
# FINAL REPORT
# UTILITY IMPACT REPORT

## 160.10.45

## I-710 CORRIDOR PROJECT

*Prepared for*

Metro

Los Angeles County
Metropolitan Transportation Authority

November 2011

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# ACRONYMS & ABBREVIATIONS

| | |
|---|---|
| Abn/Aban | Abandoned |
| ACP | Asbestos Cement Pipe |
| AT&T | American Telephone and Telegraph Company |
| Ave | Avenue |
| Blvd | Boulevard |
| Bu | Buried |
| BP | British Petroleum acquired ARCO |
| Caltrans/CT | California Department of Transportation |
| CATV | Cable Television |
| Co | County |
| DIP | Ductile Iron Pipe |
| Du | Duct |
| HP | High Pressure |
| Hwy | Highway |
| I-105 | Interstate 105 |
| I-405 | Interstate 405 |
| I-710 | Interstate 710 |
| I/C | Interchange |
| KMEP | Kinder Morgan Energy Partners, including SFPP facilities |
| LA | Los Angeles |
| LACSD | Los Angeles County Sanitation District |
| LADWP | Los Angeles Department of Water and Power |
| LBGO | Long Beach Gas & Oil |
| LBWD | Long Beach Water Department |
| MP | Medium Pressure |
| MWD/MWDSC | Metropolitan Water District of Southern California |
| MTA or Metro | Los Angeles County Metropolitan Transportation Authority |
| MTD | Multiple Tile Duct |
| N. | North |
| N/O | North of |
| NB | Northbound |
| OH | Overhead |
| OXY | Occidental Petroleum. This includes THUMS City of Long Beach (operates offshore portion) and Tidelands Oil production Company (which operates onshore portion). |
| PCE | Passenger Car Equivalents |
| POLA | Port of Los Angeles |
| POLB | Port of Long Beach |
| PS&E | Plans, Specifications & Estimate |
| Rd | Road |

**Acronyms & Abbreviations (continued)**

| | |
|---|---|
| SR 91 | State Route 91 |
| S. | South |
| SB | Southbound |
| SCE | Southern California Edison |
| SCG | Southern California Gas Company |
| St | Street |
| Tel | Telephone |
| THUMS | Texaco, Humble, Unocal, Mobile, Shell |
| UG | Underground |
| VZN | Verizon |

# 1.0 EXECUTIVE SUMMARY

The I-710 Corridor Project Funding Partners[1] propose to improve the I-710 Corridor from Ocean Boulevard in the City of Long Beach to SR-60 in East Los Angeles. Alternatives under consideration include four Build Alternatives and a No-Build Alternative. The principal improvements included in the alternatives consist of widening and reconstructing the freeway to ten lanes and adding four separate freight movement lanes adjacent to the freeway.

The objective of this report is to identify existing utilities within the study area and identify potential conflicts with alternative improvements. Final disposition of each facility is established after selection of a project alternative, in cooperation with the utility owner during final design. With some exceptions, all relocated utilities can be placed in public street rights of way. The conflict assessment and relocation dispositions identified herein, provide the basis for establishing requirements and estimating costs for each alternative. Alternative analysis, project requirements, and costs are documented in the Draft Project Report.

Through data collection efforts, 40 different utility owners were identified that operate facilities within the project study area. 792 utility lines are compiled graphically in the project study base map and the Utility Crossing Report. Alternative 5A affects 540 utility facilities and Alternative 6A/B/C affects 617 utility facilities. Preliminary dispositions of affected utilities are described in Section 3.6.

Because the build alternatives require relocation of significant regional facilities, another objective of this report is to identify viable relocation strategies, associated impacts, and project requirements for these facilities. These relocation strategies entail acquisition of new rights of way.

Two high-voltage electrical transmission corridors are affected by the alternatives. The two owners are the Los Angeles Department of Water and Power (DWP) and Southern California Edison (SCE). In order to assess the viability of each alternative, relocation strategies were advanced to further define design features and project requirements.

- For DWP's facilities, Alternative 6A/B/C requires modification to the LA River with US Army Corp of Engineers approval prior to relocation of the transmission facilities. These modifications include reconstruction of approximately 1.2 miles of channel wall and levee and new platforms located in the river. The platforms will support new transmission towers that will support circuitry to bypass the existing overhead lines. With the bypass in place, removal of the existing overhead lines and towers will accommodate construction of the freeway and freight corridor improvements.

[1] The I-710 Corridor Funding Partners are the Los Angeles County Metropolitan Transportation Authority (MTA), the California Department of Transportation (Caltrans), the Gateway Cities Council of Governments (GCCOG), the Port of Los Angeles (POLA), the Port of Long Beach (POLB), the Southern California Association of Governments (SCAG), and the I-5 Joint Powers Authority (I-5 JPA).

- For SCE's facilities, Alternative 6A/B/C requires relocation of 66kV transmission to public street right of way prior to relocation of the 220 kV transmission facilities. To accommodate relocation of the 220kV circuitry requires joint use of LA County Flood Control property adjacent to the LA River. The new overhead circuitry and supporting towers will be arranged, and the old circuitry and towers removed, to accommodate freeway and freight corridor improvements.

Two oil operations located at the southern terminus of the project study area are affected by the alternatives. The two owners are Occidental Petroleum (Oxy) and Long Beach Gas and Oil (LBG&O). In order to assess the viability of each alternative, relocation strategies were advanced to further define design features and project requirements.

- For Oxy's operation, the area currently in operation is replaced by providing new and reconfigured space within or adjacent to the current operation. To provide this space, the freeway and freight corridor improvements are designed in a manner to provide access to these spaces. The right of way requirements for Alternative 6A/B/C are sufficient and no additional right of way is required for relocation of Oxy's operations.

- For LBG&O's operation, the area currently in operation is replaced by providing new and reconfigured space near the current operation. To provide this space, additional right of way is required adjacent to the right of way required for the freeway and freight corridor improvements.

The dispositions associated with the relocation strategies identified herein, provide the basis for establishing requirements and estimating costs for each alternative. Alternative analysis, project requirements, and costs are documented in the Draft Project Report.

# 2.0 INTRODUCTION

The Interstate 710 (I-710) Corridor Project study area includes the portion of I-710 (6 or 8 lanes) from Ocean Blvd. in Long Beach to State Route 60 (SR-60), a distance of approximately 18 miles (see Figure 2-1). At the freeway-to-freeway interchanges, the study area extends one mile east and west of I-710 for the Interstate 405 (I-405), State Route 91 (SR-91), Interstate 105 (I-105), and Interstate 5 (I-5) interchanges. The I-710 Corridor Project (Project) traverses portions of the cities of Bell, Bell Gardens, Carson, Commerce, Compton, Cudahy, Downey, Huntington Park, Lakewood, Long Beach, Los Angeles, Lynwood, Maywood, Paramount, Signal Hill, South Gate, and Vernon, and portions of unincorporated Los Angeles County, all within Los Angeles County, California.

I-710 (also known as the Long Beach Freeway) is a major north/south interstate freeway connecting the City of Long Beach to central Los Angeles. Within the I-710 Corridor Project study area, the freeway serves as the principal transportation connection for goods movement between the Port of Los Angeles (POLA)/Port of Long Beach (POLB) shipping terminals and the Burlington Northern Santa Fe (BNSF)/Union Pacific Railroad (UP) railyards in the cities of Commerce and Vernon and destinations along I-710 as well as destinations north and east of I-710.

The I-710 Major Corridor Study (MCS), undertaken to address the mobility and safety needs of the I-710 Corridor and to explore possible solutions for transportation improvements, was completed in March 2005 and identified a community-based Locally Preferred Strategy (LPS) consisting of 10 general purpose (GP) lanes next to four separated freight movement lanes. The Los Angeles County Metropolitan Transportation Authority (Metro), the California Department of Transportation (Caltrans), the Gateway Cities Council of Governments (GCCOG), the Southern California Association of Governments (SCAG), POLA, POLB, and the Interstate 5 Joint Powers Authority (I-5 JPA) are collectively known as the I-710 Funding Partners. Through a cooperative agreement, these agencies are funding the preparation of preliminary engineering and environmental documentation for the I-710 Corridor Project to evaluate improvements identified in the Major Corridor Study along the I-710 Corridor from Ocean Blvd. in the City of Long Beach to SR-60. The I-710 Funding Partners have continued this engineering and environmental study effort within the same broad, continuous community participation framework that was used for the MCS.

The environmental impacts of the I-710 Corridor Project will be assessed and disclosed in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Caltrans is the Lead Agency for CEQA compliance and the lead agency for NEPA compliance pursuant to Section 6005 of the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (23 United States Code [USC] 327).

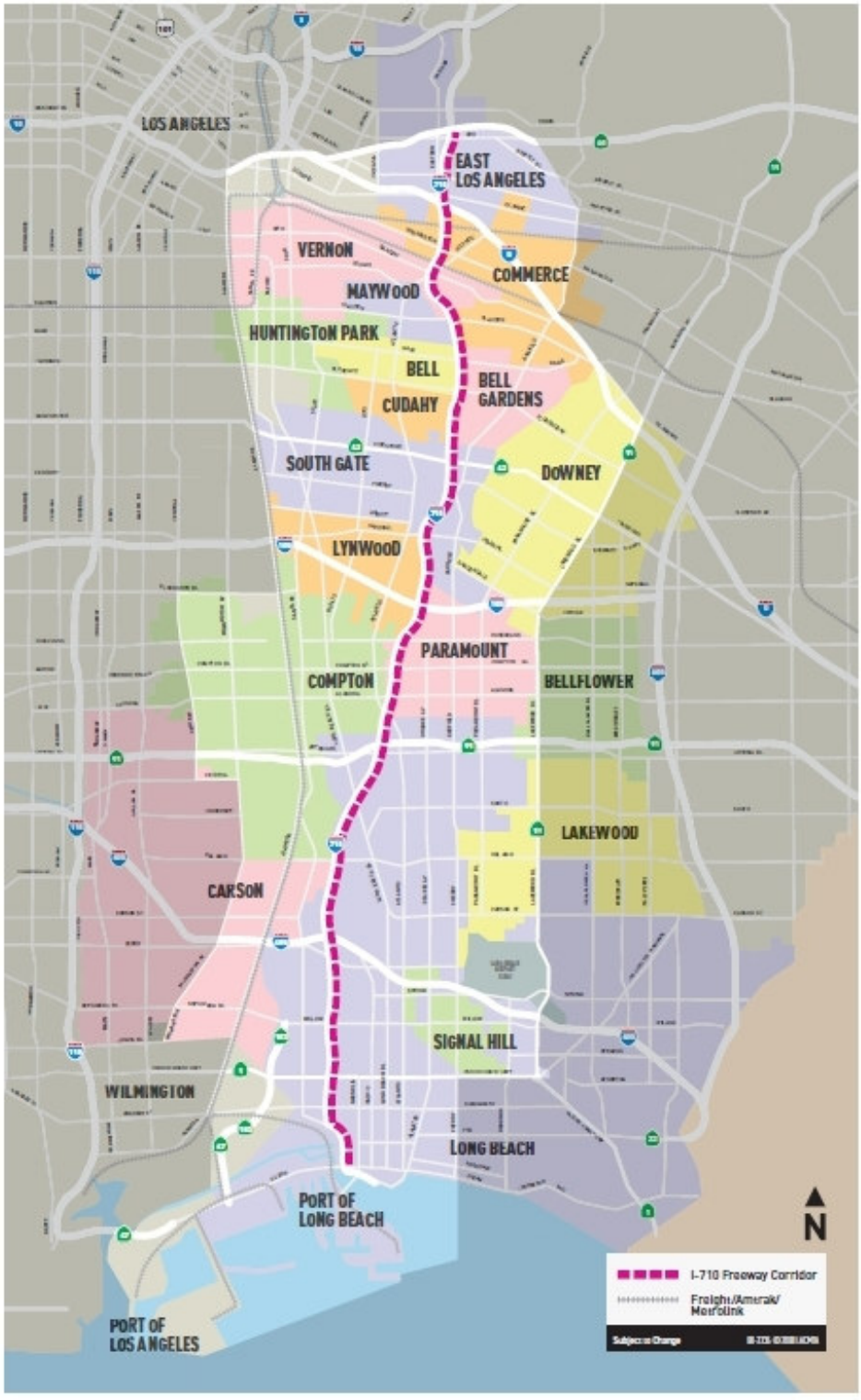
The need for the I-710 Corridor Project is as follows:

- I-710 experiences high heavy-duty truck volumes, resulting in high concentrations of diesel particulate emissions within the I-710 Corridor.
- I-710 experiences accident rates, especially truck-related, that are well above the statewide average for freeways of this type.
- At many locations along I-710, the on- and off-ramps do not meet current design standards and weaving sections within and between interchanges are of insufficient length.
- High volumes of both trucks and cars have led to severe traffic congestion throughout most of the day (6:00 a.m. to 7:00 p.m.) on I-710 as well as on the connecting freeways. This is projected to worsen over the next 25 years.
- Increases in population, employment, and goods movement between now and 2035 will lead to more traffic demand on I-710 and on the streets and roadways within the I-710 Corridor as a whole.

