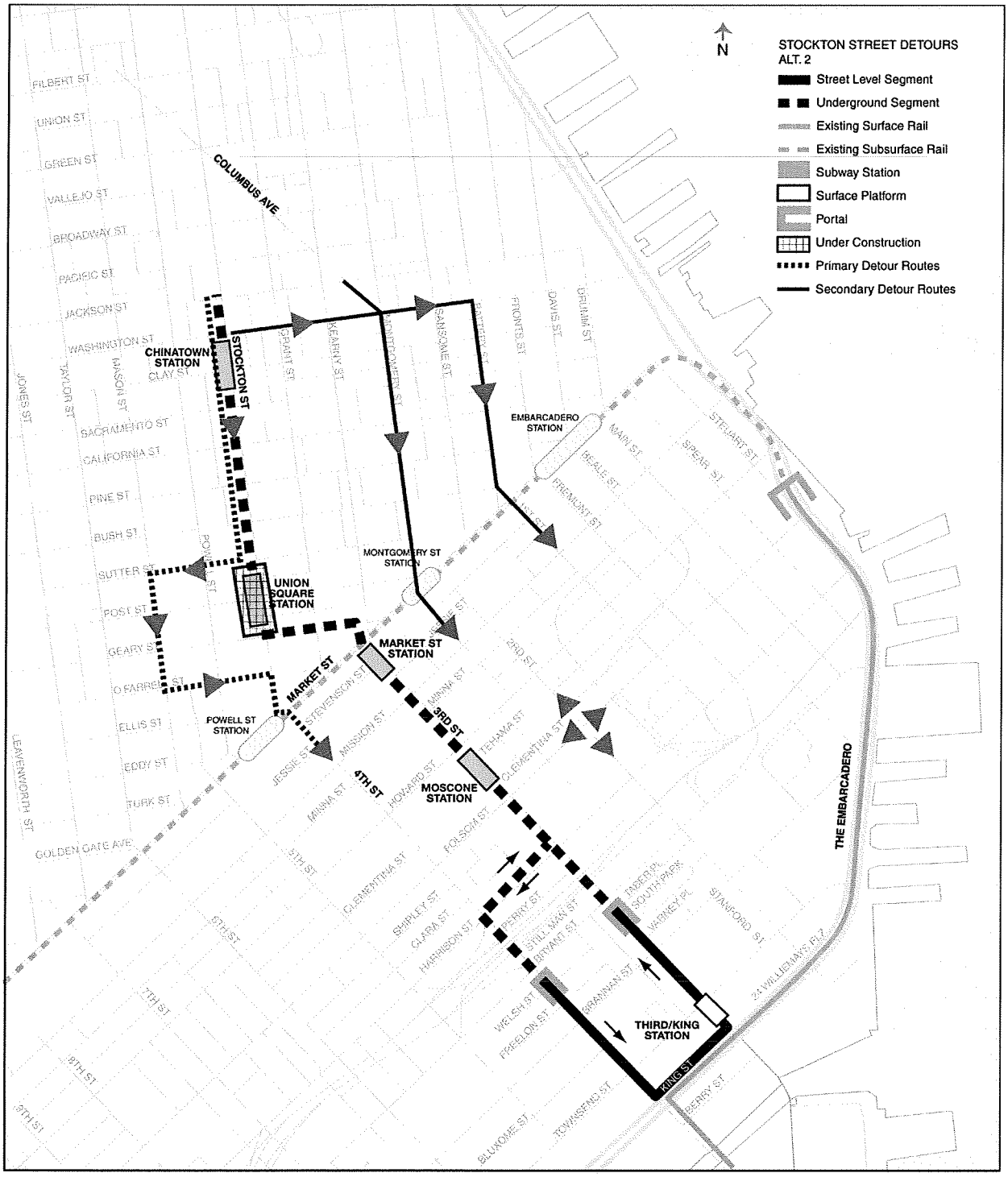


Source: PB Wong
Not to scale

FIGURE E-4

PROPOSED TRAFFIC DETOURS FOR UNION SQAURE STATION CONSTRUCTOIN

ALTERNATIVE 2 – ENHANCED EIS/EIR ALIGNMENT

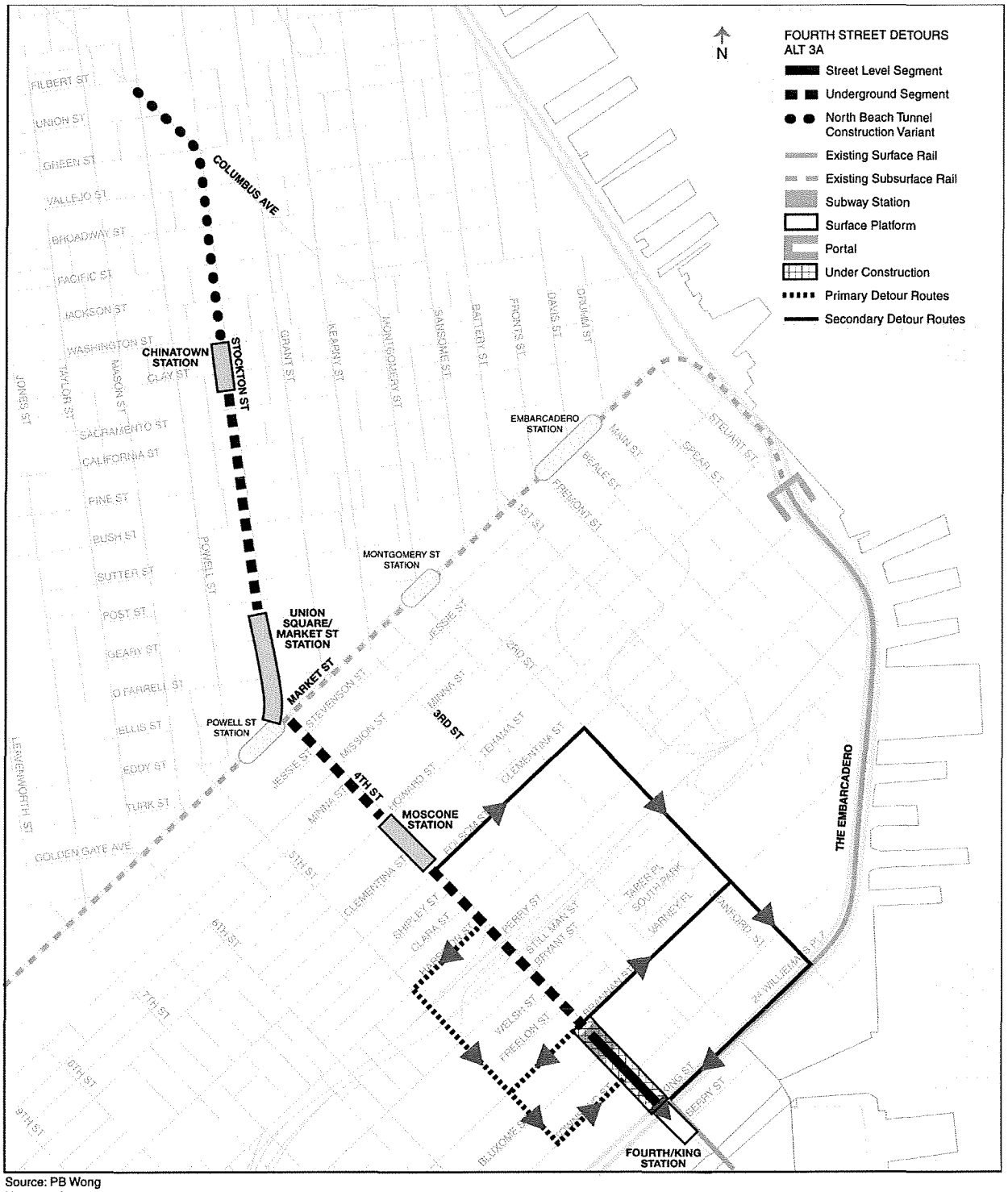


Source: PB Wong
Not to scale

FIGURE E-5

PROPOSED TRAFFIC DETOURS FOR FOURTH STREET CONSTRUCTION

ALTERNATIVE 3 – FOURTH/STOCKTON ALIGNMENT OPTION A (LPA)

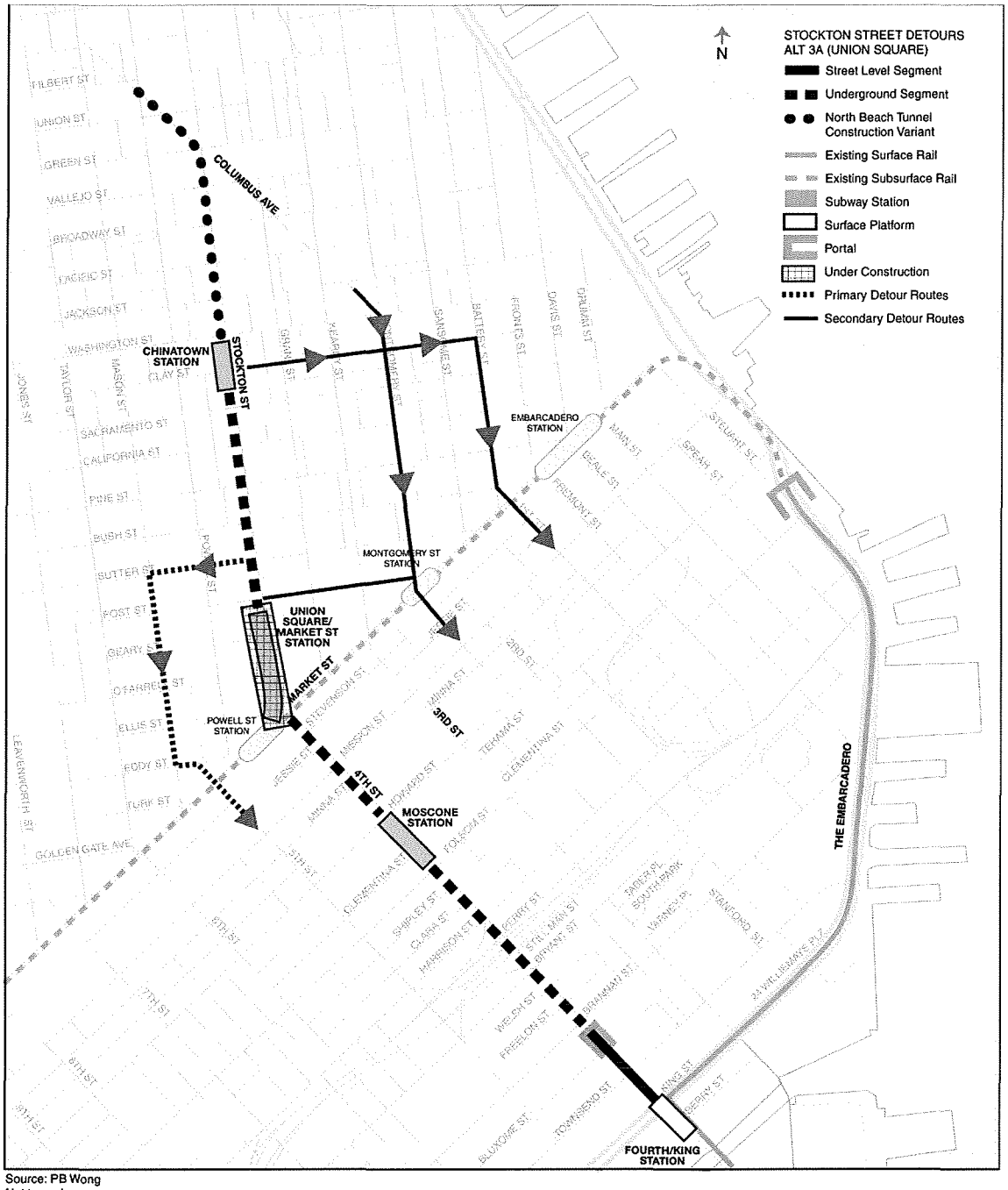


Source: PB Wong
Not to scale

FIGURE E-6

PROPOSED TRAFFIC DETOURS FOR UNION SQUARE/MARKET STREET CONSTRUCTION

ALTERNATIVE 3 – FOURTH/STOCKTON ALIGNMENT OPTION A (LPA)

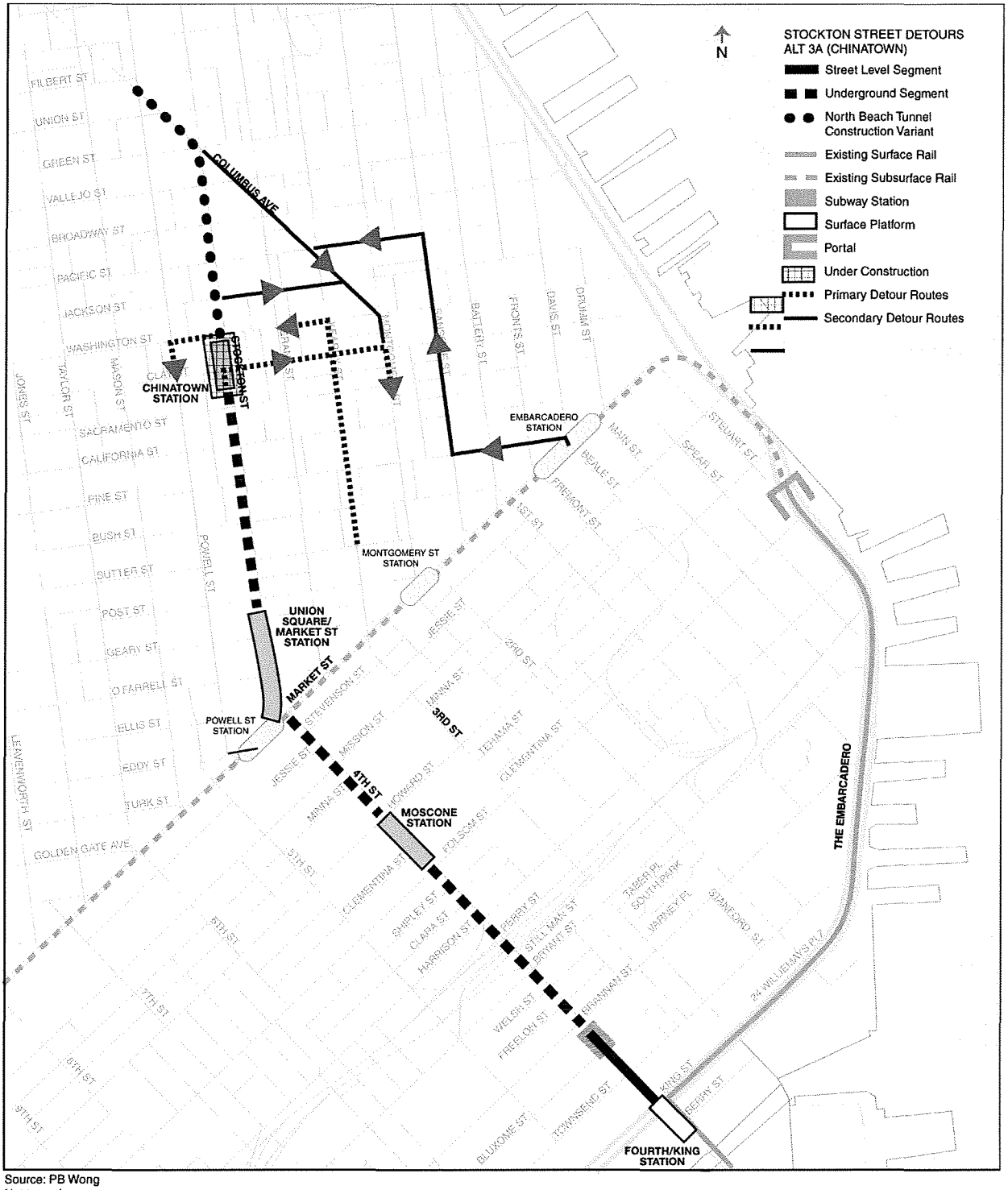


Source: PB Wong
Not to scale

FIGURE E-7

PROPOSED TRAFFIC DETOURS FOR CHINATOWN STATION CONSTRUCTION

ALTERNATIVE 3 – FOURTH/STOCKTON ALIGNMENT OPTION A (LPA)

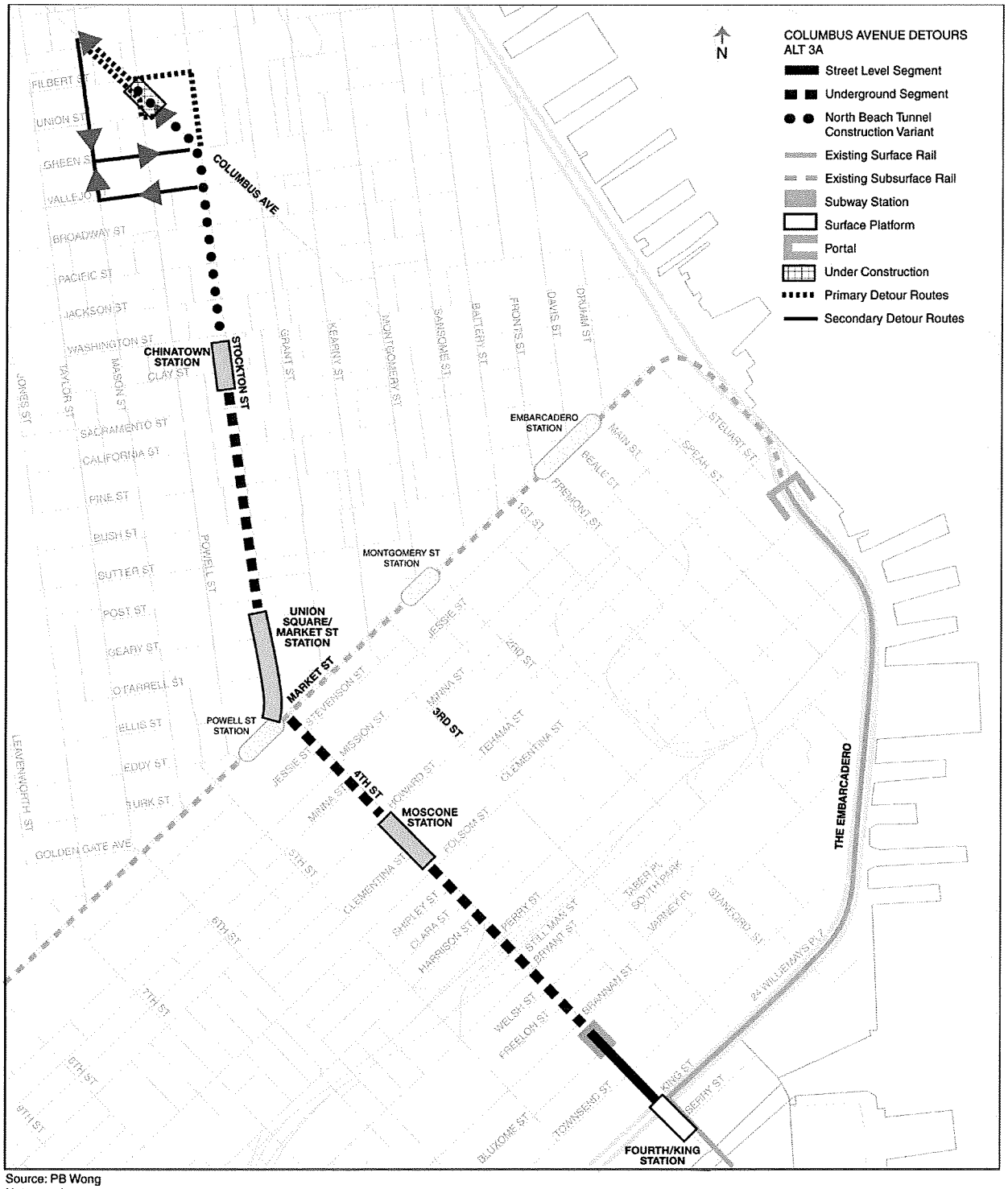


Source: PB Wong
Not to scale

FIGURE E-8

PROPOSED TRAFFIC DETOURS FOR NORTH BEACH CONSTRUCTION VARIANT

ALTERNATIVE 3 – FOURTH/STOCKTON ALIGNMENT OPTION A (LPA)

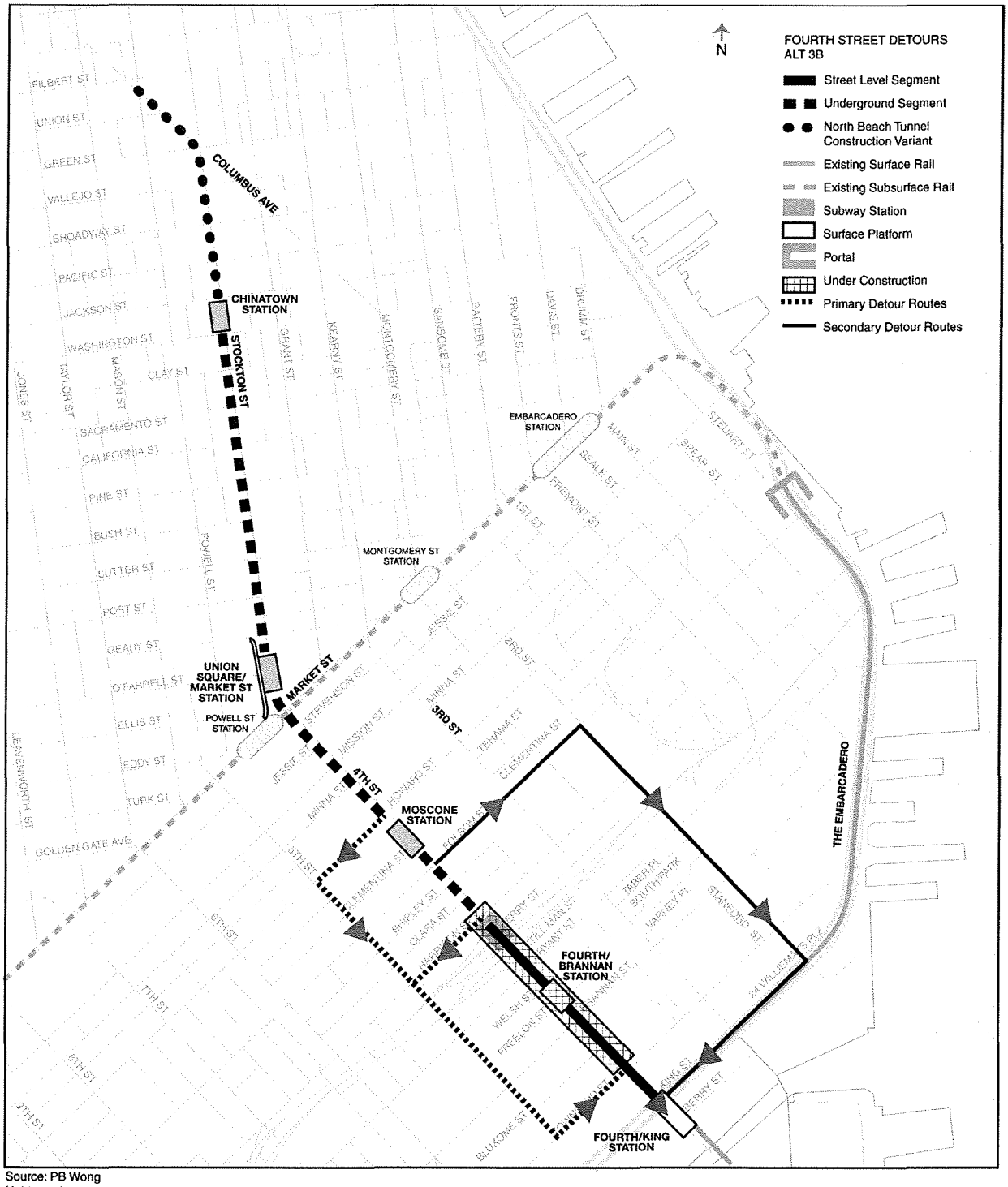


Source: PB Wong
Not to scale

FIGURE E-9

PROPOSED TRAFFIC DETOURS FOR FOURTH STREET CONSTRUCTION

ALTERNATIVE 3 – FOURTH/STOCKTON ALIGNMENT OPTION B (MODIFIED LPA)

