Regional Connector Transit Corridor
Draft Environmental Impact Statement/
Draft Environmental Impact Report

APPENDIX H

FINAL ALTERNATIVES ANALYSIS REPORT

State Clearinghouse Number: 2009031043

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ES.1 Introduction

The Regional Connector Transit Corridor project (Regional Connector) is a vital, core piece of public transit infrastructure that enhances investments already made in the existing Metro Light Rail system. It will link four distinct travel corridors covering over 50 miles across the County through the center of downtown Los Angeles. The Los Angeles County Metropolitan Transportation Authority (Metro) has envisioned this connection for nearly two decades beginning in the late 1980's/early 1990's. At the time of the Metro Rail system's inception, the Long Beach and Pasadena light rail branches were envisioned to meet in downtown Los Angeles and operate as a single line[1]. However, the downtown segment was never built, and passengers now must transfer to the Metro Red Line to move between the two branches as well as reach many major central business district destinations. This solution has functioned acceptably during the Metro Rail system's infancy. However, with the Metro Expo Line to Culver City and Metro Gold Line Eastside Extension opening over the next two years, increasing ridership, increasing traffic congestion, and new major regional developments occurring in downtown Los Angeles, a direct high-capacity link to tie the unconnected regional branches of Metro's light rail system together through downtown is needed.

The proposed Regional Connector would directly link 7th St./Metro Center Station (the Metro Blue Line and Metro Expo Line (2010) terminus) located at 7th and Figueroa Streets, to the Little Tokyo/Arts District Station (a new Metro Gold Line Station opening in 2009) at 1st and Alameda Streets. The project would include several new stations downtown and would allow train operations between Long Beach and Pasadena without the need to transfer. Simultaneously, it would allow train operations between East Los Angeles and Culver City also without the need to transfer. It would also provide passengers with direct trains into the heart of the business and civic districts, whereas the line currently passes along the periphery and then north to Union Station. Metrolink, Amtrak, and Metro Red Line passengers would also have the option to transfer to the Long Beach-Pasadena and East Los Angeles-Culver City trains and reach portions of the downtown area not presently served by Metro Rail. The Regional Connector is a project which provides regional benefits to residents across the County, and can be accomplished with just 1.8 miles of a new set of dual tracks.

Since conclusion of early studies conducted in the early 1990's and even as late as 2004, much has changed in the downtown Los Angeles area, including the availability of right-of-way due to new civic and private developments and the residential explosion created by new development and re-use of historic underutilized buildings. Alternatives previously studied, while mindful of the tight physical and environmental constraints concerning the construction of new infrastructure in a dense urban area like downtown Los Angeles, are no longer applicable. Particularly challenging is the lack of vacant rail rights-of-way for transit vehicles to use, the high traffic pedestrian volumes on streets throughout the project study area (PSA), and the high volume of trains that will funnel into the Regional Connector. New solutions that negotiate these difficulties while maximizing benefits to the regional transit system, provide opportunities for land use improvements, and minimize impingement on the existing street

[1] Pasadena to Los Angeles Project EIR 1988-1993

network have been challenging to develop. Some proposed solutions include splitting the tracks into a couplet to avoid taking two lanes on the same street for rail use, building underpasses to eliminate conflicts between trains and automobiles, and building the tracks underground. The following map (Figure ES-1) shows the PSA and illustrates the present gap in the light rail network.

Figure ES-1 Project Study Area

By linking the 7th St./Metro Center and Little Tokyo/Arts District Stations, Metro will have the ability to provide continuous service across the region in two different directions: east/west and north/south without the need for transfer. The Regional Connector would thus provide a faster, more attractive transit option with greater access to the downtown area and mobility region-wide. The project would make possible the operation plan shown in Figure ES-2. Without it, each of the light rail branches shown would reach only the edge of downtown Los Angeles.

Recognizing the potential benefits to Southern California residents, the Metro Board authorized an Alternatives Analysis (AA) study in July 2007 to explore various technologies and route alignments for the Regional Connector. This report contains the results of that AA study.

Figure ES-2 Anticipated Service Plan

ES.2 Purpose of this Study

The AA is the first phase in the fixed guideway transit project development process defined by Metro and the Federal Transit Administration (FTA) under the New Starts program's Project Planning and Development process. The AA defines a specific transportation need in a corridor, identifies all reasonable alternatives and narrows down the alternatives based on a screening process using evaluation criteria developed during early scoping. The AA provides the reasoning for decisions regarding the identification and narrowing of alternatives. The study is based on evaluation criteria and measures consistent with FTA New Starts guidelines, including costs, benefits, environmental and community impacts and financial feasibility, as well as input from local stakeholders, community members, and public agencies.

