SUBSECTION 8.10

Traffic and Transportation

8.10 Traffic and Transportation

This section assesses transportation impacts associated with the proposed project. The analysis primarily quantifies impacts on intersection levels of service expected during construction (the addition of approximately 506 maximum daily vehicles including construction workers and trucks) of the proposed project. Additional transportation factors examined in this section include pedestrian and bicyclist impacts, safety, goods movement, and any potential impacts to air, rail, and waterborne transportation networks.

Descriptions of existing transportation facilities in proximity of the proposed project and an analysis of the proposed project's potential impacts on the existing transportation network are provided. The intersection level of service (LOS) analysis examines the worst-case scenario during construction activities (which would occur for a 2-month duration) to the local study area intersections. The operation of the proposed project would include relatively few peak hour trips, which would be associated with permanent employees (11 employees, or 11 morning and 11 evening peak hour trips). Once these employee peak hour trips are distributed on the street network, traffic impacts would be immeasurable due to the relatively low volume of traffic generated. An additional 60 trips are anticipated to occur throughout the workday (i.e., materials deliveries, visitors, work-related business trips), but not during the critical peak commute hours. An LOS analysis is also provided to assess cumulative impacts.

Information sources include traffic counts, data provided by the City of San Francisco's Department of Parking and Transportation (DPT), the California Department of Transportation (Caltrans) and field observations. This subsection also discusses applicable laws, ordinances, and regulations (LORS) relevant to the potential transportation impacts caused by the proposed project.

8.10.1 Laws, Ordinances, Regulations and Standards

LORS related to traffic and transportation are summarized in the following subsections.

8.10.1.1 Federal

- Title 49, Code of Federal Regulations (CFR), Sections 171-177 (49 CFR 171-177), governs the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles.
- 49 CFR 350-399, and Appendices A-G, Federal Motor Carrier Safety Regulations, address safety considerations for the transport of goods, materials, and substances over public highways.
- 49 CFR 397.9, the Hazardous Materials Transportation Act of 1974, directs the U.S. Department of Transportation to establish criteria and regulations for the safe transportation of hazardous materials.

8.10.1.2 State

State laws that apply to this project include the following sections of this California Vehicle Code (CVC), unless specified otherwise:

- California Street and Highways Code (S&HC), Sections 660, 670, 1450, 1460 et seq., 1470, and 1480, regulates right-of-way encroachment and granting of permits for encroachments on state and county roads.
- Sections 13369, 15275, and 15278 address the licensing of drivers and classifications of licenses required for operation of particular types of vehicles. In addition, certificates permitting the operation of vehicles transporting hazardous materials are addressed.
- Sections 25160 et seq. describe requirements for the safe transport of hazardous materials.
- Sections 2500-2505 authorize the issuance of licenses by the Commissioner of the California Highway Patrol (CHP) to transport hazardous materials, including explosives.
- Sections 31303-31309 regulate the highway transportation of hazardous materials, routes used, and restrictions. CVC Section 31303 requires hazardous materials to be transported on state or interstate highways that offer the shortest overall transit time possible.
- Sections 31600-31620 regulate the transportation of explosive materials.
- Sections 32000-32053 regulate the licensing of carriers of hazardous materials and include noticing requirements.
- Sections 32100-32109 establish special requirements for the transportation of substances presenting inhalation hazards and poisonous gases. CVC Section 32105 requires shippers of inhalation or explosive materials to contact the CHP and apply for a Hazardous Material Transportation License. Upon receiving this license, the shipper will obtain a handbook specifying approved routes.
- Sections 34000-34121 establish special requirements for transporting flammable and combustible liquids over public roads and highways.
- Sections 34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5-7, 34506, 34507.5, and 34510-11 regulate the safe operation of vehicles, including those used to transport hazardous materials.
- S&HC, Sections 117 and 660-72, and CVC, Sections 35780 et seq., require permits to transport oversized loads on county roads. California S&HC Sections 117 and 660 to 711 requires permits for any construction, maintenance, or repair involving encroachment on state highway rights-of-way. CVC Section 35780 requires approval for a permit to transport oversized or excessive loads over state highways.
- California State Planning Law, Government Code Section 65302, requires each city and county to adopt a General Plan, consisting of seven mandatory elements, to guide its physical development. Section 65302(b) requires that a circulation element be one of the mandatory elements.
- All construction in the public right-of-way will need to comply with the "Manual of Traffic Controls for Construction and Maintenance of Work Zones" (Caltrans, 1996).

- California Department of Transportation weight and load limitations for state highways apply to all state and local roadways. The weight and load limitations are specified in the CVC Sections 35550 to 35559. The following provisions, from the CVC, apply to all roadways and are therefore applicable to this project.

  General Provisions:

  - The gross weight imposed upon the highway by the wheels on any axle of a vehicle shall not exceed 20,000 pounds and the gross weight upon any one wheel, or wheels, supporting one end of an axle, and resting upon the roadway, shall not exceed 10,500 pounds.
  - The maximum wheel load is the lesser of the following: a) the load limit established by the tire manufacturer, or b) a load of 620 pounds per lateral inch of tire width, as determined by the manufacturer's rated tire width.

  Vehicles with Trailers or Semitrailers:

  - The gross weight imposed upon the highway by the wheels on any one axle of a vehicle shall not exceed 18,000 pounds and the gross weight upon any one wheel, or wheels, supporting one end of an axle and resting upon the roadway, shall not exceed 9,500 pounds, except that the gross weight imposed upon the highway by the wheels on any front steering axle of a motor vehicle shall not exceed 12,500 pounds.

8.10.1.3 Local

The transportation elements of local plans that are applicable to the project are summarized in Table 8.10-1 and in the following subsection.

- The San Francisco General Plan, transportation and circulation elements, sets forth policies that are applicable to the project. They are as follows:
  - The City's level of service standards for the state highway system and specific routes of regional significance shall be those standards adopted in the General Plan.
- Regional Transportation Plan (RTP) represents the blueprint for major transportation investments in the Bay Area region over the 30-year period from 2000 to 2030. The plan provides a vision for the regional transportation system, now and in the future, and is designed to achieve specific goals defined by the Association of Bay Area Governments (ABAG).

8.10.1.4 Compliance with Laws, Ordinances, Regulations, and Standards

All applicable LORS and administering agencies are summarized subsequently. Table 8.10-1 describes how the project will comply with all LORS pertaining to traffic and transportation impacts.

TABLE 8.10-1
Compliance with Laws, Ordinances, Regulations, and Standards

Authority	Administering Agency	Requirements	Compliance (Location in AFC where compliance discussed)
49 CFR, Section 171-177 and 350-300 Chapter II, Subchapter C and Chapter III, Subchapter B	U.S. Department of Transportation and Caltrans	Requires proper handling and storage of hazardous materials during transportation.	Project and transportation will comply with all standards for the transportation of hazardous materials.
49 CFR, Section 350-399, and Appendices A-G	U.S. Department of Transportation and Caltrans	Requires transporters to address safety considerations for the transport of goods, materials, and substances over public highways.	Project and transportation will comply with all standards for the transport of goods, materials, and substances.
49 CFR, Section 397.9	U.S. Department of Transportation and Caltrans	Directs the USDOT to establish criteria and regulations for the safe transportation of hazardous materials.	Project and transportation will comply to criteria established by USDOT under the Hazardous Materials Transportation Act of 1974.
CVC §31300 et seq.	Caltrans	Requires transporters to meet proper storage and handling standards for transporting hazardous materials on public roads.	Transporters will comply with standards for transportation of hazardous materials on state highways during construction and operations. The project will conform to CVC §31303 by requiring that shippers of hazardous materials use the shortest route possible to and from the site.
CVC §§31600 – 31620	Caltrans	Regulates the transportation of explosive materials.	The project will conform to CVC 31600 - 31620.
CVC §§32000 – 32053	Caltrans	Regulates the licensing of carriers of hazardous materials and includes noticing requirements.	The project will conform to CVC 32000 - 32053.
CVC §§32100 - 32109 and 32105.	Caltrans	Establishes special requirements for the transportation of substances presenting inhalation hazards and poisonous gases. Requires that shippers of inhalation or explosive materials contact the CHP and apply for a Hazardous Material Transportation License.	The project will conform by requiring shippers of inhalation or explosive materials to contact the CHP and obtain a Hazardous Materials Transportation License.
CVC §§34000 –34121.	Caltrans	Establishes special requirements for the transportation of flammable and combustible liquids over public roads and highways.	The project will conform to CVC §§34000 - 34121.

TABLE 8.10-1
Compliance with Laws, Ordinances, Regulations, and Standards

Authority	Administering Agency	Requirements	Compliance (Location in AFC where compliance discussed)
CVC §§34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5-7, 34506, 34507.5 and 34510-11.	Caltrans	Regulates the safe operation of vehicles, including those used to transport hazardous materials.	The project will conform to these sections in the CVC.
CVC §§35550-35559	Caltrans	Regulates weight and load limitations.	The project will conform to these sections in the CVC.
CVC §§25160 et seq.	Caltrans	Addresses the safe transport of hazardous materials.	The project will conform to these sections in CVC.
CVC §§2500-2505.	Caltrans	Authorizes the issuance of licenses by the Commissioner of the CHP for the transportation of hazardous materials including explosives.	The project will conform to these sections in the CVC.
CVC §§13369, 15275, and 15278.	Caltrans	Addresses the licensing of drivers and classifications of licenses required for the operation of particular types of vehicles. In addition, certificates permitting the operation of vehicles transporting hazardous materials are required.	The project will conform to these sections in the CVC.
S&HC §§117, 660-711	Caltrans	Requires permits from Caltrans for any roadway encroachment during truck transportation and delivery.	Encroachment permits will be obtained by transporters, as required.
CVC §35780; S&HC §660-711; 21 CCR 1411.1-11411.6	Caltrans	Requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.	Transportation permits will be obtained by transporters for all overloads, as required.
S&HC §§660, 670, 1450, 1460 *et seq.*, 1470, and 1480	Caltrans	Regulates right-of-way encroachment and the granting of permits for encroachments on state and county roads.	The project will conform to these sections in the CVC.
California State Planning Law, Government Code Section 65302	Caltrans	Project must conform to the General Plan.	Project will comply with General Plan.

CCR California Code of Regulations
CFR Code of Federal Regulations
CVC California Vehicle Code
S&HC California Streets and Highways Code

8.10.2 Affected Environment

8.10.2.1 Project Location and Description

The proposed project includes a power generation facility, an underground transmission line and the construction of a water pump station (WPS) at an existing collection station southwest of the project site to a new onsite water treatment system. Figure 8.10-1 (all figures are located at the end of this subsection) illustrates the regional location of the project site and its relative transportation and transit facilities. The study area is bounded by the San Francisco Bay to the east, Evans Avenue/Hunters Point Boulevard to the south, Evans Avenue to the west, and 16th Street to the north. The power generation facility would be located behind the proposed MUNI Metro East Light Rail Vehicle Maintenance and Operations Facility, east of Illinois Street, between Cesar Chavez and 25th streets at Michigan Street in the Potrero District of the City of San Francisco (see Figure 8.10-2). The proposed process water supply pipeline and WPS would be installed along Cesar Chavez to Marin Street (Figure 8.10-2). A temporary construction "laydown" area (for staging, equipment, and construction worker parking) will be developed to the east of the power plant site, with access from both 25th Street and Cesar Chavez. The construction crews for the pipeline and underground transmission line would be staged in appropriate areas adjacent to the construction corridors.

The surrounding land uses are primarily warehouses and industrial activities. Port facilities, including dry docks for ship maintenance, lie farther east and south. The proposed facility would result in additional traffic that includes both passenger vehicles related to construction workers and permanent employees, and delivery vehicles transporting commercial equipment, as well as potential impacts related to street closures associated with pipeline installation.

8.10.2.2 Existing Transportation Facilities

8.10.2.2.1 Regional Roadway Facilities. The proposed project lies near primary transportation corridors that traverse the southern and eastern sections of San Francisco, providing access between Peninsula communities and the employment and cultural centers of the City of San Francisco (City). Major freeways in proximity to the proposed project site include Interstate 280 (I-280), U.S. Highway 101 (U.S. 101), and Interstate 80 (I-80).

Interstate 280. I-280 begins in the South of Market (SoMa) district of San Francisco, extends southwest through Daly City, then proceeds south adjacent to suburban Peninsula communities (e.g. Redwood City and Palo Alto) and then to downtown San Jose. I-280 is comprised of 6 to 8 lanes of mixed flow traffic in the area near the proposed project. According to traffic counts conducted by Caltrans in 2003, I-280 carries approximately 92,000 average daily vehicle trips. Based on review of the Metropolitan Transportation Commission (MTC) traffic model, the current peak hour truck percentage on I-280, near Cesar Chavez Street, is approximately 2 percent (MTC, 2004). Access to the project site from I-280 southbound is by the 25th Street exit, while the Cesar Chavez Street exit provides access from I-280 northbound.