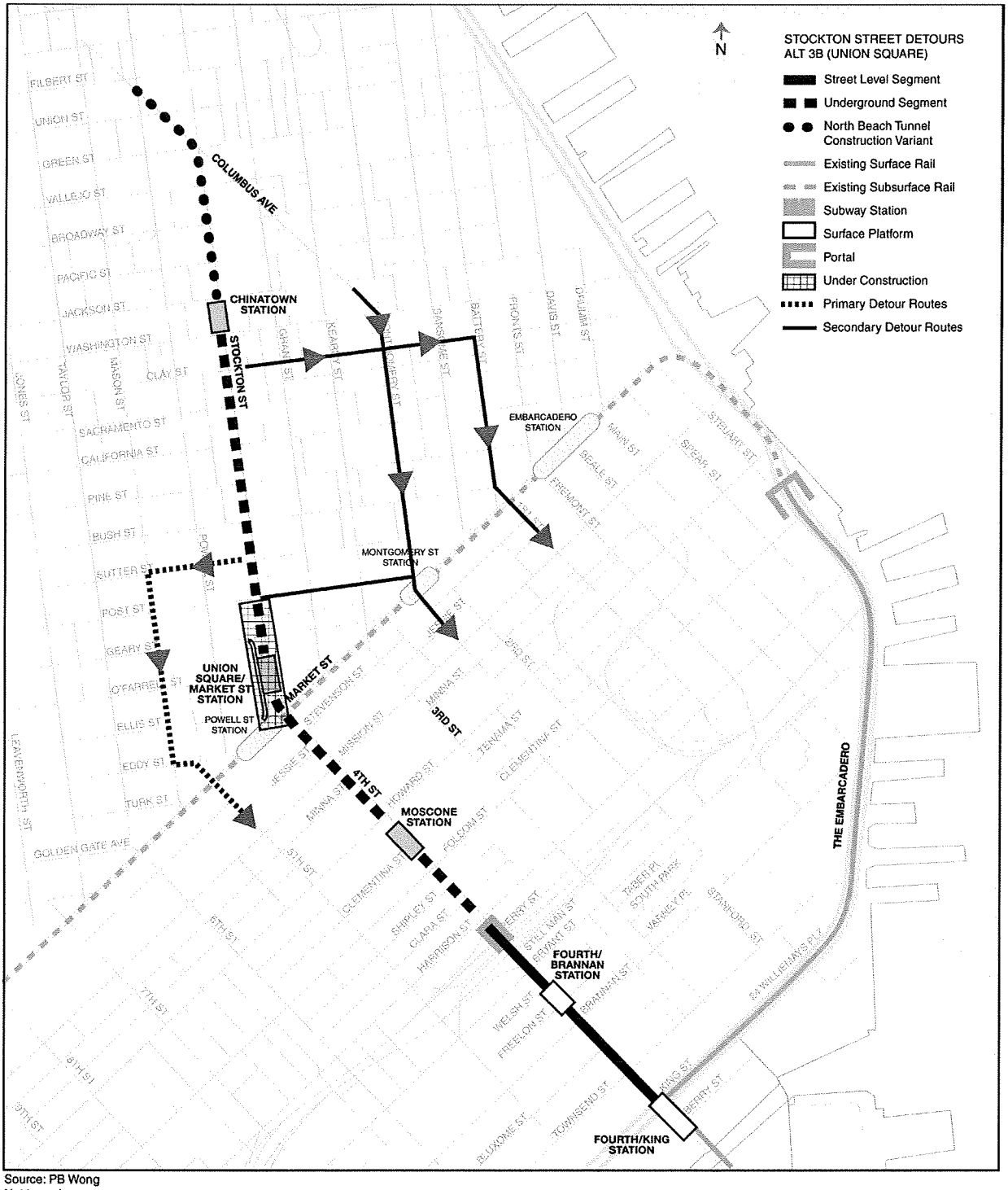


Source: PB Wong
Not to scale

FIGURE E-10

PROPOSED TRAFFIC DETOURS FOR UNION SQUARE/MARKET STREET CONSTRUCTION

ALTERNATIVE 3 – FOURTH/STOCKTON ALIGNMENT OPTION B (MODIFIED LPA)

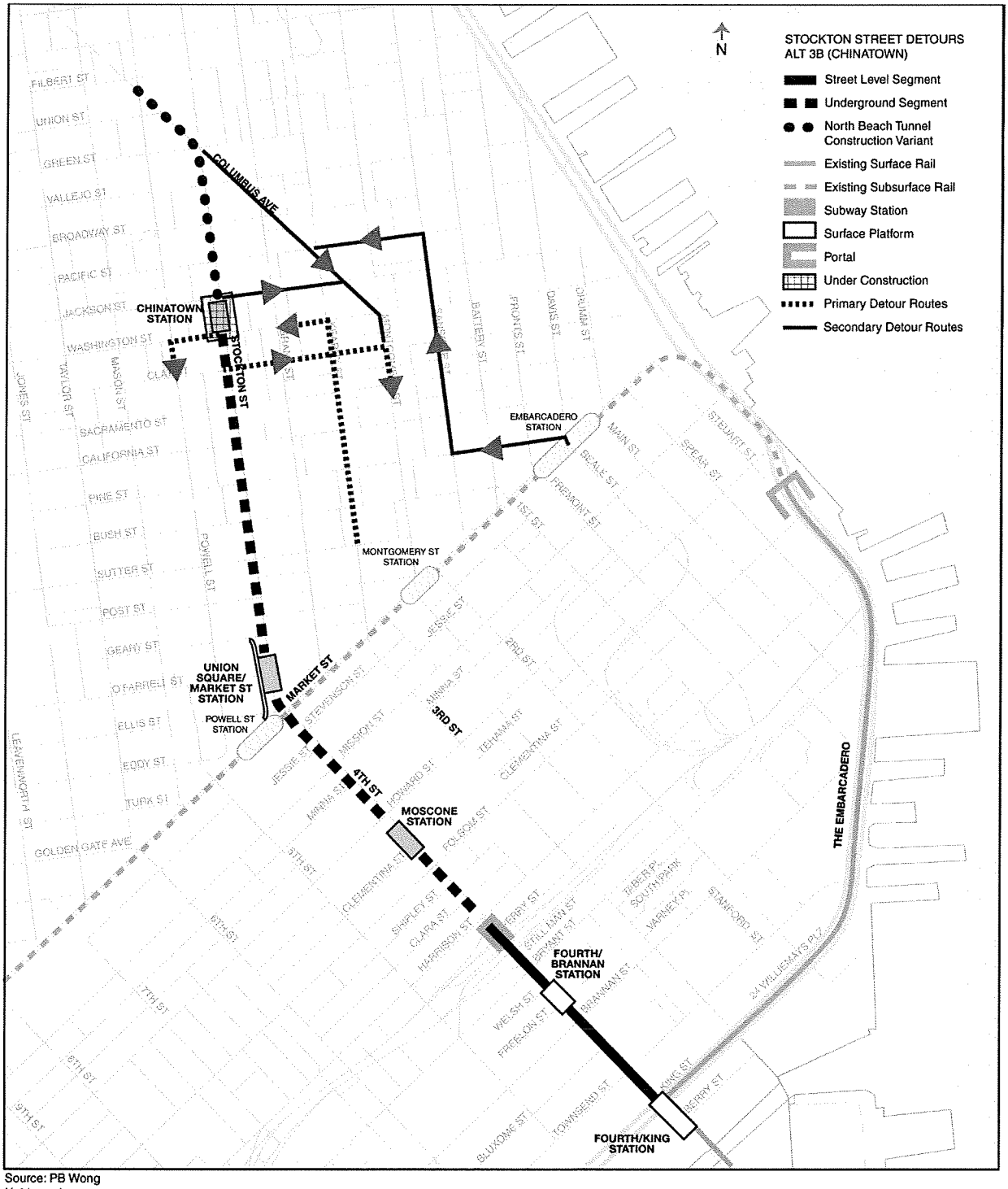


Source: PB Wong
Not to scale

FIGURE E-11

PROPOSED TRAFFIC DETOURS FOR CHINATOWN STATION CONSTRUCTION

ALTERNATIVE 3 – FOURTH/STOCKTON ALIGNMENT OPTION B (MODIFIED LPA)

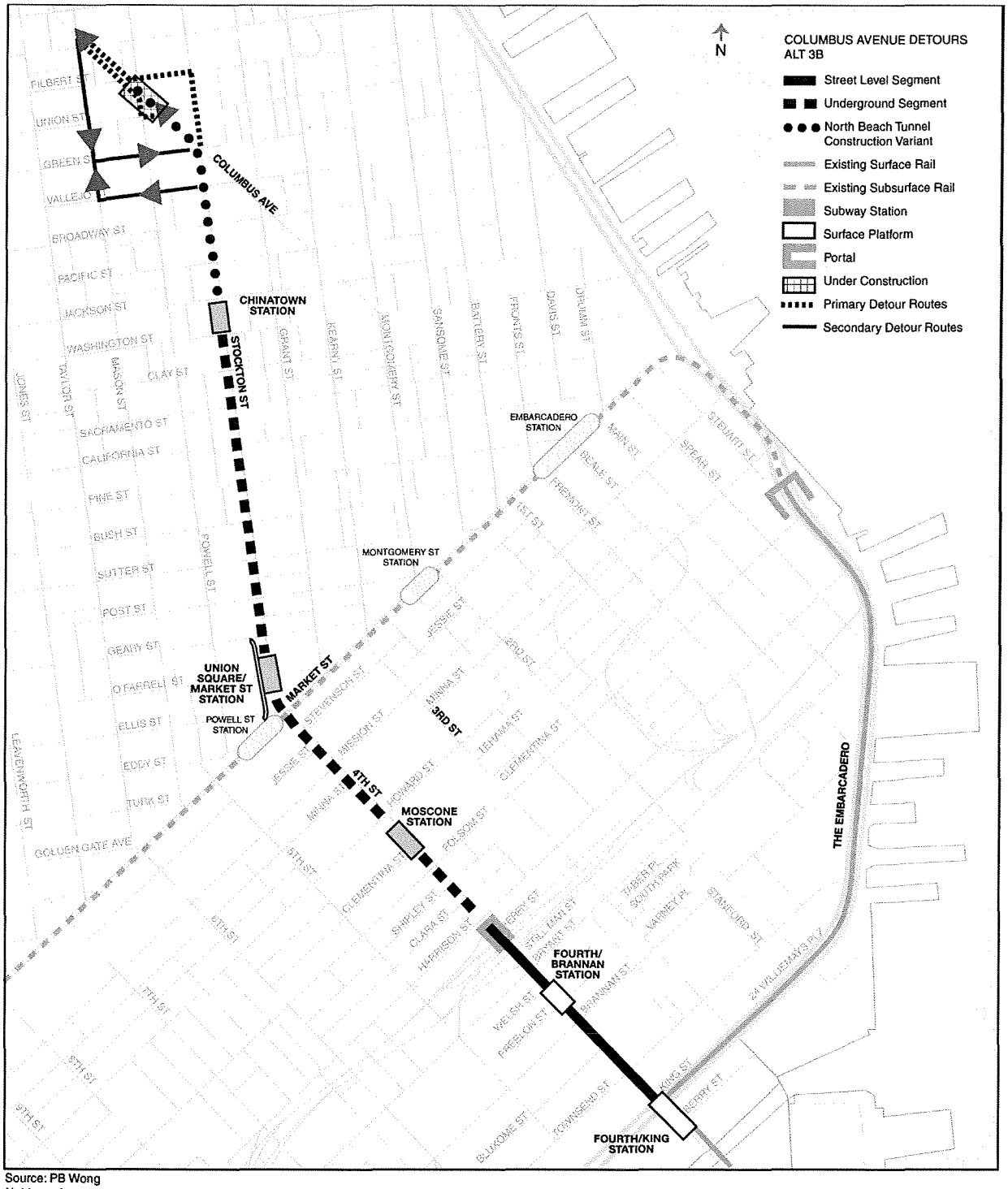


Source: PB Wong
Not to scale

FIGURE E-12

PROPOSED TRAFFIC DETOURS FOR NORTH BEACH CONSTRUCTION VARIANT

ALTERNATIVE 3 – FOURTH/STOCKTON ALIGNMENT OPTION B (MODIFIED LPA)



Source: PB Wong
Not to scale

APPENDIX F

HISTORICAL ARCHITECTURAL RESOURCES

- **Historical Architectural Properties in APE**
- **Properties With Potential for Impacts**
- **Historic Architectural References**

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov
www.ohp.parks.ca.gov

05 November 2007

Reply To: FTA980703A

Leslie Rogers, Regional Administrator
US Department of Transportation
Federal Transit Administration, Region IX
201 Mission Street, Suite 1650
San Francisco, CA 94105-1839

Re: Determination of Eligibility for Phase 2 of the 3rd Street Light rail, San Francisco, San Francisco County, CA

Dear Mr. Rogers:

Thank you for initiating consultation with me pursuant to Section 106 of the National Historic Preservation Act as amended and the implementing regulations codified in 36 CFR 800 with regards to the above referenced undertaking. You are requesting I review and concur with the determination of eligibility for 76 properties and 18 previously evaluated properties.

As I presently understand it, the undertaking consists of extension of the light rail from the current terminus at Fourth and King Streets, primarily via subway, to a terminus in Chinatown on Stockton between Washington and Jackson Streets.

I concurred with the delineation of the APE in our earlier consultation.

FTA has determined that 39 properties are eligible for inclusion in the National Register of Historic Places (NRHP). Of those properties the following were reevaluated and recommended as **eligible** for inclusion in the NRHP:

1. 920 Sacramento Street, (Reference 285), eligible under Criterion A and C both individual and as a contributor to the Chinatown Historic District. I concur with this determination but am unable to concur with the eligibility under Criterion B.
2. 950 Clay Street (Reference 292), eligible as a contributor to the Chinatown Historic District
3. 1325-1341 Stockton Street (Reference 337), eligible as a contributor to the North Beach Historic District
4. 470-480 Columbus Avenue (Reference 348), eligible under Criterion C as an example of Moderne Architecture. At this time I am unable to concur with the determination of eligibility under Criterion B.
5. 1435 Stockton Street (Reference 353), eligible as a contributor to the North Beach Historic District
6. 1455 Stockton Street (Reference 354), eligible individually under Criterion C for its architecture and as a contributor to the North Beach Historic District
7. 500-524 Columbus Avenue (Reference 360), eligible as a contributor to the North Beach Historic District

8. 532 Columbus Street/1527 Stockton Street (Reference 362), eligible as a contributor to the North Beach Historic District
9. 548 Columbus Street/629 Union Street (Reference 364), eligible as a contributor to the North Beach Historic District and the Washington Square Historic District
10. 552-566 Columbus Street (Reference 365), eligible as a contributor the North Beach Historic District and the Washington Square Historic District
11. 600-668 Columbus Street (Reference 366), eligible as a contributor to the North Beach Historic District and Washington Square Historic District
12. 651 Columbus Avenue (Reference 367), eligible as a contributor to the North Beach Historic District and Washington Square Historic District
13. 701-705 Union Street (Reference 368), eligible as a contributor to the North Beach Historic District and Washington Square Historic District
14. 1701-1715 Powell Street (Reference 369), eligible as a contributor to the North Beach Historic District and Washington Square Historic District
15. 1717-1719 Powell Street (Reference 370), eligible as a contributor to the North Beach Historic District and Washington Square Historic District
16. 1731-1741 Powell Street (Reference 371), eligible as a contributor to the North Beach Historic District and Washington Square Historic District, but I am unable to concur with the determination that the building would be eligible if it were to be restored (7N1)

FTA has determined that two newly identified properties are **individually eligible** for listing in the NRHP:

17. 601 Fourth Street (Reference 173), eligible under Criterion A for its association with the Liggett and Meyers Tobacco Company and under Criterion C as a significant example of industrial architecture for the early twentieth century. I am able to concur with the determination under Criterion C but will need more justification under Criterion A to consider the building eligible.
18. 54 Fourth Street (Reference 238), at this time I am unable to concur with the eligibility under Criterion B and C unless more information is provided. Additionally FTA may want to consider eligibility under Criterion A for its association with construction of new commercial buildings and hotel to showcase San Francisco during the Panama-Pacific Exposition.

Additionally, FTA has determined that the following properties are **eligible as contributors** to historic districts and I concur with the following determinations:

19. 165-167 O'Farrell Street (Reference 256)
20. 918 Sacramento Street (Reference No. 286)
21. 910-914 Clay Street (Reference No. 289)
22. 916-918 Clay Street (Reference No. 290)
23. 868-870 Clay Street (Reference No. 294)
24. 45-53 Ross Alley (Reference No. 301)
25. 168-770 Jackson Street (Reference No. 317)
26. 1200-1206 Stockton Street (Reference No. 322)
27. 1208-1214 Stockton Street (Reference No. 323)
28. 1216-1218 Stockton Street (Reference No. 324)
29. 1220-1222 Stockton Street (Reference No. 325)
30. 1224-1226 Stockton Street (Reference No. 326)
31. 1230 Stockton Street (Reference No. 327)
32. 1238-1242 Stockton Street (Reference No. 328)
33. 1201-1217 Stockton Street (Reference No. 330)
34. 1241-1245 Stockton Street (Reference No. 332)
35. 1247 Stockton Street (Reference No. 333)
36. 1265 Stockton Street/705 Broadway (Reference No. 334)

37. 1301-1317 Stockton/700 Broadway (Reference No. 335)
38. 1319-1323 Stockton Street (Reference No. 336)
39. 1355-1365 Stockton Street (Reference No. 339)
40. 1300 Stockton Street (Reference No. 340)
41. 1318-1324 Stockton Street (Reference No. 341)
42. 1326-1328 Stockton Street (Reference No. 342)
43. 1334-1338 Stockton Street (Reference No. 344)
44. 637 Vallejo Street/1362 Stockton Street (Reference No. 345)
45. 1424 Stockton/401-451 Columbus Ave (Reference No. 346)
46. 1418 Stockton Street (Reference No. 347)
47. 702-712 Vallejo Street/1401-1405 Stockton Street (Reference No. 351)
48. 1411 Stockton Street (Reference No. 352)
49. 501-543 Columbus Ave (Reference No. 355)
50. 526 Columbus Ave/1521 Stockton Street (Reference No. 361)
51. 549-561 Columbus Ave (Reference No. 356)
52. 561-571 Columbus Ave (Reference No. 357)
53. 575-579 Columbus Ave (Reference No. 358)
54. 166 South Park (Reference No. 192)

Of the properties determined eligible for the NRHP as contributors to a historic district, I am unable to concur with the following:

55. Willie "Woo Woo" Wong Playground- 850 Sacramento Street (Reference No. 283), the property still has to maintain integrity to be considered a contributor to a historic district, and as the report states, the property does not maintain integrity.

As for archeological resources, FTA has determined there is potential for buried deposits and that a new Programmatic Agreement for deferred identification is appropriate. I agree with this approach.

I look forward to continuing consultation on this project. If you have any questions, please contact Amanda Blosser of my staff at (916) 653-9010 or e-mail at ablosser@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

MWD:ab

APPENDIX F - HISTORIC ARCHITECTURAL RESOURCE IMPACTS

The following tables describe each of the historic architectural properties in areas identified for potential impacts from proposed project features (stations, tunnel portals) that are individually listed or appear eligible for an individual listing on the National Register of Historic Places, and properties that have been identified as contributors to a NRHP District, or an eligible Historic District. The shaded properties are in the first row of buildings adjacent to the project features, and the un-shaded properties in the tables are in the second row of properties, behind the first row of buildings.

HISTORIC ARCHITECTURAL PROPERTIES IN POTENTIAL IMPACT AREAS THAT ARE INDIVIDUALLY LISTED OR APPEAR ELIGIBLE FOR AN INDIVIDUAL LISTING

Ref. No.	Potential Impact Area	Address/Parcel	Parcel No. (Block/Lot)	Building History, Description, and NRHP Eligibility
19	Alt 2- SB Portal; Alt 3B- Bryant/Brannan Station	508-514 Fourth	3777/002	508-514 Fourth Street was built in 1925 for owners William Hoelscher, an investor, and Frank J. Merschen, a painter. The architect was Walter C. Falch who worked for Bliss and Faville in 1910 and practiced in San Francisco from 1911 to the 1940s. The building is generally L-shaped and has façades on both Fourth and Bryant streets. In appearance, the building is designed as a Renaissance and Baroque pilaster order of three bays on the Fourth Street frontage and one bay on the Bryant Street frontage. The building appears eligible for the NRHP under Criteria A and C at the local level of significance. Under Criterion A it is an example of a widespread pattern of speculative industrial development south of Market street between the two world wars. Its significance under Criterion C relates to its fireproof, reinforced concrete construction, an effective use of Renaissance motifs to the façade design of an industrial building (Corbett et al. 1997). (NRHP Code 3S)
21	Alt 3B- Bryant/Brannan Station	500-504 Fourth	3777/001	Constructed in 1908, the Hotel Utah is a four-story wood-framed residential hotel with a ground floor saloon and two stores designed by John F. Deininger. The building displays a series of second floor-to-roof projected bays and a rounded corner bay. It is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
26	Alt 2-TBM NB Portal	566-586 Third	3776/008	The Central Hotel at 566-586 Third Street is a three-story and basement building constructed of brick with wood interior columns, wood floors, and steel columns in the front walls. The building has a two-part composition with Renaissance-Baroque ornamentation. It was built in 1906-1907 for Edward Rolkin who co-owned several residential hotels. The architectural firm of Sutton and Weeks designed the 440-room building. Albert Sutton had attended the University of California and partnered with Charles Peter Weeks who had attended the prestigious Ecole des Beaux Arts in Paris. The Central Hotel appears eligible for the NRHP under Criterion A at the local level of significance for the period 1906 to 1943. This is one of the last surviving large buildings of this type, which was once common and played an important role in the history of the city. The hotel was built to house seasonal workers who had no permanent residence but moved frequently from farm to city following work. With the exception of aluminum framed windows replacing the original wood windows, the exterior still appears today much as it did during its period of significance (Corbett et al. 1997). (NRHP Code 3S)
31	Alt 2-TBM NB Portal	500 Third	3776/031	500 Third Street is a fireproof reinforced concrete building first built in 1920 by Lange & Bergstom and leased to the Schwabacher-Frey Stationary Company for a period of twenty years. The building was expanded in 1927 using identical architectural detailing. Schwabacher-Frey used the building as a printing plant and warehouse at least through 1959. The building appears eligible for the NRHP under criteria A and C at the local level of significance. Under Criterion A, it appears that Schwabacher-Frey was the largest printing plant in San Francisco at a time when printing was the largest major local industry (1920-1959). Under Criterion C, it is both the largest, and most characteristic, example in its

				structure and architectural design of the modern type of reinforced concrete printing building that began in the 1920s. The building is little changed and retains integrity (Corbett et al. 1997). (NRHP Code 3S)
58	Alt 2-Market Street Station	700-706 Mission	3706/093	The large ten-story Aronson Building was constructed in 1903 for real estate investor Abraham Aronson. The building was designed by Hemenway and Mille and consists of a glass base with skeletal shaft and embellished arcade and Renaissance/Baroque embellishments. It partly withstood the 1906 San Francisco earthquake and fire, but the tile-clad steel columns failed. The building was sold in the 1930s and was renamed the Mercantile Building. The building was determined eligible for a separate listing in the NRHP under Criterion A for its association with Abraham Aronson and under Criterion C for its fine architectural design (Corbett 1979). (NRHP Code 2S1)
62	Alt 2-Market Street Station	17-29 Third	3707/057	17-29 Third Street is a three-story brick masonry building designed by Arthur T. Ehrenfort for Herman Levy in 1907. This building is located on the same parcel as the Hearst Building, is linked to it internally, and its upper floors are only accessed via the Hearst Building. It appears to be eligible for the NRHP under Criterion C at the local level of significance for the period 1907 to 1919 and 1931 to 1975. This is the last building known to survive which housed a newspaper bar, a legendary type of establishment in San Francisco (Corbett 1979). (NRHP Code 3S)
63	Alt 2-Market Street Station	703-705 Market 26 Third	3706/001	The Reid Brothers designed the Call/Claus Spreckels Building constructed in 1898. The dome-towered steel-framed skyscraper was renowned as one of the finest in San Francisco. A remodel by Albert Roller in 1938 added six floors to the top of the building with an Art Moderne tower. The building is eligible for the NRHP under Criterion A at the local level for its association with the 1906 San Francisco earthquake, Criterion B for its association with structural engineer Charles Strobel, and under Criterion C for its association with noted architects and its architectural design (Corbett 1979). (NRHP Code 3S)
64	Alt 2-Market Street Station	691-699 Market	3707/057	The twelve-story San Francisco Examiner Building was constructed in 1909 for William Randolph Hearst, the American newspaper magnate. Architect Julia Morgan remodeled the building in 1937 by adding elaborate ornamentation to the façade and grand entrance. The building is eligible for the NRHP due to its association with William Randolph Hearst (Criterion B) and master architect Julia Morgan and her masterful architectural detailing (Criterion C). (NRHP Code 3S)
65	Alt 2-Market Street Station	673-687 Market	3707/051	Frederick H. Meyer designed the ten-story Monadnock Building. The building was only half built at the time, but it survived the 1906 earthquake. The large 1906 Beaux-Art style building is noted for its expansive use of glass and fireproof construction. It houses fine offices and retail spaces in the Financial District. The building is eligible for the NRHP under Criterion A at the local level for its association with the 1906 San Francisco earthquake and under Criterion C for its association with Frederick Meyer and its architectural design. (NRHP Code 3S)
85	Alt 3A, 3B,Union Square Station	150 Stockton	0313/018	The Neiman Marcus Building was constructed in 1908 and exhibits fine Beaux Art embellishments. It has been identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
92	Alt 3A- Union Square Station	160-170 Geary	0309/010	Shea and Shea Architects designed the Whittell Building, an early skyscraper fronting Geary Street near Union Square. Innovative engineering features of the prominent steel-framed building, under construction during the 1906 earthquake, enabled it to withstand the tremors.