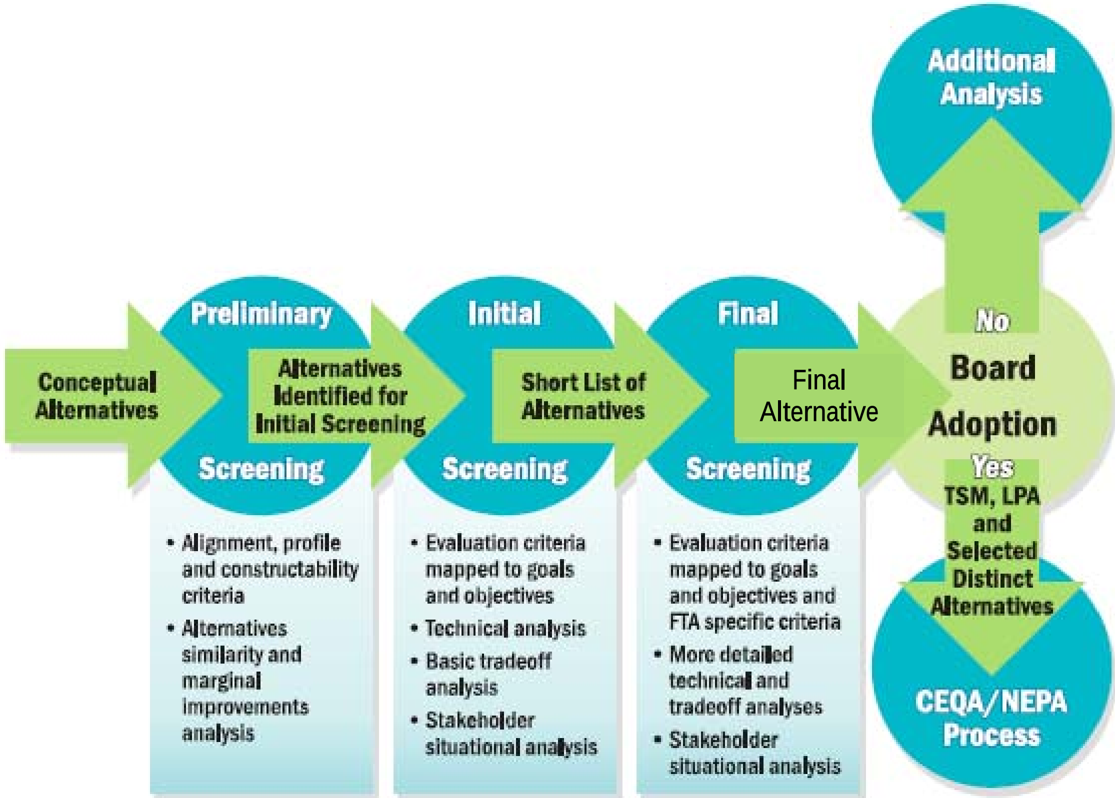


Figure ES-3 Alternatives Analysis Process

Relying on sound assumptions, public input, and initial conceptual engineering, this AA report includes a recommendation to carry a short list of alternatives into the next phase, which includes environmental documentation and clearance per the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), advanced conceptual engineering, and the selection of a Locally Preferred Alternative (LPA). Upon selection of the LPA and approval from FTA, final environmental documentation and preliminary engineering will be initiated. The process will ultimately lead to a certification of the environmental document, a Record of Decision by FTA, and potential negotiation of a Full Funding Grant Agreement between FTA and Metro. The following diagram (Figure ES-4) shows the AA phase with respect to the entire FTA New Starts process.