U.S. Highway 101. U.S. 101 serves as one of California's primary western arteries, linking San Francisco to Marin County in the north and to the Peninsula in the south. U.S. 101 is also the primary route serving the San Francisco International Airport (SFO). In the vicinity of the proposed project, U.S. 101 is an 8-lane, limited access freeway. According to traffic counts conducted by Caltrans in 2003, U.S. 101 carries an average of 249,000 vehicles per day in the vicinity of the project site. The current truck percentage on Highway 101, near Cesar Chavez Street, is approximately one percent during the peak hour (MTC, 2004). Access to and from U.S. 101 in the vicinity of the project site is via the Cesar Chavez Street interchange for both northbound and southbound traffic.

Interstate 80. Interstate 80, which merges with U.S. 101 north of Hunters Point Shipyard and southwest of downtown, is generally an east–west freeway, extending from downtown San Francisco in the west, to Sacramento and beyond to the east. The San Francisco-Oakland Bay Bridge is located along this freeway, connecting San Francisco with the East Bay. Per Caltrans, 2003 average daily traffic counts, average daily traffic in the project vicinity (i.e., north of the I-80/U.S. 101 junction) is approximately 197,500 vehicles. The current truck percentage on I-80, near the Highway 101 junction, is approximately one percent during the peak hour (MTC, 2004).

8.10.2.2.2 Local Roadway Facilities. San Francisco has an extensive street grid system that connects the proposed project to downtown, neighboring communities, and the major freeways described above. This network is categorized into three primary classifications: major arterial roadways, secondary arterial roadways, and collector roads. Major arterial roadways collect and distribute freeway-bound traffic to accommodate intra-city travel and other medium- and long-distance trips. Secondary arterials and collector roads collect and distribute traffic generated in the area by major arterial roadways.

Major and secondary arterial roadways within the study area that provide access to and from the project area include Third Street, Cesar Chavez Street, 16th Street, and Evans Avenue. These roadways are briefly described below, while Figure 8.10-2 shows the arrangement of the local roadway network in the vicinity of the project site. Table 8.10-2 provides classification and traffic volume data for the local and regional roadways.

TABLE 8.10-2
Characteristics of Roadways in Project Study Area

Name	Classification [a]	Average Daily Traffic Volume	Peak Hour Volume
Local Roadways			
Third Street	Major Arterial	21,000 [b]	2,750 [c,f]
16th Street	Secondary Arterial	13,000 [c]	870 [c]
23rd Street	Collector Road	3,000 [d]	200 [c]
25th Street	Collector Road	3,700 [d]	250 [c]
Evans Avenue	Major Arterial	14,600 [b]	1,640 [c]
Cesar Chavez Street	Major Arterial	12,000 [b]	1,330 [c]
Illinois Street	Collector Road	3,400 [b]	230 [d]
Pennsylvania Avenue	Collector Road	19,000 [c]	1,270 [d]

TABLE 8.10-2
Characteristics of Roadways in Project Study Area

Name	Classification [a]	Average Daily Traffic Volume	Peak Hour Volume
Regional Roadways			
I-280 (post mile 6.05) [e]	Freeway	92,000	7,050
U.S. 101 (post mile 2.92) [e]	Freeway	249,000	15,650
I-80 (post mile 4.4) [e]	Freeway	197,500	12,500

Notes:
[a] Source: Vehicular Street Map, Transportation Element, City and County of San Francisco, 1995.
[b] Source: Korve Engineering, 1999.
[c] Source: Daily and peak hour volumes from City of San Francisco Department of Parking and Transportation (DPT), 2004. Peak hour volumes were obtained from the City's Traffic model (Synchro).
[d] Peak hour volume and ADT were determined based on 6.7% K-factor of adjacent streets.
[e] Source: State of California, Department of Transportation (Caltrans), 2003.
[f] Peak hour volume was calculated by averaging the peak hour volume for multiple segments.

Third Street. Third Street functions as the principal north–south arterial within the study area. Third Street extends north from its interchange with U.S. 101 and Bayshore Boulevard to its intersection with Market Street. It serves as a main commercial street, as well as a primary access route to industrial development along San Francisco's southern waterfront, carrying approximately 21,000 vehicles per day (Korve Engineering, 1999). Based on the MTC, the current peak hour truck percentage on Third Street in the project vicinity is 2 percent (MTC, 2004). The Transportation Element of the San Francisco General Plan designates Third Street as a Major Arterial and Primary Transit Route (CCSF Planning Department, 1995). The plan also names Third Street as a Neighborhood Commercial Street and a Citywide Bicycle Route. Per the DPT, there are no vehicle weight and load restrictions on Third Street in the project vicinity.

In terms of physical design, Third Street in the project area is undergoing construction of the Third Street Light Rail Transit (LRT) Improvement Project. Third Street was reconstructed from a 6-lane arterial to a 4-lane arterial with two 11-foot-wide traffic lanes and an 8-foot shoulder in each direction. A center median contains two LRT tracks. In addition, separate left-turn storage lanes are provided at intersections with major arterial roadways but are not provided at minor street intersections. On-street parking is generally allowed on both sides of the street.

The full Third Street LRT extension to the southern City limits will be completed and in operation by late 2005 (Howard, 2004).

Cesar Chavez Street. Cesar Chavez Street (formerly Army Street) is a major arterial and a Citywide Bicycle Route carrying approximately 12,000 vehicles per day (Korve Engineering, 1999). Cesar Chavez Street has direct access to the project site and the construction laydown area. The current peak hour truck percentage on Cesar Chavez Street in the project vicinity is 2 percent (MTC, 2004). This 4-lane major arterial extends to the west, traversing the Mission District until Guerrero Street, where it becomes a local street. Cesar Chavez Street provides direct access to both I-280 and U.S. 101. Vehicles exiting on Cesar Chavez Street, going eastbound, from southbound U.S. 101 are subject to an exit ramp with a tight turn radius. The tight turn radius of this ramp is a non-standard design that may have safety issues; and it is not accessible for trucks due to horizontal and vertical constraints (curve radius and overhead clearance). Cesar Chavez Street proceeds to Third Street, from which vehicles traveling to the proposed project site can continue north to 23rd Street to access the SFERP facility. Per the DPT, there are no vehicle weight and load restrictions on Cesar Chavez Street in the project vicinity.

16th Street. Sixteenth Street functions as a secondary east-west arterial between Market Street and Third Street. Sixteenth Street provides access to the project site from the north and west, with access through the Mission District. Land uses along 16th Street are primarily neighborhood street-front retail/commercial with medium- to high-density residential units. Where 16th Street intersects with Third Street, the area becomes predominantly light industrial. In the project vicinity, 16th Street carries approximately 13,000 vehicles per day (City of San Francisco DPT, 2004), and there are no vehicle weight and load restrictions per the DPT. The current peak hour truck percentage on 16th Street in the project vicinity is one percent (MTC, 2004).

23rd Street. In the project vicinity, 23rd Street carries approximately 3,000 average daily vehicles (estimated by CH2M HILL). This roadway is undivided and provides one lane of travel in each direction, and there are no vehicle weight and load restrictions on this street in the project vicinity. In addition, there is on-street parking on both sides of the street, and there is a posted speed limit of 25 miles per hour (mph). The intersection of Third Street and 23rd Street is signalized.

25th Street. Although the site and construction laydown area can be accessed from Cesar Chavez Street, to provide a worse case analysis it is assumed that 25th Street would provide primary access to the project site, construction laydown area (i.e., staging and construction worker parking area), and access to other adjacent industrial properties. This roadway is undivided and provides one lane of travel in each direction. 25th Street carries approximately 3,700 average vehicles per day (estimated by CH2M HILL). In addition, there are no vehicle weight and load restrictions, there is on-street parking on both sides of the street, and there is a posted speed limit of 25 mph along 25th Street in the project vicinity. The intersection of Third Street and 25th Street is signalized. Access to I-280 is provided via 25th Street, which leads directly to I-280 northbound at Indiana Street, or via Pennsylvania Avenue to reach I-280 southbound. Traffic headed northbound on U.S. 101 can access the ramp directly from Cesar Chavez Street westbound. However, traffic headed southbound must turn around at Bryant Street and return eastbound along Cesar Chavez Street.

Illinois Street. Illinois Street is a wide 2-lane undivided roadway west of the project site. Illinois Street carries approximately 3,400 vehicles per day (Korve Engineering, 1999). Traffic is controlled at the intersections of Illinois Street and 23rd and 25th streets by a two-way stop sign with 23rd and 25th streets serving as the minor (stopped) streets. Land uses along this street in the immediate vicinity of the proposed project consist of warehouses and industrial uses. Additionally, per the DPT, there are no vehicle weight and load restrictions on Illinois Street in the project vicinity.

Pennsylvania Avenue. Pennsylvania Avenue is a north-south 2-lane undivided roadway west of the project site. It carries approximately 19,000 vehicles per day (City of San Francisco DPT, 2004). The segment of Pennsylvania Avenue between 23rd Street and Cesar Chavez Street provides freeway on- and off-ramp access to and from southbound I-280. Land uses along this section of roadway are primarily light industrial. Per the DPT, there are no vehicle weight and load restrictions on Pennsylvania Avenue in the project vicinity.

8.10.2.3 Existing and Future Baseline Intersection Levels of Service

Level of service (LOS),measured by the average control delay at an intersection, is the performance measure used by DPT for assessing intersections operations. The DPT (like most other jurisdictions) analyzes traffic impacts by peak hour intersection capacity and operations, rather than daily roadway capacity. Intersection level of service is identified through a letter designation, varying from LOS A (less than 10 seconds of delay) to LOS F (greater than 80 seconds of delay) as described in Table 8.10-3. For urban settings, LOS E (delays of 55 to 80 seconds) represents the least tolerable acceptable condition.

TABLE 8.10-3
Level of Service Criteria for Signalized Intersections

Level of Service	Average Delay (seconds per vehicle)	Traffic Flow Characteristics
A	≤ 10	Most vehicles arrive during the green phase and do not stop at all.
B	> 10 to ≤ 20	More vehicles stop, causing higher delay.
C	> 20 to ≤ 35	Vehicle stopping is significant, but many still pass through the intersection without stopping.
D	> 35 to ≤ 55	Many vehicles stop, and the influence of congestion becomes more noticeable.
E	> 55 to ≤ 80	Very few vehicles pass through without stopping.
F	> 80	Considered unacceptable to most drivers; intersection is not necessarily over capacity even though arrivals exceed capacity of lane groups.

Source: Highway Capacity Model, Transportation Research Board, 2000

This analysis focuses on the following study area intersections during a typical weekday peak hour between 7:00 a.m. to 9:00 a.m. (morning peak), and 4:00 p.m. to 6:00 p.m. (evening peak).

- Third Street/16th Street
- Third Street/20th Street
- Third Street/23rd Street
- Third Street/25th Street
- Third Street/Cesar Chavez Street
- Third Street/Evans Avenue
- Evans Avenue/Cesar Chavez Street

Traffic conditions were evaluated using the Synchro software (Trafficware, Version 5). Synchro is a traffic operations analysis tool that incorporates the methodology of Transportation Research Board's 2000 *Highway Capacity Manual* (TRB, 2000). This program assigns a LOS designation based upon average vehicle delay. This methodology complies with the evaluation requirements of the City DPT.

Intersection conditions were evaluated for the following scenarios:

- Existing (2000) conditions
- Baseline (2007) conditions

- Baseline plus Project Construction Phase conditions (Baseline plus Project Construction Phase Conditions is discussed in Subsection 8.10.3.1.)
- Cumulative (2015) conditions

LOS was calculated for most intersections in the study area. Peak hour traffic volume data are not available through the DPT for Pennsylvania Avenue intersections. However, it is expected that traffic in this immediate area would not be congested since surrounding land uses are industrial and industrial land uses tend to generate low volumes of traffic. Pennsylvania Avenue, between 23rd Street and Cesar Chavez Street, primarily provides access to and from the I-280 southbound on- and off-ramps. The turning movements at these intersections mainly provide access to I-280 and as such, there are few conflicts at these intersections.

8.10.2.3.1 Existing Conditions. Figure 8.10-3 illustrates the existing a.m. and p.m. peak hour traffic volumes, intersection geometrics and controls, while Table 8.10-4 shows the results of the existing condition traffic analysis. Under existing conditions, the studied intersections operate at LOS D or better for both the morning and evening peak periods. The intersections within proximity to the project, Third Street/20th Street and Third Street/25th Street currently operate at LOS A and LOS B during the a.m. and p.m. peak hours, respectively. The intersection of Third Street/Evans Avenue operates at LOS D (37.3 seconds delay) during the morning peak hour.

TABLE 8.10-4
Level of Service Summary for Existing, Baseline 2007, and Cumulative (2015) Conditions

Intersection	Peak Hour	Existing (2000)		Baseline (2007)		Cumulative (2015)	
		LOS	Delay [a]	LOS	Delay *	LOS	Delay*
Third Street/16th Street	Morning	B	12.1	C	22.8	C	25.7
	Evening	B	14.5	B	16.5	C	22.0
Third Street/20th Street	Morning	A	3.1	A	2.2	C	20.1
	Evening	A	2.8	A	3.7	C	27.4
Third Street/23rd Street	Morning	A	3.4	A	2.9	C	27.5
	Evening	A	4.7	A	6.0	C	22.6
Third Street/25th Street	Morning	B	11.9	A	5.5	B	13.2
	Evening	B	11.3	B	11.0	B	11.7
Third Street/Cesar Chavez Street	Morning	C	27.1	D	40.8	D	39.9
	Evening	C	24.5	D	39.1	D	40.0
Third Street/Evans Avenue	Morning	D	37.3	D	44.1	D	44.7
	Evening	C	24.0	C	33.5	D	36.0
Evans Avenue/Cesar Chavez Street	Morning	B	13.6	B	14.1	B	16.6
	Evening	B	19.4	C	29.9	C	31.1

Note:
*Delay in seconds per vehicle.