				The building is eligible for the NRHP under Criterion A at the local level for its association with the 1906 San Francisco earthquake, Criterion B for its association with structural engineer J. B. C. Locke, and under Criterion C for its association with noted architects and its architectural design (Corbett 1979). (NRHP Code 3S)
94	Alt 3A, 3B- Union Square Station	233 Geary	0314/001	233 Geary Street began as the Butler Building in 1907. The building was under construction when the 1906 San Francisco Earthquake occurred, extending the total construction period to two years. The nine-story steel-framed building, at the corner of Geary and Stockton streets, featured Renaissance/Baroque embellishments. The kitchenware shop closed its doors in 1946 and the building was transformed into an architecturally Art Moderne building by architects Miller & Pflueger, with sleek walls of white marble to house the upscale I Magnin women's clothing store. I Magnin was housed in that same location until 1995. The building was proposed for listing in the NRHP as an individual property (Corbett 1997). (NRHP Code 3S)
94A	Alt 3A, 3B- Union Square Station	Geary, Grant, Kearny, Post, Stockton, Sutter		The Triangular District Street Lights were completed in the retail area of the city in 1919. They are located on Kearny, Geary, Grant, Stockton, Post, and Sutter streets and in 1919 the area had the distinction of being "the best lighted business district in any city in the world." The street lights have been identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
95	Alt 2, 3A, 3B- Union Square Station	333 Post	0308/001	The Union Square Garage was constructed at 333 Post Street in 1942. It was the first parking garage in the United States to be constructed underground with a park above it. The innovative design by architect Timothy Pfleuger provided a natural area within an urban space; however, today much of the grassy mound has been paved over (Corbett 1979). It is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
97	Alt 2, 3A - Union Square Station	218-222 Stockton	0309/014	The A.M. Robertson Building was constructed at the corner of Stockton and Maiden Lane in 1908. A. B. Foulks designed the two-part vertical composition, which exhibits eighteenth century ornamentation. The building is eligible for the NRHP under Criterion C for its architectural design (Corbett 1979). (NRHP Code 3S)
98	Alt 2, 3A- Union Square Station	234-240 Stockton	0309/020	The Scroth Building (aka TWA Building) at 234-240 Stockton Street was constructed in 1908-1909 with modified Renaissance/Baroque decor. The early reinforced concrete building was designed by Cunningham and Politeo and exhibits ten stories with an Art Moderne parapet (Corbett 1979). It has been identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
100	Alt 2, 3A- Union Square Station	275-299 Post	0309/022	The Lathrop Building was constructed at the southeast corner of Stockton and Post streets in 1909 and occupies an important location at Union Square. The seven-story steel-framed brick building of stacked vertical composition displays Renaissance/Baroque embellishments (Corbett 1979). It has been identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
102	Alt 2- Union Square Station	278-298 Post	0294/011	The Joseph Fredericks Co. Building was built in 1910 at the northeast corner of Stockton and Post streets at Union Square. Willis Polk designed the six-story building with an attic for D. H. Burnham and Co. The building has a two-part vertical block composition and features Renaissance/Baroque embellishments. It bears a similar design to a building in Paris

				(Corbett 1979). This building is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
173	Alt 3A- NB/SB Portal	601 Fourth	3787/052-139	This large three-story plus basement, reinforced concrete industrial loft was built at the southeast corner of Fourth and Brannan streets in 1916. The surface of the building is covered with stucco that has been lightly scored to suggest masonry construction. Paneled sheet metal spandrels can be found between the second and third stories and a molded cornice with dentils tops the composition of both façades. It appears the building was remodeled in 1945. By 1950, it housed the Liggett and Meyers Tobacco Company. Today, the building has been converted into residential lofts. This property appears NRHP-eligible as an individual property under Criterion C. (Proposed NRHP Code 3S)
249	Alt 3A, 3B- Union Square Station	760 Market/35 O'Farrell	0328/001	Prominent architect William Curlett designed the Phelan Building at 760 Market Street (also 35 O'Farrell Street) in 1908. The exquisite fire-proof, steel-framed ten-story building with Classical Revival embellishments was constructed for James Duvall Phelan, the mayor of San Francisco from 1897 to 1902 and U. S. Senator from 1913 to 1919 (Corbett 1979). The flatiron-shaped office building has ground floor retail storefronts. The top eight stories of this building are clad in glazed white terra cotta; the second story has ornamental cast iron over the steel frame; and the first story has paneled pilasters over a steel frame. The building was registered as Landmark No. 156 by the city of San Francisco. It is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
251	Alt 3A, 3B- Union Square Station	77-81 O'Farrell	0328/003	77-81 O'Farrell Street was designed by Lansburgh & Joseph architects in 1909. The five-story steel-frame retail commercial building is at the southeast corner of O'Farrell and Stockton streets. The style is a blend of Classical Revival and Gothic Revival. By 1913, Newman & Levinson occupied the space along with the adjacent building. Later, Joseph Magnin Department Store occupied the building. It should be noted that although 77-81 O'Farrell Street was constructed as a separate building on the parcel next to 79 O'Farrell Street, they now appear as one building. It is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
252	Alt 3A, 3B- Union Square Station	79 O'Farrell (previously 46-68 Stockton/77-79 O'Farrell)	0328/004	Lansburgh & Joseph architects designed 46-68 Stockton Street at the southeast corner of O'Farrell Street in 1909. Newman & Levinson dry goods/clothing store first housed the five-story building, but Joseph Magnin later moved into the building. The steel-framed building has a three-part vertical composition with a curved cornice, and arched five-part bays in the capital (Corbett 1979). It is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
266	Alt 3A, 3B- Union Square Station	101 Stockton	0314/002; 0314/004	When constructed in 1928, Lewis Hobart designed the building at 101 Stockton. It originally housed the O'Connor-Moffatt Department Store, but Macy's later moved into the three-part vertical block building. The same architect, Lewis Hobart, designed a building expansion in 1948. The building is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
272	Alt 2, 3A- Union Square Station	177-179 Maiden	0309/012; 0309/010	When constructed in 1907, Anna Whittell owned the small brick building at 177-179 Maiden Lane. It is a two-part commercial block with a Medieval corbelled brick cornice and

				Classical Revival storefront. It is eligible under Criterion C for its architectural design. The building is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
273	Alt 2, 3A- Union Square Station	259 Post	0309/023	In 1909, 259 Post Street was constructed as a four-story department store using reinforced concrete framing. The three-part vertical block composition was retained in 1918 when architect G. Lansburg added four stories to the top of the building. In about 1940, the building was remodeled in Art Moderne styling to create a very elegant form clad with a gray stone veneer and accented by a tasteful bronze entrance and window frames. Ransohoffs Department Store was housed in the building continuously from 1909 until 1973 (Corbett 1979). This building is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
276	Alt 2- Union Square Station	272 Post	0294/010	272 Post Street is a four-story reinforced concrete commercial building designed by Meyers and Ward and constructed in 1909. Over the years, it housed the Martin Sachs Company and then the Lengfeld Drug Company. Martin Sachs dabbled in real estate and was a stockholder of the North American Navigation Company. In form, the building is a two-part vertical composition with Renaissance/Baroque embellishments. It is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
305	Alt 3B- Chinatown Station	940 Washington	0192/005	In 1911, prominent architect Julia Morgan designed this three-story red brick building that resembles a "Florentine villa." It features an arched entrance and a projected cornice, and contains 43 rooms. It became the Gum Moon Residential Hall and was operated by the Women's Home Mission Society of the Methodist Episcopalian Church. It served as an orphanage through the 1930s and as a residence for Asian women. The building is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)
359	Alt 3A, 3B-TBM Extraction Shaft	1636-1656 Powell	0117/016	The 1914 Verdi Apartment Building is a large three-story, light-colored brick building of Renaissance/Baroque styling located in North Beach. The building features storefronts on the ground level and residential flats on the upper floors. It is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as an individual property. (NRHP Code 3S)

CONTRIBUTORS TO A NRHP HISTORIC DISTRICT OR NRHP-ELIGIBLE HISTORIC DISTRICT

Ref. No.	Potential Impact Area	Address/Parcel	Parcel No. (Block/Lot)	Building History, Description, and NRHP Eligibility
132	Alt 2, 3A- Chinatown Station	801-805 Stockton	0224/006	In 1925, contractor H. A. Hogreve constructed the three-story reinforced concrete building for owner William D. Brown, a realtor (Corbett et al. 1997; Choy et al. 1994). The San Francisco Landmarks Preservation Advisory Board identified this building as a contributing element to the Chinatown District in 1994. In 1996, the FSF Landmarks Board noted its contextual importance to the Chinatown District. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element of the Chinatown Historic District. (NRHP Code 3D)
133	Alt 2, 3A- Chinatown Station	800-810 Stockton	0225/013	Constructed in 1911 by Walter K. Yorston for W. J. Gardner, the brick building with a basement is on a sloping lot that backs up to Hang Ah Alley (Pagoda Alley). The Stockton façade features four stories, but the rear of the building exhibits a fifth floor. A series of segmented arched windows and a projecting metal cornice characterize the building. In the 1920s it was known as the Lewis Gasner Hotel (Corbett et al. 1997; Choy et al. 1994). It occupies a lot considered a part of Chinatown since the 1880s and, despite alterations -- including some replacement aluminum windows and modifications to storefronts -- the integrity is consistent with other contributors to the Chinatown Historic District. The building is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element of the Chinatown Historic District. (NRHP Code 3D)
134	Alt 2, 3A- Chinatown Station	809-815 Stockton	0224/005	Architect Earl B. Scott designed the three-story brick building for owner H. Bruce Schroder in 1915. It housed storefronts and residential lodging. In 1923 it was known as the Burke Lodging House. The San Francisco Landmarks Preservation Advisory Board identified this building as a contributing element of the Chinatown Historic District in 1994; and the FSF Heritage staff noted its contextual importance to the Chinatown Historic District in 1996. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element of the Chinatown Historic District. (NRHP Code 3D)
135	Alt 2, 3A- Chinatown Station **Proposed for demolition**	**812-828 Stockton**	0225/014	812-828 Stockton Street is a one-story reinforced concrete building constructed in 1923-1924 -- later than most of the buildings on the block. It is on a sloping lot that backs up to Hang Ah Alley (Pagoda Alley), and exhibits a second floor at the rear. A cast embellishment on the triangular-shaped parapet has been removed from the stuccoed façade wall; however, changes to the storefronts are minimal. Prior to 1930, there were three separate Chinese proprietors. In 1930 the Hoysan Ningyung Benevolent Society of America became the building's owners. There is a history of continuous Chinese occupation with current tenants that include a clothing factory, plumbing shop, and Chinese School in the basement. In the 1970s and 1980s, it housed a Chinese newspaper (Corbett et al. 1997). This building is proposed for demolition and removal to make way for the Chinatown Station under Alternatives 2 and 3A. The building is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element of

				the Chinatown Historic District. (NRHP Code 3D)
136	Alt 2, 3A- Chinatown Station	827-829 Stockton	0224/004	Constructed in 1908, 827-829 Stockton first housed the Chinese High School. It was originally a one-story building, but in the 1940s it was remodeled as Victory Hall. In 1970 a second story was added. The building has Chinese design elements that include a pagoda roof, flared roof, and bracketed Chinese eaves (Choy et al. 1994). Although not formally instituted, in 1986 the San Francisco Planning Department proposed nominating the building to an individual landmark status. The San Francisco Landmarks Preservation Advisory Board identified this building as a contributing element of the Chinatown Historic District in 1994; the FSF Heritage staff noted the building's major importance to the Chinatown Historic District in 1996. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element of the Chinatown Historic District. (NRHP Code 3D)
137	Alt 2, 3A- Chinatown Station	830-848 Stockton	0225/016	In 1915, the three-story brick building at 830-848 Stockton Street was constructed for Kuo Ming Tang, the Nationalist Party of the Republic of China. In 1932, there was a building remodel and expansion after Generalissimo Chian Kai Shek achieved control of the party (Choy et al. 1994). The building is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element of the Chinatown Historic District. (NRHP Code 3D)
138	Alt 2, 3A- Chinatown Station	833-841 Stockton	0224/003	The three-story reinforced concrete building at 833-841 Stockton Street was constructed in 1914 for T. J. Gintjee, manager of the Standard Cigar Company. From the early 1920s to the 1950s, Kuo Ming Tang, the Chinese Nationalist Party, owned the building (Corbett 1997). The San Francisco Landmarks Preservation Advisory Board identified this building as a contributing element of the Chinatown Historic District in 1994; FSF Heritage staff noted the building's contextual importance to the Chinatown Historic District in 1996. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element of the Chinatown Historic District. (NRHP Code 3D)
139	Alt 2, 3A- Chinatown Station	843 Stockton	0224/002	843 Stockton Street was built in 1908 to house the Chinese Benevolent Society (Chinese Six Companies). Designed by architects Cuthbertson & Mahoney, the building is set back from the street and features lions at the entry and a flight of steps leading to the formal entrance. The lively building exhibits vibrant Chinese décor including balconies on the second and third floors and green-tiled projected eaves. Although not formally recorded, it was proposed as an individual City Landmark in 1986. The San Francisco Landmarks Preservation Advisory Board identified this building as a contributing element of the Chinatown Historic District in 1994, and was considered of highest importance to the Chinatown District by the FSF Heritage staff in 1996. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element of the Chinatown Historic District. (NRHP Code 3D)
140	Alt 2, 3A- Chinatown Station	850-898 Stockton	0225/017	850-888 Stockton occupies the lot at the southeast corner of Stockton and Clay streets. In 1910, contractor Walter K. Yorston constructed the three-story brick building with both storefronts and upper lodging for Sal Scheyer. In 1913, it was known as the Oriental Hotel and a print shop was housed there (Corbett et al. 1997; Choy et al. 1994). It occupies a lot considered a part of Chinatown since the 1880s and, despite alterations that include storefront modifications, the integrity is consistent with other contributors to the Chinatown Historic District. The building is identified in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element of the Chinatown

				Historic District. (NRHP Code 3D)
143	Alt 3B- Chinatown Station	901-907 Stockton	0211/004	Located at the northwest corner of Stockton and Clay streets, this four-story brick building was constructed in 1907. Sometime in the 1930s, the two-part vertical composition building was stuccoed and Art Deco design elements were added (Corbett et al. 1997). The San Francisco Landmarks Preservation Advisory Board identified this building as a contributing element of the Chinatown District in 1994, and was considered of contextual importance to the Chinatown Historic District by the FSF Heritage staff in 1996. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element in the Chinatown Historic District. (NRHP Code 3D)
144	Alt 3B- Chinatown Station	913-917 Stockton	0211/003	The O'Brien Brothers architects designed the three-story brick building for the Hop Wo Benevolent Society in 1910, an organization committed to helping recent Chinese immigrants to San Francisco (Corbett et al. 1997). The San Francisco Landmarks Preservation Advisory Board identified this building as a contributing element of the Chinatown Historic District in 1994, and the FSF Heritage staff considered the building to be of major importance to the Chinatown District in 1996. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element in the Chinatown Historic District. (NRHP Code 3D)
145	Alt 3B- Chinatown Station	925 Stockton	0211/002	In 1907, architect H. Starbuck designed the two-story concrete Chinese Presbyterian Church (and school) in the same location as an earlier one erected in 1858. In 1909, it was known as the Foreign Missions of Presbyterian Church. The Palladian style building displays Ionic pilasters, a portico, and roof pediment (Choy et al. 1994). In 1986 the San Francisco Planning Department proposed an individual landmark status, although the building was not formally recorded. The San Francisco Landmarks Preservation Advisory Board identified this building as a contributing element of the Chinatown Historic District in 1994, and the FSF Heritage staff considered the building to be of major importance to the Chinatown Historic District in 1996. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element in the Chinatown Historic District. (NRHP Code 3D)
146	Alt 3B- Chinatown Station	930 Stockton	0210/047 (0210/014)	The O'Brien Brothers architects designed 930 Stockton Street for Leo J. Borch in 1906 as a four-story brick and concrete storefront property with upper residential lodging. Beginning in 1920 the building was enlarged and remodeled with second floor triple-arched windows for St. Mary's School. The San Francisco Landmarks Preservation Advisory Board identified it as a contributing element of the Chinatown Historic District in 1994. In 1996, the FSF Heritage staff determined the building to be of major importance to the Chinatown Historic District by. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element of the Chinatown Historic District. (NRHP Code 3D)
147	Alt 3B- Chinatown Station **Proposed for demolition**	933-949 Stockton	0211/001	In 1908, S. H. Woodruff designed the two-part composition, two-story brick building at 933-949 Stockton Street for the Freeborn Estate. The ground floor has nine storefronts and the upper floors contain residential units. The building is clad with stucco that has been scored, and decorative plaster swags above the wood-framed double-hung windows on the second floor. The San Francisco Landmarks Preservation Advisory Board identified this building as a contributing element of the Chinatown Historic District in 1994, and the FSF Heritage staff noted its contextual importance to the Chinatown Historic District in 1996. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the

				NRHP as a contributing element of the Chinatown Historic District. (NRHP Code 3D)
148A	Alt 3B- Chinatown Station	Washington Street Street Lights		Constructed in 1925, the street lights on Washington Street are listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element of the Chinatown Historic District. (NRHP Code 3D)
149	Alt 3B- Chinatown Station	1003-1011 Stockton	0192/004	Henry H. Meyers designed the brick building that houses the Chinese Methodist Episcopal Church constructed at 1003-1011 Stockton Street in 1910. The building represents a fusion of Chinese and western ornamental elements including a pagoda cupola topped by a gold cross, stained glass windows, red tile cladding on storefront surrounds, projected red tile cornices and Asian motif balconies (Choy et al. 1994). In 1986 the San Francisco Planning Department proposed an individual landmark status, but it was not listed. The San Francisco Landmarks Preservation Advisory Board identified this building as a contributing element of the Chinatown Historic District in 1994, and the FSF Heritage staff noted its contextual importance to the Chinatown Historic District in 1996. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element in the Chinatown Historic District. (NRHP Code 3D)
151	Alt 3B- Chinatown Station	1013-1017 Stockton	0192/003	Built in 1910, 1013-1017 Stockton Street was designed by architect George Wagner. The brick two-part vertical block composition features Renaissance/Baroque embellishments that include an ornate cornice. The ground floor has been remodeled to accommodate Wells Fargo Bank, but the upper two residential flats exhibit wood-paired double-hung windows with a keystone centered above each pairing, and scored plaster walls (Choy et al. 1994). The San Francisco Landmarks Preservation Advisory Board identified this building as a contributing element of the Chinatown Historic District in 1994, and the FSF Heritage staff noted its contextual importance to the Chinatown Historic District in 1996. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element in the Chinatown Historic District. (NRHP Code 3D)
178	Alt. 2- Third Street Surface Tracks	660-670 Third	3787/008	The four-story South End Terminal Warehouse industrial building at 660-670 Third Street was constructed in c. 1906 and previously housed Butterfield and Butterfield. The building is presently a contributor to the local South End Historic District and appears to qualify for listing as a contributor to a NR-eligible district. (NRHP Code 3D)
185	Alt. 2- Third Street Surface Tracks	689-699 Third	3788/014	689-699 Third Street is a one-story brick masonry building at the corner of Third and Townsend streets constructed in 1917. Pent roofs with imitation clay tiles on top give the building a faint Mission Revival style. It is known as the Anna Davidow Building and Wall & Company has also been a tenant. The building is presently a contributor to the local South End Historic District and appears to qualify for listing as a contributor to a NR-eligible district. (NRHP Code 3D)
186	Alt. 2- Third Street Surface Tracks	679-685 Third	3788/015	Constructed in 1906, this five-story reinforced concrete industrial building one housed "A Nice Company," but is now an annex to the MJB Coffee Company. It has similar styling to 665 Third Street. The building is presently a contributor to the local South End Historic District and appears to qualify for listing as a contributor to a NR-eligible district. (NRHP Code 3D)
187	Alt. 2- Third Street Surface Tracks	665 Third	3788/041	G. Albert Lansburgh was the architect for this five-story reinforced concrete industrial building constructed in 1916. The building has a restrained Classical Revival style as exhibited by its cornice with block modillions and its entrance. The building houses the M.J. Brandenstein (MJB) Coffee Company. The building is presently a contributor to the local South End Historic District and appears to qualify for listing as a contributor to a NR-eligible

				district. (NRHP Code 3D)
188	Alt. 2- Third Street Surface Tracks	625 Third	3788/045	Constructed in 1909, this four-story brick building displays superior use of brickwork design patterns, with a corbelled brick cornice and pedimented parapet. There is an ornate frieze over the entrance with rinceaux surrounding the date "1908" and floral supporting brackets. From 1970 to 1977, the building housed the Rolling Stone Magazine offices. The building is presently a contributor to the local South End Historic District and appears to qualify for listing as a contributor to a NR-eligible district. (NRHP Code 3D)
189	Alt. 2- Third Street Surface Tracks	601 Third	3788/020	601 Third Street is a large two-story reinforced concrete industrial building constructed in 1920, which housed the General Cigar Company Building. It has Classical Revival styling with a grand entrance graced by an entablature with wreaths across the frieze supported by Corinthian pilasters. The building is presently a contributor to the local South End Historic District and appears to qualify for listing as a contributor to a NR-eligible district. (NRHP Code 3D)
250	Alt 3A- Union Square Station	790 Market	0328/002	Albert Pissis was the original architect when the building was constructed in 1907 using a Classical Revival design. Roos Brothers Clothing Store occupied the storefront from 1908 until 1950. Bliss & Fairweather revamped the building in Art Deco styling in 1937. In ca. 1990 the flatiron end of this building was sheared off and replaced by the current metal tower. Grodins was a later tenant, but Virgin Megastore now occupies the storefront. The building is listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element to a historic district. (NRHP Code 3D)
284	Alt 2, 3A- Chinatown Station	857-865 Clay	0225/019	857-865 Clay Street was constructed in 1913, housed two storefronts, and was known as the San Francisco Hotel. The Hang Ah Alley (Pagoda Alley) is located at the west side of the building and the Children's Playground is to the rear (Sanborn Map 1950; Choy et. al 1994). The San Francisco Landmarks Preservation Advisory Board identified it as a contributing element of the Chinatown Historic District in 1994 and the FSF Heritage staff noted its contextual importance to the Chinatown Historic District in 1996. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element of the Chinatown Historic District. (NRHP Code 3D)
289	Alt 3B- Chinatown Station	910-914 Clay	0211/005	In 1907, architects Samuel and Sydney B Newsom designed the three-story brick building that housed the Chinese Mission at 910-914 Clay Street. The building is a two-part vertical block composition with a storefront on the ground floor and apartments on the upper floors. Both this building and 916-918 Clay Street were constructed at the same time at the request of Toy Dong. Both of these buildings appear to be eligible for listing on the NRHP as contributing elements of the Chinatown Historic District. (NRHP Code 3D)
290	Alt 3B- Chinatown Station	916-918 Clay	0211/006	In 1907, architects Samuel and Sydney B Newsom designed the three-story brick building for Toy Dong, one of wealthiest members of the Chinese community. The building is a two-part vertical block composition with a storefront on the ground floor and apartments on the upper floors. The front of the building was used to house the Mission, and a cigar factory was in