The purpose of the I-710 Corridor Project is to achieve the following within the I-710 Corridor (2035 time frame):

- Improve air quality and public health
- Improve traffic safety
- Provide modern design for the I-710 mainline
- Address projected traffic volumes
- Address projected growth in population, employment, and activities related to goods movement (based on SCAG population projections and projected container volume increases at the two ports)

## Figure 2-1: EIR/EIS Corridor Study Area



## 2.1 PURPOSE

The purpose of this report is to provide an overview of the impacts from the I-710 Corridor Project alternatives to the network of existing utilities located within the project corridor. This report also attempts to quantify the extent of each utility impact and provide a disposition relative to the amount of work required to mitigate for each project impact. The Project utility impacts are then summarized by interchange package and segment for each proposed alternative. The information provided in this report supports the development of the project utility Cost Estimate and the Project Report.

## 2.2 ALTERNATIVES DESCRIPTION

This section describes the alternatives based on the Major Corridor Study that were developed by a multidisciplinary technical team to achieve the I-710 Corridor Project purpose and subsequently were reviewed and concurred upon by the various committees involved in the I-710 Corridor Project community participation framework. Alternatives 2, 3, and 4 were considered but withdrawn from further environmental study as stand-alone alternatives but elements of these alternatives have been included in Build Alternatives 5A, 6A, 6B, and 6C. The alternatives are Alternative 1 (No Build Alternative), Alternative 5A (I-710 Widening up to 10 General Purpose [GP] Lanes), Alternative 6A (10 GP Lanes plus a Four-Lane Freight Corridor), Alternative 6B (10 GP Lanes plus a Zero-Emissions Four-Lane Freight Corridor), and Alternative 6C (10 GP Lanes plus a Four-Lane Freight Corridor Tolled).

## 2.3 ALTERNATIVE 1 – NO BUILD ALTERNATIVE

The No Build Alternative does not include any improvements within the I-710 Corridor other than those projects that are already planned and committed to be constructed by or before the planning horizon year of 2035. The projects included in this alternative are based on Southern California Association of Governments (SCAG's) 2008 Regional Transportation Improvement Program (RTIP) project list, including freeway, arterial, and transit improvements within the SCAG region. This alternative also assumes that goods movement to and from the ports make maximum utilization of existing and planned railroad capacity within the I-710 Corridor. Alternative 1 is the baseline against which the Build Alternatives proposed for the I-710 Corridor Project will be assessed. The existing I-710 mainline generally consists of eight GP lanes north of I-405 and six GP lanes south of I-405.

## 2.4 ALTERNATIVE 5A – FREEWAY WIDENING UP TO 10 GP LANES

Alternative 5A proposes to widen the I-710 mainline to up to ten GP lanes (northbound [NB] I-710 and southbound [SB] I-710). This alternative will:

- Provide an updated design at the I-405 and State Route 91 (SR-91) interchanges (no improvements to the I-710/Interstate 5 [I-5] interchange are proposed under Alternative 5A)

- Reconfigure all local arterial interchanges within the project limits that may include realignment of on- and off-ramps, widening of on- and off-ramps, and reconfiguration of interchange geometry
- Eliminate local ramp connections over I-710 (9th to 6th St. and 7th to 10th St.) in the City of Long Beach
- Eliminate a local interchange at Wardlow Ave. in the City of Long Beach
- Add a local street connection under I-710 to Thunderbird Villas at Miller Way in the City of South Gate
- Add a local connection (bridge) over I-710 at Southern Ave. in the City of South Gate
- Add a local arterial interchange at NB and SB I-710/Slauson Ave. in the City of Maywood
- Shift the I-710 centerline at several locations to reduce right-of-way requirements.

Additionally, various structures such as freeway connectors, ramps, and local arterial overcrossings, structures over the Los Angeles River and structures over the two rail yards throughout the project limits will be replaced, widened, or added as part of Alternative 5A.

In addition to improvements to the I-710 mainline and the interchanges, Alternative 5A also includes Transportation Systems/Transportation Demand Management (TSM/TDM), Transit, and Intelligent Transportation Systems (ITS) improvements. TSM improvements include provision of or future provision of ramp metering at all locations and the addition of improved arterial signage for access to I-710. Parking restrictions during peak periods (7:00 a.m.–9:00 a.m.; 4:00 p.m.–7:00 p.m.) will be implemented on four arterial roadways: Atlantic Blvd. between Pacific Coast Hwy. and SR-60; Cherry Ave./Garfield Ave. between Pacific Coast Hwy. and SR-60; Eastern Ave. between Cherry Ave. and Atlantic Blvd.; and Long Beach Blvd. between San Antonio Dr. and Firestone Blvd. Transit improvements that will be provided as part of the I-710 Corridor Project include increased service on all Metro Rapid routes and local bus routes in the study area. ITS improvements include updated fiber-optic communications to interconnect traffic signals along major arterial streets to provide for continuous, real-time adjustment of signal timing to improve traffic flow as well as other technology improvements.

Alternative 5A also includes improvements to 42 local arterial intersections within the I-710 Corridor Project study area (see Figure 2). These improvements generally consist of lane restriping or minimal widening to provide additional intersection turn lanes that will reduce traffic delay and improve intersection operations for those intersections with projected Level of Service (LOS) F.

In addition to the transportation system improvements described above, Alternative 5A also includes:

- **Aesthetic Enhancements:** Landscaping and irrigation systems would be provided within the corridor where feasible. Urban design and aesthetic treatment concepts for community enhancement will be integrated into the design of the I-710 Corridor Project. These concepts will highlight unique community identities within a unified overall corridor theme; strengthen physical connections and access/mobility within and between communities; and implement new technologies and best practices to ensure maximum respect for the environment and natural resources. They will continue to evolve and be refined through future phases of project development.

- **Drainage/Water Quality Features: Alternative** 5A includes modifications to the Los Angeles River levee; new, extended, replacement, and additional bents and pier walls in the Los Angeles River; additional and extended bents and pier walls in the Compton Channel; modifications to existing pump stations or provision of additional pump stations; and detention basins and bioswales that will provide for treatment of surface water runoff prior to discharge into the storm drain system.

## 2.5 ALTERNATIVE 6A – 10 GP LANES PLUS A FOUR-LANE FREIGHT CORRIDOR

Alternative 6A includes all the components of Alternatives 1 and 5A described above. (The alignment of the GP lanes in Alternative 6A will be slightly different than Alternative 5A in a few locations.) In addition, this alternative includes a separated four-lane freight corridor (FC) from Ocean Blvd. northerly to its terminus near the UP and BNSF rail yards in the City of Commerce. The FC would be built to Caltrans highway design standards and would be restricted to the exclusive use of heavy-duty trucks (5+ axles). In Alternative 6A these trucks are assumed to be conventional" trucks (conventional trucks are defined to be newer [post-2007] diesel/fossil-fueled trucks [new or retrofitted engines required per new regulations and standards].

The FC would be both at-grade and on elevated structure with two lanes in each direction. There are exclusive, truck only ingress and egress ramps to and/or from the FC at the following locations:

- Harbor Scenic Dr. (NB ingress only)
- Ocean Blvd. (NB ingress only)
- Pico Ave. (NB ingress and SB egress only)
- Anaheim St. (NB ingress and SB egress only)
- SB I-710 GP lanes just south of Pacific Coast Hwy (SB egress only)
- NB I-710 GP lanes north of I-405 at 208th St. (NB ingress only)

- SB I-710 GP lanes north of I-405 at 208th St. (SB egress only)
- Eastbound (EB) SR-91 (NB egress only)
- Westbound (WB) SR-91 (SB ingress only)
- Patata St (NB egress and SB ingress only)
- SB I-710 GP lanes at Bandini Blvd. (SB ingress only)
- NB I-710 GP lanes at Bandini Blvd. (NB egress only)
- Washington Blvd. – (NB egress ~~only~~ and SB ingress only) (Design Options 1 and 2)
- Washington Blvd. (NB egress and SB ingress via Indiana Ave) (Design Option 3)
- Sheila St – (NB egress only) (Design Option 3)

In addition to the FC feature, Alternative 6A includes:

- Partial modification to the I-5 interchange, notably the replacement of the NB I-710 to NB I-5 connector (right-side ramp replacement of left-side ramp) and a realigned SB I-5 to SB I-710 connector and 5 SB GP lanes from SR-60 to Washington Blvd.
- 3 NB GP lanes from I-5 to SR-60
- Retention of and modification to the I-710 SB on- and off-ramps at Eastern Ave. to slightly realign them.
- A local connection over I-710 at Patata St. in the cities of South Gate and Bell Gardens.

As with Alternative 5A, Alternative 6A will include additional aesthetic enhancements, and drainage/water quality features as follows:

Aesthetic Enhancements: In addition to the aesthetic enhancements described above for Alternative 5A, specific aesthetic treatments will be developed for the FC, including use of screen walls and masonry treatments on the FC structures (including soundwalls).

Drainage/water quality features: Alternative 6A includes features to capture and treat the additional surface water runoff from the FC, as well as some modifications to the Los Angeles River levees in order to accommodate electrical transmission line relocations.

## 2.6 ALTERNATIVE 6B – 10 GP LANES PLUS A ZERO-EMISSIONS FOUR-LANE FREIGHT CORRIDOR

Alternative 6B includes all the components of Alternative 6A as described above, but would restrict the use of the FC to zero-emission trucks rather than conventional trucks. This proposed zero emission truck technology is assumed to consist of trucks powered by electric motors in lieu of internal combustion engines and producing zero tailpipe emissions while traveling on the freight corridor. The specific type of electric motor is not defined, but feasible options include linear induction motors, linear synchronous motors or battery technology. The power systems for these electric propulsion trucks could include, but is not limited to, hybrid with dual-mode operation (ZEV Mode), Range Extender EV (Fuel Cell or Turbine with ZEV mode), Full EV (with fast charging or infrastructure power), road-connected power (e.g., overhead catenary electric power distribution system), alternative fuel hybrids, zero NOx dedicated fuel engines (CNG, RNG, H2 ICE), and range extender EV (turbine). For purposes of the I-710 environmental studies, the zero-emission electric trucks are assumed to receive electric power while traveling along the FC via an overhead catenary electric power distribution system (road-connected power).

Alternative 6B also includes the assumption that all trucks using the FC will have an automated control system that will steer, brake, and accelerate the trucks under computer control while traveling on the FC. This will safely allow for trucks to travel in “platoons” (e.g., groups of 6–8 trucks) and increase the capacity of the FC from a nominal 2,350 passenger car equivalents per lane per hour (pce/ln/hr) (as defined in Alternative 6A) to 3,000 pce/ln/hr in Alternative 6B.

The design of the FC will also allow for possible future conversion, or be initially constructed, as feasible (which may require additional environmental analysis and approval), of a fixed-track guideway family of alternative freight transport technologies (e.g., Maglev). However, this fixed-track family of technologies has been screened out of this analysis for now, as they have been determined to be inferior to electric trucks in terms of cost and ability to readily serve the multitude of freight origins and destinations served by trucks using the I-710 corridor.

## 2.7 ALTERNATIVE 6C – 10 GP LANES PLUS A FOUR-LANE FREIGHT CORRIDOR WITH TOLLS

Alternative 6C includes all the components of Alternative 6B as described above, but would toll trucks using the FC. Although tolling trucks in the FC could be done under either Alternative 6A or 6B; for analytical purposes, tolling has only been evaluated for Alternative 6B as this alternative provides for higher FC capacity than Alternative 6A due to the automated guidance feature of Alternative 6B.

Tolls would be collected using electronic transponders which would require overhead sign bridges and transponder readers like the SR-91 toll lanes currently operating in Orange County, where no cash toll lanes are provided. The toll pricing structure would provide for collection of higher tolls during peak travel periods.

## 2.8 DESIGN OPTIONS

For alternatives 6A, 6B, and 6C, three design options for the portion of I-710 between the I-710/Slauson Ave interchange to just south of the I-710/I-5 interchange are under consideration. These configurations will be fully analyzed so that they can be considered in the future selection of a Preferred Alternative for the project. These options are as follows:

### 2.8.1 Design Option 1

Design Option 1 applies to Alternatives 6A, 6B and 6C and provides access to Washington Blvd using three ramp intersections at Washington Blvd.