In addition, a freeway mainline level of service analysis was prepared for the study area freeway segments of I-280 (at Cesar Chavez Street), Highway 101 (at Cesar Chavez Street), and I-80 (at U.S. 101 junction). This analysis is consistent with the methodology provided in the Highway Capacity Manual. Currently, the segment of I-280 in the project area is operating at a LOS C, while Highway 101 and I-80 in the project study area are both operating at LOS F.

8.10.2.3.2 Cumulative (2015) Conditions. Cumulative 2015 peak hour traffic volumes were provided by the DPT and based on growth and development trends in the Potrero area of the City, as determined by DPT transportation modeling staff. The 2015 traffic conditions would be associated with the operations of the proposed project. The operations of the proposed project would generate a total of 82 daily trips; 11 during the morning peak hour, 11 during the evening peak hour trips and the remainder during off-peak hours. This addition of traffic in the study area will not have a measurable effect on intersection LOS once the trips are distributed throughout the street network.

Figure 8.10-5 illustrates the 2015 cumulative morning and evening peak hour traffic volumes, intersection geometrics and controls, while Table 8.10-4 provides the 2015 intersection LOS at the study area intersections. Other than the operation of the MUNI N-Judah light rail line through the center median of Third Street, no additional intersection improvements are planned for the study area intersections. Based on the LOS analysis of the 2015 cumulative conditions, all of the study area intersections are forecast to continue to operate at LOS D or better for both morning and evening peak hours. Additional traffic from operations will have no significant impact on LOS.

The freeway mainline LOS analysis was run for the 2015 cumulative condition. Based on DPT growth and development projects that were included in the analysis, LOS on the I-280 study area segment would degrade to LOS D in the 2015 condition. Both Highway 101 and I-80 would continue to operate at LOS F in the 2015 condition.

8.10.2.3.3 Baseline (2007) Conditions. The cumulative 2015 traffic volumes provided the basis of estimating the 2007 traffic volumes. Background (2007) morning and evening peak hour volumes, consistent with the planned year of project construction, were interpolated assuming straight line growth from existing (2000) and future (2015) volumes. Based on the interpolation of DPT's cumulative traffic volumes, the average growth rate applied at the intersection traffic volumes in the study area is approximately 2.6 percent per year.

Figure 8.10-4 illustrates the 2007 baseline (without project construction traffic) morning and evening peak hour traffic volumes, intersection geometrics and controls, while Table 8.10-4 shows the results of the 2007 baseline traffic analysis. No additional intersection improvements are planned for the study area intersections, and therefore, the intersection geometrics remain the same as the existing condition. Based on the LOS analysis of the 2007 baseline conditions, all of the study area intersections are forecast to continue to operate at LOS D or better for both morning and evening peak hours.

The study area freeway mainline segments would continue to operate at similar LOS as the existing condition (I-280 at LOS C, Highway 101 at LOS F, and I-80 at LOS F).

8.10.2.4 Public Transportation

San Francisco is a transit hub served by local and regional bus, rail, and ferry services. Regional service connects downtown San Francisco with the surrounding suburban areas. San Mateo County Transit District (SamTrans) and Bay Area Rapid Transit (BART) serve the Peninsula communities south of the SFERP facility. AC Transit buses and BART serve the East Bay, while Golden Gate Transit serves the North Bay communities. Ferry service also carries passengers to downtown San Francisco from coastal North and East Bay communities. In central eastern San Francisco, BART runs north-south along Mission Street, with the station nearest to the project site located at 24th Street.

8.10.2.4.1 San Francisco Municipal Railway. The San Francisco Municipal Railway (MUNI) currently carries 219 million passengers per year on 85 transit lines. The system provides approximately 5,300 stops throughout San Francisco, with lines providing extensive coverage to all San Francisco neighborhoods. MUNI connects with other Bay Area transit service providers at major transfer centers including the Ferry Building, Transbay Terminal, Embarcadero, and Civic Center BART stations along Market Street, and the Stonestown Shopping Center, and the Daly City BART station. MUNI is planning to build a light rail maintenance and operation facility adjacent to the project site on Illinois Street.

Major MUNI routes in the vicinity of the project site serve both north-south travel originating in downtown San Francisco or San Mateo counties, and cross-town travel. Below are descriptions of the major routes that serve these travel patterns. Route N – Judah serves as the only light-rail transit (LRT) in the study area, while other MUNI routes are bus routes.

Route N – Judah (Light-Rail Transit). This LRT route currently travels in a general east-west fashion from Ocean Beach, through downtown and the Embarcadero, to the Caltrain station at Fourth and King streets. Route N has major stops at the MUNI and BART stations at Van Ness, Civic Center, Powell, Montgomery, and Embarcadero. Route N provides 5- to 9-minute headways during the morning peak period, and 4- to 12-minute headways during the evening peak period.

The extension of the MUNI Third Street LRT Line past the Caltrain Station, south to the southern City limits, is currently under construction in the vicinity of the project site. Specific portions of this extension project were completed and operational in 2004, with full completion of the extension to the City's southern limits planned for completion by late 2005 (Garcia 2005).

Route #15 - Third Street. This route functions as the primary transit line serving the Central Basin and Hunters Point regions. It carries passengers through downtown San Francisco, extending north to Fisherman's Wharf and south to Hunters Point. Route #15 allows connections with other transportation services that reach throughout the Bay Area including Caltrain (terminal at 4th and Townsend streets and Paul Avenue station), BART, and the MUNI subway system (via the Montgomery and Embarcadero stations). Route #15 provides frequent service with articulated buses, running on 5- to 8-minute intervals during peak hours and 10- to 15-minute intervals during off-peak hours.

Route #22 – Fillmore. This route travels from Fillmore and Bay streets in the Marina District south through Pacific Heights and Mission Dolores before heading southeast to Third Street. The route turns north at 20th Street, stopping 2 blocks from the proposed project site. Route

#22 provides service at 7- to 12-minute intervals during the morning peak period and at 5- to 11-minute intervals during the evening peak period.

Route #48 – Quintara/24th Street. This route provides crosstown service from the West Portal community to Potrero Hill. This line accesses the MUNI subway at the West Portal Station, as well as BART at 24th and Mission Streets. Passengers are transported within one block of the proposed project site, with a stop at 22nd and Illinois Streets. This line also connects to Route #15 and Route #9, while passing near Caltrain's 22nd Street depot. Route #48 offers service at 6- to 15-minute intervals during the morning peak period, and at 10- to 12-minute intervals during the evening peak period.

8.10.2.4.2 Caltrain. Caltrain provides commuter rail service between Santa Clara, San Mateo, and San Francisco counties. The station closest to the project site is the 22nd Street and Pennsylvania Avenue station. This station is approximately 6 blocks west of the proposed project along MUNI Route #48, described above. During the week, trains connect this station to Peninsula communities, while all 32 trains continue northbound to the final Caltrain stop at 4th and Townsend Streets. Service runs on 30-minute intervals during the a.m. and p.m. peak periods. During the weekends, 13 trains run approximately every hour on Saturday, while 10 trains run every 1 to 2 hours on Sunday.

8.10.2.4.3 Bay Area Ferries. Ferry service is provided between Vallejo, Alameda, Oakland, Tiburon, Sausalito, and downtown San Francisco. Presently MUNI Route #15 provides connections to ferry services only in Fisherman's Wharf and at Piers 41 and 43. In the project vicinity, MUNI Route #15 operates southbound on Second Street and northbound on Third Street. Beginning in 2004, MUNI's new Third Street LRT is providing service to Bay Area ferries via connections along the Embarcadero. The following describes the five ferry service providers in the project area.

Vallejo Baylink Ferry. The Red and White Fleet operates this limited commute ferry service from Vallejo to the San Francisco Ferry Building. There are currently 15 trips per weekday in each direction, four of which are via bus, and nine trips per day on weekends, one of which is via bus.

Alameda and Oakland Ferry Service. The Blue and Gold Fleet operates this service, with ferries departing from Alameda and Oakland's Jack London Square for both the San Francisco Ferry Building and Pier 41/Fisherman's Wharf. Thirteen inbound and outbound trips each weekday serve the Ferry Building while 7 inbound and 5 outbound trips serve Pier 41. On the weekends, 4 inbound trips and 5 outbound trips serve the Ferry Building while 6 inbound and outbound trips serve Pier 41.

Harbor Bay Ferry. This ferry provides weekday commuter service between Alameda and the San Francisco Ferry Building. There are six inbound trips and six outbound trips per day.

Red and White Fleet. The Red and White Fleet provides ferry service from San Francisco to Tiburon and Sausalito, Service to these locations is provided from both the Ferry Terminal (during peak commute hours) and from Fisherman's Wharf at Pier 43. Five ferries in each direction travel between San Francisco and Tiburon/Sausalito.

Golden Gate Ferry. This ferry provides daily service between Larkspur and Sausalito in Marin County and the San Francisco Ferry Building. The Larkspur Ferry runs 21 inbound and outbound trips (one trip in each direction is via bus) on weekdays with one Friday night late ferry in each direction during summer months. On weekends and holidays, there are 5 inbound and outbound trips running on 2-hour intervals during the day. The Sausalito Ferry runs 9 trips in each direction on weekdays with a 10th trip provided during summer months. On weekends and holidays, there are 6 trips in each direction with a 7th trip during summer months.

8.10.2.5 Bicycle and Pedestrian Circulation

There are currently several signed on-street bicycle routes in the project vicinity, but no existing pedestrian trails. A Class III route (on-street bike route; signs only) circles around Monster Park and connects to Third Street, via Gilman, Carroll, Thomas, and Revere avenues. Within the project vicinity, the *San Francisco Master Plan* designates Evans Avenue, Innes Avenue, Cesar Chavez Street, and Third Street as Citywide Bicycle Routes.

Additionally, by December 2005, DPT will be providing Class II (striped) bike lanes on Illinois Street. With the construction of the Third Street Light Rail Line discussed above, cyclists traveling north and south in the Third Street – Illinois Street Corridor would be subject to unsafe conditions on Third Street. Illinois Street is the logical replacement for Third Street as a bicycle route, Illinois Street is one block to the east, and connects to other bicycle routes to the north and south. Since Illinois Street is part of the Bay Trail Plan (see below), the bike lanes would form a continuous connection between Islais Creek and North Beach on bike lanes or paths (Class I, off-street).

Sidewalks exist along Third Street, and with the completion of the Third Street LRT project, more pedestrians are anticipated along Third Street. Sidewalks do not exist on 22nd, 23rd and 25th streets, with shops abutting directly onto the street. Parking space is available on both sides of these streets, requiring that pedestrians walk within travel lanes.

The Bay Trail Plan was adopted by the Association of Bay Area Governments in 1989 pursuant to Senate Bill 100, and provides an alignment that connects the nine-county Bay Area region with a multi-purpose hiking and bicycle trail, along with a set of policies to guide implementation. Consistent with the Bay Trail Plan, Illinois Street is a designated bikeway in the draft Central Waterfront Neighborhood Plan. Illinois Street in the vicinity of the project site is the designated Bay Trail. However, no dedicated facilities (e.g., a striped bike lane) are currently provided in the vicinity of the project.

The Bay Trail Plan proposes an alignment for what will become a 400-mile recreational "ring around the Bay." Approximately one-third of the trail already exists, either as hiking-only paths, hiking and bicycling paths or as on-street bicycle lanes. When completed, the Bay Trail will create connections between more than 130 parks and publicly-accessible open space areas around San Francisco and San Pablo Bays.

8.10.2.6 Airports

San Francisco International Airport (SFO) is approximately 15 miles south of the proposed project site on U.S. 101. SFO can also be reached via BART (transit) and Interstate 380 (I-380) that connects to I-280 (vehicles). In addition, Oakland International Airport (OAK) sits across the Bay, accessible via BART and I-80 across the Bay Bridge, connecting to Interstate 880 (I-880). San Jose International Airport (SJC) lies farther south, accessible via Caltrain and U.S. 101 or I-280.

8.10.2.7 Goods Movement

8.10.2.7.1 Freight Rail Service. Currently no active freight rail service is provided in the immediate vicinity of the proposed project. There is an inactive railroad track operated by the Southern Pacific Corporation (SP) via trackage rights from Caltrain, which connect the Caltrain mainline tracks to the south gate of Hunters Point Shipyard. Currently, the Port of San Francisco (Port) is planning to re-orient freight rail service from Mission Bay to the Port of San Francisco waterfront via the future Illinois Street rail/truck bridge.

Immediately north of Hunters Point Shipyard and the India Basin, an Intermodal Container Transfer Facility (ICTF) branch track serves the Evergreen Pier 90 to Pier 96 area. The ICTF branch diverges from the Caltrain mainline just north of Tunnel #3 in the northbound direction.