				the rear. By the 1950s the building was a Chinese Laundry. This building and 910-914 Clay Street appear to be eligible for listing on the NRHP as contributing elements of the Chinatown Historic District. (NRHP Code 3D)
292	Alt 3B- Chinatown Station	950 Clay	0211/007	The Oriental School was constructed in 1913, but renamed the Commodore Stockton School in 1924. In 1998 it became known as the Gordon J. Lau Elementary School in honor of the late advocate for the Chinese community. The San Francisco Landmarks Preservation Advisory Board identified it as a contributing element of the Chinatown Historic District in 1994, and the FSF Heritage staff noted its highest/major importance to the Chinatown Historic District in 1996. It is now listed in the Office of Historic Preservation's Historic Properties Directory as requiring evaluation. (NRHP Code 7N)
294	Alt 3B- Chinatown Station	868-870 Clay	0210/012	Between 1911-1912, the 54 room, four-story reinforced concrete building was constructed on Clay Street. It housed storefronts and residential lodging upstairs. The San Francisco Landmarks Preservation Advisory Board identified it as a contributing element of the Chinatown Historic District in 1994 and the FSF Heritage staff noted its contextual importance to the Chinatown Historic District in 1996. It has been identified as a possible contributor to the Chinatown Historic District . (NRHP Code 3D)
295	Alt 3B- Chinatown Station	31-37 Spofford	0210/015	Architects Albert C. J. and W. J. O'Brien designed the building at 31-37 Spofford Street in 1907. The three-story masonry building fronts Spofford Street and was constructed with two storefronts and lodging on the upper floors. It now features seventeen rooms in four units. The San Francisco Landmarks Preservation Advisory Board identified it as a contributing element of the Chinatown Historic District in 1994, and the FSF Heritage staff noted its contextual importance to the Chinatown Historic District in 1996. It is now listed in the Office of Historic Preservation's Historic Properties Directory as eligible for listing on the NRHP as a contributing element of the Chinatown Historic District. (NRHP Code 3D)
358	Alt 3A, 3B-TBM Extraction Shaft	575-579 Columbus	0117/017	When constructed in 1912, Meta Goedecke owned the property, but sold it to Italian immigrant, Guiseppe Torre, in 1924. Torre's four children received the property in 1931. It is not known who designed or built the three-story building. The exterior walls are wood siding, faced with stucco that has been scored to mimic block construction. The building is a blend of styles. There are three projected slanted bays, but the building is crowned with a parapet reminiscent of Mission Revival styling, and it expresses a projected cornice with dentils; medallions are centered below. This building appears to be a contributor to the proposed Washington Square Historic District, and it can also be considered a contributor to the overlapping proposed North Beach Historic District. (Proposed NRHP Code 3D)
366	Alt 3A, 3B- TBM Extraction Shaft	600-668 Columbus	0102/001	Washington Square park was a gift to the city of San Francisco in 1850 by John White Geary, the first mayor of the newly American San Francisco. Over the years it has served as a magnet for leisure and social events. The center of the park features a statue of Benjamin Franklin and near the west end there is a statue of a volunteer fireman given to the city by Lillie Hitchcock Coit in 1929. Washington Square is San Francisco Landmark # 226. The park has been identified as a contributor to the proposed Washington Square Historic District, and it can also be considered a contributor to the overlapping proposed North Beach Historic District. (NRHP Code 5S2; Proposed NRHP Code 3D)
367	Alt 3A, 3B- TBM Extraction Shaft	651 Columbus	0102/002	This is a triangular piece of park property created when Columbus (then Montgomery) street cut through North Beach diagonally in the mid-1870s. This portion of the park features mature trees, a birdbath and a small seasonal concrete-lined pond. The bisected park is a visual image that is familiar to residents. The park segment appears to be a contributor to the

				proposed Washington Square Historic District, and it can also be considered a contributor to the overlapping proposed North Beach Historic District. (Proposed NRHP Code 3D)
369	Alt 3A, 3B- TBM Extraction Shaft	1701-1711 Powell 1715 Powell	0101/005A	This two-story wood-framed building was constructed in 1908 for Eliza Baum. It features slanted bay windows and a modillioned cornice. The storefronts housed drugstores, liquor and cigar stores, and restaurants, while the upper floor was used for residential purposes. By the mid-1930s it was known as the Milano Inn. The building is listed in the Office of Historic Preservation's Historic Properties Directory as requiring re-evaluation (NRHP Code 7N). This building appears to be a contributor to the proposed Washington Square Historic District, and it can also be considered a contributor to the overlapping proposed North Beach Historic District. (NRHP Code 7N; Proposed NRHP Code 3D)
370	Alt 3A, 3B- TBM Extraction Shaft	1717- 1719 Powell	0101/005	This three-story wood-framed building was constructed in 1914, and is a fine example of Art Deco architecture. Several Italians have owned the property and it has housed a grocery store and a macaroni factory. It is listed in the Office of Historic Preservation's Historic Properties Directory as requiring re-evaluation (NRHP Code 7N). This building appears to be a contributor to the proposed Washington Square Historic District, and it can also be considered a contributor to the overlapping proposed North Beach Historic District. (NRHP Code 3D)
371	Alt 3A, 3B- TBM Extraction Shaft	1731-1741 Powell	0101/004	J. P. Capurro designed the Washington Square Theatre at 1731-1741 Powell Street. Theatre was an important segment of the local Italian community. In 1925 it became the Milano Theatre, and in 1937 it was renamed the Palace Theatre. By 1974 it began to feature Chinese movies as the Pagoda Theatre. The two-story building was constructed in 1908 using a structural steel fireproof frame. The building has an Art Deco-style stepped parapet/marquee; however, the building's exterior was stripped as part of a renovation project that was halted. It is listed in the Office of Historic Preservation's Historic Properties Directory as requiring re-evaluation (NRHP Code 7N). Presently, the building has the potential to be eligible for the NR as an individual property and/or as a contributor to the proposed Washington Square Historic District, and also to the overlapping proposed North Beach Historic District, but not in its current state. The building may become eligible for the NR if it is restored to its original appearance. (NRHP Code 7N1)

Of the historic properties evaluated during both phases of work, 57 properties in the previous study (shaded entries) and 40 identified during the current study were determined to have some potential for impacts under either the Enhanced EIR/EIS Alternative, Alternative 3A, or Alternative 3B alignments. Some of these properties are within the listed or proposed historic districts; others are outside established district boundaries. A detailed analysis of historic properties with potential impacts by the project is included in Section 5.4 of this document.

MASTER TABLE OF HISTORIC PROPERTIES WITH THE POTENTIAL FOR PROJECT IMPACTS

(Alt 2 = Enhanced EIR/EIS Alignment)

Ref. No.	Potential Impact Area	Address	Historic Name	Date Built	Parcel No. (Block/Lot)	Historic District	NRHP Eligibility
19	Alt 2- SB Portal; Alt 3B- Bryant/Brannan Station	508-514 Fourth		1925	3777/002		3S
21	Alt 3B- Bryant/Brannan Station	500-504 Fourth	The Hotel Utah	1908	3777/001		3S
26	Alt 2-NB Portal	566-586 Third	Central Hotel	1907	3776/008		3S
31	Alt 2-NB Portal	500 Third	Schwabacher-Frey	1920	3776/031		3S
58	Alt 2-Market Street Station	700-706 Mission	Aronson Bldg., Mercantile Bldg.	1906 (1903?)	3706/093		2S
62	Alt 2-Market Street Station	17-29 Third	Herman Levy Bldg	1907	3707/057		3S
63	Alt 2-Market Street Station	703-705 Market 26 Third	Claus Spreckels Bldg./ Call Bldg.	1898	3706/001		3S
64	Alt 2-Market Street Station	691-699 Market	Hearst Building	1909	3707/057		3S
65	Alt 2-Market Street Station	673-687 Market	Monadnock Building	1906	3707/051		3S
66	Alt 2-Market Street Station	Market at Kearny	Lotta Crabtree Fountain	1875	----	Kearny-Market-Mason-Sutter	SF Landmark No. 73; NRHP No. 1975000475
71	Alt 2- Geary and Stockton Streets	700-706 Market	Mutual Building, Citizen Savings	1902	0312/010	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. IV Bldg.
78	Alt 2- Geary and Stockton Streets	722-742 Market	Banker's Investment Building	1912	0312/009	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. IV Bldg.
85	Alt 3A, 3B- Market/Union Square Station	125-129 Geary (Corner of Geary and Stockton streets)	Former City of Paris Building	1908	0313/018	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. IV Bldg. NRHP No. 1975000471
89	Alt 2 – Geary Street	146 Geary		1907	0309/007	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. IV Bldg.
90	Alt 2 – Geary Street	152 Geary		1907	0309/008	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. IV Bldg.
91	Alt 2 - Union Square Station, Alt 3A Market Street/Union Square Station	156 Geary		1907	0309/009	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. IV Bldg.
92	Alt 3A Market Street/Union Square Station	160-170 Geary	Whittell Building	1906	0309/010	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. I Bldg.
94	Alt 3A, 3B- Market/Union Square Station	233 Geary	I. Magnin	1907/ 1946	0314/001		3S
94A	Alt 3A- Market/Union Square Station	Geary Grant, Kearny, Post, Stockton, Sutter	Triangular Street Lights				3S
95	Alt 2 - Union Square Station, Alt 3A, 3B Market Street/Union Square Station	333 Post	Union Square (including Garage)	1942	0308/001	Kearny-Market-Mason-Sutter; CA Landmark No. 623; SF Landmark No. 210	3S
97	Alt 2 - Union Square Station, Alt 3A, Market Street/Union Square Station	218-222 Stockton	A.M. Robertson Bldg.	1908	0309/014	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. IV Bldg.
98	Alt 2 - Union Square Station, Alt 3A Market	234-240 Stockton	Scroth Bldg., TWA Bldg.	1908	0309/020	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. I Bldg.

Ref. No.	Potential Impact Area	Address	Historic Name	Date Built	Parcel No. (Block/Lot)	Historic District	NRHP Eligibility
	Street/Union Square Station						
100	Alt 2- Union Square Station; Alt 3A- Market/Union Square Station	275-299 Post	Lathrop Bldg.	1909	0309/022	Kearny-Market-Mason-Sutter	3S , Art. 11, Cat. I Bldg.
102	Alt 2- Union Square Station	278-298 Post	Joseph Fredericks Co. Bldg.	1910	0294/011	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. I Bldg.
104	Alt 2 - Union Square Station, Alt 3A, 3B Market Street/Union Square Station	340 Stockton	Hotel Drake Wilshire Building	1909; 1984 remodeled	0294/013	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. I Bldg.
108	Alt 2 – Fourth Street; Alt 3A, 3B – Fourth Street	417 Stockton	Hotel Navarre, All Seasons Hotel	1907	0285/004	Kearny-Market-Mason-Sutter and Lower Nob Hill Apartment Hotel District	ID, Art. 11, Cat. IV Bldg.
109	Alt 2 – Fourth Street; Alt 3A, 3B – Fourth Street	423-439 Stockton	Natalia Apartments	1911	0285/003	Kearny-Market-Mason-Sutter and Lower Nob Hill Apartment Hotel District	2D2, Art. 11, Cat. IV Bldg.
110 A	Alt 3A, 3B – Stockton Street	Stockton Tunnel	Stockton Tunnel	1914	-----		2S; Listed in CR.
111	Alt 2 – Stockton Street; Alt 3A, 3B – Stockton Street	600-604 Bush		1915	0272/004	Lower Nob Hill Apartment Hotel District	1D
112	Alt 2 – Stockton Street; Alt 3A, 3B – Stockton Street	590-598 Bush	Victoria Hotel	1908	0271/015	Lower Nob Hill Apartment Hotel District	1S and 1D
113	Alt 2 – Stockton Street; Alt 3A, 3B – Stockton Street	510 Stockton		1920	0271/016	Lower Nob Hill Apartment Hotel District	1D
114	Alt 2 – Stockton Street; Alt 3A, 3B – Stockton Street	525 Stockton		1921	0272/002	Lower Nob Hill Apartment Hotel District	1D
115	Alt 2 – Stockton Street; Alt 3A, 3B – Stockton Street	530 Stockton		1925	0271/017	Lower Nob Hill Apartment Hotel District	1D
116	Alt 2 – Stockton Street; Alt 3A, 3B – Stockton Street	535 Stockton	Pon Apartments	1925	0272/001A	Lower Nob Hill Apartment Hotel District	1D
117	Alt 2 – Stockton Street; Alt 3A, 3B – Stockton Street	540 Stockton		1922	0271/018	Lower Nob Hill Apartment Hotel District	1D
118	Alt 2 – Stockton Street; Alt 3A, 3B – Stockton Street	701-737 Pine	Agatha Apartments	1925	0272/001	Lower Nob Hill Apartment Hotel District	1D
119	Alt 2 – Stockton Street; Alt 3A, 3B – Stockton Street	550 Stockton	Pinemont Apartments	1923	0271/019	Lower Nob Hill Apartment Hotel District	1D
121	Alt 2 – Stockton Street; Alt 3A, 3B – Stockton Street	600 Stockton	Metropolitan Life Building – Pacific Coast Head Office	1909	0257/012		SF Landmark No. 167
124 A	Alt 2 – Stockton Street; Alt 3A, 3B – Stockton Street	California and Kearny	San Francisco Cable Cars	1873	------		1S; Listed in CR.
132	Alt 2, 3A- Chinatown Station	801-805 Stockton		1925	0224/006	Chinatown	3D
133	Alt 2, 3A- Chinatown Station	800-810 Stockton	Lewis Gasner Hotel	1911	0225/013	Chinatown	3D
134	Alt 2, 3A- Chinatown Station	809-815 Stockton	Burke Lodging House	1915	0224/005	Chinatown	3D

Ref. No.	Potential Impact Area	Address	Historic Name	Date Built	Parcel No. (Block/Lot)	Historic District	NRHP Eligibility
135	Alt 2, 3A- Chinatown Station	812-828 Stockton		1924	0225/014	Chinatown DEMOLITION PROPOSED	3D
136	Alt 2, 3A- Chinatown Station	827-829 Stockton	Chinese High School, Victory Hall	1908	0224/004	Chinatown (1986-S.F. Planning Dept. proposed individual landmark status)	3D
137	Alt 2, 3A- Chinatown Station	830-848 Stockton	Kuo Ming Tang	1915	0225/016	Chinatown	3D
138	Alt 2, 3A- Chinatown Station	833-841 Stockton		1914	0224/003	Chinatown	3D
139	Alt 2, 3A- Chinatown Station	843 Stockton	Chinese Six Companies, Chinese Benevolent Society	1908	0224/002	Chinatown Proposed as an individual City Landmark-1986	3D
140	Alt 2, 3A- Chinatown Station	850-898 Stockton	Oriental Hotel	1910	0225/017	Chinatown	3D
143	Alt 3B- Chinatown Station	901-907 Stockton		1907	0211/004	Chinatown	3D
144	Alt 3B- Chinatown Station	913-917 Stockton	Hop Wo Benevolent Society	1910	0211/003	Chinatown	3D
145	Alt 3B Chinatown Station	925 Stockton	Foreign Missions of Presbyterian Church (1909)	1907	0211/002	Chinatown (1986-S.F. Planning Dept. proposed individual landmark status)	3D
146	Alt 3B- Chinatown Station	930 Stockton	St. Mary's School	1906	0210/047 (0210/014)	Chinatown	3D
147	Alt 3B- Chinatown Station	933-949 Stockton	S. H. Woodruff	1908	0211/001	Chinatown DEMOLITION PROPOSED under Alt 3B	3D
148 A	Alt 3B- Chinatown Station	Washington Street Street Lights		1925		Chinatown	3D
149	Alt 3B- Chinatown Station	1003-1011 Stockton	Chinese Methodist Episcopal Church	1910	0192/004	Chinatown (1986-S.F. Planning Dept. proposed individual landmark status)	3D
151	Alt 3B- Chinatown Station	1013-1017 Stockton		1910	0192/003	Chinatown	3D
---	Alt 2- Union Square Station; Alt 3A – Market/Union Square Station	590-1209 Bush 680-1156 Sutter 600-1099 Post, and intersecting streets	Lower Nob Hill Apartment Hotel District		----	Lower Nob Hill Apartment Hotel District	NRHP No. 1991000957
173	Alt 3A- NB/SB Portal	601 Fourth		1916	3787/052-139		3S
178	Alt 2- Surface tracks	660-670 Third	South End Terminal Warehouse	1906	3787/008	Rincon Point/South Beach & South End	3D
185	Alt 2- Surface tracks	689-699 Third	Wall & Co./Anna Davidow Bldg.	1917	3788/014	Rincon Point/South Beach & South End	3D

Ref. No.	Potential Impact Area	Address	Historic Name	Date Built	Parcel No. (Block/Lot)	Historic District	NRHP Eligibility
186	Alt 2- Surface tracks	679-685 Third	A Nice Co.	1906	3788/015	Rincon Point/South Beach & South End	3D
187	Alt 2- Surface tracks	665 Third	M.J. Brandenstein Bldg.	1916	3788/041	Rincon Point/South Beach & South End	3D
188	Alt 2- Surface tracks	625 Third	Rolling Stones Magazine Ofc. 1970-1977	1909	3788/045	Rincon Point/South Beach & South End	3D
189	Alt 2- Surface tracks	601 Third	General Cigar Co. Bldg.	1909	3788/020	Rincon Point/South Beach & South End	3D
217	At 3A, 3B – Fourth Street	360 Fourth	Salvation Army Senior Activities Center	1925	3752/010		2S; Listed in CR
238	Alt 3A – Fourth Street	54 Fourth	Keystone Hotel	1910	3705/004		3S
240	Alt. 3B- Market/Union Square Station	801 Market/ 12 Fourth		1907	3705/048A; now 3705/002		3S
242	Alt. 3A – Fourth Street	825-833 Market	Commercial Building; California Academy of Sciences	1908	3705/037	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. II Bldg.
244	Alt. 3B- Market/Union Square Station	785 Market	Humboldt Savings Bank Building	1906	3706/075-092	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. I Bldg.
249	Alt 3A, 3B- Market/Union Square Station	760 Market/35 O'Farrell	Phelan Building	1908	0328/001	Kearny-Market-Mason-Sutter SF Landmark No. 156	3S, Art. 11, Cat. I Bldg.
250	Alt 3A- Market/Union Square Station	790 Market	Roos Bros. (Grodins)	1907;	0328/002	Kearny-Market-Mason-Sutter	3D
251	Alt 3A, 3B- Market/Union Square Station	77-81 O'Farrell	Newman & Levinson Bldg.; Joseph Magnin	1909	0328/003	Kearny-Market-Mason-Sutter	3S
252	Alt 3A, 3B- Market/Union Square Station	79 O'Farrell (previously 46-68 Stockton/77-79 O'Farrell)		1909	0328/004	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. I Bldg.
254	Alt. 3B- Market/Union Square Station	838 Market	Sommer & Kaufman Bldg.	1930	0329/002		3S
266	Alt 3A, 3B- Market/Union Square Station	101 Stockton	O'Connor-Moffatt	1928; addition 1948	0314/002; 0314/004	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. I Bldg.
272	Alt 2- Union Square Station; Alt 3A – Market/Union Square Station	177-179 Maiden		1907	0309/012; portion of 0309/010	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. IV Bldg.
273	Alt 2- Union Square Station; Alt 3A – Market/Union Square Station	259 Post	New Hobart Building; Ransohoffs Dept. Store	1909	0309/023	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. IV Bldg.
274	Alt 3A- Market/Union Square Station	245-253 Post	Mercedes Building	1908	0309/024		3S
275	Alt 2- Union Square	250 Post (246-268	Gumps Department	1865;	0294/009	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. II Bldg.

Ref. No.	Potential Impact Area	Address	Historic Name	Date Built	Parcel No. (Block/Lot)	Historic District	NRHP Eligibility
	Station; Alt 3A and 3B – Stockton Street	Post)	Store	1906			
276	Alt 2- Union Square Station	272 Post	Lengfeld Drug Co Bldg Martin Sachs Co.	1909	0294/010	Kearny-Market-Mason-Sutter	3S, Art. 11, Cat. IV Bldg.
284	Alt 2, 3A - Chinatown Station	857-865 Clay		1913	0225/019	Chinatown	3D
285	Alt 3A – Chinatown	920 Sacramento	Donaldina Cameron House	1908	0224/008	Chinatown	SF Landmark No. 44
289	Alt 3B- Chinatown Station	910-914 Clay	Chinese Mission	1907	0211/005	Chinatown	3D
290	Alt 3B- Chinatown Station	916-918 Clay		1907	0211/006	Chinatown	3D
292	Alt 3B- Chinatown Station	950 Clay	Commodore Stockton School	1913	0211/007	Chinatown	3D
294	Alt 3B- Chinatown Station	868-870 Clay		1911-1912	0210/012	Chinatown	3D
295	Alt 3B- Chinatown Station	31-37 Spofford		1907	0210/015	Chinatown	3D
297	Alt 3B- Chinatown Station	867-869 Washington		1929	0210/018	Chinatown	3D
305	Alt 3B- Chinatown Station	940 Washington	Gum Moon Residential Hall	1911	0192/005	Chinatown	3S
358	Alt 3A, 3B-TBM Extraction Shaft	575-579 Columbus		1912	0117/017	Washington Square, North Beach	3D
359	Alt 3A, 3B-TBM Extraction Shaft	1636-1656 Powell	Verdi Apartments	1914	0117/016	Washington Square, North Beach	3S
366	Alt 3A, 3B-TBM Extraction Shaft	600-668 Columbus	Washington Square Park	Ca. 1860	0102/001	Washington Square SF Landmark # 226	5S2
367	Alt 3A, 3B-TBM Extraction Shaft	651 Columbus	Washington Square Park- triangle	Ca. 1860	0102/002	Washington Square, North Beach	3D
369	Alt 3A, 3B-TBM Extraction Shaft	1701-1711 Powell 1715 Powell		1908	0101/005A	Washington Square, North Beach	3D
370	Alt 3A, 3B-TBM Extraction Shaft	1717- 1719 Powell		1914	0101/005	Washington Square, North Beach	3D
371	Alt 3A, 3B-TBM Extraction Shaft	1731-1741 Powell	Pagoda Theatre	1908	0101/004	Washington Square, North Beach	7N1
---	Alt 2- Union Square Station; Alt 3A – Market/Union Square Station	1-2490 Market Street	Path of Gold Standards (historic street lights)	1908, 1916, 1925	----		SF Landmark No. 200

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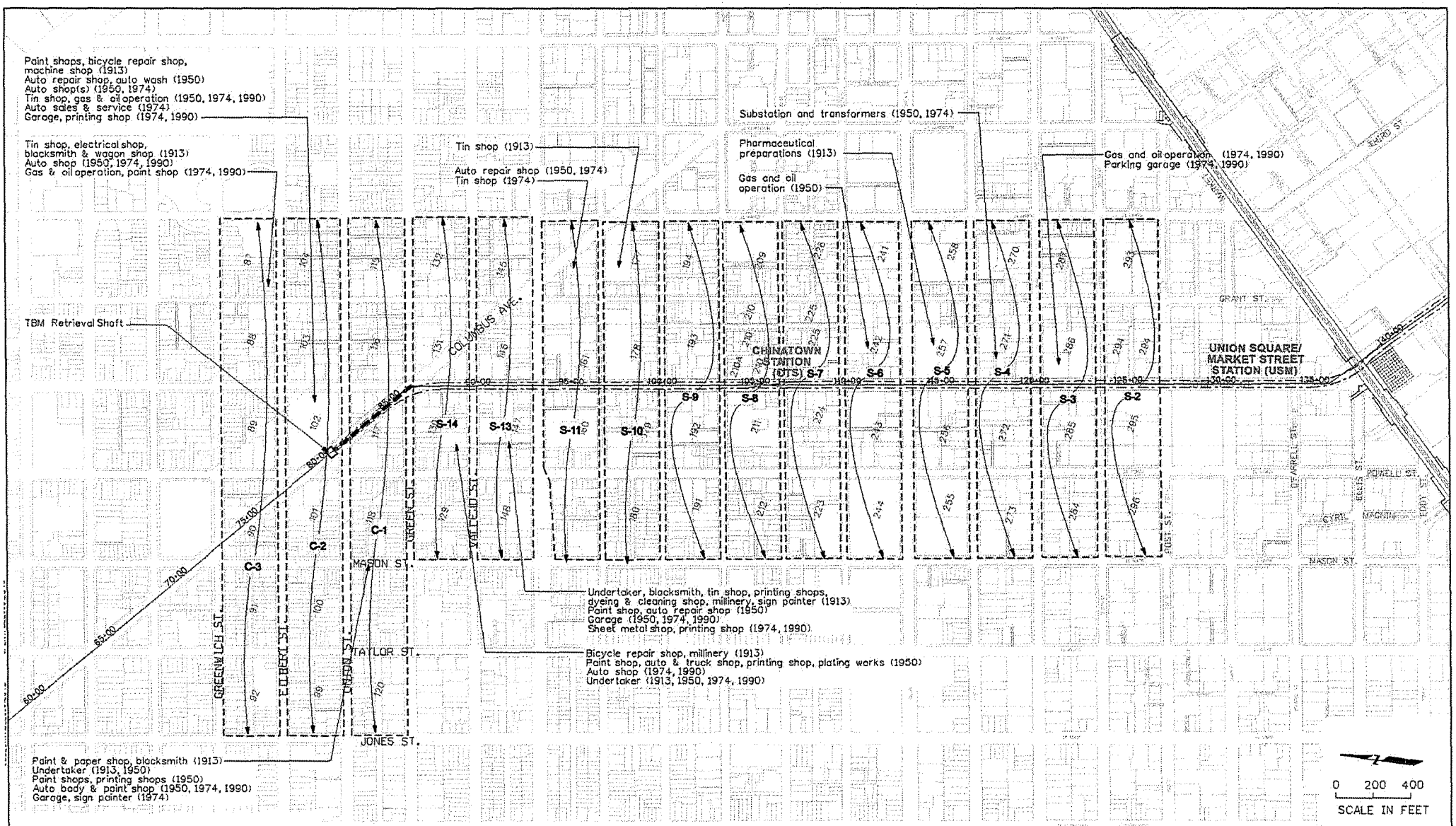
APPENDIX G

HAZARDOUS MATERIALS BACKGROUND



EXPLANATION

4-8 Block designation. Refer to Tables in Geomatrix's reports for block descriptions.