### 2.8.2 Design Option 2

Design Option 2 applies to Alternatives 6A, 6B, and 6C and provides access to Washington Blvd. using two ramp intersections at Washington Blvd.

### 2.8.3 Design Option 3

Design Option 3 applies only to Alternative 6B[2] and removes access to Washington Blvd. at its current location. The ramps at the I-710/Washington Blvd. interchange would be removed to accommodate the proposed FC ramps in and out of the rail yards. The SB off-ramp and NB-on-ramp access would be accommodated by Alternative 6B in the vicinity of the existing interchange by the proposed new SB off-ramp and NB on-ramp at Oak St. and Indiana St. These two ramps are proposed as mixed-flow ramps (freight connector ramps that would also allow automobile traffic). However, the SB on-ramp and NB off-ramp traffic that previously used the Washington Blvd. interchange would be required to access the Atlantic Blvd./Bandini Blvd. interchange located south of the existing Washington Blvd. interchange to ultimately reach I-710.

[2] Design Option 3 only applies to Alternative 6B because it was not included in the travel demand modeling for either Alternative 6A or 6C.

### 2.8.4 Project Segments

To facilitate design, analysis, and organization, the project is broken down geographically into seven segments. Table 2-1 provides the segment limits and interchange locations.

**Table 2-1: Segment Limits**

| Segment | Limits | Interchanges |
|---|---|---|
| 1 | Ocean Boulevard to Willow Street<br><br>*City of Long Beach* | • Ocean Boulevard<br>• Harbor Scenic Drive<br>• Pico Avenue<br>• Shoreline Drive (Downtown)<br>• Anaheim Street<br>• Pacific Coast Highway<br>• Willow Street |
| 2 | Wardlow Road to Del Amo Boulevard<br><br>*City of Long Beach*<br>*City of Carson*<br>*County of Los Angeles* | • Wardlow Road<br>• Interstate 405<br>• Del Amo Boulevard<br>• Santa Fe Avenue (at I-405)<br>• Pacific Place (at I-405) |
| 3 | Long Beach Boulevard to Alondra Boulevard<br><br>*City of Long Beach*<br>*City Of Compton*<br>*City of Paramount* | • Long Beach Boulevard<br>• Artesia Boulevard<br>• State Route 91<br>• Alondra Boulevard<br>• Long Beach Boulevard (at SR-91) |
| 4 | Rosecrans Avenue to Firestone Boulevard<br><br>*City of Paramount*<br>*City of Lynwood*<br>*City of South Gate* | • Rosecrans Avenue<br>• Interstate 105<br>• Martin Luther King Jr Boulevard<br>• Imperial Highway<br>• Firestone Boulevard |
| 5 | Clara Street to Slauson Avenue<br><br>*City of Bell Gardens*<br>*City of Cudahy* | • Florence Avenue<br>• Slauson Avenue (New) |

| Segment | Limits | Interchanges |
|---|---|---|
| | *City of Bell*<br>*City of Maywood*<br>*City of Vernon* | |
| **6** | Atlantic Boulevard to Washington Boulevard<br><br>*City of Vernon*<br>*City of Commerce*<br>*County of Los Angeles* | • Atlantic Boulevard<br>• Bandini Boulevard<br>• Washington Boulevard |
| **7** | I-5 to SR60<br><br>*City of Commerce*<br>*City of East Los Angeles*<br>*County of Los Angeles* | • Interstate 5<br>• Olympic Boulevard<br>• 3rd Street<br>• State Route 60 |

## 2.9 DATA COLLECTION

Utility information was requested and obtained from the City of Long Beach, the Port of Long Beach, Caltrans, other public agencies, and utility company owners. The Office of State Fire Marshall (OSFM) and Pipeline & Hazardous Material Safety Administration (PHSMA) provided contact information for petroleum and hazardous materials pipeline operators. The data provided included electronic media (GIS or CAD) or record as-built drawings.

36 utility owners were contacted and letters forwarded requesting electronic media or hard copies of record as-built drawings. 31 utility owners responded by providing the data requested and five responded with letters confirming they had no facilities within the vicinity of the I-710 corridor study area.

Thirteen public agencies were contacted and letters forwarded requesting electronic media or hard copies of record as-built drawings. Nine public agencies responded by providing the data requested and two responded with letters confirming they had no facilities within the vicinity of the I-710 corridor study area.

To facilitate the data requests made to utility owners and public agencies the I-710 Corridor Study Area map was enclosed with each letter sent. Figure 2-1 provides limits of the I-710 freeway and arterial streets from which utilities were identified within local jurisdictions shown.

Title reports, existing easements, property ownership, franchise agreements, master agreements and other property information to establish existing rights were not researched for this study.

# 3.0 EXISTING FACILITIES

This section describes the type and location of existing local and regional facilities potentially affected by the project alternatives. Local facilities are critical to municipalities and include power distribution systems, gas distribution pipelines, telephone systems, cable television (CATV) systems, water distribution mains, sanitary sewer mains and city telecommunication systems. Regional facilities are critical to national and regional interests and include power transmission systems, gas transmission pipelines, petroleum pipelines, water aqueducts, and sewer interceptors.

Data collected is compiled in a utility base map to establish the approximate location in relation to existing freeways and arterials. Base maps are featured in Appendix 2. Ownership, facility type and size, and location are compiled in a project database. Each facility is assigned a crossing number. A crossing report is included in Appendix 3. The descriptions and locations rely upon the record data collected, field reconnaissance, and limited coordination with utility owners. Positive identification methods, such as potholing or surveying, were not used to verify the location of facilities.

## 3.1 UTILITY COMPANIES AND TYPES OF FACILITIES

| | | | |
|---|---|---|---|
| 1. AT&T | Telephone | 21. MWD of Southern California | Water |
| 2. BP Pipelines, Inc. | Oil | 22.Mobile Pacific Pipeline | Oil |
| 3. Chemoil Corporation | Oil | 23. Pacific Energy | Oil |
| 4. Chevron Pipeline Co | Oil | 24. Pacific Pipeline System | Oil |
| 5. City of Bell | Sewer | 25. Pacific Terminals | Oil |
| 6. City of Carson | Water | 26. Paramount Petroleum | Oil |
| 7. City of Commerce | Sewer | 27. Petro Diamond | Oil |
| 8. City of Compton | Sewer | 28. Plains Pipeline | Oil |
| 9. City of Long Beach | Water, Sewer | 29. Praxair | Oil |
| 10. City of Lynwood | Sewer | 30. Qwest | Telecom |
| 11. City of Southgate | Sewer | 31. Shell Pipeline | Oil |
| 12. Conoco Phillips | Oil | 32. SCE | Power |
| 13.Crimson Pipeline | Oil | 33. SCG | Gas |
| 14. Defense Energy | Jet Fuel | 34. Texaco | Oil |
| 15. Exxon Mobile | Oil | 35. THUMS | Oil |
| 16. Equilon Enterprises | Oil | 36. Tidelands | Oil |
| 17. Kinder Morgan | Oil | 37. Time Warner | CATV |
| 18. LACSD | Sewer | 38. Ultramar | Oil |
| 19. LADWP | Power | 39. Valero | Oil |
| 20. Long Beach Gas & Oil | Gas, Oil | 40. Verizon | Telecom |

## 3.2 SUMMARY OF UTILITIES BY TYPE AND LOCATION

Table 3-1 summarizes the total number of utilities identified in the I-710 Corridor Study Area by type and segment location. The quantities in Table 3-1, 3-2 and 3-3 exclude storm drains, service laterals, street lighting, fire hydrants, and traffic and railroad signal facilities.

**Table 3-1: Utility Type and Location by Segment**

| | | CATV | Gas | Oil | Power | Sewer | Tel | Water | Total |
|---|---|---|---|---|---|---|---|---|---|
| SEG 1 | Downtown | 0 | 6 | 2 | 12 | 14 | 3 | 13 | **50** |
| | S. Terminus | 1 | 29 | 157 | 12 | 20 | 3 | 28 | **250** |
| | Willow | 0 | 6 | 50 | 5 | 1 | 2 | 3 | **67** |
| SEG 2 | I-405 | 0 | 13 | 6 | 12 | 3 | 13 | 13 | **60** |
| | Del Amo | 0 | 6 | 8 | 8 | 0 | 10 | 2 | **34** |
| SEG 3 | LB Blvd | 0 | 7 | 5 | 5 | 16 | 7 | 4 | **44** |
| | SR-91 | 4 | 19 | 1 | 14 | 25 | 33 | 23 | **119** |
| SEG 4 | Rosecrans | 0 | 2 | 9 | 1 | 7 | 9 | 5 | **33** |
| | Imperial | 1 | 1 | 6 | 3 | 2 | 3 | 1 | **17** |
| | Southern | 1 | 2 | 1 | 3 | 4 | 3 | 3 | **17** |
| | Firestone | 0 | 2 | 3 | 4 | 0 | 2 | 1 | **12** |
| SEG 5 | Florence | 0 | 5 | 5 | 5 | 0 | 10 | 2 | **27** |
| | Slauson | 0 | 4 | 3 | 7 | 0 | 1 | 3 | **18** |
| SEG 6 | N. Terminus | 0 | 10 | 0 | 12 | 4 | 11 | 7 | **44** |
| SEG 7 | I-5 | 0 | 3 | 0 | 8 | 3 | 7 | 5 | **26** |
| **SUB-TOTALS** | | **7** | **115** | **256** | **111** | **99** | **117** | **113** | **818** |

## 3.3 REGIONAL FACILITIES

Regional facilities critical to national and regional interests are located throughout the project area. These regional facilities are proprietary in nature and are regulated under federal jurisdictions. Those identified within the project study area include power transmission systems, petroleum transmission pipelines, gas transmission pipelines, water aqueducts, sewer interceptor trunklines and telecommunication systems.

Regional facilities potentially affected by project alternatives were given the highest priority for developing mitigation strategies with concurrence from the facility owners.

Regional facilities identified included:

- LACSD Sewer Interceptor Trunk lines
- LADWP Power Transmission Lines
- LBGO Gas Transmission Pipelines
- LBWD Water Transmission Mains
- MWDSC Water Aqueducts
- SCG Gas Transmission Pipelines
- SCE Power Transmission Lines
- THUMS Petroleum Transmission Pipelines
- Verizon Telecommunication Systems Conflict Analysis

## 3.4 METHODOLOGY

Existing utilities were plotted onto I-710 Corridor Project plans with Alternatives 5A and 6A/B/C transposed. Each individual utility line was assessed based on the location of the line and its physical relationship to proposed highway widening, new bridges, elevated structures and new roadway alignments. State and local agencies having jurisdiction over safety clearances (i.e. CAPUC, NESC, etc) between existing utility lines and proposed roadways and structures were considered in the determination of potentially affected lines.

## 3.5 SUMMARY OF CONFLICTS BY ALTERNATIVE

### 3.5.1 Alternative 5A

Table 3-2 summarizes the total number of potentially affected utilities for Alternative 5A by type and segment location. The quantities include both distribution and transmission lines that may require relocation or mechanical protection systems. Note that Segment 1 has half of the total relocations.

**Table 3-2: Affected Utilities by Type – Alternative 5A**

| | | Cable TV | Gas | Oil | Power | Sewer | Tel | Water | Total |
|---|---|---|---|---|---|---|---|---|---|
| SEG 1 | Downtown | 0 | 6 | 2 | 10 | 13 | 3 | 10 | **44** |
| | Southern Terminus | 0 | 11 | 124 | 7 | 14 | 2 | 14 | **172** |
| | Willow | 0 | 4 | 26 | 3 | 1 | 2 | 1 | **37** |
| SEG 2 | I-405 | 0 | 6 | 2 | 8 | 2 | 8 | 7 | **33** |
| | Del Amo | 0 | 4 | 5 | 8 | 0 | 9 | 1 | **27** |
| SEG 3 | LB Blvd | 0 | 5 | 4 | 5 | 8 | 7 | 4 | **33** |
| | SR-91 | 4 | 12 | 0 | 11 | 10 | 23 | 15 | **75** |
| SEG 4 | Rosecrans | 0 | 1 | 6 | 0 | 2 | 9 | 3 | **21** |
| | Imperial | 1 | 1 | 1 | 1 | 2 | 3 | 1 | **10** |
| | Southern | 1 | 2 | 1 | 3 | 2 | 3 | 3 | **15** |
| | Firestone | 0 | 1 | 2 | 4 | 0 | 2 | 1 | **10** |
| SEG 5 | Florence | 0 | 2 | 5 | 3 | 0 | 8 | 1 | **19** |
| | Slauson | 0 | 3 | 3 | 7 | 0 | 1 | 3 | **17** |
| SEG 6 | Northern Terminus | 0 | 7 | 0 | 10 | 2 | 9 | 6 | **34** |
| SEG 7 | I-5 | 0 | 3 | 0 | 3 | 1 | 7 | 5 | **19** |
| **SUB-TOTALS** | | **6** | **68** | **181** | **83** | **57** | **96** | **75** | **566** |

### 3.5.2 Alternative 6A/B/C

Table 3-3 summarizes the total number of potentially affected utilities for Alternative 6A/B/C by type and segment location. The quantities include both distribution and transmission lines that require relocation or mechanical protection systems.