8.10.2.7.2 Truck Access. The largely industrial land uses near the project site generate truck traffic. A designated truck route between U.S. 101 and I-280 and the project site exists along Cesar Chavez Street, Evans Avenue, and Third Street (north of Evans Avenue). Trucks weighing more than 11,000 pounds are prohibited on Third Street between Evans Avenue and Carroll Avenue and no through trucks are allowed on Third Street between Jamestown Avenue and Jerrold Avenue.

8.10.2.8 Planned Transportation Improvements

8.10.2.8.1 Third Street Light Rail Project. The MUNI Third Street LRT Line is currently under construction within the vicinity of the proposed project. This MUNI project will provide a light rail line down Third Street to the City's southern limit, and provide a 4-lane arterial with two 11-foot-wide traffic lanes and 8-foot shoulders in each direction. An approximately 32-foot-wide center median would contain two LRT tracks for the future extension of the MUNI N Line. As of January 2005, the Third Street LRT construction ended at 22nd Street; however, full LRT extension to the southern City limits will be completed and in operation by late 2005 (Howard, 2004).

In the vicinity of the project, left-turn lanes will remain on Third Street for Evans, Cesar Chavez Street, 25th Street (northbound only), 23rd Street, and 20th Street. In addition to the light rail line, a new Metro Light Rail Vehicle East Operating and Maintenance Facility is planned at Illinois and 25th streets. This facility would store, maintain, and dispatch light rail vehicles on a site of approximately 13 acres adjacent to the SFERP site.

8.10.2.8.2 Bicycle Facility Improvements. DPT's Bicycle Program Manager provided the following information on planned bicycle facility improvements. (Tannen, 2003).

Illinois Street Bicycle Route (16th Street to Cesar Chavez Street). DPT received a Transportation Funding for Clean Air (TFCA) grant from the Bay Area Air Quality Management District (BAAQMD) to provide Class II (striped) bike lanes on Illinois Street. With the construction of the Third Street Light Rail Line, cyclists traveling north and south in the Third Street – Illinois Street Corridor would be subject to unsafe conditions on Third Street. Illinois Street is the logical replacement for Third Street as a bicycle route. It is one block to the east and connects to other bicycle routes to the north and south.

In addition, Illinois Street is part of the Bay Trail bicycle route in San Francisco. The Illinois Street bike lanes would form a continuous connection between Islais Creek and North Beach on bike lanes or paths (Class I, off-street). The bicycle connection would include the future (funded) Illinois Street Bridge over Islais Creek, the existing Terry A. Francois Boulevard bike lanes, the Pac Bell Park Promenade, and The Embarcadero Promenade bike lanes for a total of 4.75 miles. The Illinois Street bike lane project will be completed by December 2005.

Cesar Chavez Street Bicycle Route (U.S. 101 to I-280). The Cesar Chavez Street bike route would provide for Class II (striped) bike lanes on Cesar Chavez Street, between U.S. 101 and I-280. As a result of this project, existing on-street parking on the north side of Cesar Chavez Street (westbound) would be removed. Colored bike lane treatments across the U.S. 101 and I-280 on- and off-ramps would also be used to help highlight the presence of bicycles across these potential high-conflict areas. This segment would make use of the existing asphalt path underneath U.S. 101. Other crossing treatments would be needed to allow bicyclists to cross safely.

8.10.3 Environmental Consequences

This subsection discusses potential environmental impacts of the proposed project. Potential traffic impacts during construction of the plant, as well as plant operation after construction, have been analyzed. Significance criteria were developed based upon Appendix G of the CEQA *Guidelines*, which identifies significant impacts to be caused by a project if it results in an increase in traffic that is substantial relative to the amount of existing traffic and the capacity of the surrounding roadway network. In addition, impacts are assessed in accordance with the criteria used by the City Planning Department. The more stringent of these two sets of criteria were used to determine project-related impacts.

Project area reconnaissance was performed by CH2M HILL in November 2003 to examine the proposed project area, document roadway characteristics, identify physical constraints, and assess general traffic conditions.

When completed, the operational phase of the proposed project would generate approximately 11 additional employee commutes and other off-peak hour trips (i.e., materials deliveries, visitors, business-related trips), or 82 daily trips. During the peak construction phase, the project is expected to generate approximately 506 average daily construction worker trips. To analyze the "worst-case" scenario, traffic impacts associated with construction traffic were analyzed. Consequently, a quantitative traffic analysis was not conducted for the long-term operations phase since it would generate a low volume of peak hour trips (11 morning and 11 evening peak hour employees trips). This would not have a measurable impact on the study area intersections.

8.10.3.1 Thresholds of Significance

The following are the significance criteria regarding transportation used by the San Francisco Planning Department for the determination of impacts associated with a proposed project:

- 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.

- 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 shall be designed to encourage travel by public transportation and alternative transportation."

  The transportation analysis accounts for potential secondary effects, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the project site and then seek parking farther away if convenient parking is unavailable. 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.

- 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. With the MUNI and regional transit screenlines analyses, the project would have a significant effect on the transit provider if project-related transit trips would cause the capacity utilization standard to be exceeded during the evening peak hour. (A screenline is an imaginary line on a map, composed of one or more straight line segments. A screenline can run across a number of network links. It is used to analyze the number of trips or other traffic quantities going from one segment of the network to the other segment divided by the screenline. Hence, it is a method used for evaluating a network.)

- 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.
- 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.
- 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.
- Construction-related impacts generally would not be considered significant due to their temporary and limited duration.

8.10.3.2 Intersection Levels of Service

8.10.3.2.1 Construction Impacts. Peak hour traffic operations were evaluated for the weekday morning and evening peak periods (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.) for the local roadway network adjacent to the project site during construction. The peak hour analysis examined the worst-case scenario of the impact of 264 daily workers during construction of the project.

Trip Generation. Construction of the proposed project is anticipated to begin in the 2nd quarter 2006 and last approximately 12 months. A peak workforce would consist of approximately 245 workers at the plant site, and 19 workers along the pipeline and transmission line alignment, each day over a one-month period during the 6th month of construction. While all of the plant construction workers would park at the lay-down area off 25th Street, the linear construction crews would park adjacent to their work sites along the respective alignments.

Construction for the plant and linears would generally be scheduled to occur between 7:00 a.m. and 8:00 p.m., during weekdays, although additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Based on the regular schedule, most worker trips to the project site would occur during the morning (inbound to site) and evening (outbound from site) peak commute hours. The delivery of construction materials and the hauling of materials from the project site would also occur during the day, but not during the peak hours. Table 8.10-5 summarizes the total daily and peak-hour construction vehicle trip generation for the peak construction period.

TABLE 8.10-5
Construction Trip Generation for the Proposed Project

		Morning Peak Hour		Evening Peak Hour	
Vehicle Type	**ADT**	**In**	**Out**	**In**	**Out**
Construction Personnel (plant site)[a]	432	206	11	11	206
Construction Personnel (Linear alignments)[a]	34	17	0	0	17
Delivery Trucks [b]	10	0	0	0	0
Heavy Vehicles and Trucks	30	0	0	0	0
Total	**506**	**223**	**11**	**11**	**223**

[a] Approximately 10 construction personnel trips (5 inbound and 5 outbound) associated with lunch and other business-related trips would occur from 9:00 a.m. to 4:00 p.m. (outside of peak hours)
[b] Delivery and other truck trips would occur on weekdays, from 9:00 a.m. to 4:00 p.m. (outside of peak hours)

During the peak construction period, using a average vehicle occupancy (AVO) factor of 1.14 persons per vehicle for commuting (National Personal Transportation Survey, Table 7.16, Average Vehicle Occupancy by Trip Purpose, FHWA, 1990), construction workers would generate an estimated 466 daily trips, 234 morning peak hour trips, and 234 evening peak hour trips. During this period, approximately 40 truck trips would occur (inbound and outbound trips for 5 delivery trucks to plant site, 8 heavy trucks to plant site, and 7 heavy trucks to pipeline construction areas), with no truck trips occurring during the a.m. and p.m. peak commute periods. Also, approximately 10 construction personnel trips (5 inbound and 5 outbound) associated with lunch and/or business-related trips would occur outside of the peak hours. Therefore, the total peak construction trip generation would be 506 daily trips, 234 morning peak hour trips, and 234 evening peak hour trips.

Trip Distribution. Trip distribution percentages for the construction employees are based on assumptions of regional demographics of construction workers, review of existing traffic counts from DPT, and recent surveys of the project site (i.e., drive-by windshield surveys). The construction worker trip distribution has been determined to be 25 percent within the City of San Francisco (local trips); 15 percent would originate in Marin County and points north; 40 percent would originate from the East Bay; and the remaining 20 percent would originate from San Mateo County and points south.

To arrive at the construction "laydown" area, adjacent to the project site, construction worker trips from Marin County would use U.S. 101 and exit on Cesar Chavez Street and proceed to Third Street. Trips from the East Bay would use I-80 to U.S. 101, and exit on Cesar Chavez Street. Trips from within the City would use 16th Street and Third Street to reach project location. Trips from San Mateo County would use I-280, exit at Evans Avenue and Third Street. The construction crew for the pipeline facilities (crew of eight workers) would be staged in appropriate areas along 23rd, Tennessee, Cesar Chavez, and Marin Streets, adjacent to pipeline construction activities.

Figure 8.10-6 illustrates the construction worker trip assignment that incorporates the trip generation and the distribution of construction workers. These volumes serve as the basis for the traffic impact analyses to determine the LOS impacts likely to be imposed by construction of the proposed project.

Background Plus Project Conditions. As previously discussed, the proposed project would add approximately 234 morning and 234 evening peak hour trips to the study area street network in the 2007 construction year. To provide a worse case analysis, these peak hour trips were added to the 2007 baseline condition, and Figure 8.10-7 illustrates the 2007 plus project construction traffic a.m. and p.m. peak hour volumes, as well as the intersection geometrics and traffic controls. Table 8.10-6 summarizes the intersection LOS for the 2007 plus construction traffic condition.

TABLE 8.10-6
Level of Service Summary for 2007 Plus Project Construction Conditions

Intersection	Peak Hour	Baseline (2007)		2007 Plus Project	
		LOS	Delay*	LOS	Delay *
Third Street/16th Street	Morning	C	22.8	C	20.8
	Evening	B	16.5	B	19.3
Third Street/20th Street	Morning	A	2.2	A	2.4
	Evening	A	3.7	A	2.7
Third Street/23rd Street	Morning	A	2.9	A	4.1
	Evening	A	6.0	A	4.5
Third Street/25th Street	Morning	A	5.5	A	9.0
	Evening	B	11.0	B	14.8
Third Street/Cesar Chavez Street	Morning	D	40.8	D	53.1
	Evening	D	39.1	D	46.6
Third Street/Evans Avenue	Morning	D	44.1	D	49.3
	Evening	C	33.5	D	43.9
Evans Avenue/Cesar Chavez Street	Morning	B	14.1	B	16.9
	Evening	C	29.9	C	26.4

Note:

* Delay in seconds per vehicle

Based on the traffic analysis, addition of the construction worker traffic volumes would change LOS during one or both peak hours at the following intersections:

- Third Street/Evans Avenue: LOS C to LOS D in the evening peak hour

Although the construction trips associated with the project would change LOS at this intersection, all study area intersections are forecast to continue to operate at LOS D or better. Based on the freeway mainline analysis prepared for the 2007 plus peak construction phase of the project, mainline LOS at the study area segments of I-280, Highway 101, and I-80 would remain the same as the 2007 baseline (i.e., without project) condition. Project contributions to the LOS F segments of Highway 101 and I-80 would be less than one percent and two percent, respectively. The project contribution of two percent or less to the freeway mainline segments would be considered less-than-significant.

Therefore, the addition of project construction traffic would have a less-than-significant impact on intersection levels of service in the study area. In addition, it is important to note that this peak construction activity would only occur for a 4-month period.

Construction impacts related to the WPS and process water supply pipeline component are primarily related to the placement pipeline and associated materials along streets in the study area. A crew of 8 pipeline construction personnel and 11 transmission line workers would be working during the peak month. These crews would park adjacent to their worksites, rather than the laydown area on 25th Street. The construction methods for the pipeline would consist of open-cut trenching and tunneling methods such as microtunneling or jack-and-bore along the following roadway segments:

- Marin Street, west of I-280 to Cesar Chavez Street
- Cesar Chavez Street to the point where it turns north into the project site

Similarly, construction of the transmission line would be by open trench or microtunnel, where needed.

The project will prepare a Traffic Management Plan (TMP) to offset traffic impacts associated with construction of the pipeline and transmission line. The 17 morning peak hour, and 17 evening peak hour trips (using 1.14 AVO for 19 workers along these linears) would not have a measurable impact on the streets in the study area.

The roadways providing access to the project site and plant and linear laydown areas would continue to provide adequate capacity to accommodate the additional vehicle trips expected during construction. A TMP will also address the potential impacts to affected streets due to the installation of the WPS and process water supply pipeline. Therefore, impacts during construction are expected to be less-than-significant.