3/120 Block number. Refer to Table in Geomatrix's report for full parcel designations.

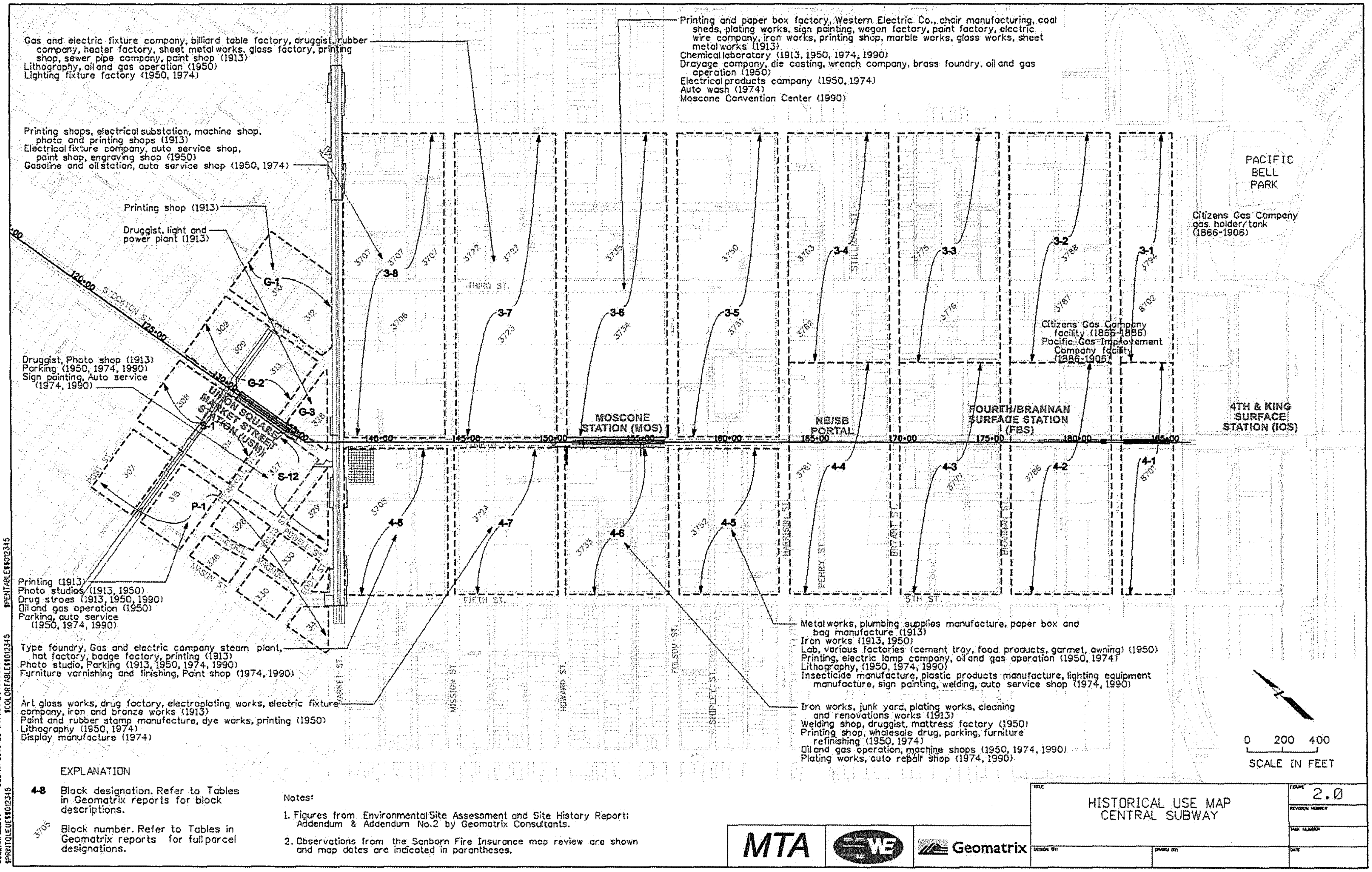
Note:

1. Figures from Environmental Site Assessment and Site History Report: Addendum & Addendum No.2 by Geomatrix Consultants.
2. Observations from the Sanborn Fire Insurance map review are shown and map dates are indicated in parantheses.

MTA | WE | Geomatrix

HISTORICAL USE MAP CENTRAL SUBWAY

FIGURE 1.0


Gas and electric fixture company, billiard table factory, druggist, rubber company, heater factory, sheet metal works, glass factory, printing shop, sewer pipe company, paint shop (1913)
Lithography, oil and gas operation (1950)
Lighting fixture factory (1950, 1974)
Printing and paper box factory, Western Electric Co., chair manufacturing, coal sheds, plating works, sign painting, wagon factory, paint factory, electric wire company, iron works, printing shop, marble works, glass works, sheet metal works (1913)
Chemical laboratory (1913, 1950, 1974, 1990)
Drayage company, die casting, wrench company, brass foundry, oil and gas operation (1950)
Electrical products company (1950, 1974)
Auto wash (1974)
Moscone Convention Center (1990)
Printing shops, electrical substation, machine shop, photo and printing shops (1913)
Electrical fixture company, auto service shop, paint shop, engraving shop (1950)
Gasoline and oil station, auto service shop (1950, 1974)
Printing shop (1913)
Druggist, light and power plant (1913)
PACIFIC BELL PARK
Citizens Gas Company gas holder/tank (1866-1906)
Citizens Gas Company facility (1866-1886)
Pacific Gas Improvement Company facility (1886-1906)
Druggist, Photo shop (1913)
Parking (1950, 1974, 1990)
Sign painting, Auto service (1974, 1990)
UNION SQUARE MARKET STREET STATION (USM)
MOSCONE STATION (MOS)
NB/SB PORTAL
FOURTH/BRANNAN SURFACE STATION (FBS)
4TH & KING SURFACE STATION (IOS)
THIRD ST.
STOCKTON ST.
STILLMAN ST.
FIFTH ST.
5TH ST.
MARKET ST.
MISSION ST.
HOWARD ST.
FOLSOM ST.
SHIPLEY ST.
HARRISON ST.
BRYANT ST.
BRANNAN ST.
PERRY ST.
120+00
125+00
130+00
140+00
145+00
150+00
160+00
165+00
170+00
175+00
180+00
185+00
G-1
G-2
G-3
S-1
S-12
P-1
3-1
3-2
3-3
3-4
3-5
3-6
3-7
3-8
4-1
4-2
4-3
4-4
4-5
4-6
4-7
4-8
Printing (1913)
Photo studios (1913, 1950)
Drug stroes (1913, 1950, 1990)
Oil and gas operation (1950)
Parking, auto service (1950, 1974, 1990)
Type foundry, Gas and electric company steam plant, hat factory, badge factory, printing (1913)
Photo studio, Parking (1913, 1950, 1974, 1990)
Furniture varnishing and finishing, Paint shop (1974, 1990)
Art glass works, drug factory, electroplating works, electric fixture company, iron and bronze works (1913)
Paint and rubber stamp manufacture, dye works, printing (1950)
Lithography (1950, 1974)
Display manufacture (1974)
Metal works, plumbing supplies manufacture, paper box and bag manufacture (1913)
Iron works (1913, 1950)
Lab, various factories (cement tray, food products, garmet, awning) (1950)
Printing, electric lamp company, oil and gas operation (1950, 1974)
Lithography, (1950, 1974, 1990)
Insecticide manufacture, plastic products manufacture, lighting equipment manufacture, sign painting, welding, auto service shop (1974, 1990)
Iron works, junk yard, plating works, cleaning and renovations works (1913)
Welding shop, druggist, mattress factory (1950)
Printing shop, wholesale drug, parking, furniture refinishing (1950, 1974)
Oil and gas operation, machine shops (1950, 1974, 1990)
Plating works, auto repair shop (1974, 1990)
0 200 400
SCALE IN FEET
EXPLANATION
4-8 Block designation. Refer to Tables in Geomatrix reports for block descriptions.
3705 Block number. Refer to Tables in Geomatrix reports for full parcel designations.
Notes:
1. Figures from Environmental Site Assesement and Site History Report: Addendum & Addendum No.2 by Geomatrix Consultants.
2. Observations from the Sanborn Fire Insurance map review are shown and map dates are indicated in parentheses.
MTA
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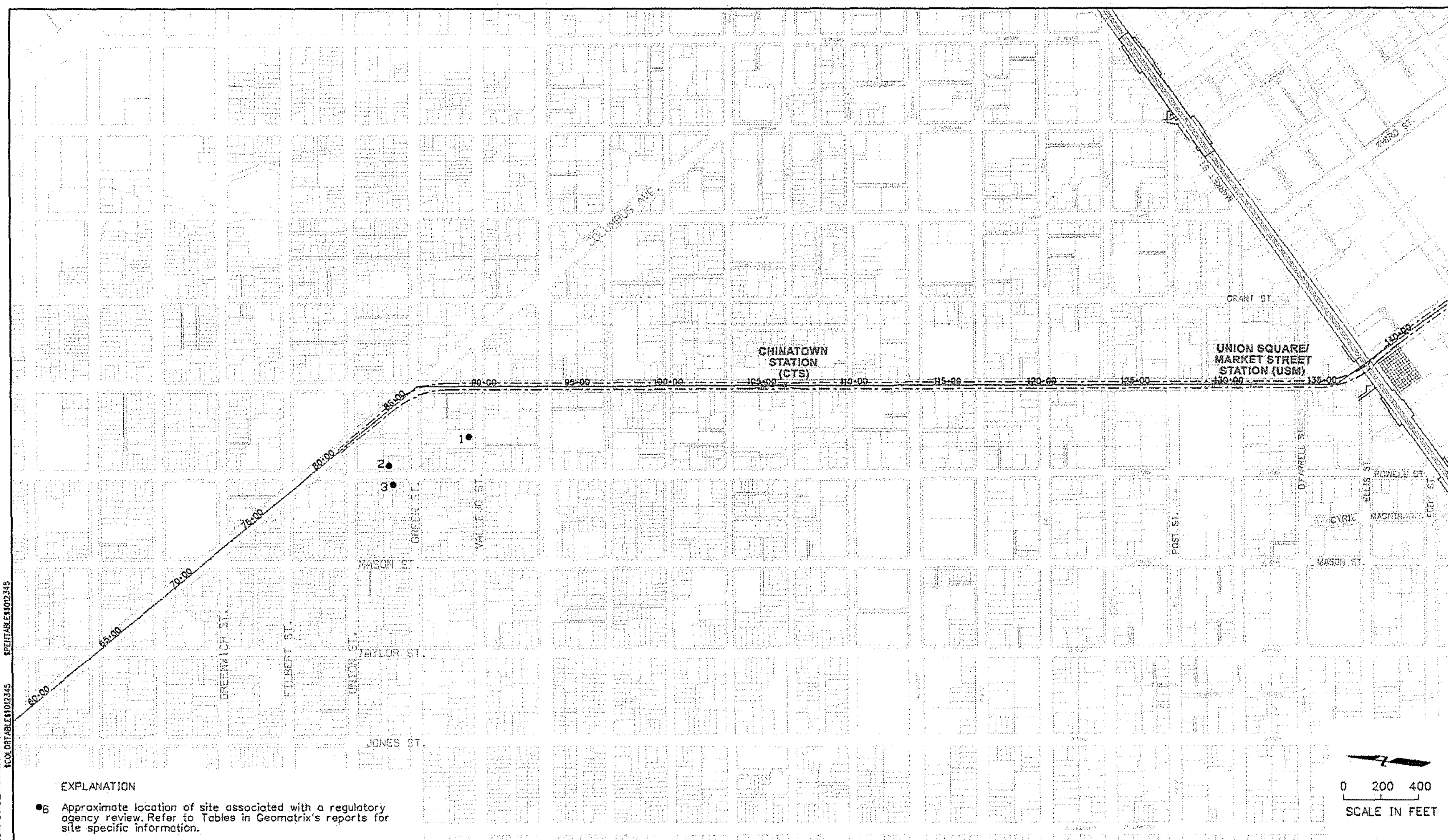
HISTORICAL USE MAP
CENTRAL SUBWAY
2.0



EXPLANATION

●6 Approximate location of site associated with a regulatory agency review. Refer to Tables in Geomatrix's reports for site specific information.

■ Approximate location where dumping of various materials, including trash, observed during site recoinnaissance on November 16, 2004.

(GS) Gas station with evidence for USTs

MGP Former manufactured gas plant.

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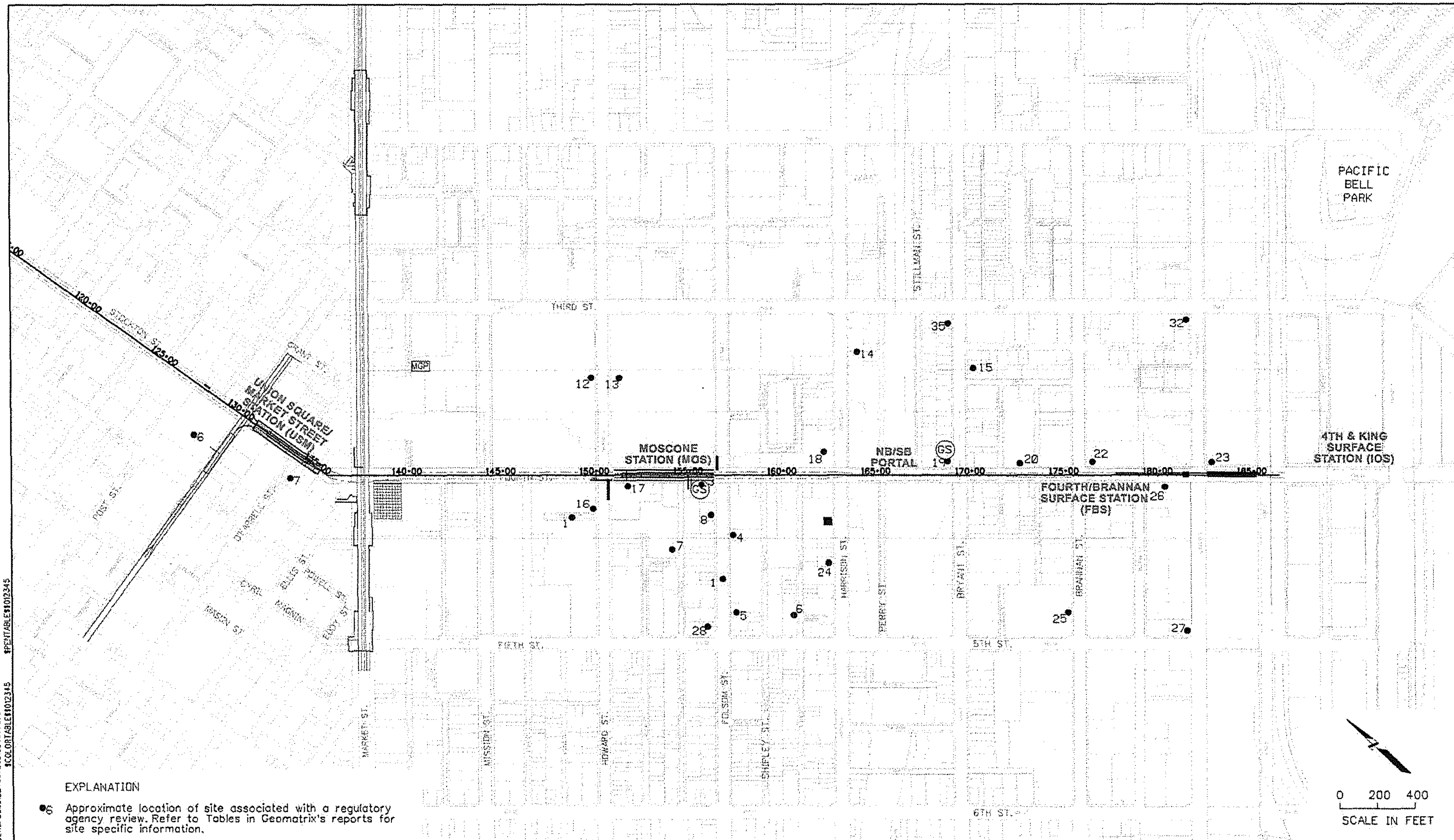
LOCATIONS OF DOCUMENTED REGULATORY AGENCY SITES

FIGURE 3.0



EXPLANATION

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(GS) Gas station with evidence for USTs

MGP Former manufactured gas plant.

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LOCATIONS OF DOCUMENTED REGULATORY AGENCY SITES

4.0

APPENDIX H

2009 NEW STARTS COST EFFECTIVENESS

Difference in Cost Effectiveness Between the Draft SEIS/SEIR and the Fiscal Year 2009 New Starts Submittal

Cost effectiveness calculations for the Draft SEIS/SEIR alternatives were based upon the Fiscal Year 2007 New Starts Submittal prepared in August 2006. The formula for calculating the project cost-effectiveness is based on annualized capital and operating cost per hour of user benefits and is captured in the following formula:

(Change in Annualized Capital Costs) + (Change in Annual Operating Cost)
Change in Transportation System User Benefit"

For Alternative 3B shown in Table 9-9 of the Draft SEIS/SEIR the numbers used to calculate the cost effectiveness were an Annualization Factor of 317, an annualized capital cost of $73,832,000, an annual system-wide O&M cost for the baseline of $519,432,667, and an annual system-wide O&M cost with the project built of $508,643,005.

As part of Section V, Part 5 of the Fiscal Year 2009 New Starts Submittal the numbers used to calculate the cost effectiveness for Alternative 3B (Modified LPA) were updated. The revised base numbers are an Annualization Factor of 319, an annualized capital cost of $76,225,000, an annual system-wide O&M cost for the baseline of $634,976,277, and an annual system-wide O&M cost with the project built of $633,466,740.

The annualization factor was adjusted from 317 to 319 due to changes to the model used to calculate this number.

The annual cost changed due to refinements made to the cost estimate. As the development of the project progressed, the cost estimate was updated accordingly.

The O&M costs changed due to refinements made to the estimate that defines these. Although the O&M cost for the baseline and the new starts submittal increased when compared to the Draft SEIS/SEIR numbers, the differences in the two, used to calculate the cost effectiveness, remained similar.

These overall changes resulted in the cost effectiveness for the Draft SEIS/SEIR being $18.36 and the cost effectiveness for the Fiscal Year 2009 New Starts Submittal being $20.60.

APPENDIX I

MITIGATION MONITORING AND REPORTING PROGRAM

MITIGATION MONITORING AND REPORTING PROGRAM
for the

Central Subway Project
Locally Preferred Alternative 3B

City and County of San Francisco, California

by the

San Francisco Municipal Transportation Agency

July 2008

The California Environmental Quality Act (CEQA) requires public agencies adopt mitigation measures and a Mitigation Monitoring and Reporting Program (MMRP) that would avoid or substantially lessen the identified significant impacts of the project, assuming such measures are feasible. This MMRP includes objectives, criteria, and specific responsibilities and procedures to administer responsibilities under the CEQA Act and the CEQA Guidelines. This document lists mitigation measures and commitments that will fulfill these requirements for the Central Subway project.

The mitigation measures table summarizes the significant impacts for construction and operations of the Central Subway Project as identified in the SEIS/SEIR and the action(s) that the Project will undertake to mitigate those effects. The mitigation actions will reduce the effects of the Project to less than significant levels, except as they relate to traffic, residential and small business displacement, archaeological resources, and historical architectural resources,. The table is organized as follows:

Impact Area: The table is divided into 29 sections (Operation - Transit, Operation - Traffic, Operation - Freight and Loading, Operation - Parking, Operation - Pedestrians, Operation - Bicycles, Operation - Emergency Vehicle Access, Operation – Socioeconomic, Operation – Community Facilities, Operation - Historic Architectural Resource Impacts, Operation - Visual and Aesthetic Resources, Operation - Noise and Vibration, Construction - Transit, Construction - Traffic, Construction - Freight and Loading, Construction - Parking, Construction - Pedestrians, Construction - Bicycles, Construction - Emergency Vehicle Access, Construction - Land Use, Construction - Community Facilities, Construction - Prehistoric and Historical Archaeological Resources, Construction - Historical Architectural Resources, Construction - Visual and Aesthetic Resources, Construction - Utilities, Construction - Geology and Seismicity, Construction – Hydrology and Water Quality, Construction - Biological and Wetland Resources, Construction - Hazardous Materials, Construction - Noise and Vibration. Each section identifies the potentially significant impacts and mitigation measures for a particular resource.

Impact Summary: Provides a brief description of the impact or effect of the Central Subway Alternative 3B project that is to be mitigated.

Mitigation Measures/Improvement Measures: Provides a brief description of the mitigation and/or improvement measures that San Francisco Municipal Transportation Agency (SFMTA) is required to implement to mitigate the significant impact or effect of the undertaking. Improvement measures are measures that will be undertaken to further reduce the project's less-than-significant impacts. The Final MMRP is part of the project Final SEIS/SEIR and adopted project and CEQA findings. The measures approved by SFMTA will be part of construction bid documents and will be enforced.

Monitoring and Reporting Program: Identifies the milestones at which the mitigation measure must be finalized and implemented.

- Check Final Engineering Documents indicates that the mitigation must be incorporated into the construction plans and specifications.
- Monitor Construction indicates that construction will be monitored to see that the project is constructed pursuant to the construction documents, that field modifications cannot be made

without review and concurrence, and that the change is consistent with the intent of the mitigation measures and that monitoring results will be reported monthly to SFMTA and quarterly to the Planning Department and the FTA.

- Test Operations During Pre-Revenue Testing indicates that the mitigation has potential for adjustment and that the system must be tested for effectiveness during pre-revenue testing.
- Real property acquisition, relocation, demolition, and clean-up will be performed by the SFMTA in accordance with Real Property Acquisition Procedures established by the Project. The Project will have to monitor and audit those activities to insure compliance with the established procedures and the federal law (Uniform Relocation Act).
- Section 106 Memorandum of Agreement requires the development of Research Design and Treatment Plans. The Mitigation Monitoring Plan will have to monitor both the development and implementation of these plans to insure conformity with the MOA.

Responsibility: In all instances SFMTA. Actions or activities are assigned to parties working for or reporting to the SFMTA.

- The Project Engineering Team (PE) is responsible for seeing that all mitigations that require design solutions and/or conditions in the construction specifications are implemented. An independent Environmental Compliance Manager will be retained by SFMTA to work with the PE to monitor construction activities and report to City Planning, SFMTA, and the FTA.
- The SFMTA is responsible for acquiring the real property necessary for the Project and delivering the necessary ROW to the Project free and clear of any physical or legal encumbrances. SFMTA is responsible for auditing the acquisition process for compliance with established procedures and federal law.
- Mitigation measures that are implemented pursuant to the Memorandum of Agreement will have to be accomplished in consultation with the City, FTA and the State Historic Preservation Coordinator ("SHPO") and reports will go to the SHPO.
- Construction activities will be overseen by SFMTA who will be responsible for ensuring that all construction related mitigation measures are implemented. The SFMTA may retain a construction management consultant (CMC) to assist in the mitigation oversight.
- Contractors will be responsible for the actual implementation of construction related mitigation measures.