## Table 3-3: Affected Utilities by Type – Alternative 6A/B/C

| | | Cable TV | Gas | Oil | Power | Sewer | Tel | Water | Total |
|---|---|---|---|---|---|---|---|---|---|
| SEG 1 | Downtown | 0 | 6 | 2 | 10 | 13 | 3 | 10 | **44** |
| | Southern Terminus | 0 | 19 | 147 | 6 | 14 | 2 | 18 | **206** |
| | Willow | 0 | 4 | 39 | 5 | 1 | 2 | 1 | **52** |
| SEG 2 | I-405 | 0 | 6 | 6 | 9 | 2 | 8 | 8 | **39** |
| | Del Amo | 0 | 4 | 8 | 8 | 0 | 9 | 1 | **30** |
| SEG 3 | LB Blvd | 0 | 5 | 4 | 5 | 8 | 7 | 4 | **33** |
| | SR-91 | 4 | 13 | 0 | 12 | 14 | 23 | 16 | **82** |
| SEG 4 | Rosecrans | 0 | 1 | 8 | 0 | 2 | 9 | 3 | **23** |
| | Imperial | 1 | 1 | 3 | 1 | 2 | 3 | 1 | **12** |
| | Southern | 1 | 2 | 1 | 3 | 2 | 3 | 3 | **15** |
| | Firestone | 0 | 1 | 2 | 4 | 0 | 2 | 1 | **10** |
| SEG 5 | Florence | 0 | 3 | 3 | 5 | 0 | 10 | 1 | **22** |
| | Slauson | 0 | 3 | 3 | 7 | 0 | 1 | 3 | **17** |
| SEG 6 | Northern Terminus Variant 1 | 0 | 4 | 0 | 10 | 1 | 9 | 2 | **26** |
| | Northern Terminus Variant 2 | 0 | 7 | 0 | 12 | 2 | 6 | 6 | **33** |
| | Northern Terminus Variant 3 | 0 | 7 | 0 | 9 | 3 | 9 | 4 | **32** |
| SEG 7 | I-5 | 0 | 2 | 0 | 8 | 3 | 1 | 5 | **19** |
| **SUB-TOTALS Variant 1** | | **6** | **74** | **226** | **93** | **62** | **92** | **77** | **630** |
| **SUB-TOTALS Variant 2** | | **6** | **77** | **226** | **95** | **63** | **89** | **81** | **637** |
| **SUB-TOTALS Variant 3** | | **6** | **77** | **226** | **92** | **64** | **92** | **79** | **636** |

## 3.6 DISPOSITIONS BY SEGMENT

Facilities in conflict with the alternatives will either be relocated or protected in place. Further coordination is required with each owner to confirm the conflict and disposition strategy. The following dispositions are preliminary and serve as the basis for alternative cost estimates. With exception of the major transmission facilities, all utility dispositions are expected to occupy new fee owned right of way, new easements, existing easements and/or public rights of way.

Relocations are classified as follows in the **Utility Crossing Report** in Appendix 3**:**

- **No Impact** – All utilities outside the footprint of the project or within project limits but have no impact whatsoever are given this designation. There will be no impact upon the utility and thus no cost is associated with the item.

- **Minimal** – This utility is relatively minor and serves a local street. These relocations are the easiest and can typically be done by placing the new facility parallel to the existing facility in order to avoid conflict.

- **Moderate** – This utility is relatively major and supports a local community of sizeable population, or is a facility that cannot be shut down by the owner for extended periods of time. Relocation schemes, therefore, could be difficult based upon what the proposed improvements are. For example, some of these facilities are on or within bridges or on separate utility bridges. Also, if these utilities are pressurized and are part of the pressure loop, then the facilities must be replaced prior to abandonment of the existing facilities. All oil facilities, even pipelines as small as 4", are considered moderate facilities. New utility bridges that span across the improvements could be the cheapest, fastest, and least disruptive means of relocation.

- **Regional** – This is a major utility that serves several communities or cities and thus any disruption of service would be impossible. Major utilities include SCE and DWP transmission lines, MWD and LACSD large sewer lines, and large transmission gas mains.

Each utility has different impacts:

- SCE & DWP – Several transmission towers are longitudinal and/or cross proposed improvements. Overhead circuits that cross the I-710 corridor and are impacted need to be relocated on new alignments to satisfy CPUC General Order 95 for minimum clearances. See Section 4.0 for further discussion.

- Oil Operations - Two oil operations located at the southern terminus of the project study area are affected by the alternatives. The two owners are Occidental Petroleum (Oxy) and Long Beach Gas and Oil (LBG&O). In order to assess the viability of each alternative, relocation strategies were advanced to further define design features and project requirements. See section 4.0 for further discussion.

- MWD – Several transmission water lines “aqueducts” cross the proposed improvements.

- LACSD – Protection in place schemes for LACSD sewer trunk mains are applied. Relocations of these large lines (i.e. 114”, 102” 66” and 63”) are very difficult and present many issues; therefore, relocation should be avoided.

- SCG – Two 26” gas mains are longitudinal to the I-710 Freeway and Freight Corridor. One is an active high pressure gas line and the other is an inactive abandoned main. The lines cross Wardlow Road, MTA R/W, Del Amo Boulevard, Long Beach Boulevard, Artesia Boulevard and I-710/SR-91 interchange. In order to relocate SCE’s 220kV transmission facilities, Alternative 6A/B/C includes the removal and relocation of the gas pipeline from the right of way. Relocation of the active transmission line would prove to be difficult because the line needs to be placed within SCE’s easement, similar to existing conditions, since there is limited space within the area. The SCG high pressure gas line operates under several hundred PSI, therefore, any shutting down, (even if temporary), and relocation off the right of way, will require further coordination with SCG.

### 3.6.1 Segment 1

**Southern Terminus**

The Southern Terminus passes through Port of Long Beach (POLB), Northeast Harbor District 2 (Ocean Boulevard to 9th Street), the oldest part of the harbor which contains a substantial number of crude oil transmission, processed liquefied natural gas and gas supply lines critical to the operation of the POLB. These supply lines occupy four utility corridors described as follows:

- I-710 R/W – 65 crossings occupy a longitudinal utility corridor that was ultimately paved to become the northbound lanes of the I-710 freeway. These crossings are within the existing and proposed I-710 right of way and are considered longitudinal encroachments per Caltrans policy. These utilities are not physically affected by the alternatives. An exception to the policy is required for these facilities to remain.

  Longitudinal utilities within I-710 are typically prohibited, but may be allowed under three situations:

  - The private use is based on retained property rights.

  - Oil company facilities that were placed within the right of way of a city or county road under a local agency issued a franchise agreement before the road became a state highway may remain within the state highway for the duration of its useful life or until physically impacted by a highway improvement project, at which time it shall be relocated outside the highway right-of-way.

  - Cogeneration plants transporting lines that transport electricity to a public utility may be treated as public utilities and their transporting lines allowed as encroachments within state highways.

- Pico Avenue – 174 crossings occupy a utility corridor within Pico Avenue and Pier B rail yard west of the I-710 R/W. 56 crossings are potentially affected by construction at the I-710 on and off ramps at Pico Avenue.

- Los Angeles County Flood Control District – 19 crossings occupy a longitudinal utility corridor east of the I-710 R/W that will be affected by the proposed Freight Corridor. One 66kV overhead power line between Ocean Boulevard and 21st Street must be relocated. The other 18 crossings serve facilities that will be removed to accommodate the alternatives; thus, no relocations are anticipated.

- Pier B Street – 18 oil pipeline crossings occupy a transverse utility corridor in Pier B Street crossing the Pier B rail yard into the I-710 R/W continuing south, longitudinally to Pier D St. These 18 crossings are within the existing and/or proposed I-710 right of way and are branching off the main utilities in I-710. Therefore, longitudinal encroachments per Caltrans policy must be considered. These utilities are not physically affected by the alternatives. An exception to the policy is required for these facilities to remain.

Other utilities occupying Northeast Harbor District 2 within or adjacent to the project area include:

- Occidental "OXY" Facilities – All active and idle oil and gas injection pipelines and production wells, pump, and supporting equipment shall be removed from within the strip of LACFCD R/W where OXY facilities are in conflict with proposed improvements, and are no longer accessible. See Section 4.0 for further discussion.

- Ocean Boulevard – oil, gas and water lines cross the I-710 and Los Angeles River. These facilities will be protected in place per Alternative 6A/B/C.

- A 36" transmission water pipeline is located west of Pico Avenue and then turns west on 9th Street. Portions of this line will need to be relocated per Alternative 6A/B/C due to the proposed north and southbound I-710 to Pico Avenue ramps.

- SCE 66kV overhead line on the westerly side of Pico Avenue will be protected in place due to Pico Avenue's ramp structures.

- SCE 66kV overhead line on 3rd Street extension crossing Harbor Scenic Drive will be relocated due to the proposed Freight Corridor.

- SCE 66kV overhead line on the westerly side of the LA River from Ocean Boulevard to Willow Street will present multiple conflicts. Alternative 6A/B/C affects most of these poles due to conflicts with the proposed Freight Corridor, requiring approximately 2.5 mile relocation of SCE's 66kV transmission line.

- SCE 12kV overhead on Fashion Avenue/12th Street will be relocated due to the proposed on/off ramp Freight Corridor.

- SCE 66kV overhead on the westerly side of I-710 Freeway turns west to Pier B Street will be affected by Alternative 6A/B/C. Most of these poles are in conflict with the proposed alignment and ramps.

- City of Long Beach Gas Facilities – The City of Long Beach has gas facilities within the project area between Pier E Street and south of Ocean Boulevard to south of I-405.

- Pier E Street has a 16" HP gas line that terminates at the 16" HP gas line in Harbor Scenic Drive. This main is dependent on the 16" HP line on Harbor Scenic Drive for pressure supply and therefore both lines must be relocated accordingly.

- Harbor Scenic Drive 16" HP gas line crosses I-710 Freeway in 200 feet of 20" steel casing, continues north on the east side of Pico Avenue, and then turns west on 9th Street. Alternative 6A/B/C will require portions of this main to be relocated.

- Ocean Boulevard 16" HP gas line crosses I-710 Freeway, Los Angeles River and Shoreline Drive. Relocations are not anticipated based on Alternatives 5A and 6A/B/C.

- Pier C and Pier D 12" HP gas lines connect to a 16" HP Harbor Scenic Drive gas line. Alternatives 5A and 6A/B/C will require portions of the gas line to be relocated.

- Anaheim Street 12" HP gas line crosses I-710 and Los Angeles River. Alternative 5A and 6A/B/C will require the line to be relocated. A 16" HP gas line on Harbor Avenue and 12th Street north and south alleys will also be relocated due to on/off Anaheim Street Freight Corridor ramps.

The Southern Terminus passes through POLB, Northeast Harbor District 1 (9th Street to Anaheim Street), which contains numerous independently owned pipeline facilities dedicated to transporting crude oil and gas supplies to POLB and local petroleum processing plants. These supply lines occupy public streets as follows:

- 9th Street, 10th Street, 11th Street, 12th Street, Harbor Avenue, Fashion Avenue – 62 utility crossings occupy these streets. 21 of the 62 crossings are oil pipelines and are potentially affected by the Freight Corridor on and off ramps to/from Anaheim Street.

- Anaheim Street – 8 utility crossings will be affected by the Alternatives near the Anaheim Street roadway and bridge improvements including a 20" water line, 12" gas line and several oil lines.

The Southern Terminus also includes the following utility crossings:

- Streets west of I-710 R/W between 14th Street and Esther Street – 43 utility crossings occupy these streets. Two 66kV overhead power lines will be affected by the freight corridor. A sewer pump station on 16th Street is not affected; however, the alternatives limit the owner's planned expansion and upgrade of the station. Five oil pipelines in Cowles Street are potentially affected by the freight corridor.