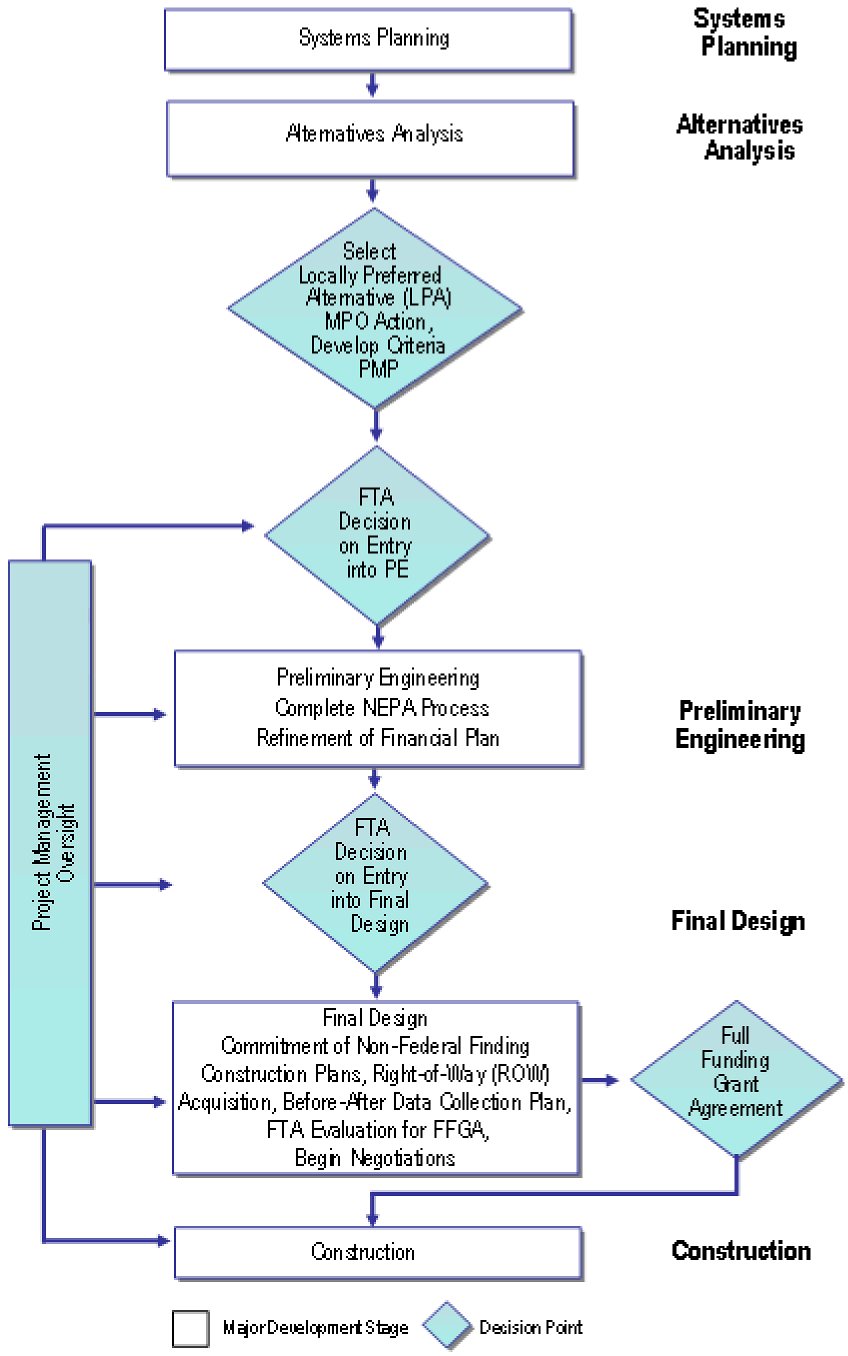


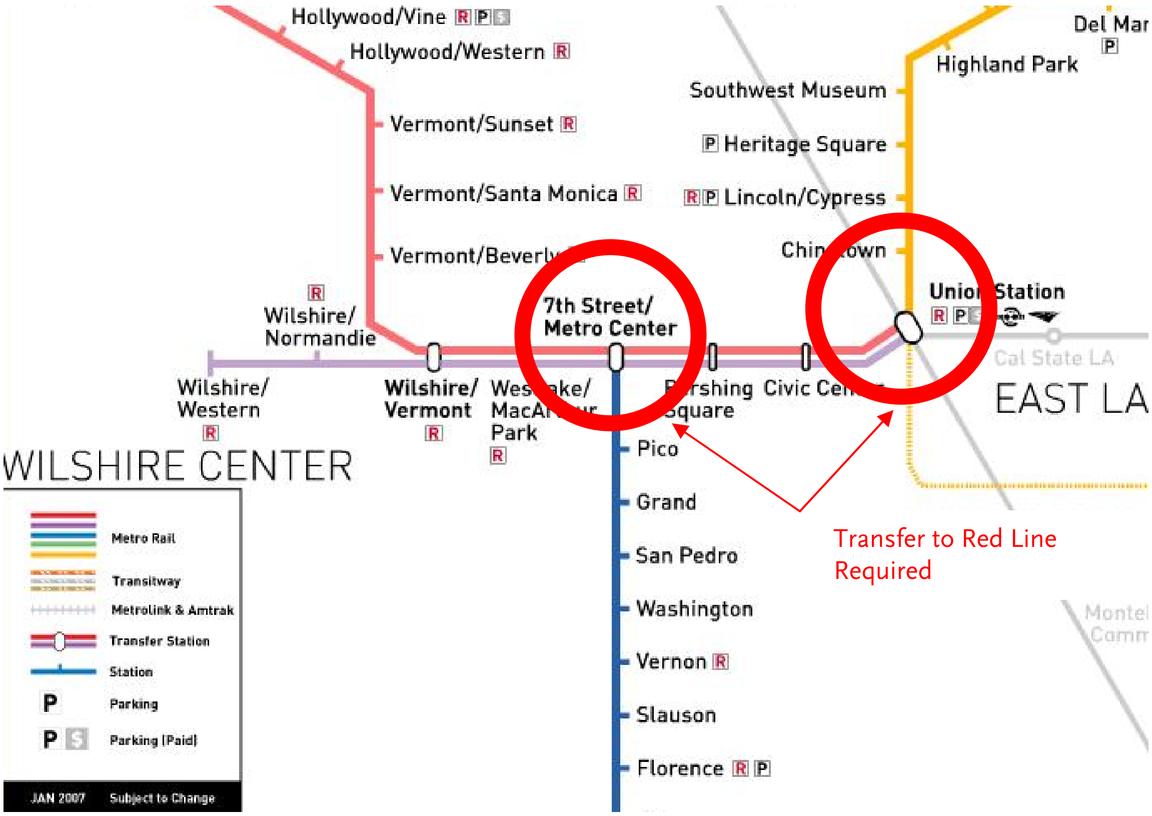
Figure ES-4 FTA New Starts Process
Graphic by Federal Transit Administration

ES.3 Background

The PSA is bounded by the Harbor Freeway (SR-110) on the west, the Santa Ana Freeway (US-101) on the north, Alameda St. on the east, and 7th and 9th Streets on the south. The area presently experiences heavy traffic congestion on weekdays, particularly on the surrounding freeways and the arterial streets leading to freeway on-ramps. Streets in the dense western portion of the PSA (Bunker Hill and the Financial District) routinely experience the highest traffic volumes, with 20,000-30,000 trips per day on some segments of Figueroa and Flower Streets. Though the volumes on these streets are high, the roadways are configured for one-way operation, and are six lanes wide in most places. As such, they accommodate traffic better than some of the narrower streets with lower traffic volumes elsewhere in the PSA. The worst-performing intersection in the PSA, 1st and Alameda Streets, operates at level of service (LOS, a measure of vehicular traffic) F during the morning rush hour, indicating severe congestion. In light of the rapid resurgence of development in the downtown area, traffic conditions are likely to worsen in the absence of improved transit connections to and within the PSA.

Wide roadway on Flower Street near 5th Street, with six automobile traffic lanes and one curb lane of parking. This segment of Flower Street carries about 20,000 cars on a typical weekday.

In the early 1990's, prior to the selection of a finalized rail transit route from downtown Los Angeles to Pasadena, the Los Angeles County Transportation Commission (LACTC, one of Metro's predecessors) studied the continuation of the Metro Blue Line from the existing 7th St./Metro Center Station north to Pasadena. However, LACTC decided to initiate the new light rail service to Pasadena from Union Station, concluding that in the interim riders would be required to transfer to the existing Metro Red Line, which connects Union Station to 7th St./Metro Center Station, until additional funding for a direct connection became available.



Interim solution for connections between the Metro Gold Line and Metro Blue Line selected by LACTC in 1990. Trips involving both the Metro Gold Line and the Metro Blue Line require two transfers.

In 2004, after the Metro Gold Line to Pasadena had opened and construction of the Metro Gold Line Eastside Extension had commenced, Metro initiated studies to revisit the connection between the Metro Gold and Blue Lines. Originally planned as an extension of the heavy rail Metro Red Line that would serve the strong east-west travel demand in the region, the Metro Gold Line Eastside Extension is currently being built as a light rail line to Union Station from East Los Angeles. In addition, the first phase of a new light rail line, the Metro Expo Line, is also being constructed between Culver City and 7th St./Metro Center Station. This first phase is scheduled for completion in 2010. The benefits of having three light rail lines serving four distinct transit corridors connecting through downtown Los Angeles allowing for cross-County trips on a single train prompted Metro to initiate an AA study that would guide the development and funding of the Regional Connector Transit Corridor project.

In June 2008, Metro included the Regional Connector Transit Corridor project in its Draft Long Range Transportation Plan (LRTP) as a rail project in the Tier 1 Unfunded Strategic Plan. At the moment, $160 million has been identified in the recent passage of the half-cent sales tax, Measure R, and additional funding will need to be secured to build and operate the line. This is consistent with Regional Transportation Plan (RTP) which was approved by the Southern California Association of Governments (SCAG) in May 2008.