8.10.3.2.2 Operational Impacts. The permanent addition of 11 employees and other plant-associated trips (i.e., materials deliveries, visitors, business-related trips) for operations would generate 82 daily, 11 morning peak hour, and 11 evening peak hour trips. Once these trips are distributed on the study area network, they would result in a less-than-significant impact, as their traffic volumes would be immeasurable in terms of intersection LOS. The freeway mainline LOS analysis for the 2015 cumulative condition indicated that Highway 101 and I-80 would continue to operate at LOS F, while I-280 would operate at LOS D.

The remaining 60 non-peak hour trips would be associated with regular plant deliveries, visitors, and employee business-related trips. Since these trips would be spread throughout the day, and would not occur during the peak commute hours, they would also have a less-than-significant impact on traffic operations.

8.10.3.3 Parking Facilities

Construction of the proposed project would not impact on-street parking. A vacant lot to the east of the project site will be used as a laydown area (staging, and construction worker parking lot) for the construction worker parking demand (see Figure 8.10-2).

When completed, the project would contain adequate onsite parking to accommodate the permanent 11 employees. In addition, street parking will continue to be available along 25th Street. Street parking spaces would not be eliminated as part of the proposed project. Therefore, no significant impacts to parking are anticipated.

8.10.3.4 Public Transportation

MUNI Route 48 has a stop at Illinois Street/22nd Street, which is the nearest stop to the project site. (Once the light rail on Third Street is completed, it may have a closer stop.) Approximately 23 percent (61 employees) of the construction workforce is anticipated to either carpool or use alternative transportation modes to and from the project site, and the remaining 203 employees would drive their automobiles to the laydown area. A portion of the 61 construction workers and a portion of the 11 permanent employees would not significantly impact the operations of MUNI bus routes, and the future Third Street Light Rail Line (for permanent employees).

8.10.3.5 Bicycle and Pedestrian Circulation

By the end of 2005, planned bicycle routes on Third Street, Cesar Chavez Street, and Illinois Street will be completed. Pedestrian sidewalks will continue to exist along on Third Street, while Illinois Street, 23rd Street, and 25th Street will offer little space to accommodate pedestrians. Construction-related traffic would be temporary in nature and would circulate during the a.m. and p.m. peak hours only, while operational traffic of the project would be relatively low. The addition of construction and operational traffic is not expected to significantly impact pedestrian or bicycle facilities along Third Street, Cesar Chavez Street, and Illinois Street.

8.10.3.6 Goods Movement

Construction and operation of the proposed project would not impact adjacent freight rail lines, and air or shipping routes. Therefore, the project would not have a significant impact on goods movement.

8.10.3.7 Safety

There will be no changes to the design of the roadways in the vicinity of the proposed project site. Accident rates at nearby intersections are relatively low, averaging approximately 2.5 per year (Korve Engineering, 1999). Truck traffic within the area would continue to use designated truck routes (Cesar Chavez Street) to access the proposed project site. In addition, the project site is located in an industrial zone one block east of Third Street, with no neighboring commercial retail businesses or residences. Impacts to vehicle, pedestrian, and bicycle safety as a result of construction and operation of the project would be less-than-significant.

8.10.3.8 Air, Rail, and Waterborne Traffic

The proposed project would have no impacts on air, rail, or waterborne traffic.

8.10.3.9 Hazardous Materials Transport

Construction of the proposed project would generate hazardous wastes consisting primarily of batteries, asbestos containing materials, and various liquid wastes (e.g., cleaning solutions, solvents, paint and antifreeze). Contaminated soils could also be generated in the pre-construction or site preparation phase and would be transported as hazardous materials or hazardous waste. (See Subsection 8.13.6.1.2.) Transport route arrangements would be required with Caltrans officials for permitting and escort, as applicable. Generally, only small quantities of hazardous materials will be used during the construction period, as described in Subsection 8.12, Hazardous Materials Handling. They may include gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. Because of the small quantities of hazardous materials involved, shipments will likely be consolidated. Multiple truck deliveries of hazardous materials during construction are unlikely. During construction, a minimal number of truck trips per month will be required to haul waste for disposal. Because the transport of hazardous wastes will be conducted in accordance with the relevant transportation regulations (see below), no significant impact is expected.

Operation of the project would result in the generation of additional wastes including lubricants, water treatment chemicals, herbicides and pesticides, and sludge. In addition, operation of the project will require transportation of aqueous ammonia, a regulated substance. Aqueous ammonia will be delivered to the plant by truck transport using designated truck routes (see discussion below). Small quantities of sulfuric acid and various other hazardous materials will also be used in project operations, as described in Subsection 8.12. According to Division 13 Section 31303 of the CVC, the transportation of regulated substances and hazardous materials will be on the state or interstate highways that offer the shortest overall transit time possible.

Aqueous ammonia is considered a potential inhalation hazard. Division 14.3 Section 32105 of the CVC specifies that unless there is not an alternative route, every driver of a vehicle transporting inhalation hazards shall avoid, by prearrangement of routes, driving into or through heavily populated areas, congested thoroughfares, or places where crowds are assembled.

The truck loading area will be located within a bermed area adjacent to the storage tank onsite. The use of 29 percent aqueous ammonia will require approximately 14 deliveries of ammonia per year, or 28 truck trips per year. This would equate to approximately 1 to 2 deliveries per month, or 2 to 4 truck trips per month (inbound and outbound). These occasional truck trips would generally occur during the non-peak commute hours. If the plant uses lower concentrations of aqueous ammonia, more frequent delivery would be required.

Table 8.10-7 summarizes expected truck trips for the project, including delivery of hazardous materials and removal of wastes. There will be a maximum of ten truck trips per day, with an average of 2 or less truck trips per day to the project site. For further information on the management of hazardous materials and waste products, see Subsections 8.12 and 8.13, respectively.

TABLE 8.10-7
Estimated Truck Traffic at the Facility During Operation

Delivery Type	Number and Occurrence of Trucks
Aqueous ammonia	1 to 2 per month
Sulfuric acid	2 per month
Cleaning chemicals	1 per month
Trash pickup	1 per week
Lubricating oil	4 per year
Lubricating oil filters	4 per year
Laboratory analysis waste	4 per year
Oily rags	4 per year
Oil absorbents	4 per year
Water treatment chemicals	Up to 4 per week

Additionally, transporters of inhalation hazardous or explosive materials must contact the CHP and apply for a Hazardous Material Transportation License. Upon receiving this license, the shipper will obtain a handbook that will specify the routes approved to ship inhalation hazardous or explosive materials. The exact route of the inhalation or explosive material shipment will not be determined until the shipper contacts the CHP and applies for a license. Transportation impacts related to hazardous materials associated with power plant operations will not be significant since deliveries of hazardous materials will be limited. Delivery of these materials will occur over prearranged routes and will be in compliance with all LORS governing the safe transportation of hazardous materials.

Standards for the transport of hazardous materials are contained in the Code of Federal Regulations, Title 49 and enforced by the U.S. Department of Transportation. Additionally, the State of California has promulgated rules for hazardous waste transport that can be found in the California Code of Regulations, Title 26. Additional regulations for the transportation of hazardous materials are outlined in the California Vehicle Code (Sections 2500-505, 12804-804.5, 31300, 3400, and 34500-501). The two state agencies with primary responsibility for enforcing federal and state regulations governing the transportation of hazardous wastes are the California Highway Patrol (CHP) and Caltrans. Transport of hazardous materials to and from the SFERP will comply with all applicable requirements.

For those materials that require offsite removal, a licensed hazardous waste transporter would move these substances to one of three Class I hazardous waste landfills in proximity to the project site. Access by waste haulers to the project site would be via 25th Street. Vehicles can then proceed south along Illinois Street to Cesar Chavez Street to reach southbound I-280 to U.S. 101 (hazardous wastes cannot be transported on the Bay Bridge (I-80)). Specific outbound truck routes in the City from the project site to southbound I-280 to U.S. 101 are as follows:

1. Project site (25th Street) to Third Street – southbound
2. Third Street to Cesar Chavez Street – westbound

3. Cesar Chavez Street to Pennsylvania Avenue – northbound
4. Pennsylvania Avenue to I-280 southbound on-ramp
5. I-280 southbound to U.S. 101 southbound

Specific inbound truck routes in the City to the project site from northbound 1-280 from U.S. 101 are as follows:

1. U.S. 101 northbound to I-280 northbound
2. I-280 northbound to Evans Avenue/Cesar Chavez Street off-ramp
3. Evans Avenue – eastbound, to Third Street
4. Third Street – northbound, to project site (25th Street)

These inbound and outbound truck routes serving the project site to I-280/U.S. 101 would travel through predominantly industrial areas within the City. Once established, these routes would not allow truck travel through sensitive residential neighborhood areas.

For outbound trucks, once on U.S. 101, trucks would proceed around the south end of the Bay to I-580 and I-5 via I-880 and SR 238. Alternatively, haulers could continue through Stockton to State Route 99 (SR 99) that parallels I-5 but runs slightly east through the Central Valley communities of Merced and Fresno. I-5 and SR 99 provide access to California's three Class I hazardous waste facilities including:

- Safety Kleen, Buttonwillow (Kern County)
- Safety Kleen, Imperial County
- Chemical Waste Management, Kettleman Hills (Kings County)

The major highways and interstates that would be used to carry hazardous wastes from the project site to the appropriate landfills contain adequate capacity to accommodate these vehicle trips. Hauling would be carried out in accordance with local, state, and federal regulations that include the Resource Conservation and Recovery Act (42 U.S. Code 6901 et seq.), the California Integrated Waste Management Act (Public Resources Code Sections 40000 et seq.), and the San Francisco Department of Public Health.

In addition, the federal government prescribes regulations for transporting hazardous materials. These regulations are described in the Code of Federal Regulations, Number 49, Part 171. These laws and ordinances place requirements on various aspects of hazardous waste hauling, from materials handling to vehicle signs, to ensure public safety. Transporting and handling of chemicals and wastes are discussed in Subsection 8.12, Hazardous Materials Handling, including the transport of ammonia.

8.10.4 Cumulative Impacts

As described previously, the available capacity of the regional state routes and local roads in the project area shows the regional and local transportation system has the capacity to accommodate future traffic including that resulting from the proposed construction and operation of project.

According to MUNI, the Third Street LRT project is anticipated to be completed and in operation by the end of 2005. Based on discussions with MUNI staff (Garcia, 2005), Segment B of the LRT extension (16th Street to 23rd Street) would be completed and in operation by September 2005, while Segment C (23rd Street to Cesar Chavez Street) would be completed and in operation by late 2005. The remaining segments (south to the City limits) would be completed an in operation by the end of 2005. Segment C is the closest to the project site. Construction of the proposed project in 2006 (with peak construction months 5 through 8), would occur after completion of Segment C of the LRT project. Since Segment C would be completed before the peak construction months of the proposed project, it is anticipated that there would be no significant construction timing issues relating to peak hour trips of construction forces and truck trips.

Construction on the proposed MUNI Maintenance and Operations Facility (located between the project site and Illinois Street) is expected to begin in June 2005, and be completed by March 2008. It is anticipated that the average construction workforce will be 120 workers, with a peak construction workforce of 200 workers. The peak workforce would occur in approximately October, 2006 (Fong, 2005). With a conservative assumption of four months of peak work force (September to December, 2006), there will be an overlap of peak workforces in December 2006. The combined peak will be 464 workers.

To assess the cumulative impacts of the two projects, the analysis of intersection level of service (described in Subsection 8.10.3.2) was supplemented with a cumulative analysis of the two projects. The total number of trips (Table 8.10-5) was increased to reflect the additional 200 workers associated with the construction of the MUNI Maintenance and Operations Facility. Trip distribution was completed using the same procedures described in Subsection 8.10.3.2.1

Table 8.10-8 summarizes the intersection LOS for the 2007 plus construction traffic condition (with and without the cumulative analysis). The right columns list the LOS and delay for the overlapping peak construction period for both projects.

TABLE 8.10-8
Level of Service Summary for 2007 Plus Project Construction Conditions

Intersection	Peak Hour	Baseline (2007)		2007 Plus Project		2007 Cumulative	
		LOS	Delay*	LOS	Delay *	LOS	Delay *
Third Street/16th Street	Morning	C	22.8	C	20.8	C	26.0
	Evening	B	16.5	B	19.3	C	21.3
Third Street/20th Street	Morning	A	2.2	A	2.4	A	2.4
	Evening	A	3.7	A	2.7	A	2.8
Third Street/23rd Street	Morning	A	2.9	A	4.1	A	3.7
	Evening	A	6.0	A	4.5	A	5.5
Third Street/25th Street	Morning	A	5.5	A	9.0	A	9.1
	Evening	B	11.0	B	14.8	C	33.0
Third Street/Cesar Chavez Street	Morning	D	40.8	D	53.1	E	63.5
	Evening	D	39.1	D	46.6	D	47.9
Third Street/Evans Avenue	Morning	D	44.1	D	49.3	E	57.7
	Evening	C	33.5	D	43.9	D	43.9
Evans Avenue/Cesar Chavez Street	Morning	B	14.1	B	16.9	C	20.9
	Evening	C	29.9	C	26.4	C	25.9

Note:
* Delay in seconds per vehicle

In most cases, the increase in delay is minimal, because traffic will be added to major movements that operate a good LOS (with spare capacity). However, the results indicate degradation of operations to LOS E in the morning peak for the intersections of Third Street/Cesar Chavez Street and Third Street/Evans Avenue. While the increases are relatively minor (8 to 10 seconds per intersection), they do result in degradation to LOS E. These operations will be a significant cumulative impact of the two projects.