- PCH – 23 utility crossings are located within or adjacent to PCH and will be affected by the PCH roadway and bridge improvements included in the alternatives. This is due to the Freight Corridor and the shifting of I-710 to the east. Some of the utilities affected include a 12" water line, 16" gas line, telephone ducts, and several oil lines.

- SCE 12kV feed and transformer underground service to storm drain pump station on the westerly side of LA River north of Pacific Coast Highway will be abandoned since the pump station will be relocated, per Alternative 6A/B/C.

- Streets west of I-710 R/W between Parade Street and 21st Street – 15 utility crossings occupy these streets. The alternatives do not directly affect these facilities.

**Downtown**

The Downtown Long Beach project area contains approximately 50 utility crossings bordered by west Shoreline Drive east to Maine Avenue and Ocean Boulevard north to 7th Street, as listed in Table 3-1. Most of these utilities are considered "minimal" per Section 3.6. The exception is SCE's Seabright substation and its related underground and overhead facilities. Two critical transmission facilities are located in this area and are described as follows:

- SCE Seabright Substation

    - The existing substation is located north of Cesar Chavez Park between NB and SB Shoreline Drive. The substation has primary and secondary feeds employing 66kV systems via overhead and underground facilities. Improvements to Shoreline Drive are designed not to impact the substation.

    - 66kV UG ductbanks provide primary feeds from 5th Street and are not affected by the Downtown improvements. 66kV OH conductors cross the LA River and continue north along the east side on steel poles.

        - The OH conductors cross SB Shoreline Drive and terminate at the substation. One or more of the steel poles may conflict with Shoreline Drive improvements and may need to be relocated.

- Pipe Bridge Crossing LA River

    - An existing pipe bridge carries distribution and transmission pipelines over the Los Angeles River from 6th Street. Facilities include 4 oil transmission pipelines, one gas

transmission and one 24" water transmission pipeline, local telephone, and power distribution conduits.

- The proposed Shoemaker Bridge west abutment and proposed improvements west of the Los Angeles River will need to be designed to avoid the existing pipelines so that they may remain in place. Similarly, other adjacent roadway structures and alignments will include design features necessary to allow these lines to remain in place.

Utilities located within this area are primarily for local distribution. Preliminary dispositions are described as follows:

- Shoreline Drive
  - Existing sewer, telephone and power distribution lines located along the perimeter of existing Shoreline Drive are affected by alternative improvements.
  - The affected lines will be relocated.
- Golden Shore Street
  - Existing power, telephone & CATV ductbanks, water, sewer and gas mains located in Golden Shore Street between Ocean Boulevard and Broadway are affected by alternative improvements.
  - The affected lines will be relocated.
- Broadway
  - Existing power, telephone & CATV ductbanks, water, sewer and gas mains located in Broadway between Golden Shore Street and Shoreline Drive are not affected by alternative improvements and will be protected in place.
- 3rd Street
  - Realignment and lowering of 3rd Street under I-710 on-ramp between Golden Avenue and Broadway/Shoreline Drive intersection per City of Long Beach request will require relocation of 12kV underground SCE duct and protection or adjustment to telephone, CATV duct banks and 10" water lines.

**Willow**

The Willow project area contains several utility crossings. Preliminary findings are as follows:

- Twelve encased oil pipelines cross below the freeway at Burnett Street. A pipeline bridge carries these lines across the LA River. These will be protected in place.

Relocation of existing valve vaults may be required to ensure access is maintained to these facilities. Freight Corridor piles will be spaced to protect oil pipelines in place.

- Fourteen encased oil pipelines cross below the freeway at 28th Street. A pipeline bridge carries these lines across the LA River. These will be protected in place. Relocation of existing valve vaults may be required to ensure access is maintained to these facilities. Freight Corridor piles will be spaced to protect oil pipelines in place.

- SCE 66kV and 12kV overhead lines crossing LA River and I-710 Freeway at Spring Street will require the facility to be relocated per Alternative 6A/B/C.

- SCE 12kV feed and transformer underground service to storm drain pump station north of Willow Street Bridge and west of LA River will need to be modified. Service can be re-established from existing pole with 12kV on 27th Street and Gale Avenue.

- SCE 12kV and communication overhead line crossing I-710 Freeway and LA River at 34th Street will require the facility to be relocated per Alternative 6A/B/C.

- A 12kv line runs longitudinally between the freeway and the LA River. Alternative 6A/B/C requires its relocation.

- An 8" oil pipeline runs longitudinal between the freeway and the LA River. Alternative 6A/B/C requires its relocation.

- There are gas, water, and communication utilities contained within the Willow Street Overcrossing and the Willow Street Bridge over the LA River. Alternatives 5A and 6A/B/C require relocation of these facilities.

- City of Long Beach 10" HP gas line on Willow Street crossing I-710 and Los Angeles River will need to be relocated due to bridge reconstruction under Alternative 5A and 6A/B/C.

- 5 oil pipelines, 10" gas and 20" water lines are located in Fashion Avenue and cross Willow Street west of I-710. Due to the additional fill within this area, these utilities will need to be protected in place via concrete encasement or by other means.

### 3.6.2 Segment 2

**I-405**

The I-405 project area contains several utility crossings. Preliminary findings are as follows:

- SCE maintains a transmission corridor that traverses the I-405/I-710 interchange and parallels the I-710 freeway northerly beyond the I-405 package. The heights of existing SCE facilities through the interchange will be affected by the proposed NB and SB connector ramps linking the I-405 and I-710 freeways. SCE also maintains secured

access roads and tunnels through the interchange which must be inherent with the proposed interchange improvements.

- A 12kV OH line traverses the I-405/I-710 interchange and provides power service to the LA Metro Blue Line Yard. Alternative 6A/B/C may require the line to be relocated.

- A 4kV OH line crosses above the freeway at 33rd St. Alternative 6A/B/C requires its relocation.

- A 12kV OH line crosses above the freeway at 34th St. Alternative 6A/B/C requires its relocation.

- A 66kV OH line crosses the I-710 freeway at Carson St. Alternative 6A/B/C may require the line to be relocated.

- A 12kV OH line crosses above the freeway at Carson St. Alternative 6A/B/C may require the line to be relocated

- SCG Facilities – SCG jurisdiction along the I-710 starts at Wardlow Road and extends all areas north thereof. SCG has transmission lines, typically larger than 18", distribution lines between 8" and 18" and smaller sized lines to provide services for customers. Several transmission and distribution mains are affected by Alternative 5A and 6A/B/C. Further details of SCG facilities will be provided within their respective segments.

- A 26" HP gas line crosses I-710/I-405 I/C and then travels longitudinally within SCE easement crossing the MTA Blue Line feed, UPRR (San Pedro) Sub, Del Amo Boulevard, Long Beach Boulevard, Artesia Boulevard, SR-91, and then crosses the main line and Freight Corridor at SCE Easement/Greenleaf Boulevard. For Alternative 5A, the 26" HP gas line will need to be lowered under Carson Street due to a 12' deep cut. At the I-405/I-710 I/C, the 26" HP gas line can be protected in place. Piles and outrigger piles will be spaced out to avoid relocation of the line. For Alternative 6A/B/C, the line will need to be relocated. See Section 4.2 for further discussion.

- Gas, water and telephone ductbanks are contained within the Wardlow Street Overcrossing and the Wardlow Street Bridge over the LA River. These lines will be relocated into the new and modified bridges.

- Five encased oil pipelines and two encased water aqueducts cross below the I-710 freeway at Baker St. A pipeline bridge carries these lines across the LA River. These will be protected in place. Relocation of existing valve vaults may be required to ensure access is maintained to these facilities.

- An encased 30-inch sewer main crosses the I-405 east of the I-710. The sewer main will be protected in place.

- An encased 78-inch water aqueduct crosses the I-710 at Carson St. The line will be protected in place.

- Six buried telephone ducts cross beneath the freeway at Carson St. Alternative 6A/B/C may require the lines to be relocated.

**Del Amo**

Del Amo Boulevard will be lowered 5' under the I-710 relocation. Several utilities within Del Amo Boulevard will be affected including a 30" gas line, 20" water line, and several telephone and oil lines. These lines will be lowered in place.

The Del Amo project area contains several utility crossings. Preliminary findings are as follows:

- SCE maintains a transmission corridor east of the I-710 right-of-way throughout the length of the Del Amo package limits. Two double circuit 220kV transmission line structures, one six circuit 66kV transmission line multi-structures and 12kV distribution lines are contained within the adjacent SCE R/W. The freight corridor alignment conflicts with existing transmission lines at several locations. See Section 4.0 for further discussion.

- SCE overhead (OH) 66kV, 12kV, and communication lines cross the I-710 freeway from Dominguez Street. Due to the freight corridor, these lines will need to be relocated.

- SCE12 kV underground duct located 2 feet outside westerly I-710 R/W line south of Compton Creek crosses Metro Blue Line in a 105 feet long casing terminates at a pole riser north of UPRR. Due to additional R/W requirements for Alternatives 6A/B/C, this facility will be relocated.

- SCE 66kV and 12kV overhead lines cross overI-710. The 12kV connects to a 12kV riser at Dominguez Street traveling west. Some poles will be relocated based on Alternative 6A/B/C.

- 6 oil transmission pipelines and 1 gas transmission pipeline parallel the UPRR tracks crossing beneath the I-710. These lines will be protected in place.

- A 16-inch oil transmission pipeline and 3 telephone ductbanks run alongside the Compton Channel. These lines will be protected in place.

- A 12kV OH line crosses above the freeway at Del Amo Blvd. Due to the freight corridor, this line will need to be relocated.

- Gas, water, sewer, telephone, CATV and power lines are located in Susana Rd providing services to the adjacent commercial business. These utility lines will need to be relocated into the new Susana Road alignment.

- 7 Oil transmission pipelines cross the I-710 at Del Amo Blvd. These lines will be protected in place.

- A 26" HP SCG gas line crosses the Freight Corridor at the Metro Blue Line alignment and at Carson Street. The line is also located within the SCE right of way. Much of the alignment will be protected in place for Alternative 5A. For Alternative 6A/B/C, the line will need to be relocated. See Section 4.2 for further discussion.

- Several SCG 24" and 30" valves and blow-offs at the southeast corner of Del Amo Boulevard and I-710. A 16" HP bypass is also connected to the valves. These facilities are just outside of the Freight Corridor and will either be relocated or protected in place, depending upon the disposition of the 26" line.

- A 30" HP gas transmission main on Del Amo Boulevard crosses the Freight Corridor and I-710. This main will be lowered about 5' for a distance of 800' due to the lowering of Del Amo Boulevard.

### 3.6.3 Segment 3

**Long Beach Blvd**

The Long Beach Blvd project area contains several utility crossings. Preliminary findings are as follows:

- SCE Transmission Corridor: The corridor contains four 220kV transmission and six 66kV sub-transmission circuits and runs longitudinally along the east ROW of the I-710 freeway between I-710/405 and I-710/SR-91 interchanges. See Section 4.0 for further discussion.

- Gas & Oil Pipelines within SCE Transmission Corridor: SCG maintains two 26" gas mains, one being an active high pressure transmission line and the other being an abandoned main. The final portion of the line where it crosses the I-710 will be protected in place. ARCO also maintains a 10" high pressure oil pipeline within the SCE Transmission Corridor. These gas & oil lines are protected from impacts by the freeway and freight corridor improvements.

- LACSD Sewer Trunk Mains: LA County Sanitation District maintains a network of sewer trunk mains conveying effluent sewage to outfall junction structures adjacent to northbound and southbound I-710 freeway south of Long Beach Blvd. Five active large diameter trunk mains (i.e. 114", 102", 66", & two 63" mains) parallel and cross the SCE transmission corridor and I-710 freeway ¼ mile south of Long Beach Blvd where they interconnect with major junction structures conveying flows westerly. Two other 33" and 42" trunk mains cross under the LA River and connect to the 63" main. The exact location of these sewer trunk mains will be pivotal in determining the configuration of structural elements for Alternative 6A/B/C. A 63" sewer main is located under the

proposed I-710 Southbound Freeway between the Long Beach Boulevard off-ramp to about ¼ miles south thereof. If the sewer main can be protected in place (dependent on its exact location), a longitudinal encroachment exception from Caltrans may be necessary. If it cannot be protected in place or if the longitudinal exception is found to be not satisfactory, the sewer main will need to be relocated westerly outside of the proposed I-710 widening.

- A 39" sewer main crossing I-710 and SR-91 I/C will need to be relocated due to deep cut for the proposed Alondra Boulevard off-ramp. The main can be relocated southerly to avoid the cut or a siphon can be designed within the cut section.

- All outfall sewers (114", 102" 66" and 63") crossing I-710 and the Freight Corridor south of Long Beach Boulevard will be protected in place. As such, all proposed improvements to the on/off-ramps to Long Beach Boulevard, Freight Corridor, and I-710 will be designed to keep these outfall sewers protected in place.