Enforcement Agency: Identifies the agency responsible for ensuring that mitigation measures are implemented. In most cases it is the SFMTA.

Monitoring Agency: Identifies the agencies that must approve or concur with the method of implementation of the mitigation measure. In most cases this approval will come in the form of construction permits to develop the project, or in the form of an interagency agreement.

Implementation Schedule: Identifies the milestones at which the monitoring action must occur. Mitigation measures associated with system operations will have to be tested for effectiveness during pre-revenue testing and monitored during on-going operational services. The SFMTA Mitigation Monitoring Manager must approve that the mitigation measure is adequately addressed at each phase of project development.

ATTACHMENT A –MITIGATION MONITORING AND REPORTING PROGRAM

PROJECT NAME AND CASE NO. CENTRAL SUBWAY PROJECT 96.28IE

Impact No.	Impact Summary	Mitigation Measures (MM) or Improvement Measures (IM)	Monitoring and Reporting Program		
			Implementation and Reporting	Monitoring and Reporting Actions	Implementation Schedule
OPERATION – TRANSIT (TST)					
TST-1	In 2030 passenger demand could slightly exceed the capacity of proposed light rail service and 9AX bus services during certain peak hours.	**IM TST-1a:** SFMTA will monitor transit ridership and increase the number, frequency, and/or size of trains and buses through modification of the operating plan as warranted to increase the capacity.	**Responsibility:** SFMTA	Monitor operations post construction.	Post construction (2030)
TST-2	The Powell Street Station may experience capacity issues at the concourse level due to increased passenger activity at the northeast end of the station.	**IM TST-2a:** The SFMTA and BART will prepare and enter into a Station Improvement Coordination Plan for the Powell Street Station that will provide for, at a minimum, implementation of the allocation of cost for any station infrastructure improvements necessary to maintain pedestrian safety and a pedestrian level of service of D or better at the Powell Street Station as a result of the Central Subway Project.	**Responsibility:** SFMTA	Monitor passenger flow on Concourse level of station in BART shared-use area.	Post construction
OPERATION – TRAFFIC (TRF)					
TRF-1	The Fourth/Harrison Street intersection would degrade to LOS F conditions during the p.m. peak hour due to the number of right turns from Fourth Street to Harrison Street.	**MM TRF-1a:** Improve conditions by adding, via striping changes, a shared through and right-turn lane from Fourth Street to Harrison Street. This migration measure would require parking removal on the east side of Fourth Street, from Harrison Street to a point about 200 feet to the north for lane transition purposes. Signal timing	**Responsibility:** SFMTA	Check Final Traffic Engineering documents for compliance.	Post construction

ATTACHMENT A –MITIGATION MONITORING AND REPORTING PROGRAM

PROJECT NAME AND CASE NO. CENTRAL SUBWAY PROJECT 96.28IE

Impact No.	Impact Summary	Mitigation Measures (MM) or Improvement Measures (IM)	Monitoring and Reporting Program		
			Implementation and Reporting	Monitoring and Reporting Actions	Implementation Schedule
		changes would also help improve the operating conditions by allocating the appropriate amount of green time to all approaches. These improvements are projected to return intersection operations to LOS B.			
TRF-2	The portal at Fourth Street under I-80 may restrict large truck movements onto Stillman Street.	**MM TRF-2a:** SFMTA will explore with the TJPA, Caltrans, and Golden Gate Transit options, such as providing alternate truck routes, that will permit truck access to Stillman Street to reduce the impacts to a less-than-significant level	**Responsibility:** SFMTA with TJPA, Caltrans, and Golden Gate Transit.	Check Final Traffic Engineering documents for compliance.	Final Traffic Engineering documents.
OPERATION - FREIGHT AND LOADING (FRT)					
FRT-1	Provision of the light rail station platform on Fourth Street at Brannan Street, the surface alignment along Fourth Streets, and the location of the subway portal would displace some loading zones between King and Harrison Streets.	**IM FRT-1a:** Areas for new, permanent, on-street loading zones may be identified along Fourth Street (between King and Bryant Streets) and/or appropriate side streets. Some of the new loading zones may need to displace existing parking spaces.	**Responsibility:** SFMTA	Check Final Traffic Engineering documents for compliance.	Final Traffic Engineering documents
FRT-2	The portal at Fourth Street under I-80 may restrict large truck movements onto Stillman Street.	**IM FRT-2a:** SFMTA will coordinate with the TJPA and Golden Gate Transit to identify options, such as providing alternate truck routes that will permit truck access to Stillman Street.	**Responsibility:** SFMTA with TJPA, Caltrans, and Golden Gate Transit.	Check Final Engineering documents for compliance.	Final Traffic Engineering documents

ATTACHMENT A –MITIGATION MONITORING AND REPORTING PROGRAM

PROJECT NAME AND CASE NO. CENTRAL SUBWAY PROJECT 96.28IE

Impact No.	Impact Summary	Mitigation Measures (MM) or Improvement Measures (IM)	Monitoring and Reporting Program		
			Implementation and Reporting	Monitoring and Reporting Actions	Implementation Schedule
OPERATION – PEDESTRIANS (PED)					
PED-1	Sidewalk widths on Geary Street would be reduced adjacent to the Union Square Station.	**IM PED-1a:** During final design, consideration will be given to ensure that stairways and escalators would not compete with sidewalk space for pedestrians. **IM PED-1b:** Elevator shafts should be located so as not to block the line of sight of motorists exiting the garage to maximize pedestrian safety. **IM PED-1c:** During final design, elevators, escalators, and stairways should be kept as close as possible to the primary circulation path to facilitate disabled access.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance.	Design has been changed to avoid reduction in sidewalk widths. In-process design reviews.
OPERATION – BICYCLES (BIC)					
BIC-1	Diversion of traffic from Fourth Street, resulting from increased congestion associated with the project implementation could permanently impact the proposed bicycle lanes on Second and Fifth Streets.	**IM BIC-1a:** Implementation of the Second and Fifth Street bicycle projects are recommended to facilitate bicycle travel in the South of Market area.	**Responsibility:** SFMTA	Monitor progress on these independent projects.	The Citywide Bicycle Plan is currently under environmental review. Implementation schedule will be monitored.
OPERATION - EMERGENCY VEHICLE ACCESS (EMER)					
EMER-1	The introduction of a double-track median in the	**IM EMER-1a:** SFDPT will be upgrading traffic signals with	**Responsibility:** SFMTA	Traffic signal pre-emptions	Traffic signal pre-emptions

ATTACHMENT A –MITIGATION MONITORING AND REPORTING PROGRAM

PROJECT NAME AND CASE NO. CENTRAL SUBWAY PROJECT 96.28IE

Impact No.	Impact Summary	Mitigation Measures (MM) or Improvement Measures (IM)	Monitoring and Reporting Program		
			Implementation and Reporting	Monitoring and Reporting Actions	Implementation Schedule
	middle of Fourth Street would require emergency vehicles from Fire Station #8 (36 Bluxome Street) to cross the entire trackway to reach the intersection of Fourth and Brannan Streets.	emergency vehicle preemption equipment in order to minimize the emergency response time and to improve the signal operation at several intersections near fire stations along the Corridor.		have been implemented. .	have been implemented.
OPERATION - SOCIOECONOMIC (POPULATION AND HOUSING) (PH)					
PH-1	Acquisition of one parcel for the Chinatown Station at 933-949 Stockton would displace of 8 small businesses and 17 low income residential units.	**MM PH-1a:** Redevelopment of the Chinatown Station site will incorporate affordable housing and ground floor retail where possible. **MM PH-1b**: State and federal relocation regulations will be implemented.	**Responsibility:** SFMTA	Redevelopment plans for the station areas are in the early stages of discussion by SFMTA Real Estate.	Pre-Construction coordination and construction or post construction implementation.
OPERATION - COMMUNITY FACILITIES (CF)					
CF-1	The placement of station entries and elevators in Union Square Plaza would permanently remove 1,690 square feet of open space for transportation purposes in Union Square Park.	**IM CF-1a:** During final design, minimize the footprint of station entrances to the subway in Union Square plaza would be designed and located in such a manner as to minimize the station entrance footprint and minimize disruption to park users. **IM CF-1b:** Design subway entrances so they are visually integrated with the existing park design.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Coordinate with Recreation and Parks Department Planners to review plans and monitor progress.	Post construction

ATTACHMENT A –MITIGATION MONITORING AND REPORTING PROGRAM

PROJECT NAME AND CASE NO. CENTRAL SUBWAY PROJECT 96.28IE

Impact No.	Impact Summary	Mitigation Measures (MM) or Improvement Measures (IM)	Monitoring and Reporting Program		
			Implementation and Reporting	Monitoring and Reporting Actions	Implementation Schedule
OPERATION - HISTORIC ARCHITECTURAL RESOURCE IMPACTS (HARC)					
HARC-1	Demolition of the historic building at 933-949 Stockton Street, which is a contributor to a NRHP-eligible district, would create a visual break in the cohesive grouping of contextually-related buildings within the block.	**MM HARC-1a:** Partial preservation of 933-949 Stockton Street or incorporation of elements of the building into the design of the new station building; salvage significant architectural features from the building for conservation into a historical display or exhibit in the new Chinatown station or in museums; and/or develop a permanent interpretive display for public use on the T-Third line cars or station walls. Conform to MOA between SHPO, FTA, and SFMTA. **MM HARC-1b:** The final design of the Chinatown Station will be reviewed by the Environmental Review Officer, the City Preservation Coordinator, and a historic architect hired by MTA for compliance with the Secretary of Interior's standards based on their compatibility with the character-defining features of the district. **MM HARC-1c:** Prior to demolition of the 933-949 Stockton Street building a Historic American Buildings Survey/Historic American engineering Record documentation will be	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. .	In-process design reviews.

ATTACHMENT A –MITIGATION MONITORING AND REPORTING PROGRAM PROJECT NAME AND CASE NO. CENTRAL SUBWAY PROJECT 96.28IE					
Impact No.	**Impact Summary**	**Mitigation Measures (MM) or Improvement Measures (IM)**	**Monitoring and Reporting Program**		
			Implementation and Reporting	**Monitoring and Reporting Actions**	**Implementation Schedule**
		completed.			
HARC-2	Station entrances located in Union Square would permanently alter the recently redesigned plaza and parking garage.	**IM HARC-2a:** Less-than-significant visual impacts at Union Square Station will be minimized through the use of design and architectural materials that would be compatible with the surrounding structures and landscape. The final design for the station will be subject to review by the Recreation and Parks Department.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Coordinate with Recreation and Parks Department	In-process design reviews
OPERATION - VISUAL AND AESTHETIC RESOURCES (VAES)					
VAES-1	Station entrances for the Union Square Station would be visible in the plaza from Stockton and Geary Streets.	**MM VAES-1a:** Station architectural treatment for the exterior façade in the visually sensitive Union Square Park would be developed in consultation with the Planning, Recreation and Parks Departments, and the Union Square business associations.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Coordinate with city agencies and community/ business groups during design development.	In-process design reviews.
VAES-1	The demolition of an existing building to accommodate the Chinatown Station and the construction of a new station entrance and transit-oriented development in the future would visually change the street façade along	Exterior treatment of the Chinatown Station and vent shaft would be developed in consultation with the Planning Department, Architectural historians, the City Historic Preservation Coordinator, and the Chinatown community during preliminary and final design.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Coordinate with city agencies and community/ business groups during design development.	In-process design reviews.

ATTACHMENT A –MITIGATION MONITORING AND REPORTING PROGRAM

PROJECT NAME AND CASE NO. CENTRAL SUBWAY PROJECT 96.28IE

Impact No.	Impact Summary	Mitigation Measures (MM) or Improvement Measures (IM)	Monitoring and Reporting Program		
			Implementation and Reporting	Monitoring and Reporting Actions	Implementation Schedule
	Stockton Street.				
OPERATION - NOISE AND VIBRATION (NV)					
NV-1	The FTA vibration criteria of 72 VdB would be exceeded at one residential building at 570 Fourth Street at Freelon Alley.	**MM NV-1a:** Vibration propagation testing will be conducted at this location during final engineering to determine the predicted impacts and finalize the mitigation measures. MTA will implement high resilience (soft) direct fixation fasteners at this location for embedded track. Implementation of this measure would reduce the vibration impacts to a less-than-significant level.	**Responsibility:** SFMTA	Testing pre-construction.	In-process design reviews.
NV-2	Noise impacts could occur from operation of Emergency Vent Shafts and Traction Power Sub-stations (TPSS).	**IM NV-2a:** Noise control improvement measures used to meet the San Francisco Noise Ordinance will be determined during final design, but could include enclosing TPSS in masonry structures with sound-rated doors or gates and providing sound attenuation on all emergency ventilation openings of any ancillary facility buildings.	**Responsibility:** SFMTA	Design has already been modified to place TPSS substations underground to provide sound attenuation. Check Final Engineering documents for compliance related to Emergency Vent Shafts.	Design has already been modified to place TPSS substations underground to provide sound attenuation. In-process design reviews.
CONSTRUCTION – TRANSIT (CNTST)					
CNTST-1	Temporary reduction in traffic lanes on Fourth and Stockton Streets during construction would disrupt transit operations. The	**IM CNTST-1a:** SFDPT would develop and implement detour routes for non-transit traffic to minimize disruption to transit routes.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.

ATTACHMENT A –MITIGATION MONITORING AND REPORTING PROGRAM

PROJECT NAME AND CASE NO. CENTRAL SUBWAY PROJECT 96.28IE

Impact No.	Impact Summary	Mitigation Measures (MM) or Improvement Measures (IM)	Monitoring and Reporting Program		
			Implementation and Reporting	Monitoring and Reporting Actions	Implementation Schedule
	rerouting of the 30-Stockton and 45-Union/Stockton may be required.	**IM CNTST-1b:** Overhead wires for the 30-Stockton and the 45-Union/Stockton lines will be temporarily relocated or reconstructed to alternative routes where feasible or motor coaches would be temporarily substituted on alternative routes.			
CNTST-2	Excavation of the construction shaft under the I-80 freeway between Bryant and Harrison Streets would also impact Golden Gate Transit bus operations.	IM CNTST-2a: SFMTA would coordinate with Transbay Joint Powers Authority (TJPA) and Golden Gate Bridge, Highway, and Transit District (GGBHTD) to minimize construction impacts on Golden Gate Transit. SFMTA would stage excavation shaft construction and utility relocation to maintain access to the bus storage facility by Golden Gate buses and work with GGBHTD to develop bus detour routing plans for continued access. Access to the construction shaft would be scheduled to avoid conflict with the active bus periods.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.
CNTST-3	Temporary disruption of BART service could occur during construction. The BART entry at One Stockton Street would need to be closed temporarily during construction.	IM CNTST-3a: SFMTA and BART will prepare and enter into a Station Improvement Coordination Plan to include construction management procedures and processes to address any and all construction and operational impacts resulting from the tunnel boring. SFMTA will also	**Responsibility:** SFMTA	SFMTA monitoring and report to BART	Construction

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		coordinate with BART to develop bus bridges, if needed, public outreach, and other programs to minimize impacts to transit riders during construction.			
CONSTRUCTION – TRAFFIC (CNTRF)					
CNTRF-1	Temporary reduction in traffic lanes on Fourth and Stockton Streets and the subway crossing of Market Street would disrupt traffic.	**IM CNTRF-1a:** SFMTA has identified potential traffic detours. Prior to final design, the SFMTA would select the most appropriate detour routes and develop temporary transportation system management measures along these routes, e.g., additions of turn lanes at key intersections, conversion of parking lanes into peak period travel lanes, etc. Detour routes would be advertised prior to construction in the appropriate media. When detours are initially implemented, traffic control police would monitor critical locations along the detours to promote uncongested traffic flow. All traffic detour measures would be implemented in coordination with other concurrent construction projects.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.
CONSTRUCTION - FREIGHT AND LOADING (CNFRT)					
CNFRT-1	During construction, temporary disruption to truck traffic flow and removal of on-street	**IM CNFRT-1a:** To alleviate some of the congestion that would result adjacent to construction of the light rail line, the SFDPT has identified potential	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.

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	loading zones adjacent to construction work areas would occur along the Corridor on Fourth and Stockton Streets.	traffic detours. **MM CNFRT-1b:** A portion of the curb parking lanes remaining open in the construction area, or just upstream or downstream of the construction area, may be converted to short-term loading zones to enable truck loading and unloading and delivery of goods to nearby businesses. **MM CNFRT-1c:** Temporary truck loading zones on the side streets may need to be established for the duration of the Project construction to offset any impacts along the streets that are directly affected by construction.			
CNFRT-2	Cumulative construction impacts could occur on the block bounded by Perry, Third, Stillman, and Fourth Streets due to sequential construction of the I-80 retrofit, Golden Gate Transit bus storage facility, and the Central Subway projects.	**MM CNFRT-2a:** SFDPT will work with the property and business owners on Perry and Stillman Streets to develop temporary detour routes for traffic to maintain property access during construction and reduce the impacts to a less-than-significant level.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor traffic during construction.	In-process design reviews. Construction.
CONSTRUCTION – PARKING (CNPRK)					
CNPRK-1	All on-street parking would be temporarily prohibited in construction	**IM CNPRK-1a:** During construction signs denoting alternative parking areas (e.g., public parking garages) could be	**Responsibility:** SFMTA	Check Final Engineering documents for compliance.	In-process design reviews.

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	zones.	placed upstream of and through the construction zones. **IM CNPRK-1b:** To improve the accessibility to businesses in the Corridor, it is recommended that retained and added (where applicable) parking spaces be designated for short-term parking and loading, especially in commercial districts.		Monitor construction.	Construction.
CONSTRUCTION – PEDESTRIANS (CNPED)					
CNPED-1	There will be temporary sidewalk closures during excavation of each of the subway stations and the west sidewalk of Stockton Street would be closed during construction of the Chinatown Station.	**IM CNPED-1a:** During excavation of the subway stations, access to all abutting businesses would be maintained either through the existing or a reduced sidewalk area or via temporary access ways, e.g., ramps, planking, etc. Signs would be installed indicated that the businesses are "open during construction." All temporary access ways would be in compliance with the ADA. Temporary pedestrian walkways, as required by the City, would be covered to help protect pedestrians from noise, dust, and visual annoyances during construction.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.
CONSTRUCTION – BICYCLES (CNBIC)					
CNBIC-1	During construction, congestion on Fourth Street resulting from the	**IM CNBIC-1a:** Retain a wide curb or outside travel lane to facilitate bicycle travel. Where this is not possible,	**Responsibility:** SFMTA	Check Final Engineering documents for compliance.	In-process design reviews.

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	temporary lane reduction could divert traffic to Second and Fifth Streets, thereby impacting bicycle travel on Bicycle Routes #11 and #19, respectively. Temporary diversion of traffic from Geary and Stockton Streets could impact bicycle travel, especially on Route #17.	signage could be erected indicating temporary alternative routes, e.g. Second and Fifth Streets for bicyclists. **IM CNBIC-1b:** Implementation of the new bicycle routes on Second and Fifth Streets would facilitate bicycle travel on these streets.		Monitor bicycle use on 2nd and 5th Streets construction.	Construction.
CONSTRUCTION - EMERGENCY VEHICLE ACCESS (CNENE)					
CNEMER-1	Emergency response times from Fire Station #8 (36 Bluxome Street) would be impacted by construction along Fourth Street for approximately 18 to 24 months and from Fire Station #2 (1340 Powell Street) by temporary lanes closures on the west side of Stockton Street between Washington and Jackson Streets for the construction of the Chinatown Station.	**IM CNEMER-1a:** DPT will develop and implement alternative detour routes for all general traffic to minimize the construction disruption to traffic flows. **IM CNEMER-1b:** Contractor will be required to develop a site specific emergency access response plan as part of compliance with bid specifications.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor emergency access during construction.	In-process design reviews. Construction.
CONSTRUCTION - LAND USE (CNLND)					
CNLND-1	There will be temporary construction impacts	**IM CNLND-1a:** Public information programs, including signage, as well as	**Responsibility:** SFMTA	Check Final Engineering documents for compliance.	In-process design reviews.

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	associated with parking and access to land uses in the Study Area.	steps to ensure uninterrupted access to all uses along the Corridor, shall be used to minimize the construction impacts on neighboring land uses.		Monitor parking in study area during construction.	Construction.
CONSTRUCTION - COMMUNITY FACILITIES (CNCF)					
CNCF-1	Construction could temporarily disrupt access to community facilities and parks along the Corridor (Union Square).	**IM CF-1a:** Pedestrian access would be maintained to all community facilities, parks, and recreation areas during construction. **IM CF-1b:** Traffic detours will be put in place to minimize disruption to traffic and public transit along the Corridor.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.
CNCF-2	Lane closures during construction could affect emergency vehicle access time, particularly for Fire Station #8 (36 Bluxome Street) which is located on Bluxome.	**IM CF-2a:** Alternative vehicular and pedestrian circulation patterns that permit continued access to community and public facilities in these locations during construction would be developed and clearly identified during final design, in consultation with Department of Parking and Traffic (DPT) staff.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.
CNCF-3	Construction of the entrance to the Union Square/Market Street Station and construction adjacent to Yerba Buena Gardens would result in	**IM CF-3a:** City noise regulations will be included in the bid specifications to ensure that construction is in compliance.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor noise levels during construction.	In-process design reviews. Construction.

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	temporary noise and dust impacts for park users.				
CNCF-4	Emergency access and circulation could be temporarily disrupted on streets leading to construction sites.	**IM CNCF-4a:** Use a traffic control officer, at construction sites to facilitate traffic flows if circulation is disrupted.	**Responsibility:** SFMTA	Monitor construction.	Construction.
CONSTRUCTION - PREHISTORIC AND HISTORICAL ARCHAEOLOGICAL RESOURCES (CNPRE)					
CNPRE-1	Excavation for the project will potentially affect Historical Archaeological Resources, including: 6 locations identified for the possible presence of sensitive prehistoric archaeological resources, one known archaeological resource, and 13 locations where historical archaeological resources might be uncovered.	**MM CNPRE-1a:** Consistent with the SHPO MOA with the City, FTA, and SFMTA shall work with a qualified archaeologist to ensure that all state and federal regulations regarding cultural resources and Native American concerns are enforced. **MM CNPRE-1b:** Limited subsurface testing in identified archaeologically sensitive areas shall be conducted once an alignment has been selected. **MM CNPRE-1c:** During construction, archaeological monitoring shall be conducted in those sections of the alignment identified in the completed HCASR and through pre-construction testing as moderately to highly sensitive for prehistoric and historic-era archaeological deposits. **MM CNPRE-1d:** Upon completion of archaeological field investigations, a	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.

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		comprehensive technical report shall be prepared for approval by the San Francisco Environmental Review Officer that describes the archaeological findings and interpretations in accordance with state and federal guidelines. **MM CNPRE-1e:** If unanticipated cultural deposits are found during subsurface construction, soil disturbing activities in the vicinity of the find shall be halted until a qualified archaeologist can assess the discovery and make recommendations for evaluation and appropriate treatment to the ERO for approval in keeping with adopted regulations and policies.			
CONSTRUCTION - HISTORICAL ARCHITECTURAL RESOURCES (CNHARC)					
CNHARC-1	One historic architectural resource located at 933-949 Stockton Street will be demolished and replaced by the proposed Chinatown Station during construction of the project.	**MM CNHARC-1a:** Partial preservation of 933-949 Stockton Street or incorporation of elements of the building into the design of the new station building; salvage significant architectural features from the building for conservation into a historical display or exhibit in the new Chinatown station or in museums; and/or develop a permanent interpretive display for public use on the T-Third line cars or station walls.	**Responsibility:** SFMTA The level of documentation in the HABS/HAER will be prescribed in consultation with the City Historic Preservation Coordinator, FTA, and SHPO.	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.

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		MM CN-HARC-1b: If the 933-949 Stockton Street building is demolished, perform a Historic American Buildings Survey/Historic American engineering Record documentation.			
CNHARC-2	There are 25 historic architectural resources along the alignment that could be impacted by construction-related ground borne vibration and visual disturbance.	**MM CNHARC-2a:** Pre-drilling for pile installation in areas that would employ secant piles with ground-supporting walls in the cut-and-cover areas would reduce the potential effects of vibration. **MM CNHARC-2b:** Vibration monitoring of historic structures adjacent to tunnels and portals will be specified in the construction documents to ensure that historic properties do not sustain damage during construction. Vibration impacts would be mitigated to a less-than-significant level. If a mitigation monitoring plan provides the following: • The contractor will be responsible for the protection of vibration-sensitive historic building structures that are within 200 feet of any construction activity. • The maximum peak particle vibration (PPV) velocity level, in any direction, at any of these historic structures should not exceed 0.12 inches/second for any length of	**Responsibility:** SFMTA	Design team has selected a drilled pile system that minimizes vibration and the need for pre-drilling. Check Final Engineering documents for compliance. Monitor vibration during construction.	Design team has selected a drilled pile system that minimizes vibration and the need for pre-drilling. In-process design reviews. Construction.