The Southern Waterfront SEIR identifies a number of mitigation measures for traffic operations impacts associated with the proposed Port projects in the vicinity of the SFERP. These mitigation measures include new traffic signals, additional turn lanes, and modifications to intersection channelization. The mitigation measures are proposed to be instituted as needed as LOS degrades (San Francisco Planning Department, 2001). However, the Southern Waterfront analysis considers traffic operations in 2015, well after the construction of the proposed project. Therefore, the mitigation measures associated with the Southern Waterfront SEIR are not applicable to the construction traffic impacts that are expected with the SFERP.

8.10.5 Mitigation Measures

8.10.5.1 Construction Impacts

Construction of proposed project would add a moderate amount of traffic to state routes and local roadways during the peak construction period. However, because existing intersection capacity is adequate, these project-related traffic increases will not result in significant impacts.

During operation and construction, access to the facility will be provided via Third Street to 25th street. The construction contractor will prepare a construction traffic control plan and construction management plan, also known as a Traffic Management Plan (TMP), that addresses timing of heavy equipment and building material deliveries, potential street and/or lane closures associated with pipeline installation, signing, lighting, traffic control device placement, and establishing work hours outside of peak traffic periods.

Methods for mitigating potential traffic impacts caused by construction may include such activities as stationing flag persons at the access road into the site, and placing advance warning flashes, flag persons, and signage along the roadways. Figures 8.10-8 and 8.10-9 illustrate traffic control systems, as developed by Caltrans, that would be implemented during the construction phases of the project. Damage to any roadway opened during construction will be restored to or near its preexisting condition. The construction contractor will work with the local agency's engineer to prepare a schedule and mitigation plan for the roadways along the construction routes.

It should be noted that most trip reduction strategies are not feasible for the construction phase of the project, primarily because of the differing schedules of tradespersons and the need to transport tools and materials to the job site.

8.10.5.2 Operation Impacts

The operations-related and maintenance-related traffic associated with the project is considered to be minimal; state routes and local roadways have adequate capacity to accommodate operations-related traffic. Consequently, no operations-related mitigation measures are required.

8.10.5.3 Cumulative Impacts

Mitigation measures will be needed to address the cumulative impacts of the proposed project and the construction of the MUNI Maintenance and Operations facility. Depending on the exact timing of the construction activities, there may be opportunities to stagger the start and end times of each shift so that all of the workers for the two projects are not arriving or departing at the same time. The TMP should also address coordination issues between the two projects to minimize construction-related impacts.

8.10.6 Involved Agencies and Agency Contacts

The proposed project lies in proximity to roadways operated by the City of San Francisco. The relevant agencies and appropriate contacts are shown in Table 8.10-9.

TABLE 8.10-9
Agency Contacts

Agency	Contact/Title	Telephone
San Francisco, Planning Department	Tim Blomgren Environmental Group 30 Van Ness Avenue, 4th Floor San Francisco, CA 94102	(415) 558-5979
San Francisco County Transportation Authority	Tilly Chang Manager of Planning 100 Van Ness Avenue, 25th Floor San Francisco, CA 94102	(415) 522-4832
San Francisco, Department of Parking and Traffic	Jerry Robbins 25 Van Ness Avenue, Suite 410 San Francisco, CA 94102	(415) 554-2343
Federal Motor Carrier Safety Administration	Bob Brown Materials Specialist 201 Mission Street, Suite 2100 San Francisco, CA 94105	(415) 744-2646

8.10.7 Permits Required and Permit Schedule

Traffic studies for projects in San Francisco require consultation with the City Planning Department to comply with its extensive traffic analysis requirements. The short duration of the construction, in conjunction with the minute permanent addition of 100 trips, impose a relatively insignificant addition to existing traffic levels. The City will consult with Planning Department staff to determine the extent to which the traffic analysis requirements should be applied in the case of the SFERP.

The relevant permits required for work performed within city streets in San Francisco are identified in Table 8.10-10.

TABLE 8.10-10
Required Permits

Responsible Agency	Permit/Approval	Schedule
CCSF, Department of Public Works – Bureau of Street-Use and Mapping	Utility Permit	45-60 days
CCSF, Department of Parking and Traffic – Bureau of Traffic Engineering	Extralegal Truck Permit (if necessary)	24 hours

8.10.8 References

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FIGURE 8.10-1
REGIONAL TRANSPORTATION FACILITIES NEAR THE PROJECT SITE
SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
SUPPLEMENT A

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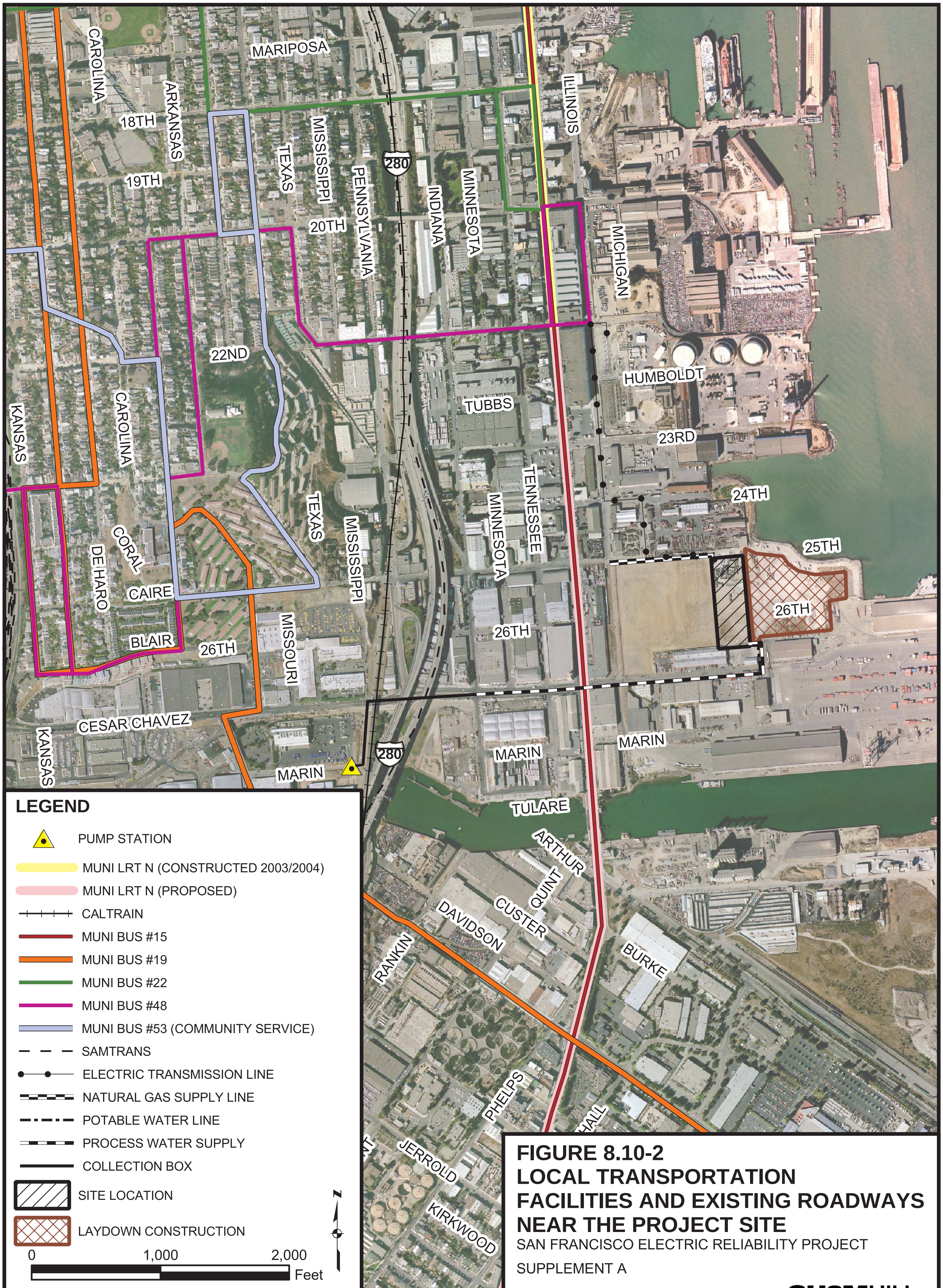
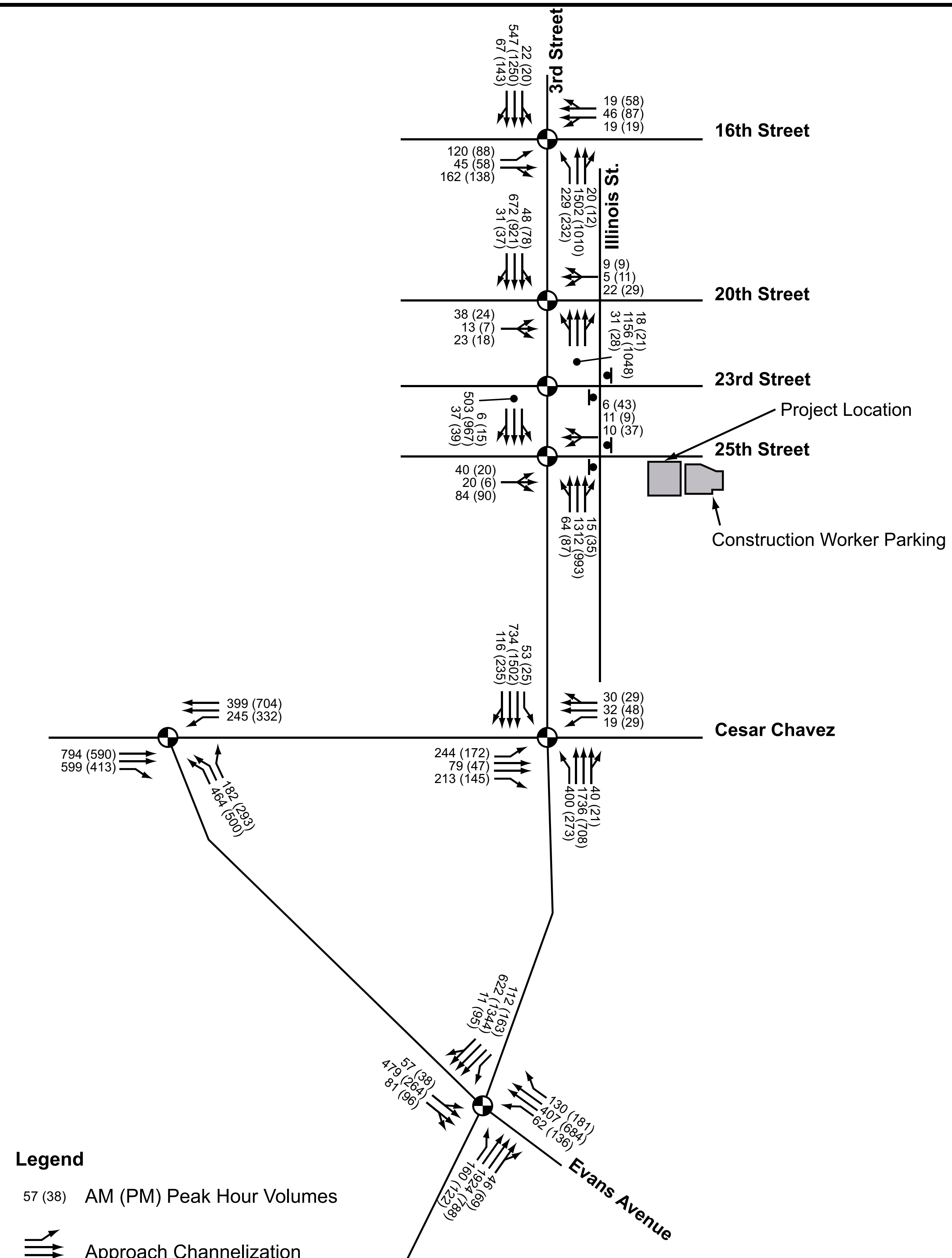


FIGURE 8.10-2
LOCAL TRANSPORTATION FACILITIES AND EXISTING ROADWAYS NEAR THE PROJECT SITE
SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
SUPPLEMENT A

CH2MHILL



Legend

57 (38) AM (PM) Peak Hour Volumes

Approach Channelization

Signalized Intersection

Stop Control

FIGURE 8.10-3
EXISTING (2000) AM AND PM PEAK HOUR VOLUMES, INTERSECTION CHANNELIZATION AND TRAFFIC CONTROL
SAN FRANCISCO ELECTRIC RELIABILITY PROJECT