- SCE 66kV power lines cross Long Beach Blvd and the I-710 freeway on steel poles north of the Long Beach Blvd interchange. Alternative 6A/B/C will require these lines to be relocated.

- SCE 66kV overhead line crosses I-710 Freeway diagonally near Gordon Street from west to east. The facility continues north thereof and is the closest to I-710. Alternatives 6 A/B/C require the overhead line to be relocated.

- AT&T has numerous underground telephone and communications ducts within the north and south sides of Long Beach Blvd crossing the I-710 freeway and LA River Bridge. Temporary relocation by intercepting cables on both sides of the bridge might be necessary during bridge construction. Alternatives 5A and 6A/B/C will require these UG lines to be relocated.

- Communication ducts and water mains presently exist in Long Beach Blvd crossing the I-710 freeway and LA River. Alternatives 5A and 6A/B/C will require these lines to be relocated.

**North of Long Beach Blvd**

- LBWD maintains an existing 30" water main that crosses the I-710 freeway. The pipeline appears to deflect beyond the existing I-710 shoulder however now that the I-710 is proposed to be widened within this area the deflection now occurs beneath the proposed roadway, which will require the pipe to be relocated based on Caltrans requirements. Alternatives 5A and 6A/B/C will require the line to be relocated.

- KMEP maintains two 26" and 30" oil pipelines which cross the I-710 freeway. The pipelines appear to deflect beyond the existing I-710 shoulder however now that the I-

710 is proposed to be widened within this area the deflections now occur beneath the proposed roadway. Alternatives 5A and 6A/B/C will require the line to be relocated.

**SR-91**

The SR-91 project area contains approximately 119 utility crossings. Preliminary findings are as follows:

Artesia Blvd

- Domestic gas, water, power, telephone and CATV duct banks are contained within the Artesia Blvd Bridge OC and roadway crossing proposed Freight Corridor and EB and WB Freight Corridor flyovers. Alternatives 5A and 6A/B/C require these lines to be relocated through the new OC Bridge and will require permanent relocations to accommodate the Freight Corridor and flyover structures. Temporary bypass facilities will be required to accommodate the new OC bridge construction.

SR-91 Interchange

- SCE maintains a 275' wide fee-owned right of way containing 10 transmission circuits oriented longitudinally along I-710 between the I-405 interchange and the SR-91 interchange. between North of SR-91, 19 circuits converge from eastern and 9 circuits from western SCE routes. See Section 4.0 for further discussion.

- The heights of existing SCE towers through the I-710/SR-91 interchange may be affected by proposed EB and WB Freight Corridor flyovers. SCE also maintains secured access roads and tunnels through the interchange which must be inherent with proposed I-710/SR-91 I/C improvements. Alternative 5A and 6A/B/C requires the relocation of these SCE transmission circuits.

- A 66kV double circuit on steel poles traverses the I-710 freeway from Long Beach Blvd through the I-710/SR-91 I/C. Alternative 6A/B/C requires the relocation of these SCE transmission circuits.

- Two 54-inch siphon joint outfall pipelines traverse the Los Angeles River north of SR-91 and east of I-710. Alternative 6A/B/C will require the lines to be protected in place.

- A 39-inch sanitary sewer pipeline is located west of I-710 and north of SR-91 on Coachella Avenue. Alternative 6A/B/C will protect the facility in place.

- A 39-inch sanitary sewer pipeline traverses the I-710/SR-91 I/C and connects to a 69" RCP sanitary sewer line. Alternative 6A/B/C will require the line to be relocated to accommodate the 69" relocation.

- A 63 to 69-inch sanitary sewer joint outfall pipeline traverses the I-710 freeway from Long Beach Blvd through the I-710/SR-91 I/C. Alternative 6A/B/C will require the line to be relocated. The portion of the line that crosses SR-91 will be protected in place.

- The 26" HP SCG gas line located within the SCE right of way extends through the SR-91 interchange. Much of the alignment will be protected in place for Alternative 5A. For Alternative 6A/B/C, the line will need to be relocated. See Section 4.2 for further discussion.

- Two 78-inch sanitary sewer pipes traverse the SR-91 east of the Los Angeles River. Alternative 6A/B/C on/off ramps leading to Freight Corridor piles will be spaced to protect the two 78-inch lines in place.

Greenleaf Blvd / SCE Easement

- A 73-inch water aqueduct encased in concrete crosses the I-710 freeway and LA River north of the SR-91 Interchange. Alternative 6A/B/C will require about 600 feet to be lowered 18 feet to accommodate proposed NB 710 off-ramp to WB Alondra Blvd.

- There are multiple SCE 220kV and 66kV overhead circuits crossing I-710. The existing towers and steel poles will be affected by the proposed eastbound and westbound Freight Corridors. Alternative 5A and 6A/B/C require the relocation of the facilities on both sides of I-710 freeway.

Alondra Blvd

- A 66kV OH line crosses the I-710 freeway and proposed Freight Corridor south of Alondra Blvd. Alternatives 5A and 6A/B/C will require the line to be relocated.

- 12" gas, water, power, telephone and CATV duct banks are contained within the Alondra Blvd Bridges crossing I-710 freeway and LA River. Alternatives 5A and 6A/B/C requires these lines to be relocated through the new OC Bridges. Temporary bypass facilities might be required as some facilities cannot be shut down for extended periods of time.

### 3.6.4 Segment 4

**Rosecrans**

The Rosecrans project area contains approximately 33 utility crossings. Preliminary findings are as follows:

Compton Blvd

- Five telephone fiber duct banks and two 6-inch oil pipelines are located within the existing Compton Blvd. Bridge OC the I-710 freeway. Alternative 6A/B/C will not affect these lines.

North of Rosecrans Ave

- An RCB containing six Chevron oil pipelines extends across the I-710 freeway from McMillan St and appear to spread in various directions within the interchange. Alternative 6A/B/C may affect one or more of these lines due to the 12' cut for the Freight Corridor.

I-710/I-105 Interchange

- SCE 66kV OH transmission conductors on steel poles span the I-710/I-105 freeway interchange. Alternative 6A/B/C may affect these lines where they cross the proposed Freight Corridor.

- MWD 61-inch West Coast Feeder traverses the I-710/I-105 interchange from south of the I-105 west of the LA River to north of the I-105 east of the LA River. The pipeline was concrete encased within limits of original I-710/I-105 interchange and may be protected in place under Alternative 6A/B/C.

- LACSD 90-inch sewer replaced the abandoned in place 78-inch Joint Outfall Sewer which flows south along the east side of the LA River. The 90-inch sewer is located 55' west of the 78-inch outfall sewer crossing Rosecrans Avenue and Imperial Highway. Alternative 6A/B/C does not appear to affect these sewer lines throughout the length of the Rosecrans Geometric Package.

**Imperial**

The Imperial project area contains approximately 17 utility crossings Preliminary findings are as follows:

- Chevron operates two active pipelines and owns three large diameter pipeline casings that run longitudinal along the west side of the LA River levee within the Imperial Hwy Package limits. Replacement of the I-710 bridges over the LA River could impact the oil pipelines and casings as part of Alternatives 5A and 6A/B/C.

- AT&T provides service to Caltrans call boxes at three locations in vicinity of the Imperial Hwy interchange. Reconfiguration of the interchange will require the relocation of the existing telephone facilities and service laterals as part of Alternatives 5A and 6A/B/C.

- The following facilities are located within the Imperial Highway overcrossing and will need to be relocated for a distance of about 1400' due to the realignment of the I-710:

    - THUMS maintains an idle 4" oil pipeline.

    - AT&T maintains a 6 ductbank telephone facility.

    - Exxon operates 4" oil pipeline within a 6" casing.

    - SCG operates an 8" HP gas pipeline within a 12" casing.

    - The City of Southgate operates an 8" water pipeline within a 24" casing.

    - DWP 12kV overhead power lines cross I-710 north of Imperial Highway

- LACSD operates a 90" outfall sewer located 55' west of the 78-inch outfall sewer crossing Rosecrans Avenue and Imperial Highway on the east side of the Los Angeles River. Alternative 6A/B/C does not appear to affect these sewer lines, however, the 90" outfall is close to the LA River proposed structure and will be protected in place.

**Southern**

The Southern project area contains approximately 17 utility crossings. All utilities within Southern Avenue will be relocated due to 15' of fill east of the Freight Corridor and the proposed new bridges over the I-710 and LA River. Preliminary findings are as follows:

- A Department of Water and Power (DWP) transmission corridor runs longitudinally on the west side of the I-710 freeway. Four 287kV overhead transmission circuits (supported on lattice towers) are in vertical conflict with the proposed Southern Ave Bridge OC. See Section 4.0 for further discussion.

- SCE 66kV OH transmission conductors on steel poles span the I-710 freeway north of the existing UPRR Overhead. Alternative 6A/B/C may affect these lines where they cross the proposed Freight Corridor. SCE 66kV OH transmission with 12kV distribution cables on steel poles span the I-710 freeway from Southern Ave. Alternatives 5A and 6A/B/C may affect these lines at the proposed Southern Ave OC over the I-710 and LA River.

- An LA County Sanitation District 45-inch sewer trunkline flows south from Atlantic Ave along UPRR to Southern Ave and continues along the west side of E. Frontage Rd to Miller Way and south along west side of Rio Hondo Channel. Alternatives 5A and 6A/B/C will affect this line at the proposed Southern Ave Bridge OC at LA River to I-710 freeway and along east side of proposed I-710 widening with longitudinal retaining walls.

- Existing water, sewer, gas and telephone lines are located within E. Frontage Road adjacent to I-710 freeway. Alternative 6A/B/C may affect these lines.

- 12kV SCE power lines, two encased water mains, a gas pipeline and telephone ducts cross the I-710 freeway in Southern Ave. Alternatives 5A and 6A/B/C will affect these utility lines due to potential conflicts with the proposed Southern Ave Bridge OC.

**Firestone**

The Firestone project area contains several utility crossings. Preliminary findings are as follows:

- A DWP transmission corridor within a 100ft. wide right of way runs longitudinal west of the I-710 freeway and east of the LA River, through the entire length of the Firestone package. See Section 4.0 for further discussion.

- A 6-inch oil pipeline is located in Firestone Blvd. west of the I-710 freeway in the vicinity of the I-710 SB off-ramp at Firestone. Alternative 6A/B/C will require this line to be relocated to accommodate the proposed interchange improvements.

- SCE 12kV UG ductbank is located within the Firestone Blvd Bridge and will be relocated to accommodate the new Firestone Blvd. OC.

- A 79" MWD water main within a 20ft. wide easement crosses the I-710 freeway and will be protected in place.

Patata Street

- SCE 66kV and 12kV and OH lines cross the I-710 freeway and LA River just south of the UPRR OC. Alternative 6A/B/C will require these OH SCE lines to be relocated. The poles have four fiber optic lines (Verizon Business, Quest, Level 3, and Metromedia Fiber Network Services) based upon a DigAlert search. Sprint also has an underground fiber optic line within UPRR R/W. All these facilities will be relocated between Atlantic Avenue and Eastern Avenue due to the northerly shifting of UPRR and relocating and extending of Patata Street south thereof.

- A 6-inch oil pipeline is located crosses the I-710 freeway south of the UPRR OC. Alternative 6A/B/C will require this line to be provided with casing or relocated.

Quinn Street

- A 30" transmission HP gas line is in a 160'-36" steel casing crossing I-710. The line deflects 30° on both sides beyond the casing endings. Due to Alternative 5A and 6A/B/C, portions of the line will be without casing. Possible relocation is necessary if Caltrans declines a protection in place scheme. Assume 250' of 36" steel split-casing.

### 3.6.5 Segment 5

**Florence**

The proposed I-710 westerly shift per Alternative 5A will not affect any utilities within the Florence Avenue overpass because there are no utilities located within the Florence Avenue bridge section. However, the Florence project area contains several utility crossings. Preliminary findings are as follows:

DWP Transmission

- The most critical utility impact involves a longitudinal DWP transmission corridor within a 100ft. wide ROW between the LA River and the I-710 ROW throughout the length of the Florence package. See Section 4.0 for further discussion.

Florence Avenue

- SCE 66kV & 16kV power lines cross the I-710 freeway on steel poles north of Firestone Blvd. Alternative 5A and 6A/B/C will require these lines to be relocated.

- AT&T has numerous underground telephone and communications lines along the north and south sides of Florence Ave crossing the I-710 freeway and LA River Bridge. This includes a 6 duct bank facility on the north side of Florence Blvd. which provides service to Caltrans call boxes along SB I-710. Alternative 5A and 6A/B/C will require these UG lines to be relocated.