ES.4 Purpose and Need for Transit Investment

As population, congestion and energy costs increase, there is a need to create mobility options for Los Angeles County. A transportation investment in the PSA will improve mobility, the environment, the economy and the livability for all of Los Angeles County. As the densest business district in the region, the downtown area includes major civic uses, high rise office buildings, the historic core, and multi-billion dollar entertainment venues, all surrounded by four major interstates and state highways operating at poor levels of service. Expansion of the roadway and highway network within the Regional Connector PSA is greatly limited due to the built-out nature of this central business core. The Metro Rail system provides an efficient alternative to driving for people travelling to the downtown area. However, Los Angeles County has several other dense business and activity districts not within downtown Los Angeles. While several of these activity centers are also served by the rail system, many passengers must pass through downtown to reach them.

At present, passengers wishing to travel through downtown Los Angeles on the light rail system must make two transfers, and many Metro Gold and Blue Line passengers need to transfer to the Metro Red Line to reach destinations within the downtown area. Future Metro Gold Line Eastside Extension and Metro Expo Line passengers will face the same delays (up to 20 minutes for transfers in some cases) and contribute to crowding on the Metro Red Line. According to the 2004 Metro Rail Onboard Survey, approximately half of all Gold Line riders used more than one train to complete their trips, suggesting that about 10,000 people are transferring between the Red and Gold Lines each day to travel in the direction of downtown Los Angeles. Ridership on the Metro Gold Line has grown by nearly one-third since 2004, so the number of passengers transferring to the Metro Red and Purple Lines today is likely even higher.

Surveys have not been completed for potential Metro riders of the Metro Gold Line Eastside Extension, the Metro Expo Line and the current riders of the Metro Blue Line. Updated surveys will be completed to determine size of stations and frequency of trains needed for the Regional Connector. A direct connection linking Metro's light rail lines together will allow for more transfer-free trips to be made through downtown Los Angeles from dense residential areas to other employment-rich districts. The following table shows the current and projected year 2030 Metro Rail boardings under No Build conditions.

Table ES-1 Current and Projected Year 2030 No Build Rail Boardings		
Line	Average Weekday Boardings – 2005-06	Projected Average Weekday Boardings - 2030
Metro Light Rail Lines	130,300	189,200
Metro Heavy Rail Lines	125,000	176,500
Total	255,300	365,700

Demographics

According to year 2005 data provided by SCAG, the PSA contains nearly 18,000 people at a density of 11,700 per square mile. However, there are over 168,000 jobs in the same area, at a density of 111,000 per square mile. This formidable imbalance between jobs and housing within the PSA results in heavy inbound commute traffic in the morning and similarly large outbound flows in the afternoon. Accordingly, the PSA records the highest levels of transit ridership in the region, and the existing transit system lifts a significant burden off of the freeways and arterial streets radiating from downtown Los Angeles. Improving the efficiency and speed of the transit system has historically been shown, particularly with the introduction of the Metro Rapid bus system and the existing Metro Rail system, to generate sizeable increases in ridership, especially in areas where the demand for transit service is already high. Additional transportation infrastructure will prove invaluable as the PSA grows. SCAG predicts that the PSA's population will increase by 16.5% and the number of employees will increase by 12% by 2030 (Figure ES-5). This is partly due to dozens of new and adaptive reuse housing developments currently under construction in the area.

Because the Regional Connector is intended to close a gap in the county-wide rail system, it is important to note that Los Angeles County's population is expected to grow to 12.2 million people (22 percent) by 2030, and no freeway expansion projects are planned near the downtown area. Increasing transit capacity and making operations more efficient will be key in allowing the transportation system to accommodate the projected regional growth. Table ES-2 shows the projected growth in both the PSA and Los Angeles County as a whole.

The following maps (Figures S-6 to S-9) show the population and employment distribution within the PSA. The downtown area has a high concentration of both jobs and residences. As the maps show, areas that contain relatively few jobs contain high numbers of residents, and vice versa. As such, nearly all areas of the PSA contain transit supportive land uses. Most of the jobs and residences are within walking distance of either the proposed Regional Connector routes, or the existing Metro Red and Purple lines. As such, the proposed rail network would provide good coverage of most jobs and housing units in downtown Los Angeles, both now and in 2030.

Table ES-2 Population, Household, and Employment Growth			
	2005	2030	Forecast Increase Between 2005-2030
Population			
Study Area	17,795	20,738	16.5%
LA County	10,010,315	12,193,030	21.8%
Study Area % of LA County	0.18%	0.17%	---
Households			
Study Area	9,673	12,287	27.0%
LA County	3,298,210	4,116,567	24.8%
Study Area % of LA County	0.29%	0.39%	---
Employment			
Study Area	168,328	188,591	12.0%
LA County	4,644,010	5,651,043	21.7%
Study Area % of LA County	3.62%	3.34%	---

Source: SCAG, 2005 data and 2030 projections

Of the 18,000 people that currently live in the PSA, most live in the northern portion of Bunker Hill and the area south of Little Tokyo, both of which would have new rail stations in more proximate locations than the existing ones upon implementation of the Regional Connector. There is evidence of concentrated levels of transit dependency in the PSA, since 8,600 of the 9,700 households in the area do not have cars, and 7,200 are classified as low income (average annual salary below $12,755 for a two-person household). Furthermore, children and the elderly are among those most likely to use public transportation because they often lack drivers' licenses and access to private automobiles, and they account for over one-quarter of the PSA's population. As such, a large portion of PSA residents stand to benefit from the new businesses, developments, and amenities in the downtown area, and will augment ridership volumes on the Regional Connector. Like the overall population, low income households are concentrated in the northern portion of Bunker Hill and the southeastern section of the PSA.