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		time. • The Contractor will be required to perform periodic vibration monitoring at the closest structure to ground disturbing construction activities, such as tunneling and station excavation, using approved seismographs. • If at any time the construction activity exceeds this level, that activity will immediately be halted until such time as an alternative construction method can be identified that would result in lower vibration levels.			
CONSTRUCTION - VISUAL AND AESTHETIC RESOURCES (CNVAES)					
CNVAES-1	The presence of construction equipment at the Moscone, Union Square, and Chinatown Station locations and the North Beach tunnel excavation shaft would temporarily obstruct public views of these scenic landscapes and would temporarily change the streetscape along the Corridor.	**IM CNVAES-1a:** Construction staging areas and excavation sites in these areas may be screened from view during construction to minimize potential visual impacts. **IM CN-VAES-1b:** In visually sensitive landscapes, like Union Square and Chinatown, temporary screening or physical barriers around the station construction sites and shaded night lights may be used to reduce the visual effects of construction equipment and to reduce glare.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.

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CONSTRUCTION – UTILITES (CNUTL)					
CNUTL-1	Construction of the subway and stations would require major utility relocation work, which could affect private parcel connections to main utility lines and result in short-term utility service disruption as relocated utility lines are reconnected to the utility system. Utility relocation would require street and sidewalk excavations that would impact traffic and pedestrian flows adjacent to the relocation areas. Permanent vacation of sub-surface sidewalk basements may be required.	**IM CNUT-1a:** Utility relocation coordination would take place during detailed design in consultation with the utility agencies and the design team and would be phased to ensure that pedestrian and vehicular traffic flows are maintained.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.
CONSTRUCTION – GEOLOGY AND SEISMICITY (CNSET)					
CNSET-1	Construction period settlement could cause damage to existing building foundations, subsurface utilities, and surface improvements.	**MM CNSET-1a:** Provisions such as concrete diaphragm walls to support the excavation and instrumentation to monitor settlement and deformation would be used to ensure that structures adjacent to tunnel alignments are not affected by excavations.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.

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		MM CNSET-1b: Tunnel construction methods that minimize ground movement, such as pressure-faced TBMs, Sequential Excavation Method, and ground improvement techniques such as compensation grouting, jet grouting or underpinning will be used. **MM CNSET-1c:** Rigorous geomechanical instrumentation would be used to monitor underground excavation and grouting or underpinning will be employed to avoid displacement of structures.			
CNSET-2	Construction of the deep subway crossing under the BART tunnel could result in the potential displacement of the BART structures.	**MM CNSET-2a:** Automated ground movement monitoring will be used to detect distortion on the BART/Muni Metro tunnels and grout pipes will be placed prior to tunnel excavation to allow immediate injection of compensation grouting to replace ground losses if deformation exceeds established thresholds.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.
CONSTRUCTION – HYDROLOGY AND WATER QUALITY (CNHWQ)					
CNHWQ-1	Construction activities at the Union Square Station could increase or otherwise disrupt flow of ground water to the Powell Street Station.	**MM CNHWWQ-1a:** Watertight shoring and fully waterproof station structures will be designed and constructed to avoid compounding ground water inflows to the Powell Street Station.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.

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CONSTRUCTION - BIOLOGICAL AND WETLAND RESOURCES (CNBIO)					
CNBIO-1	Construction could result in the removal of existing street trees along the surface segment of Fourth Street, at station entries on Fourth and Stockton Streets, and at the One Stockton entrance to Chinatown.	**IM CNBIO-1a:** Any street trees removed or damaged as part of construction would be replaced along the street at a 1:1 ratio.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.
CNBIO-2	During construction of the North Beach Tunnel Variant for removal of the tunnel boring machine at Columbus Avenue and Union Street, adjacent to Washington Square Park, exposure of roots of mature trees could occur.	**IM CNBIO-2a:** A certified arborist would be present as needed during excavation of the Columbus Avenue TBM retrieval shaft to monitor protection of tree roots.	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.
CONSTRUCTION - HAZARDOUS MATERIALS (CNHAZ)					
CNHAZ-1	Previous subsurface soils investigations indicate the potential for exposure of site workers and the public to potentially hazardous materials, including metals, volatile organic compounds (VOCs), and	**MM CNHAZ-1a:** Implementation of mitigation measures similar to those required for properties under the jurisdiction of Article 20: preparation of a Site History Report; Soil Quality Investigation, including a Soils Analysis Report and a Site Mitigation Report (SMR); description of	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.

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	semi-VOCs, during site excavation or transport of excavated soil materials (13,000 cubic yards) which would be disposed of at a Class I facility. Servicing and fueling of diesel-powered construction equipment on-site could result in exposure to lubricants, diesel fuel, antifreeze, motor oils, degreasing agents, and other hazardous materials. Properties landside of the 1851 highwater mark that are not subject to Article 20 would have potential for exposure to hazardous materials.	Environmental Conditions; Health and Safety Plan (HSP); Guidelines for the Management and Disposal of Excavated Soils; and a Certification Statement that confirms that no mitigation is required or the SMR would mitigate the risks to the environment of human health and safety. This measure would ensure that the project impacts are mitigated to a less-than-significant level.			
CONSTRUCTION - NOISE AND VIBRATION (CNNV)					
CNNV-1	Historic buildings within 200 feet of a construction area may be subject to adverse vibration impacts if the maximum peak particle vibration (PPV) velocity level in any direction exceeds 0.12 inches/second for any	**MM CNNV-1a:** The Contractor shall be required to perform periodic vibration monitoring using approved seismographs at the historic structure closest to the construction activity. If the construction activity exceeds a 0.12 inches/second level, the construction activity shall be immediately halted until an alternative construction method that would result in lower vibration	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor construction.	In-process design reviews. Construction.

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	length of time.	levels can be identified. **MM CNNV-1b:** During construction, an acoustical consultant will be retained by the contractor to prepare a more detailed construction noise and vibration analysis to address construction staging areas, tunnel portals, cut-and-cover construction, and underground mining and excavation operations.			
CNNV-2	Noise in the range of 85 to 89 dBA at 100 feet would be generated from construction activities along surface portions of the alignment and staging areas and station or portal construction areas. Vibration levels of 58 to 112 Lv at 25 feet would be experienced as a result of equipment used during at-grade construction activities. Vibration impacts on buildings could result from equipment used for underground construction, particularly from tunneling.	**IM CNNV-2a:** The incorporation of noise control measures would minimize noise impacts during construction: noise control devices such as equipment mufflers, enclosures, and barriers; stage construction as far away from sensitive receptors as possible; maintain sound reducing devices and restrictions throughout construction period; replace noisy with quieter equipment; schedule the noisiest construction activities to avoid sensitive times of the day; the contractor will hire an acoustical consultant to oversee the implementation of the Noise Control and Monitoring Plans; prepare a Noise Control Plan; comply with the nighttime noise variance provisions; conduct periodic noise measurements to ensure compliance with the Noise	**Responsibility:** SFMTA	Check Final Engineering documents for compliance. Monitor noise during construction at 100 feet from activity.	In-process design reviews. Construction.

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		Monitoring Plan; and use equipment certified to meet specified lower noise level limits during nighttime hours.			

APPENDIX J

SECTION 4(F) "DE MINIMIS" CONCURRENCE LETTERS FROM RECREATION AND PARKS DEPARTMENT

July 12, 2007

Mr. Yomi Agunbiade
General Manager
San Francisco Recreation and Park Department
McLaren Lodge
501 Stanyan Street
San Francisco, CA 94117

SUBJECT: Central Subway Supplemental EIR/EIS; Section 4(f) Report

Dear Mr. Agunbiade:

The Major Environmental Analysis (MEA) section of the City's Planning Department has completed the Administrative Draft of the Supplemental EIR/EIS (SEIR/SEIS) and the document is now being reviewed by Federal Transit Administration (FTA) staff before it is released to the public in late September 2007. John Funghi is the Project Manager for San Francisco Municipal Transportation Agency (SFMTA) and Marilyn Duffey is the Project Lead for our consultant team at PB/Wong. John and Marilyn have met with Daniel LaForte of your department to review the proposed project and to discuss potential impacts to Union Square and to Willie Woo Woo Wong Playground in Chinatown. Mr. LaForte is a member of the City review team for the SEIR/SEIS and has previously issued review comments on two Administrative Drafts.

Administrative Draft No. 3 has responded to previous comments from Recreation and Park Department staff by including information to clarify the potential impacts from additional shadows on Willie Woo Woo Wong playground, increased pedestrian use of the playground and Union Square caused by the proposed entrances for the Union Square/Market Street and Chinatown stations, and use of a small portion (1,517 to 1,690 sq. ft., dependent upon the final environmental alternative chosen) of Union Square for an off-sidewalk escalator and elevators. The Section 4(f) Report, required for a federally sponsored/funded transportation project, describes potential effects to the parks and possible mitigation and improvement measures to reduce impacts.

In accordance with recent guidance under SAFETEA-LU (Section 6009(a)) issued in 2005, the Section 4(f) process has been simplified for projects that are determined to have minor impacts to 4(f) properties, with concurrence from the officials with jurisdiction over the parks. A "de minimus" finding applies when the project would not adversely affect the activities, features and attributes of the parks. SFMTA is seeking concurrence from the Recreation and Park Department on the "de minimus" finding described in the Section 4(f) Report. We would be pleased to discuss this with you, and your staff, if you have any questions about this request or the Section 4(f) report. Concurrence from your department will greatly help to move this important transit project forward in a timely manner. If possible, we would like to receive your concurrence by July 20, 2007.

If you have questions, please contact my Environmental Coordinator, David Greenaway, at (415) 701-4237.

Sincerely,

Nathaniel P. Ford, Sr.
Executive Director/CEO

cc: Daniel LaForte, Planner, San Francisco Recreation and Park Dept.
James Barr, Project Manager, FTA Headquarters
Raymond Sukys, Director of Planning and Program Development, FTA Region IX
John Funghi, Central Subway Project Manager, SFMTA
Joan Kugler, Environmental Planner, City of San Francisco Planning Dept.
David Greenaway, Environmental Coordinator, SFMTA
Gary Griggs, Project Manager, PB/Wong
Rebecca Kohlstrand, Environmental Task Manager, ETS
Marilyn Duffey, Environmental Lead, PB/Wong

City and County of San Francisco
Recreation and Park Department

McLaren Lodge In Golden Gate Park
501 Stanyan Street, San Francisco, CA 94117
TEL: 415.831.2700 FAX: 415.831.2096 WEB: http://parks.sfgov.org

DATE: February 21, 2008

TO: Recreation and Park Commission

THRU: Yomi Agunbiade, General Manager
Dawn Kamalanathan, Planning Director

FROM: Daniel LaForte, Park Planner

RE: SFMTA Central Subway Project

Agenda Wording:
Discussion and possible action to support the Federal Transit Administration's finding of de minimis, or minor, impacts on Union Square, Washington Square and Willy Woo Wong Playground (Section 4(f) properties) for San Francisco's Municipal Transportation Agency's Central Subway Project.

Background:
In 1998, the San Francisco Municipal Transportation Agency (SFMTA) completed a Final Environmental Impact Statement /Environmental Impact Report (EIS/EIR) to describe and summarize the environmental and transportation impacts for both the Initial Operating Segment and Central Subway phases of the project, along with measures to improve, avoid, minimize or mitigate impacts for both phases of the project. The SFMTA is in the process of preparing a Draft Supplemental EIS/EIR to update information in the Central Subway Project study area and to address impacts focused on changes to the Central Subway portion of the Third Street Light Rail Project that have occurred since the 1998 environmental document. These changes include a new segment along Fourth and Stockton Street between Brannan and Geary Streets, extensions of the planning year from 2015 to 2030; above ground vent shafts for the subway; a need to locate station entries off sidewalks, where possible; use of tunnel boring equipment rather than cut-and-cover construction to minimize surface disruption during construction and a potential construction tunnel extension to Columbus and Union Streets to extract the tunnel boring equipment.

The Central Subway Project is the second phase of the Third Street Light Rail Project and would provide MUNI service from the present terminus of the T-Third Line at Fourth and King Streets along either Third or Fourth Streets through South of Market with a station at Moscone Center and a station with connections to BART at Market Street/Union Square in subway through Downtown and in subway under Stockton Street to Chinatown with a station between Clay and Jackson Street. A possible tunnel extension with a portal in the middle two lanes of Columbus Street, just north of Union Street, to extract the tunneling equipment is also being considered. There are seven Recreation and Park Department parks within two blocks of the alignment alternatives: South Park, Yerba Buena Gardens, Union Square, Willy Woo Woo Wong Playground, Woh Hei Yuen Recreation Center, Portsmouth Square, and Washington Square. Only Union Square would be directly affected and other parks may have indirect impacts.

Proposal:
The Central Subway project is designed to address mobility and transit deficiencies in the northeastern part of San Francisco by improving connections to communities in the southeastern part for the City and improving reliability of transit services. The project is also consistent with City Policy to give priority to public transportation and other alternatives in meeting San Francisco's transportation needs.

The Draft Supplemental EIS/EIR considers three project build alternatives that include varying track alignments and station locations. The project alternatives include a downtown subterranean passenger platform under Stockton Street between Market Street and Post Streets with an entry at Union Square, and a station under Stockton Street between Clay and Jackson Streets with an above-ground joint development building and station entry adjacent to Willy Woo Woo Wong Playground. The station building would be limited to 40 feet to meet Prop K shadow limits for buildings that could cast shadows on public parks. An alternative Chinatown station would be located at Stockton and Washington Streets, with no impacts to Willie Woo Woo Wong Playground. The downtown station entry would include a direct take of between 1,517 and 1,690 square feet (1.35% to 1.51%) of Union Square Plaza for the escalator, elevators and vent shafts, and the Chinatown station would have an indirect impact to Willy Woo Woo Wong Playground during construction of the station and during operation for use of a proposed second station entry on the Hang Ah Alley side of the station, adjacent to the playground.

Under Federal Law enacted as part of the Department of Transportation Act of 1966, known as Section 4(f), an assessment must be prepared when a transportation project affects a public park or recreation area, wildlife or waterfowl refuges or significant historic sites. The SFMTA prepared a Section 4(f) assessment for this project and concluded that the impacts on the parks are considered de minimus under Section 4(f) - de minimus impacts are those that would not adversely affect the activities, features and attributes of the Section 4(f) resource. Additionally, under Section 4(f) the landholder of the Section 4(f) resource - in this case, the San Francisco Recreation and Park Department - must concur with the findings of the assessment before action on the Supplemental EIS/EIR by the approval authorities (see attached letter from Executive Director Nathaniel Ford addressed to Yomi Agunbiade, July 12, 2007).

Issues:
Staff raised concerns to the SFMTA over potential impacts to Willy Woo Woo Wong Playground and Union Square. The issues of primary concern were related to removing Union Square parking spaces, using Hang Ah Alley to access a secondary entrance to the Chinatown Station, shadow impacts to Willy Woo Wong Playground, locating vent shafts on Union Square, Union Station design, and construction impacts to parks and park users.

The SFMTA Board will select Alternative 3B as the revised Locally Preferred Alternative on February 19, 2008 (see attached Project Alternatives Maps). Alternative 3B incorporates measures to minimize or avoid potential impacts to Union Square and Washington Square. The station entry at Union Square is on the Geary Street side of the park, with the vent shafts outside of the park located in the Ellis/O'Farrell garage. In addition, Alternative 3B would have no impacts to the Hang Ah Alley, as it would be located away from the park on Stockton and Washington Streets. The environmental document has also been changed to include mitigations for the loss of parking and construction impacts, and a commitment to work with Recreation and Park Department on the conceptual and final station design (See attached Comment Letter on SEIS/SEIR, December 5, 2007, and Response to Letter AI).

Therefore, the Recreation and Park Department staff recommends supporting Federal Transit Administration finding of de minimis, or minor, impacts on Section 4(f) properties (park land) for the

project because feasible measures to minimize or avoid potential impacts to Union Square and Washington Square parks have been incorporated into the Locally Preferred Alternative 3B as mitigation measures or design modifications.

Cost and Source Funding:
The capital cost of the Central Subway project, including the purchase of 4 vehicles, is estimated between $1.025 billion and $1.314 billion. Operating and maintenance costs would be an estimated $1.121 million per year, which would be about $23.6-$24.2 million less than the No Project Alternative per year. Funding would be a combination of federal New Starts funds ($762 million), state transportation funds ($106 million), and Local transportation funds ($126 million).

Schedule:
The Administrative Draft Supplemental EIR/EIS is currently under review by the Federal Transit Administration. A public Draft EIR/EIS is scheduled for distribution in April, 2008 followed by a 45-day review period and public hearing. The Final SEIR/SEIS is scheduled to be available by June of 2008, with a federal Record of Decision in August of 2008.

Supported By:
Unknown

Opposed By:
Unknown

Recommendation:
Staff recommends that the Commission support the Federal Transit Administration's finding of de minimis, or minor, impacts on Section 4(f) properties for San Francisco's Municipal Transportation Agency's Central Subway Locally Preferred Alternative 3B.

Attachments:
Project Alternatives Maps
Comment Letter to SFMTA on SEIS/SEIR
Response to Comment Letter
SFMTA Response to Letter

RECREATION AND PARK COMMISSION
City and County of San Francisco
Resolution No. 0802-011

CENTRAL SUBWAY PROJECT

RESOLVED, That this Commission does support the Federal Transit Administration's finding of de minimis, or minor, impacts on Union Square, Washington Park and Willie Woo Woo Wong Playground (Section 4(f) properties) for San Francisco's Municipal Transportation Agency's Central Subway Project Preferred Alternative 3B.

Adopted by the following vote:

Ayes	7
Noes	0
Absent	0

I hereby certify that the foregoing resolution was adopted at the Regular Meeting of the Recreation and Park Commission held on February 21, 2008.

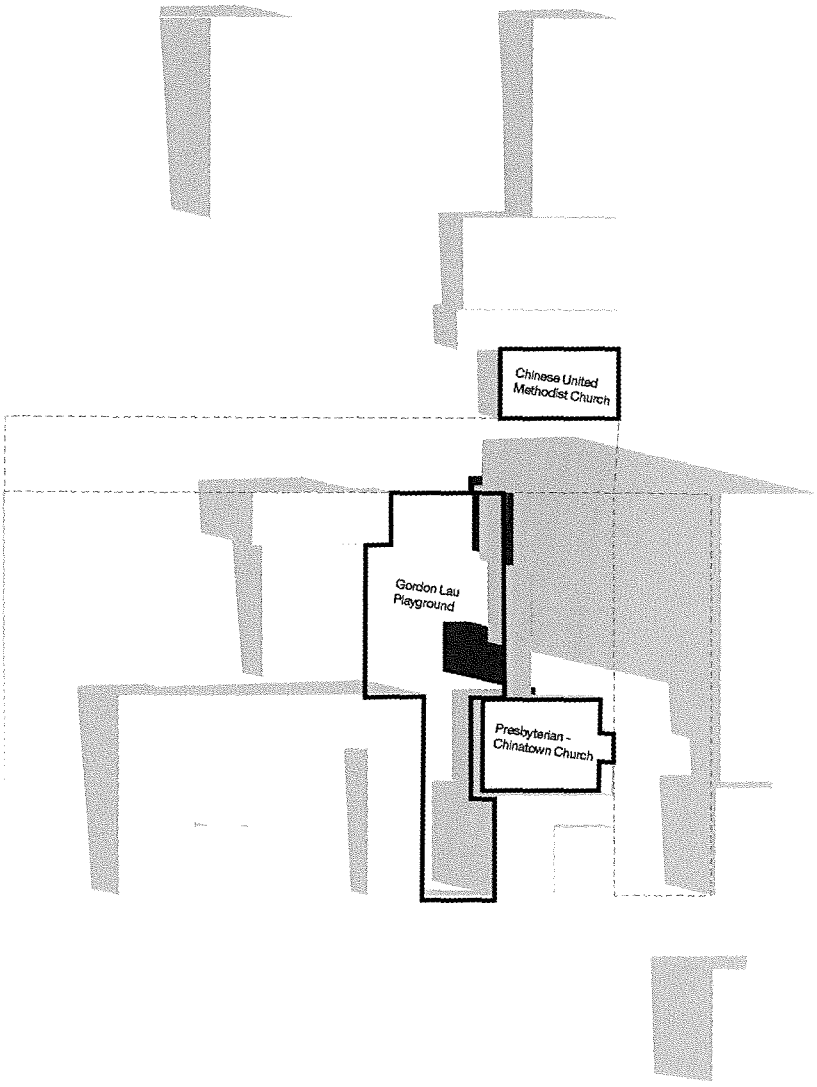
Margaret A McArthur

Margaret A. McArthur, Commission Liaison

APPENDIX K

SHADOW ANALYSIS, ALTERNATIVE 3B, CHINATOWN STATION

June 21st



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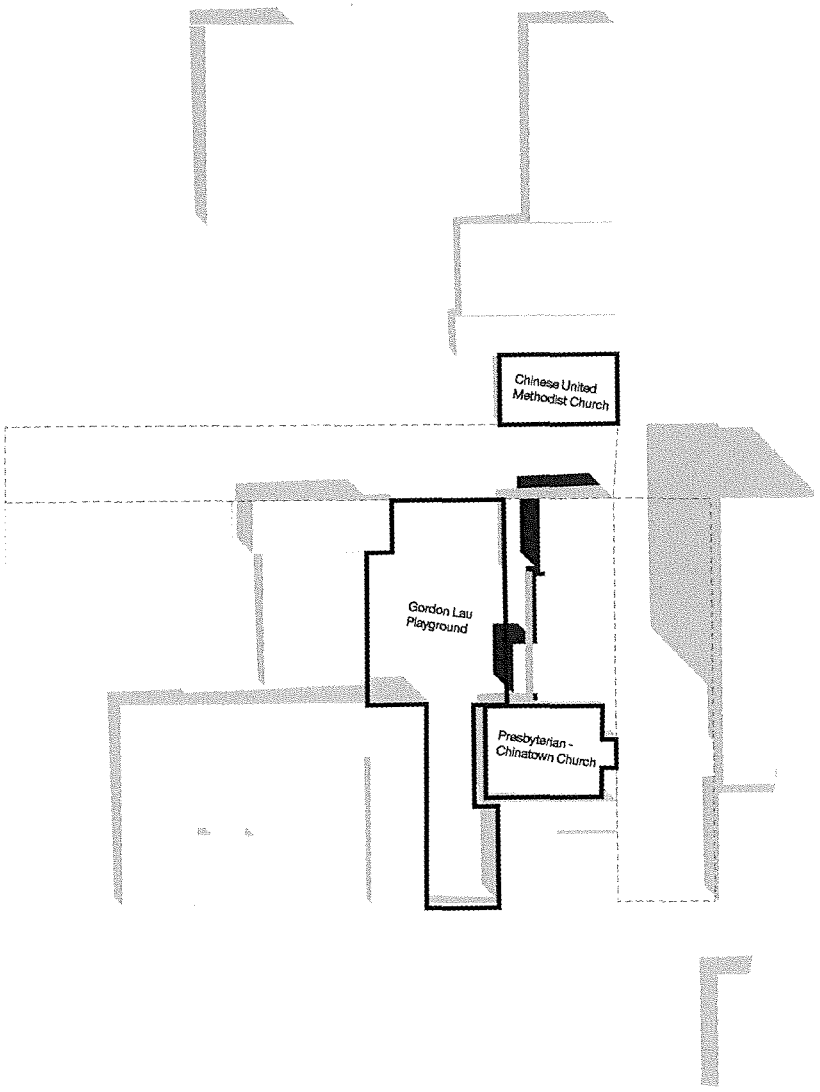