- Oil, gas and water mains presently exist in Florence Blvd. near Eastern Ave east of the I-710 freeway. Alternative 5A and 6A/B/C will have minimal impacts on these lines.

Clara Street

- SCE 66kV and 16kV and OH lines cross the I-710 freeway and LA River along Clara Street. Alternative 6A/B/C will require these OH SCE lines to be relocated.

- A 6-inch gas main is located in Clara St which crosses the I-710 freeway and LA River. Alternative 5A and 6A/B/C will require this line to be relocated.

Gage Avenue

- SCE 16kV and OH lines cross the I-710 freeway and LA River along Gage Ave. Alternative 6A/B/C will require these OH SCE lines to be relocated.

- An 8-inch gas main located in Gage Ave. crosses the I-710 freeway and continues south along the east side of the LA River towards Florence Ave. Alternative 5A and 6A/B/C will require this line to be relocated.

- AT&T maintains a 12 duct bank facility along the north side of Gage Ave. which crosses the I-710 freeway and LA River. Alternative 6A/B/C will require this duct bank to be relocated.

- Three parallel 8" oil pipelines on a utility bridge are located north of UPRR. Relocation options for the utility bridge are rather limited because there are existing transmission towers located south of the bridge. Also, the UPRR will be relocated south. Therefore, Alternative 6A/B/C will require these longitudinal oil pipelines to be relocated under I-710 and freight track in 3-12" steel casings.

**Slauson**

Slauson Avenue overpass has one gas line that must be relocated to accommodate the I-710 proposed shifting and widening per Alternative 5A. In addition to the gas line, the Slauson project area contains approximately 18 additional utility crossings. Preliminary findings are as follows:

DWP Transmission Corridor

- The Los Angeles Department of Water & Power (LADWP) maintains a transmission corridor west of the I-710 freeway right-of-way throughout the length of the Slauson

package. Five 230kV OH transmission circuits are contained within the longitudinal transmission corridor and are in conflict with the Freight Corridor. See Section 4.0 for further discussion.

Randolph St

- Four SCE 66kV transmission lines cross the I-710 freeway on steel poles along the north side of Randolph St. Alternative 6A/B/C will affect these lines where they cross the proposed Freight Corridor.

- Two parallel 8-inch oil pipelines are located south of the UPRR tracks in Randolph St and cross over the I-710 freeway on a pipe bridge south of the UPRR Bridge continuing south along the west side of the I-710 freeway. Alternative 6A/B/C will affect the existing pipe bridge and the longitudinal oil pipelines within the proposed I-710 roadway.

- A 12-inch water main is located north of Randolph St which crosses the I-710 freeway. Alternative 6A/B/C will affect this line within the limits of proposed ROW acquisitions.

- SCE 66kV OH line on north side of Randolph steps down to 16kV and provides service to UPRR spur track signals & switches east of I-710 freeway. Alternative 6A/B/C will affect the 66kV to 16kV power service.

Slauson Ave

- SCE has a 66kV OH line running parallel to and between the LA River and DWP transmission corridor. It connects to a SCE 66kV OH line crosses the I-710 freeway and LA River along the south side of Slauson Ave. Alternative 5A and 6A/B/C will affect the 16kV OH line.

- A 4-inch gas main is located within the Slauson Ave. bridges crossing the I-710 freeway and LA River. Alternative 5A and 6A/B/C will affect the gas main through both bridges.

### 3.6.6 Segment 6

The Northern Terminus project area contains approximately 44 utility crossings. Preliminary findings apply to all alternatives and options, unless otherwise noted, and are as follows:

East of I-710 Freeway

- SCE 16kV OH lines parallel the I-710 freeway serving the LA Junction RR signals and switches north of Slauson Ave between “K” St and 4$^{th}$ St. Alternative 6A/B/C may affect these OH power lines.

- An SCE substation located adjacent to 26$^{th}$ Street, north of Bandini Blvd is affected by Alternative 6A/B/C Option 2. The Substation will need to be relocated. Relocation of this regional 66kV substation may have system and regional reliability impacts. Potential relocation sites may require condemnation of private property to maintain reliability.

Replacement of in-kind property is required and further coordination with SCE is necessary.

Atlantic Blvd

- 21-inch sewer and 10-inch water mains are located in Atlantic Blvd. crossing beneath I-710 mainline and ramp bridges and freight corridor ramps. Alternatives 5A and 6A/B/C may affect these lines within the limits of the proposed improvements.

- 10-inch and 8-inch high pressure gas mains are located in Atlantic Blvd. crossing beneath I-710 mainline and ramp bridges and freight corridor ramps. Alternatives 5A and 6A/B/C may affect these high risk pipelines within the limits of the proposed improvements.

- SCE 12kV power and AT&T telephone ductbanks are located in Atlantic Blvd between the I-710 freeway and 26th St. Alternative 5A and 6A/B/C Option 3 realignment of Atlantic Blvd will require these lines to be relocated within the proposed roadway realignment.

Bandini Blvd

- A 12-inch water, 24-inch and 21-inch sewer mains are located in Bandini Blvd. crossing beneath I-710 mainline and ramp bridges and freight corridor ramps. Alternatives 5A and 6A/B/C may affect these lines within the limits of the proposed improvements.

- SCE 12kV power and AT&T telephone duct banks are located in Bandini Blvd. crossing beneath I-710 mainline and ramp bridges and freight corridor ramps. Alternatives 5A and 6A/B/C may affect these lines within the limits of the proposed improvements.

Sheila St

- A 20-inch gas transmission pipeline is located on the south side of Sheila St in the vicinity of proposed Sheila ramp featured in Alternative 6A/B/C Option 3. Structure foundations may affect this line within the limits of these proposed improvements.

### 3.6.7 Segment 7

Caltrans has prepared a disposition assessment as part of the I-5 Corridor Project. The assessment is included in Appendix 5.

# 4.0 RELOCATION STRATEGIES OF MAJOR FACILITIES

## 4.1 DWP TRANSMISSION

### 4.1.1 Existing Facilities

The Los Angeles Department of Water and Power (DWP) transmits power from its Haynes generating station, located in Seal Beach, to its Atwater substation located in Glendale. Power is transmitted utilizing five circuits of 230kV carried by overhead lines, mounted on 150' high lattice towers. The transmission corridor enters the project area carrying four circuits and crosses the I-710 freeway north of Imperial Highway, in the City of South Gate. A fifth circuit enters the corridor south of Firestone Boulevard. The transmission corridor continues northerly along the east bank of the Los Angeles River crossing several arterials in the Cities of Bell Gardens, Bell, Cudahy, Maywood, and Vernon. DWP owns the underlying property, a nominally 100' wide strip in between the LA River and the I-710 freeway. The transmission corridor exits the project area south of Atlantic Boulevard, in the City of Vernon. In total, the transmission corridor overlaps the project area approximately 4.5 miles.

### 4.1.2 Conflicts

**Alternative 5A**

The conflict areas are isolated at crossing locations within the 4.5-mile project area. Existing tower locations or wires conflict with ramp improvements at Firestone Boulevard. Up to three towers are in conflict with alternative improvements.

**Alternative 6A/B/C**

The freight corridor is the principal feature in conflict with the transmission corridor. The interchange improvements at Firestone are in conflict as well. At two locations, north of Imperial Highway and South of Firestone Blvd., where the overhead lines cross both the freeway and the freight corridor, four towers are in conflict with alternative improvements. For approximately 1.2 miles, at locations between Firestone Boulevard and Slauson Avenue, 10 towers are in conflict with alternative improvements.

### 4.1.3 Alternative Strategies Considered

**Alternative 5A**

Three new towers will replace existing towers and be located out of conflict with alternative improvements. The new tower locations would occupy existing DWP rights of way. Other relocation strategies are not considered feasible or cost effective.

**Alternative 6A/B/C**

Basic disposition strategies were considered: avoidance, relocate circuits above ground, and relocate circuits underground. All strategies adhere to avoidance of residential property impacts, notably homes abutting the east side of the freeway.

These approaches are summarized as follows:

- Avoidance (Partial): Although some towers supporting wires that cross the freeway must be relocated to accommodate the elevated freight corridor, some or all of the remaining towers can be avoided depending on the alignment of the freight corridor. The current design avoids encroachment into the DWP corridor to the extent possible, while limiting modifications to the LA River, due to tower relocations, to the extent possible. To accomplish this, the freight corridor is aligned over the southbound lanes between Firestone Boulevard and Slauson Avenue. Where the freight corridor requires relocation of towers, the relocation strategy entails constructing a transmission bypass located in the LA River. To support the bypass, the east walls of the LA River channel are modified to ensure flood protection is maintained to current hydraulic conditions, as tower platforms are needed in the river. *The LA River Impact Report*, under separate cover, describes the scope of the alterations and includes hydraulic analysis demonstrating the technical feasibility of this strategy. The strategy serves as the basis for environmental assessment of this alternative.

- Avoidance (Maximum): To avoid the transmission towers to the maximum extent requires alignment of the freight corridor in the LA River. Such an alignment requires substantially more alteration to the LA River and further analysis to demonstrate its feasibility. A minimum of two towers would need to be replaced and raised to accommodate the freight corridor alignment, as it would need to reenter the freeway alignment to serve connections to the north. This strategy is beyond the scope of this analysis and is not part of the environmental assessment.

- Continuous Above Ground Relocation: This strategy is similar to the partial avoidance strategy with respect to the river platforms and channel alterations. The extent of the transmission tower relocations and channel modifications are approximately 3 miles. This strategy allows room for the freight corridor adjacent to the southbound freeway lanes, instead of over the lanes. This approach is responsive to community concerns about double-decking highway facilities. Because of the extent of both the relocation and channel alterations, the costs associated with the strategy are considerably greater and are not part of the environmental assessment.

- Continuous Below Ground Relocation: This strategy avoids significant modification to the LA River. The configuration requires joint-use of the DWP right of way and an exception to Caltrans policy on longitudinal encroachments. To avoid river modification requires relocating the transmission lines below the freight corridor adjacent to the river. Because the elevated freight corridor alignment is elevated, maintenance access to the circuits is attainable with proper placement of vaults. Although the cost to underground electrical transmission lines exceeds above ground installations, these incremental costs are offset by the cost of channel modifications associated with the other strategies

considered. The DWP is not supportive of this strategy, however, and has cited reliability concerns. The strategy is not part of the environmental assessment.

## 4.2 SCE TRANSMISSION

### 4.2.1 Existing Facilities

Southern California Edison (SCE) operates high voltage transmission lines on or near the project study area. SCE transmits power through these lines to the Gateway Cities, including the City of Long Beach and the Port of Long Beach. In addition, SCE transmits through the project area from third party owned coastal generating stations to inland substations. Power is transmitted using a combination of 220kV and 66kV circuits carried overhead on multiple tower lines located either in fee owned right of way or in easement in other public street right of way. Four 220kV circuits run in parallel with the I-710 freeway in a major transmission corridor linking the Hinson substation, located southwest of the I-405 interchange, and the Lighthipe substation, located northeast of the SR-91 interchange. The corridor enters the project area at Wardlow Road and crosses the I-405 interchange, in the City of Long Beach. The transmission corridor continues northerly adjacent to the west bank of the Los Angeles River crossing several arterials in the City of Long Beach. SCE owns much of the underlying property. SCE's right of way, located in between the LA River and the I-710 freeway is a combination of fee owned property and easement. SCE's right of way width is 275' wide. The transmission corridor crosses the SR-91 interchange and exits the project area south of Atlantic Avenue, in the North Long Beach area. At this location, the corridor converges with an east-west corridor that crosses the I-710 and LA River. In total, the transmission corridor overlaps the project area approximately 4.5 miles.

Other SCE transmission facilities outside of the main corridor are addressed in Section 6 of this report.

### 4.2.2 Conflicts

**Alternative 6A/B/C**

The reconfiguration of the I-405, Del Amo Boulevard, Long Beach Boulevard, and SR-91 interchanges conflict with existing tower locations and wires that support the circuitry connecting the Hinson and Lighthipe substations. Additionally, the freight corridor conflicts with the same circuitry in between the reconfigured interchanges. North of SR-91, the proposed interchange and freight corridor alignments conflict with the east-west circuitry as well.

### 4.2.3 Alternative Strategies Considered

Basic disposition strategies were considered: protect-in-place, relocate circuits above ground, and relocate circuits underground. These approaches are summarized as follows:

- Protect-in-Place: Although some towers could be avoided by realigning the freight corridor outside the SCE corridor, this approach is not feasible due to severe environmental impacts that would include extensive condemnation of residential,

commercial, and industrial private property through communities abutting the freeway. Furthermore, the remaining tower and line conflicts associated with the interchange improvements featured in the alternatives are unavoidable. Thus, protection-in-place is not a viable strategy.