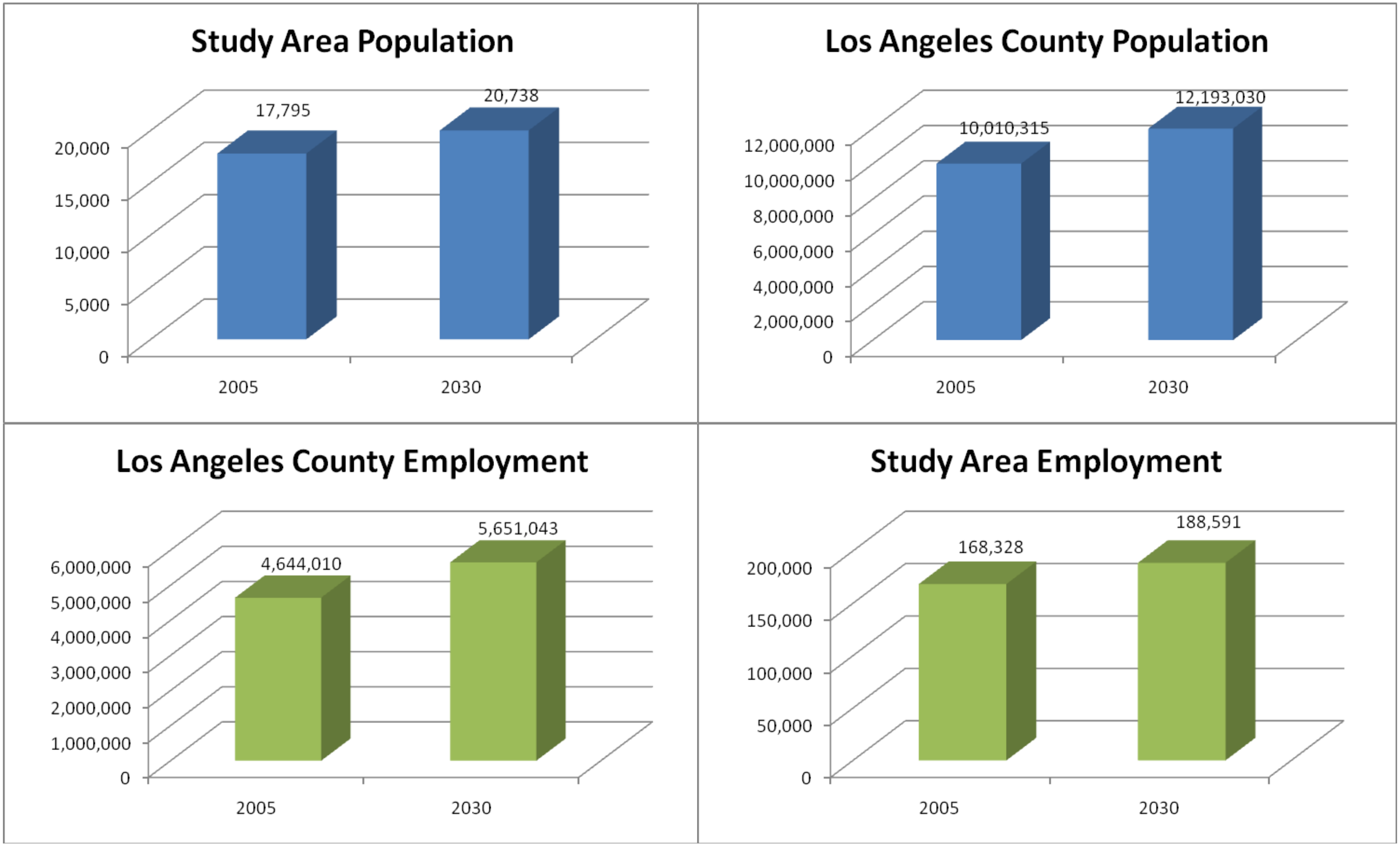
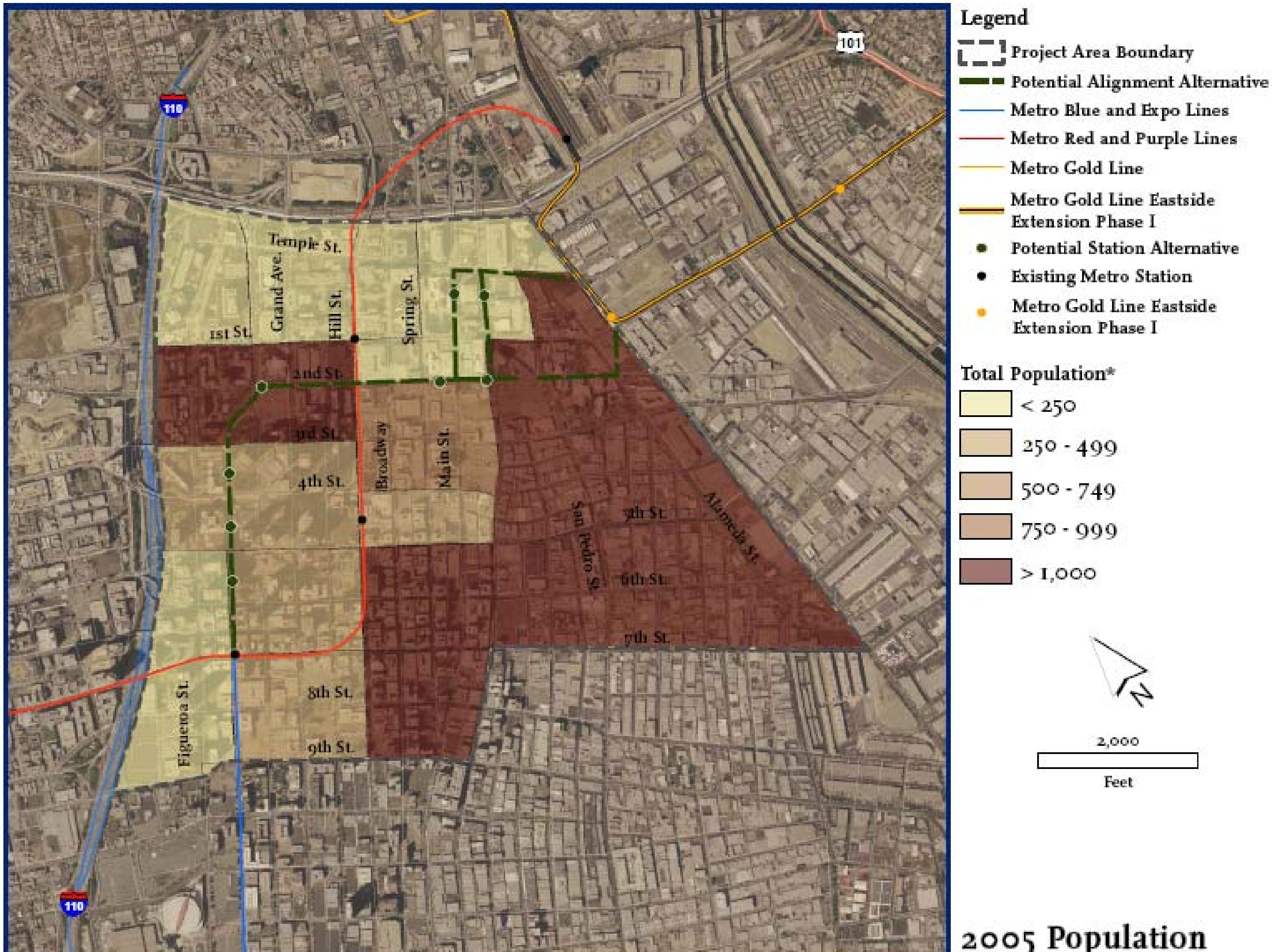