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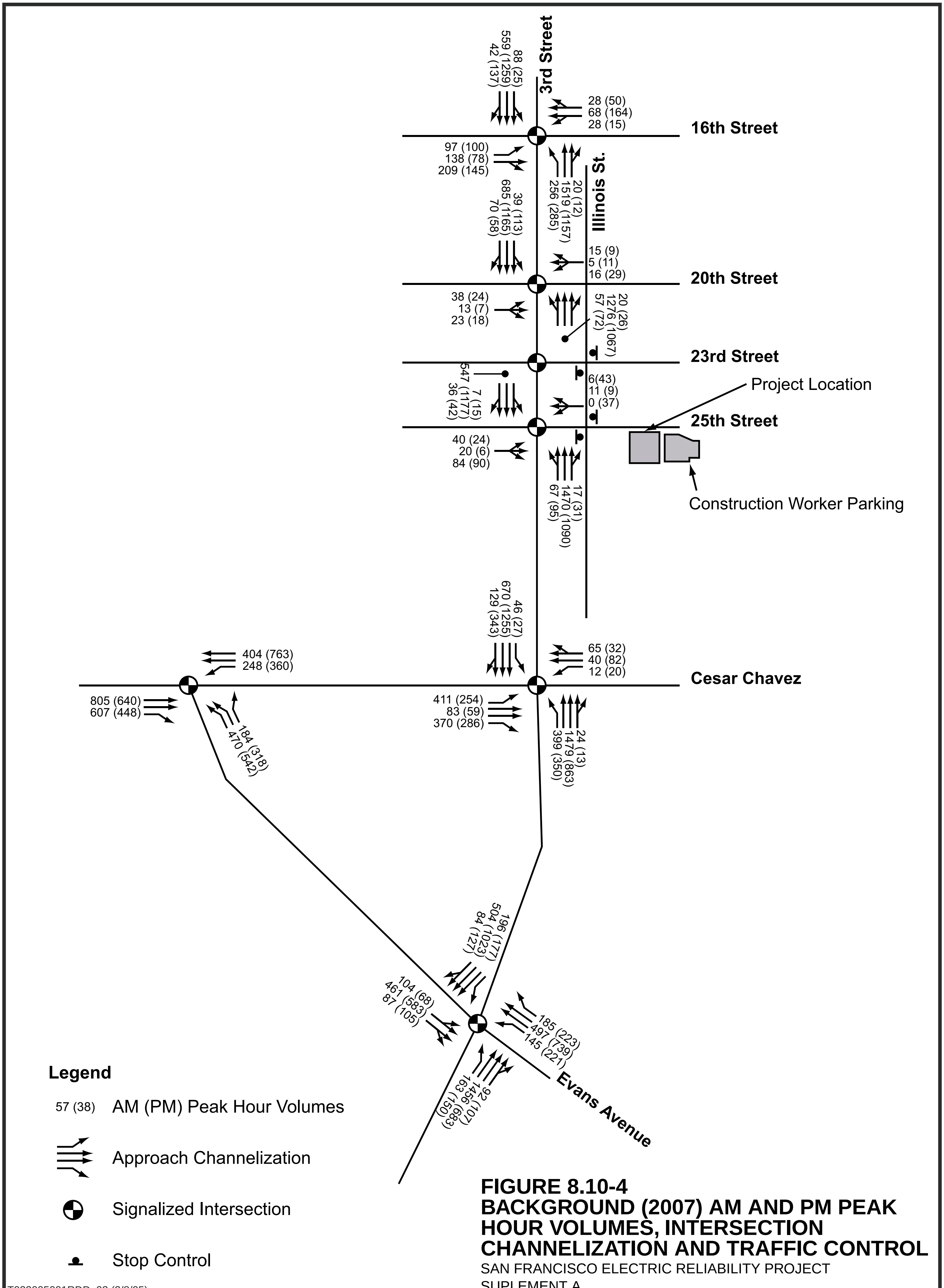

FIGURE 8.10-4
BACKGROUND (2007) AM AND PM PEAK HOUR VOLUMES, INTERSECTION CHANNELIZATION AND TRAFFIC CONTROL
SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
SUPLEMENT A

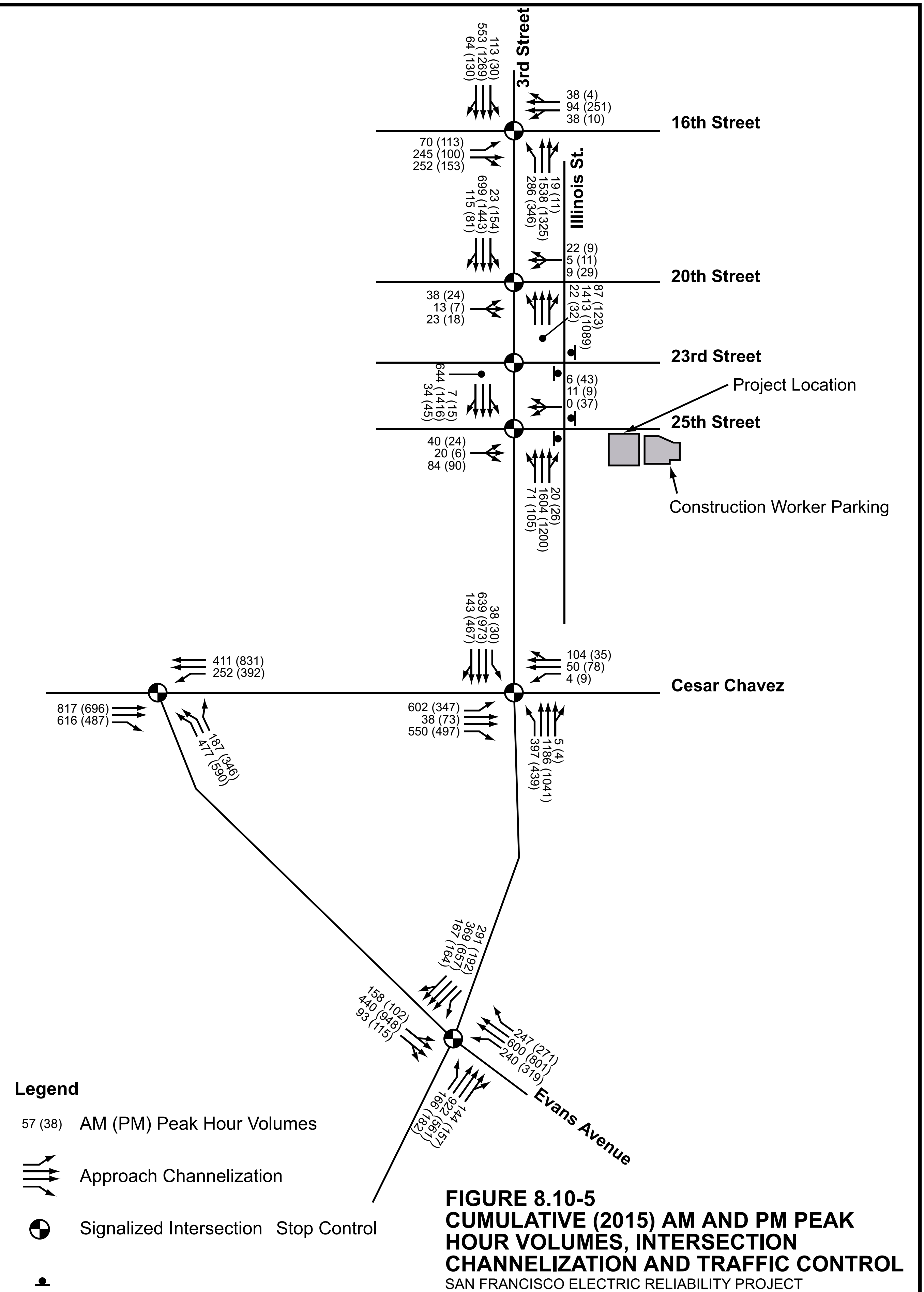

FIGURE 8.10-5
CUMULATIVE (2015) AM AND PM PEAK HOUR VOLUMES, INTERSECTION CHANNELIZATION AND TRAFFIC CONTROL
SAN FRANCISCO ELECTRIC RELIABILITY PROJECT

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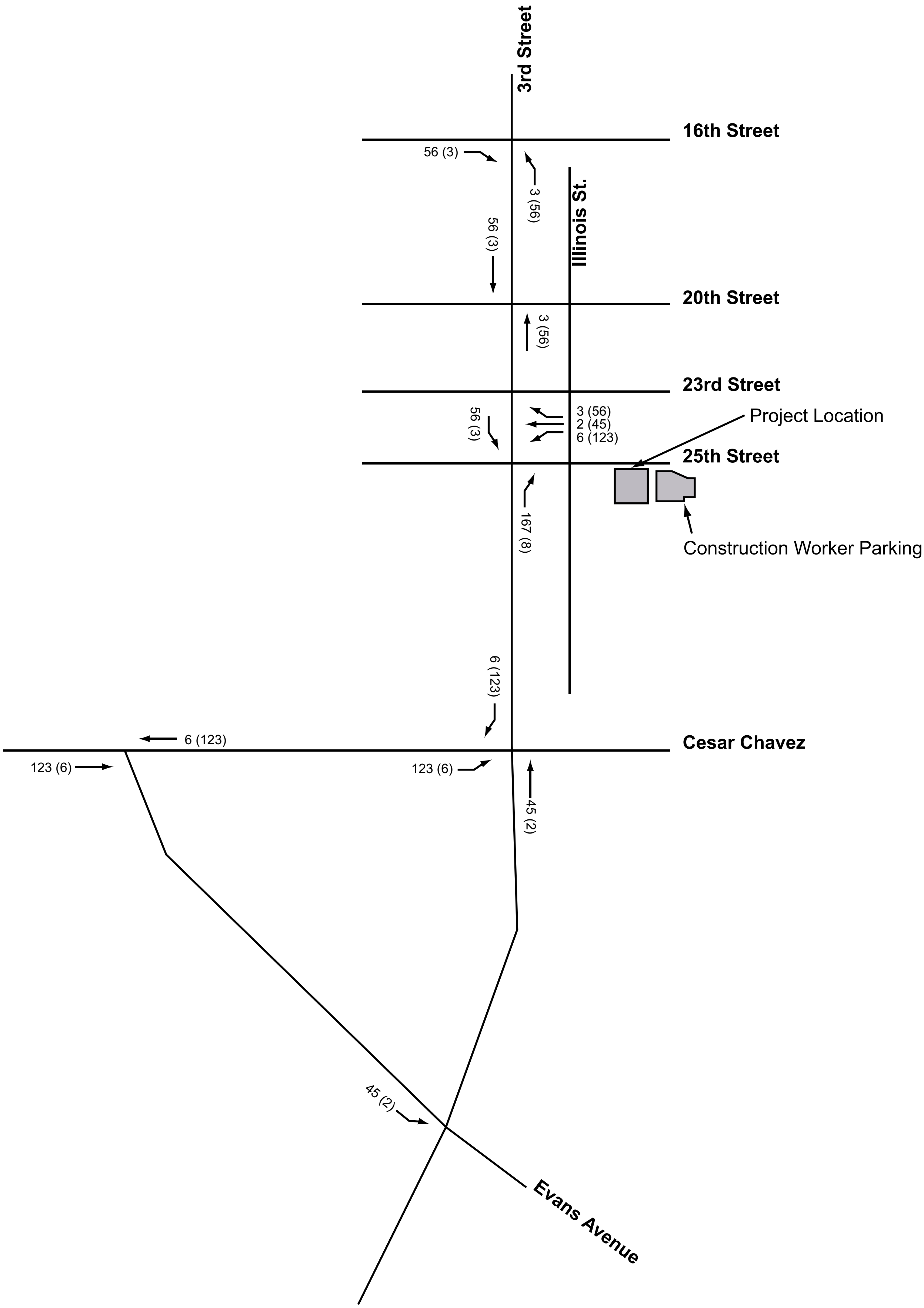

Legend

57 (38) AM (PM) Peak Hour Turn Volumes

T022005001RDD_05 (2/8/05)