- Rearrangement of 220kV and undergrounding of 66kV within Joint-Use Right of Way: This strategy was developed to initiate dialogue between MTA and SCE and was based on the initial geometrics developed for the project in 2009. The strategy entailed first undergrounding the 66KV circuits within SCE's right of way in a manner compatible with proposed freight corridor structure foundations. The underground circuits would be aligned below the elevated freight corridor structure and would be accessible for maintenance. The 220kV circuitry would then be rearranged on new tower alignments adjacent to the proposed elevated freight corridor. The freight corridor, the underground 66kV, and above ground 220kV circuitry would share the existing SCE right of way. SCE evaluated this approach and came to the conclusion that the proposed strategy was not feasible. From a technical standpoint, SCE noted that available tubular steel poles do not provide sufficient vertical clearances to span the elevated freight corridor at key locations. SCE further noted that horizontal clearances between the freight corridor and the rearranged overhead lines are insufficient. SCE also indicated that undergrounding the 66kV lines introduces risks, limits expansion, and restricts maintenance accessibility.

- Replacement Right of Way In-Kind. This strategy is identified in SCE's System Impact Study (SIS) Report. This strategy entails the replacement of displaced SCE facilities and land rights with equivalent facilities and land rights outside the existing SCE right of way. SCE requires reimbursement for any diminishment of value and/or rights. The exact right of way and land requirements would require further study and is beyond the scope of this project. In order to replace the service provided by the existing circuitry, the strategy would likely require extensive condemnation of residential, commercial, and industrial private property through communities abutting the project study area. Consequently, this approach is not considered feasible due to these severe environmental impacts.

- Rearrangement of 220kV within 200' corridor and relocation of 66kV to public streets. This strategy has been developed in collaboration with SCE and is identified in SCE's System Impact Study Report. Appendix 4 illustrates the strategy. The strategy is considered achievable and entails three major components: 1) Relocation of 66kV transmission from SCE right of way to public street right of way, 2) Relocation of 220kV from SCE right of way to a combination of SCE right of way and LACFCD right of way, and 3) Removal of the Southern California Gas pipeline from the SCE right of way. In addition, acquisition of new property rights around interchanges and removal of easement reservation rights are required. The CPUC General Order 131-D approval process will be followed.

- 66kV Relocation. Prior to the 220kV relocation, the 66kV lines must be cleared from the existing right of way. As part of SCE's SIS Report, this relocation entails approximately 48 single and double circuit miles along multiple line routes to replace the circuitry between Hinson and Lighthipe. The strategy includes new line routes, single and double circuit configurations, overhead and underground facilities, re-conductor sections, and removals or idle sections. Replacement rights will need to be secured for SCE's relocated line routes. Equivalent or irrevocable SCE rights will be conveyed to these new line routes. The feasibility of the proposed line routes are based upon preliminary engineering and SCE facility inventory maps. Appendix 4 identifies the relocation area. Details to further ascertain the scope, cost, and technical and environmental feasibility of the line routes require further development.

- 220kV Relocation. Following the 66kV relocation, the relocation for the 220kV lines must be constructed prior to removal of the old lines. The 200' corridor will accommodate the four new 220kV transmission lines. From the south, the new corridor originates from the existing corridor approaching Wardlow Road. The alignment crosses I-405, turns east, and crosses I-710, outside of the new interchange connectors. The alignment then crosses the new freight corridor in the vicinity of the Metro Blue Line maintenance yard. The corridor then turns north adjacent to the LA River levee and spans Del Amo Boulevard and Long Beach Boulevard. Approaching Artesia Boulevard, the corridor turns east and crosses the LA River onto LA County Flood Control property. The corridor then turns north and crosses SR-91 and joins the existing corridor, heading to the Lighthipe Substation. New towers may be higher than existing towers to ensure sufficient clearance over the existing and proposed highway facilities. This relocation entails approximately 20 circuit miles to replace the circuitry affected by Alternative 6A/B/C. The feasibility of the proposed line routes required reconfiguration of proposed freeway interchanges and the alignment of the freight corridor.

- Alternative 6A/B/C Modifications. To provide the new 200'-wide corridor for the 220kV relocation required modification to interchanges and the freight corridor featured in the alternatives. A key constraint held in the development of the modifications is the LA River access road, situated along the top of the river levee. Holding this constraint avoids modification to the hydraulic conditions of the LA River which are highly prohibitive in this reach. Given this constraint and the 200' SCE corridor provision, required the following:

  - Shifting the Del Amo interchange and the freeway alignment to the west resulting in additional commercial right of way impacts along Susan Road.

  - Shifting and reconfiguring the Long Beach Boulevard interchange and freeway alignment to the west. The NB entrance and exit ramps require a new bridge across the LA River.

- Realigning the NB710 to WB91 connector, realigning the freight corridor and its connections to SR-91, and shifting the freeway. The resulting modifications require spot-widening of the SR-91 to accommodate new columns and foundations for the realigned roadways.

- The above modifications presented opportunities to optimize the freight corridor alignment and transmission tower heights. The freight corridor alignment now features at-grade, instead of elevated alignments between I-405 and Del Amo Boulevard and between Del Amo Boulevard and Artesia Boulevard.

- New 220kV right of way with no relocation provisions and appropriate access to each right of way location is required from the Los Angeles County (with the approval of the US Army Corp of Engineers), which operates and maintains the LA River in this section of the study area. The right of way requirements are described in the *Right of Way Impact Report* prepared under separate cover.

**Alternative 5A**

Most elements of the relocation strategy apply to Alternative 5A due to the interchange improvements proposed at I-405, Del Amo Boulevard, Long Beach Boulevard, and SR-91. The 66kV transmission relocation still applies; however, the rearrangement of the 220kV transmission is different. It is accomplished with less right of way required from Los Angeles County and will employ shorter towers to cross SR-91.

## 4.3 OXY OIL

### 4.3.1 Existing Facilities

Oxy operates oil extraction wells, injection wells, and storage facilities, under long term leases with the City of Long Beach, on property located along the LA River. The linear operation is situated between Ocean Boulevard and Anaheim Street, in between the LA River and the freeway. Access to the area is made from Pico Avenue, across railroad lines and under highway and street facilities. The operation utilizes several pipelines, connecting pumps, wells, and tanks to offsite storage facilities. Oxy representatives have indicated its intent modernize its operations by consolidating facilities in a roughly 5 acre area at the south end of the existing operation.

### 4.3.2 Conflicts

**Alternative 6A/B/C**

The freight corridor is the principal feature in conflict with the existing and planned Oxy operations. The interchange improvements at Anaheim Street also conflict with storage tanks.

### 4.3.3 Alternative Strategies Considered

Based upon coordination with Oxy representatives and Port of Long Beach staff, acquisition of the existing oil lease is cost prohibitive as compared to replacement rights and relocation of the

operations. As such, the area currently in operation will be replaced by providing new and reconfigured space within or adjacent to the current operation. To provide this space, the freeway and freight corridor improvements are designed in a manner to provide access to these spaces. Notably, vertical clearance of structures over access roads and sufficient width to accommodate drilling equipment, pump operations, and maintenance vehicles. The right of way requirements for Alternative 6A/B/C are sufficient and no additional right of way is required for relocation of Oxy's operations.

Oxy is planning a major expansion of its facilities between Ocean Boulevard and Anaheim Street. An assessment of impacts and costs associated with the expansion is included in the project cost estimates. Further study is under way to reduce the cost of these relocations by identifying possible avoidance and/or joint-use strategies.

## 4.4 LONG BEACH GAS & OIL

### 4.4.1 Existing Facilities

Long Beach Gas & Oil operates oil extraction wells and injection wells, under long term leases with the City of Long Beach, on property located along the LA River. The operation is situated north of Anaheim Street, on a one-acre area in between the LA River and the freeway. Access to the area is made from Anaheim Street along the river levee. The operation utilizes several pipelines, connecting pumps and wells to offsite storage facilities.

### 4.4.2 Conflicts

Both the freeway and freight corridor improvements conflict with the existing oil operation.

### 4.4.3 Alternative Strategies Considered

Based upon coordination with LBG&O representatives and Long Beach staff, acquisition of the existing oil lease is cost prohibitive as compared to replacement rights and relocation of the operations. As such, the area currently in operation will be replaced by providing new and reconfigured space near the current operation. To provide this space, additional right of way is required adjacent to the right of way required for the freeway and freight corridor improvements. The additional right of way requirement abuts the east side of Fashion Avenue between Cowles Street and 15$^{th}$ Street.

## 4.5 COORDINATION WITH POLB PROJECTS

The Port of Long Beach (POLB) has three major projects under development adjacent to the I-710 Corridor Project. These projects include the Gerald Desmond Bridge Project, the On-Dock Rail Support Facility Project, and the Middle Harbor Project. All projects are expected to be under construction before or concurrently with the I-710 Project. Each of these projects has impacts on existing utilities, many of which are affected by the I-710 Project. Most of these utility facilities are oil and gas pipelines serving oil operations in the Terminal Island and Signal Hill areas. With the support of project sponsors, MTA has initiated feasibility studies to address coordination of major utility relocations for these projects.

# 5.0 CONCLUSIONS / RECOMMENDATIONS

The preliminary dispositions and relocation strategies identified herein, will provide the basis for establishing requirements and estimating costs for each alternative. Alternative analysis, project requirements, and costs will be documented in the Draft Project Report.

Coordination with SCE and DWP are on-going and required to further define relocation strategies, project requirements, and to identify and develop agreements needed to implement strategies.

Relocation of SCE and DWP facilities may impact other utilities that are not directly affected by Alternatives 5A and 6A/B/C. Relocation of SCE and SCG facilities within public streets are expected to require further coordination. Additional studies are in development to further assess other specific requirements needed to implement the strategies.

The project improvements affect several utilities within street overcrossings or on separate utility bridges due to the freeway widening and necessary replacement of these structures. Some of these utilities are essential and service interruptions are highly restrictive.

Three options govern and are accounted for in cost estimates and contingencies. If relocation is required a determination is needed:

- To establish whether or not the utility service can be shut down, abandoned, and removed during the relocation.
- To assess the feasibility, or lack thereof, of temporarily shutting down the utility for a period of time to enable construction of the new bridge overcrossing, and then relocating the utility within the new bridge. This is the most common practice for bridge replacement in urbanized areas and relocation unit cost data is applied assuming this option.
- From the utility owner indicating the utility cannot be shut down. This typical requires relocation within either a temporary or permanent bridge structure therefore allowing demolition of the existing bridge and construction of the new bridge overcrossing. Often, traffic handling during construction requires two-stage bridge construction, thereby facilitating utility relocations.

Jack and bore under proposed improvements is also an option, but is often not preferred due to higher costs. Therefore, it is not applied in unit costs and yet is included in contingent costs.

# 6.0 REPORT LIMITATIONS

This report has been prepared for the I-710 Corridor EIR/EIS Project and is to be used solely in the planning of the project described in this report. This report may not contain sufficient information for other uses or the purposes of other parties.

The conclusions presented in this report are based upon limited design of alternative features and available as-built utility data obtained. The possibility of different and/or additional utility records and data cannot be discounted.

Existing easements, property ownership, title reports, franchise agreements, and other property information were not researched for this study.

Professional judgments presented in this report are based on an evaluation of the technical information gathered, the understanding of the proposed construction and general experience in the field of highway engineering. The consultant does not guarantee the performance of the project in any respect, only that the engineering work and judgments rendered meet the standard of care in the profession.

# 7.0 REFERENCES

Caltrans Highway Design Manual (HDM), September 2006

Caltrans Right of Way Manual, Chapter 13

Caltrans Project Development Procedures Manual, Chapter 3, Section 13; Chapter 8, Section 7, Appendix LL, Section 3-1

Caltrans Permits Manual, Sections 605, 618, 619

Cal/OSHA Electrical Safety Order 2946

California Public Utilities Commission (CPUC), General Orders 26D, 95, 128

National Electrical Safety Code (NESC), Rule 234

American Association of State Highway and Transportation Officials (AASHTO) Roadway Design Manual, Chapter 10

# APPENDIX 1 - SEGMENTS DESCRIPTION

# APPENDIX 2 - UTILITY BASE MAPS

# (MAPS LOCATED ON CD)

# APPENDIX 3 - UTILITY CROSSING REPORT

# APPENDIX 4 - DWP & SCE RELOCATION STRATEGIES

# APPENDIX 5 – CALTRANS UTILITY DATA