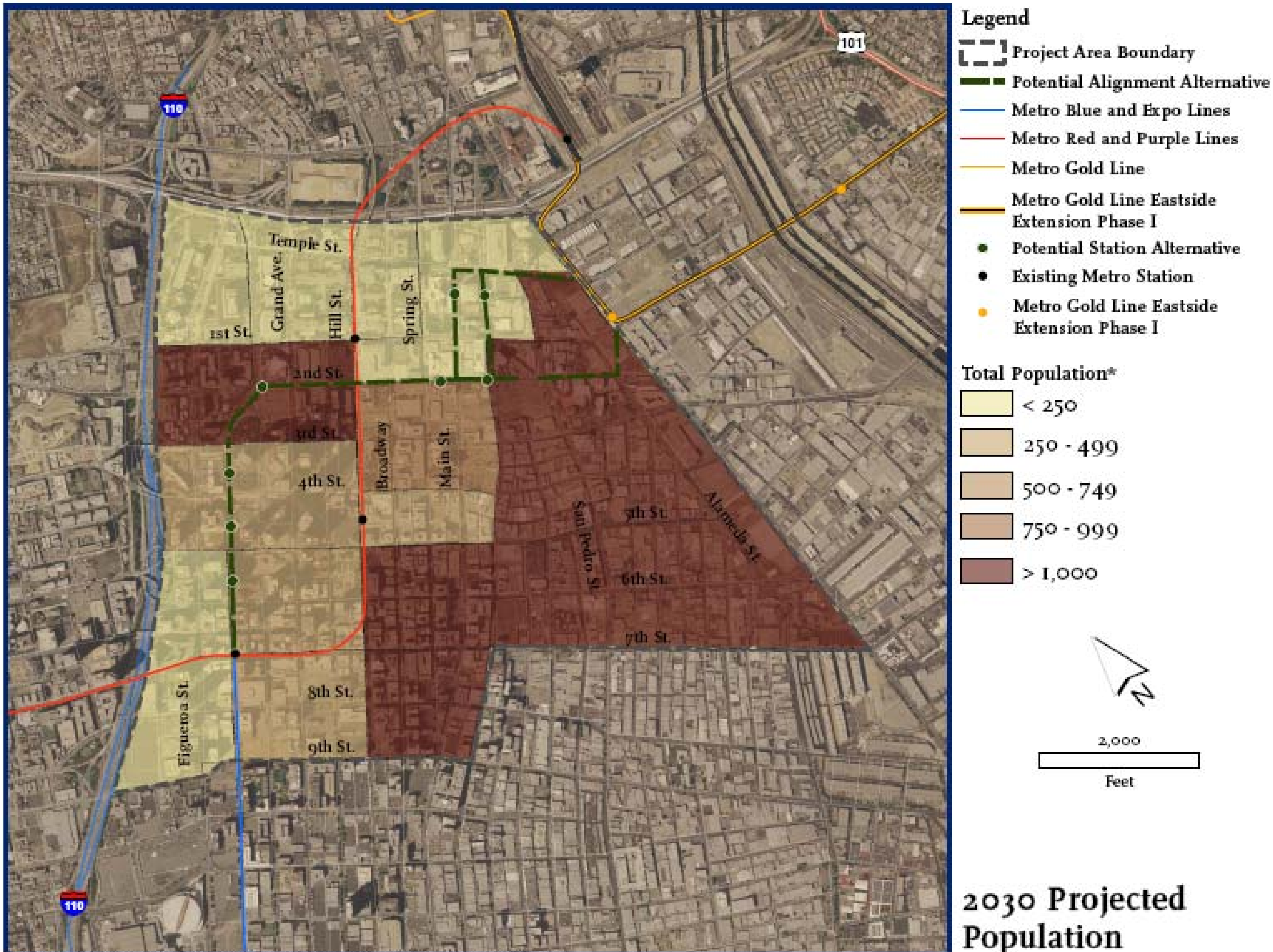