FIGURE 8.10-6
PROJECT CONSTRUCTION WORKER AM AND PM PEAK HOUR VOLUMES

SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
SUPLEMENT A

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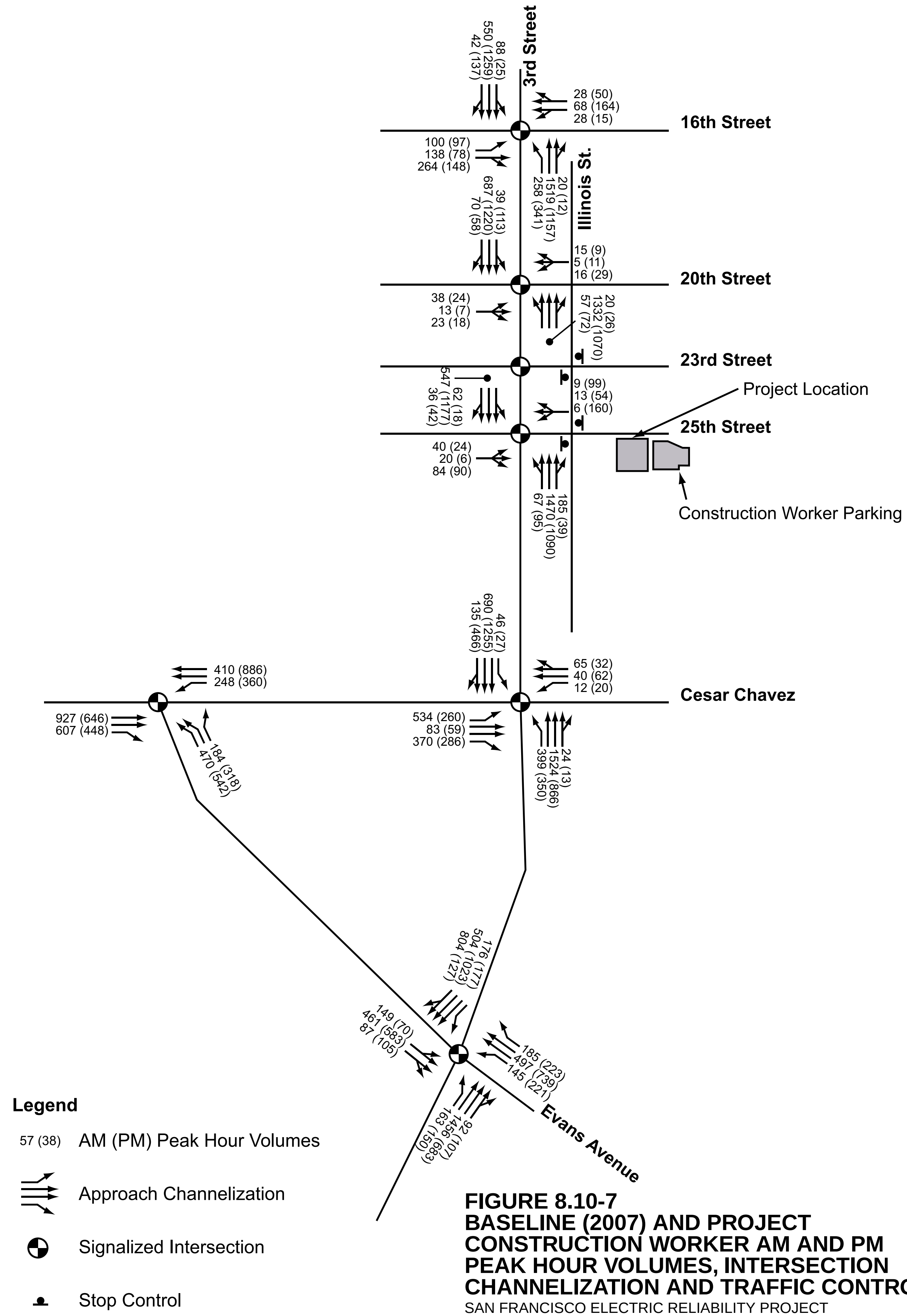

FIGURE 8.10-7
BASELINE (2007) AND PROJECT CONSTRUCTION WORKER AM AND PM PEAK HOUR VOLUMES, INTERSECTION CHANNELIZATION AND TRAFFIC CONTROL

SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
SUPLEMENT A

T022005001RDD_04 (2/8/05)

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DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

July 1, 2002

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Greg W. Edwards No. C36386 Exp. 6-30-04 CIVIL STATE OF CALIFORNIA

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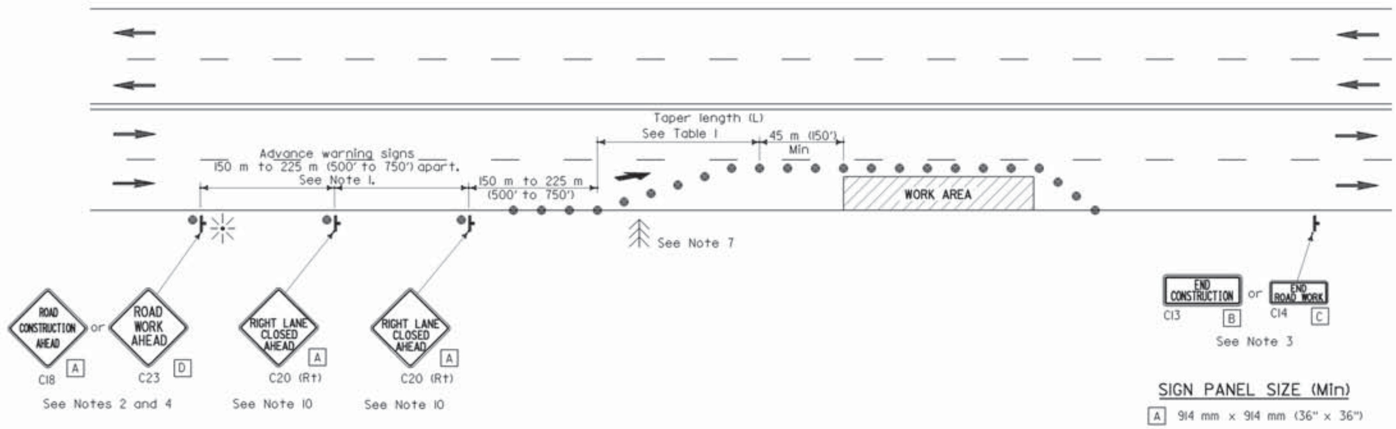
TYPICAL LANE CLOSURE



SIGN PANEL SIZE (Min)

- [A] 914 mm x 914 mm (36" x 36")
- [B] 1219 mm x 457 mm (48" x 18")
- [C] 914 mm x 457 mm (36" x 18")
- [D] 762 mm x 762 mm (30" x 30")

LEGEND

- Traffic Cone
- Portable Sign
- Direction of Travel
- Flashing Arrow Sign
- Portable Flashing Beacon

TABLE 1

Approach Speed	* Taper Length (L)	* Number of Cones for Taper	Spacing of Cones Along Taper
0-40 km/h (0-25 mph)	38m (125')	6	7.5 m (25') ±
40-65 km/h (25-40 mph)	98 m (320')	9	12 m (40') ±
65-80km/h (40-50 mph)	183 m (600')	13	15 m (50') ±
Over 80 km/h (50 mph)	See Note 9		

* Based on 3.6 (12') wide lane. This column is also appropriate for lane widths Less than 3.6 m (12')

NOTES:

1. Where approach speeds are low, signs may be placed at 90 m (300') spacing, and in urban areas, closer.
2. All advance warning sign installations shall be equipped with flags for daytime closures. Flashing Beacons shall be placed at the locations indicated for nighttime closures.
3. A C13 "END CONSTRUCTION" or C14 "END ROAD WORK" sign, as appropriate, shall be placed at the end of the lane closure unless the end of work area is obvious, or ends within a larger project's limits.
4. If the C18 (or C23) sign would follow within 600 m (2000') of a stationary C18, C23, or C11 "STATE HIGHWAY CONSTRUCTION NEXT _______ MILES", use a C20 sign for the first advance warning sign.
5. All cones used for night lane closures shall be fitted with reflective sleeves as specified in the specifications.
6. Portable delineators, placed at one-half the spacing indicated for traffic cones, may be used in lieu of cones for daytime closures only.
7. Flashing arrow sign shall be either Type I or Type II.
8. The maximum spacing between cones in a taper shall be approximately as shown in Table 1 and 15 m (50') maximum spacing on tangent.
9. For approach speeds over 80 km/h (50 mph), use the "Traffic Control System for Lane Closure On Freeways and Expressways" plan for lane closure details and requirements.
10. Where specified in the special provisions, a W11 "LANE REDUCTION SYMBOL" sign is to be used in place of the C20 "RIGHT LANE CLOSED AHEAD" sign.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

These "Standard Plans for Construction of Local Streets and Roads" contain units in two systems of measurement: International System of Units (SI or "metric") and United States Standard Measures shown in the parentheses (). The measurements expressed in the two systems are not necessarily equal or interchangeable. See the "Foreword" at the beginning of this publication.

NO SCALE

FIGURE 8.10-8
TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON MULTILANE CONVENTIONAL HIGHWAYS

SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
SUPPLEMENT A

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T022005001RDD_14 (2/22/05)

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

July 1, 2002

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Greg W. Edwards No. C36386 Exp. 6-30-04 CIVIL STATE OF CALIFORNIA

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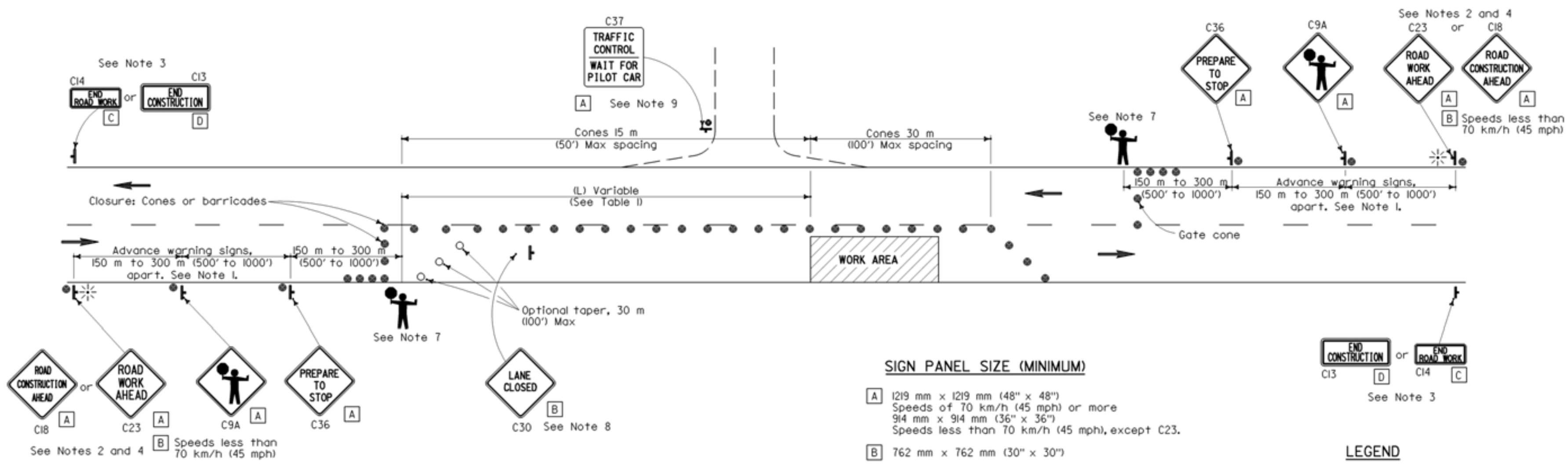
TYPICAL LANE CLOSURE WITH REVERSIBLE CONTROL



SIGN PANEL SIZE (MINIMUM)

- [A] 1219 mm x 1219 mm (48" x 48") Speeds of 70 km/h (45 mph) or more; 914 mm x 914 mm (36" x 36") Speeds less than 70 km/h (45 mph), except C23.
- [B] 762 mm x 762 mm (30" x 30")
- [C] 914 mm x 457 mm (36" x 18")
- [D] 1219 mm x 457 mm (48" x 18")

TABLE I

Approach Speed	* (L)
0-50 km/h (0-30 mph)	60 m (200')±
50-70 km/h (30-45 mph)	90 m (310')±
over 70 km/h (45 mph)	150 m (500')±

* Increase by 20 percent on sustained downgrades steeper than 3 percent and longer than 1.6 km (one mile).

LEGEND

- ● Traffic Cone
- ○ Traffic Cone (Optional Taper)
- Portable Sign
- ← Direction of Travel
- Portable Flashing Beacon
- Flagger

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

These "Standard Plans for Construction of Local Streets and Roads" contain units in two systems of measurement: International System of Units (SI or "metric") and United States Standard Measures shown in the parentheses (). The measurements expressed in the two systems are not necessarily equal or interchangeable. See the "Foreword" at the beginning of this publication.

NO SCALE

NOTES

1. Where approach speeds are low, signs may be placed at 90 m (300') spacing and in urban areas, closer.
2. All advance warning sign installations shall be equipped with flags for daytime closures. Flashing beacons shall be placed at the locations indicated during night lane closures.
3. A C13 "END CONSTRUCTION" or C14 "END ROAD WORK" sign, as appropriate, shall be placed at the end of the lane control unless the end of work area is obvious, or ends within a larger project's limits.
4. If the C18 (or C23) sign would follow within 600 m (2000') of a stationary C18, C23, or C11 "STATE HIGHWAY CONSTRUCTION NEXT ______ MILES", use a C9A sign for the first advance warning sign.
5. All cones used for night lane closures shall be fitted with reflective sleeves as specified in the specifications.
6. Portable delineators, placed at one-half the spacing indicated for traffic cones, may be used in lieu of cones for daytime closures only.
7. Additional advance flaggers may be required. Flagger should stand in a conspicuous place, be visible to approaching traffic as well as approaching vehicles after the first vehicle has stopped. Nighttime flagger station shall be illuminated as provided in the current edition of the "Manual of Traffic Controls" published by the State of California, Department of Transportation. Place a minimum of four cones at 15 m (50') intervals in advance of flagger station as shown.
8. Place C30 "LANE CLOSED" sign at 150 to 300 m (500' to 1000') intervals throughout extended work areas. They are optional if the work area is visible from the flagger station.
9. When a pilot car is used, place a C37 "TRAFFIC CONTROL-WAIT FOR PILOT CAR" sign at all intersections within traffic control area. Signs shall be clean and visible at all times.

FIGURE 8.10-9
TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON TWO LANE CONVENTIONAL HIGHWAYS

SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
SUPPLEMENT A

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