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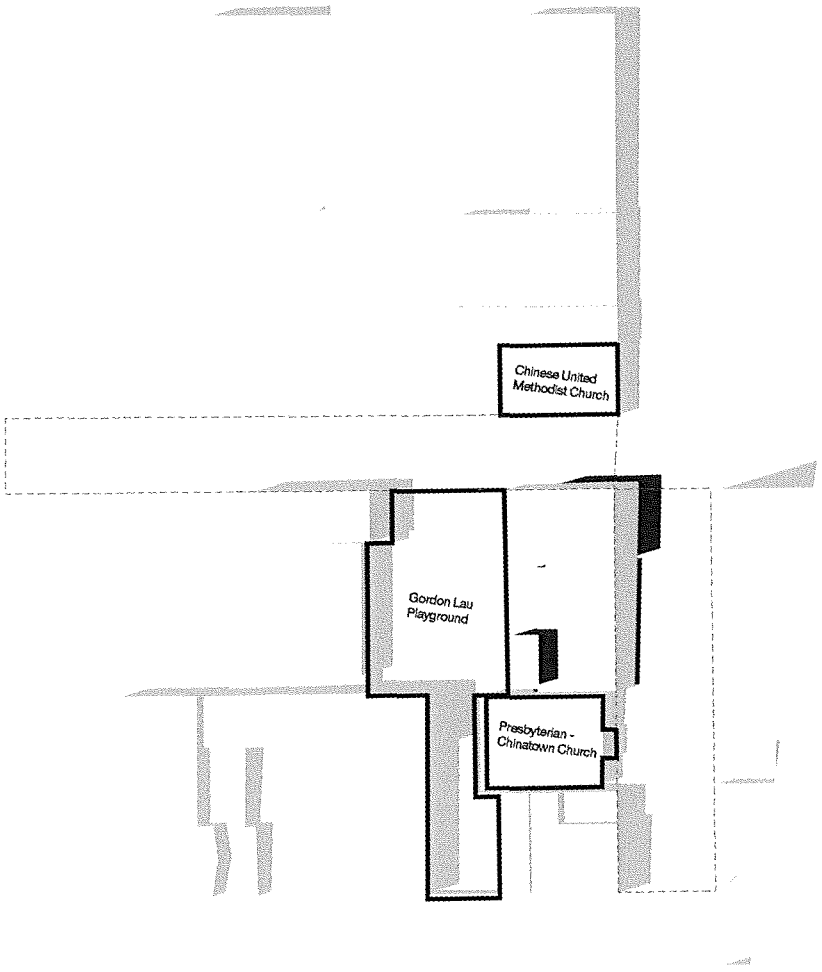

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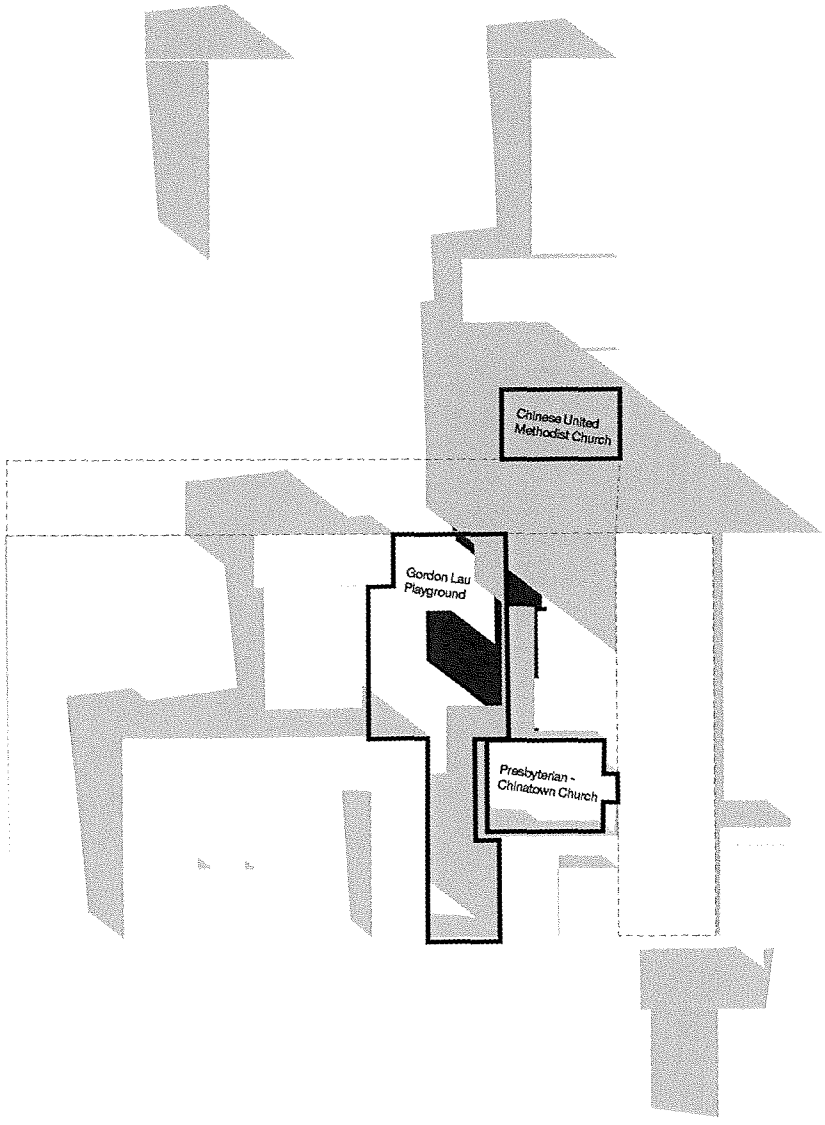

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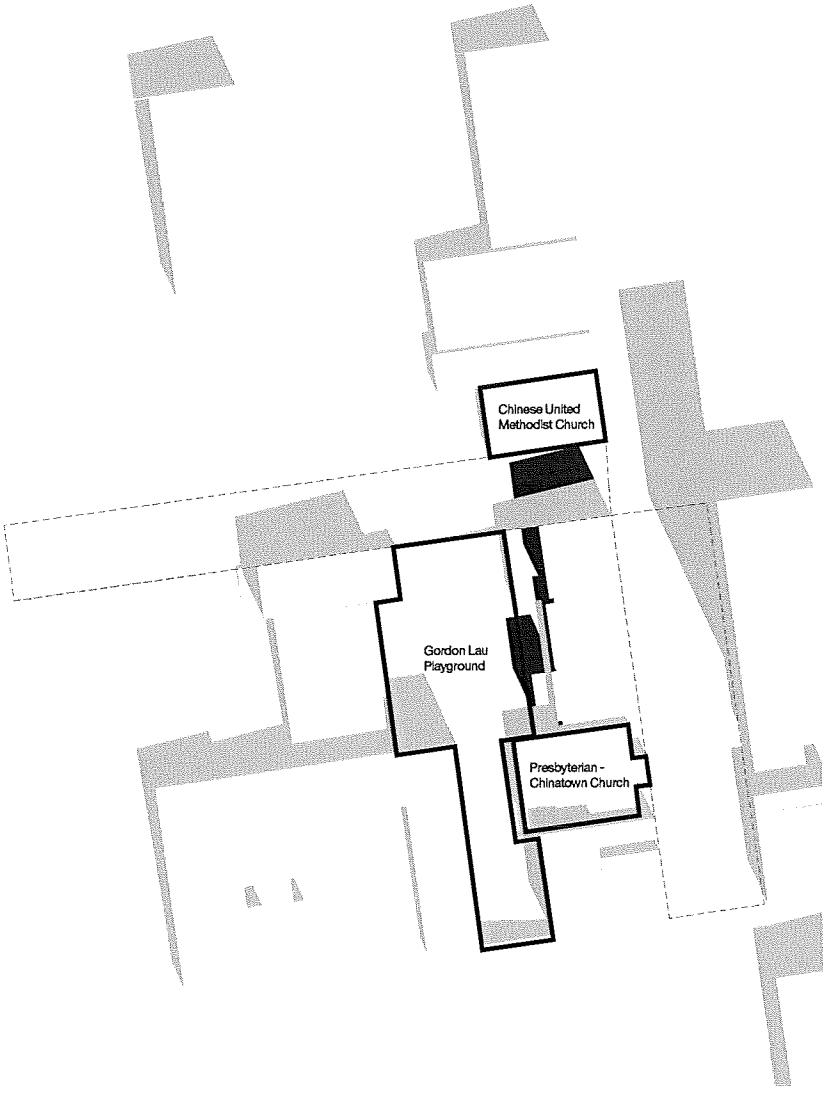

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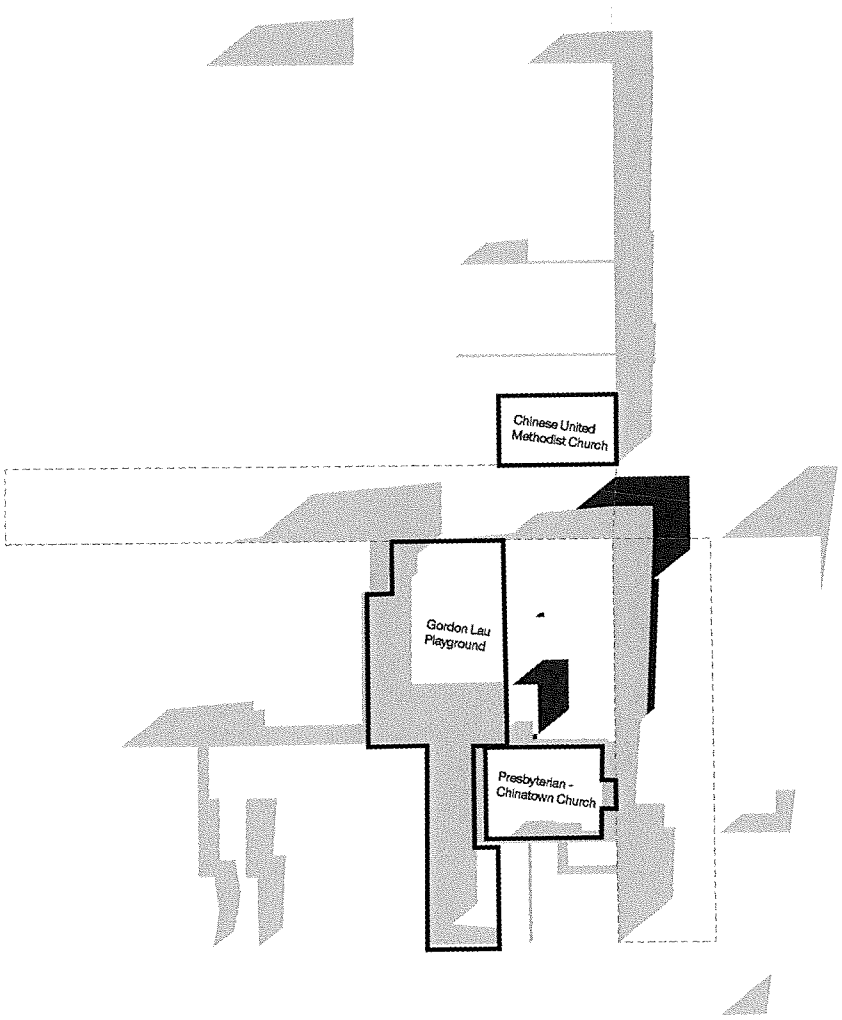

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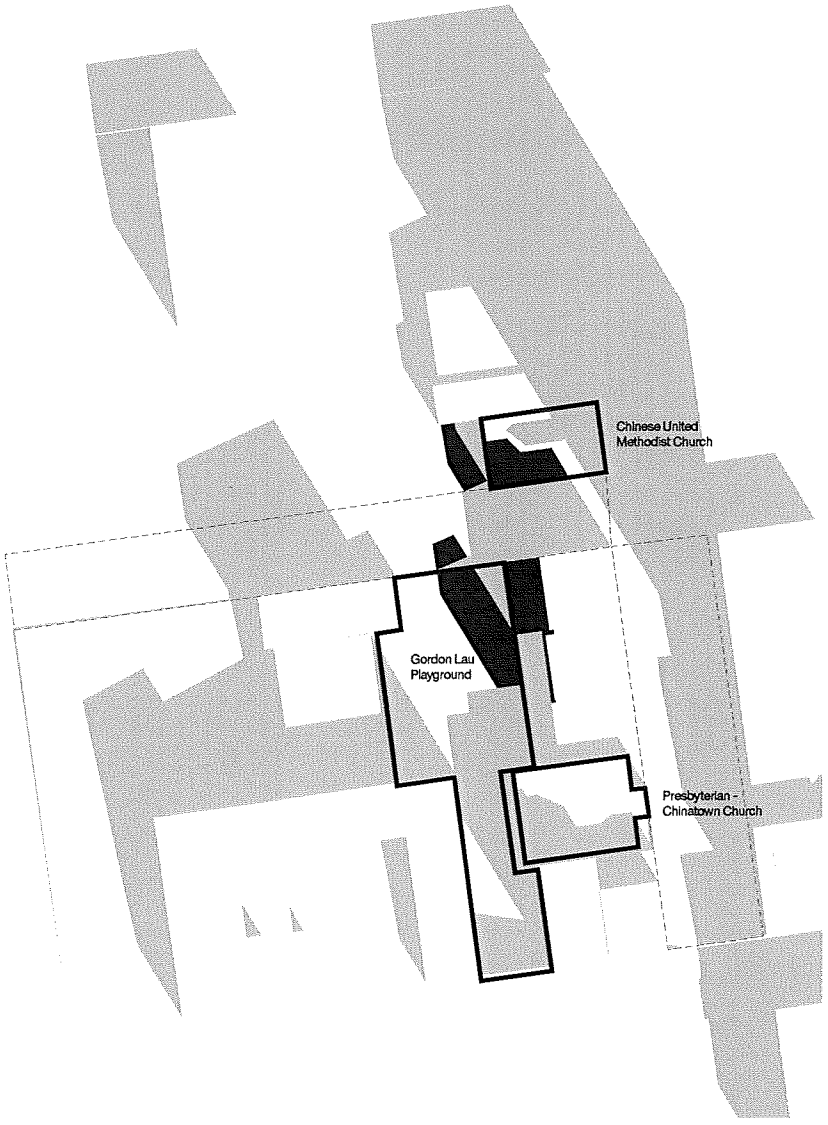

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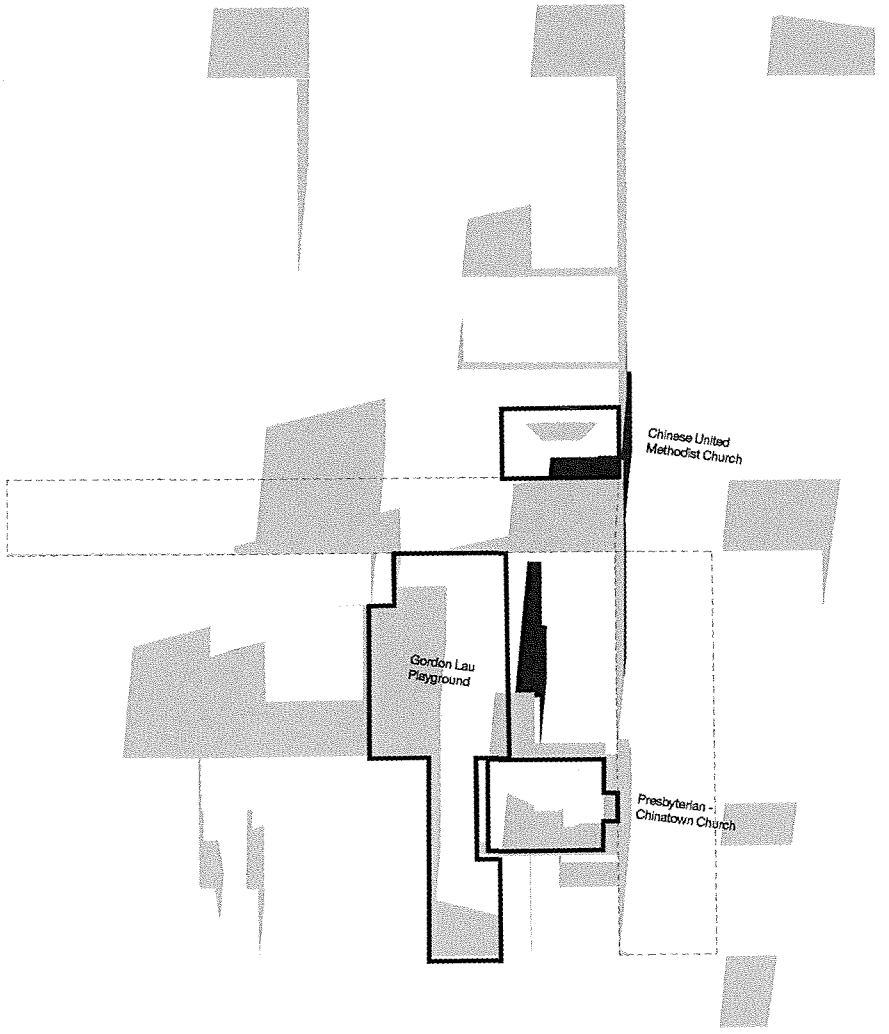

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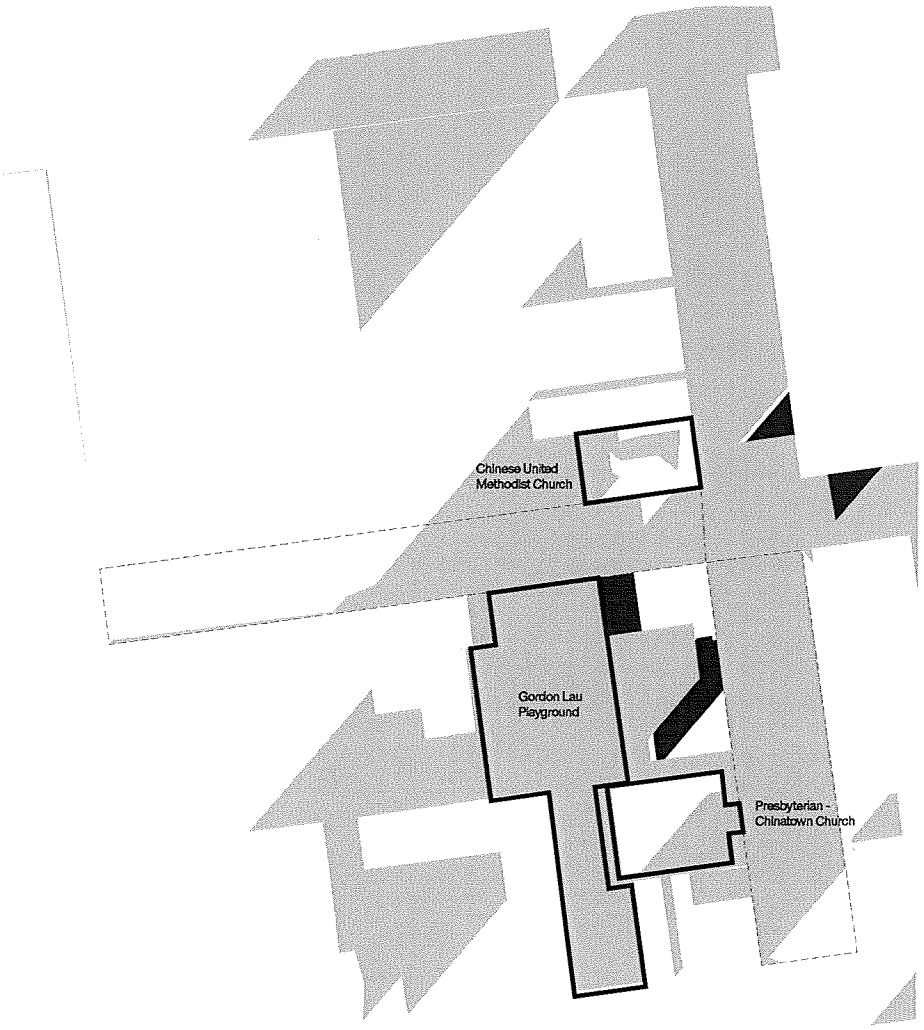

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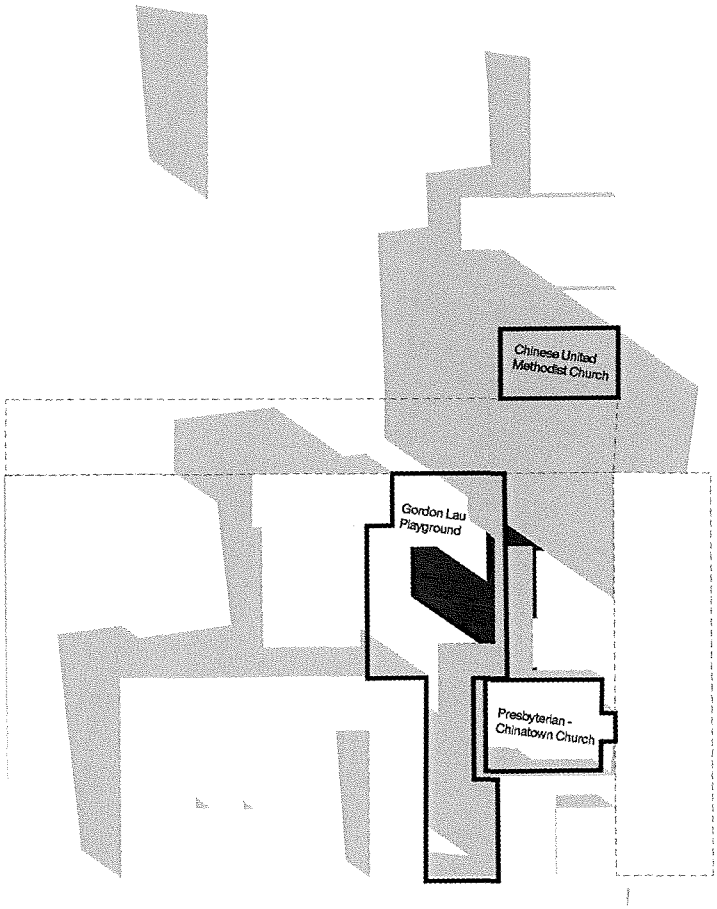

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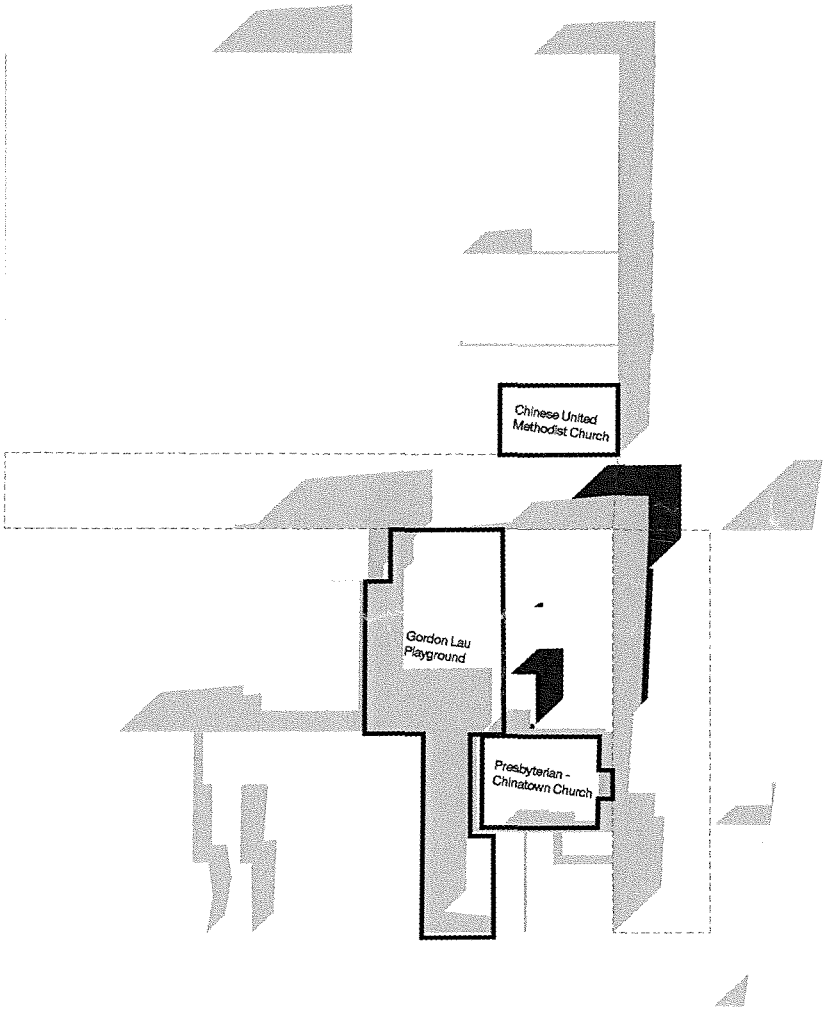

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