Figure ES-5 Projected Population and Employment Growth



Source: U.S. Census Bureau, 2005. * Weighted-Average 2005 total population within a census tract.

Figure ES-6: Year 2005 Population in the PSA



Source: U.S. Census Bureau, 2005. * Weighted-Average 2030 projected total population within a census tract.

Figure ES-7: Year 2030 Population in the PSA

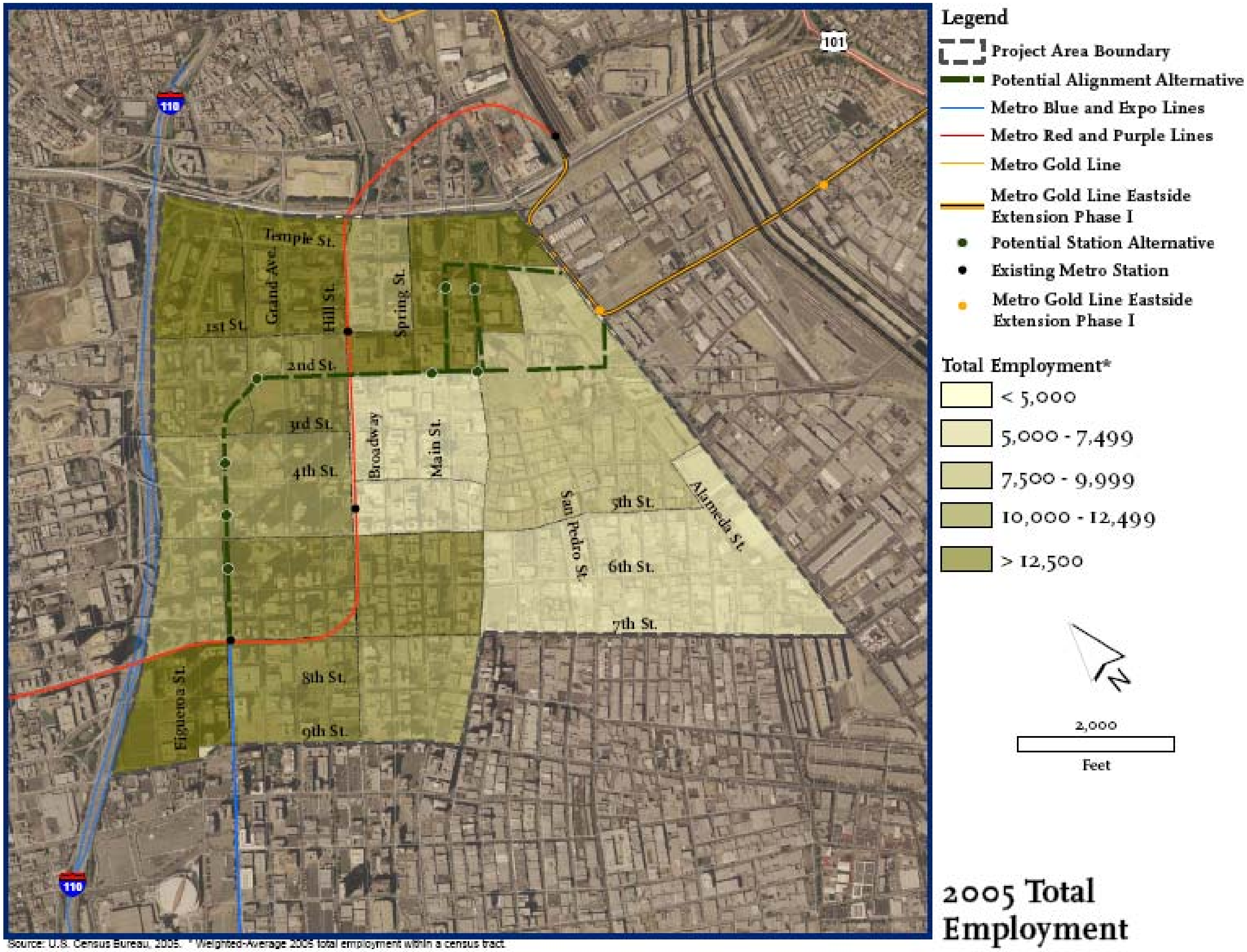


Figure ES-8: Year 2005 Employment in the PSA

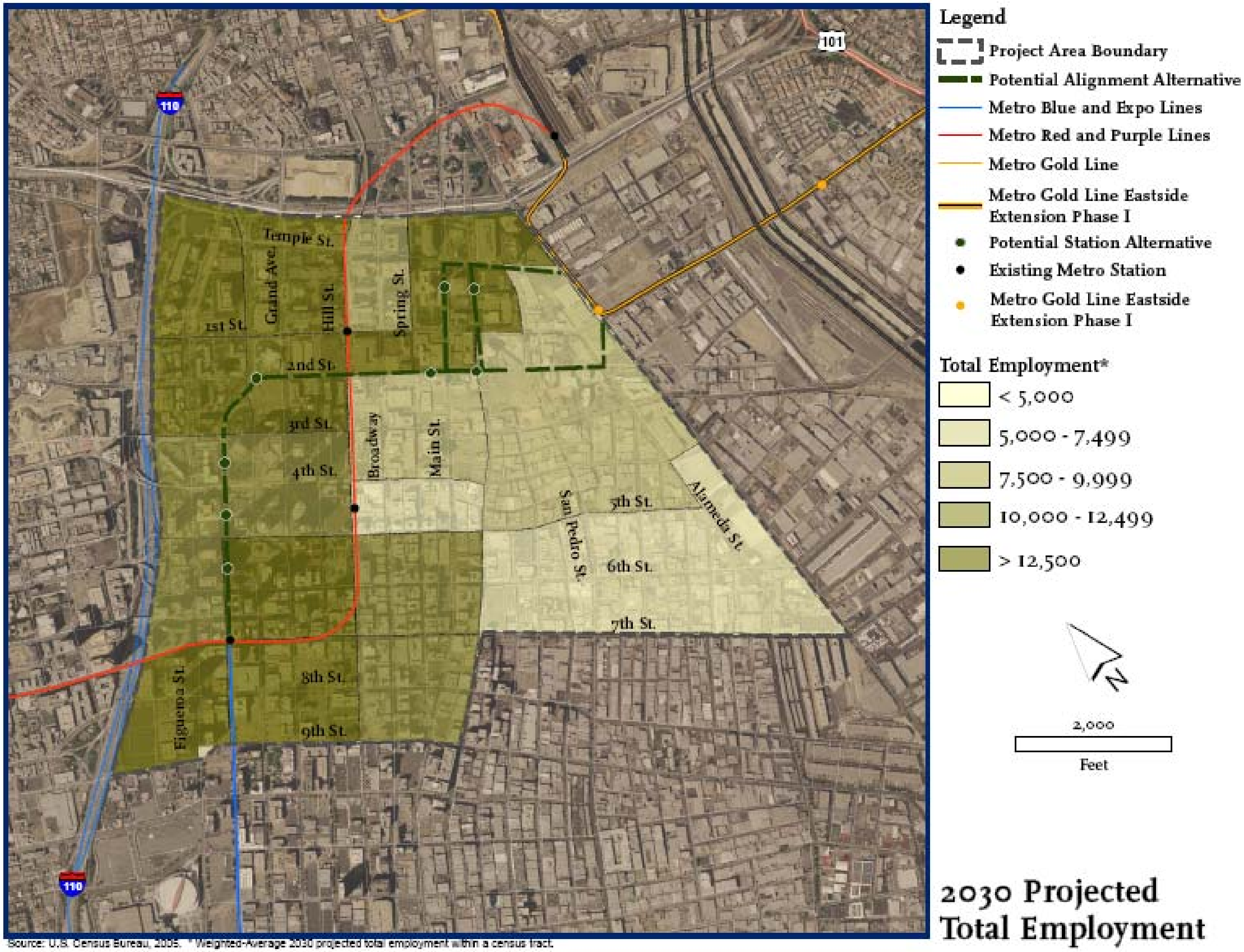


Figure ES-9: Year 2030 Employment in the PSA

Table ES-3 Transit Dependent Demographic Information

	Study Area	LA County	Study Area % of LA County
Population	17,795	10,010,315	0.18%
Under 18 years	976	2,798,604	0.03%
Over 65 years	3,497	926,670	0.38%
Households	9,673	3,298,210	0.29%
No vehicle households	8,586	671,214	1.28%
Use public transportation	1,025	254,091	0.40%
Low income households	7,244	1,481,896	0.49%
Total employment	168,328	4,644,010	3.62%

Source: U.S. Census Bureau, 2005

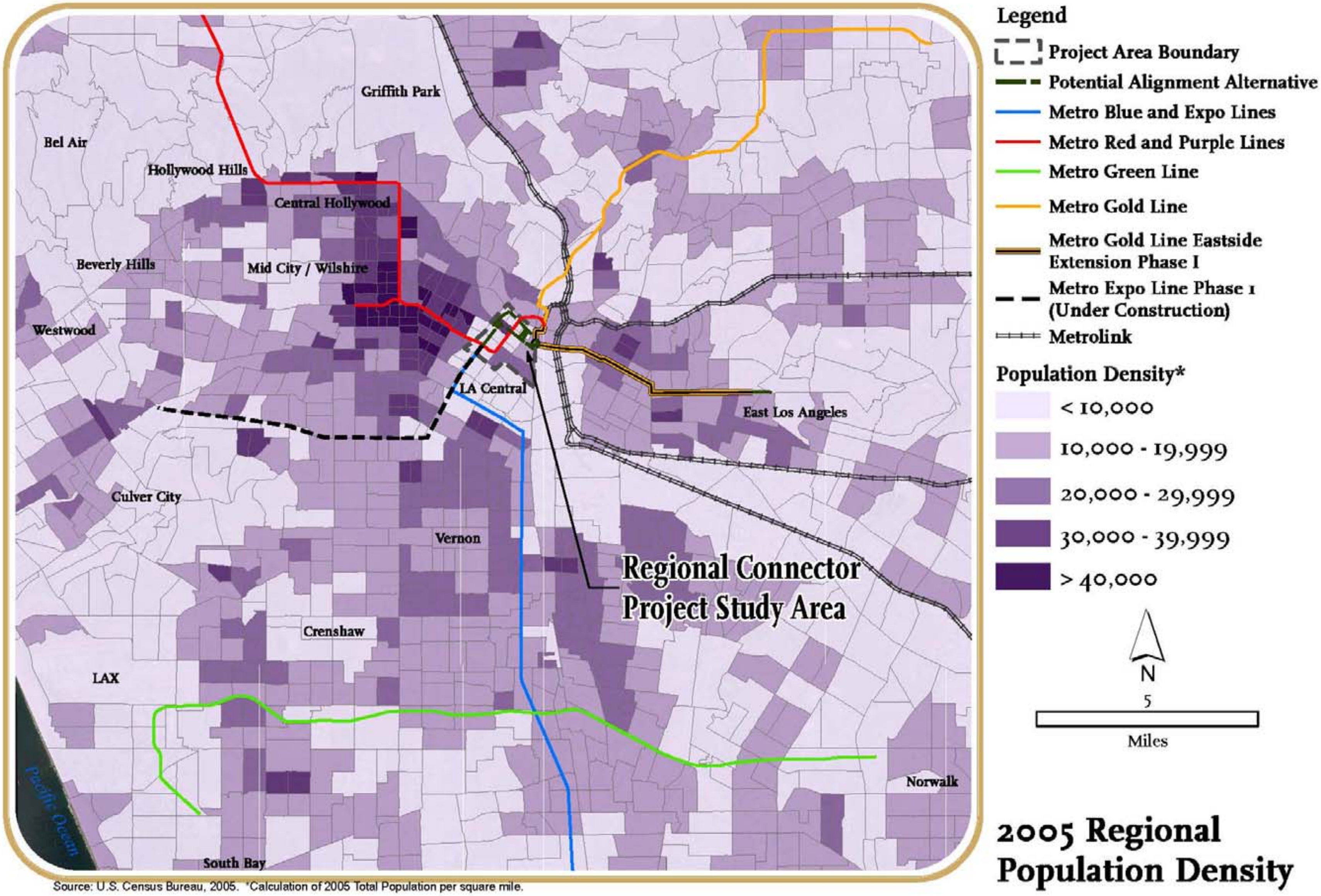
Like the PSA, Los Angeles County as a whole is expected to undergo a similar growth spurt over the next two decades. Figures ES-10 through ES-13 illustrate these growth patterns. As shown by the maps, the Metro Rail system passes through many areas with dense employment and residential land uses, including downtown Los Angeles. With large numbers of people within walking distance of the rail lines, the system-wide efficiency gains and better connections between lines generated by the Regional Connector would likely result in substantially increased transit use.

Transportation System

Downtown Los Angeles has the highest concentration of transit service in Los Angeles County. Historic growth patterns have established downtown as the crossroads of the region's transportation system. Ten transit operators provide service to 125 stops in the area along 112 bus routes and three rail lines (four when the Metro Expo Line opens in 2010). Bus service runs in a grid pattern through the downtown area, with the heaviest service on 1st St., the 4th St./5th St. couplet, Hill St., Broadway, the Main St./Spring St. couplet, and the Grand Ave./Olive St. couplet. There is also heavy pedestrian activity throughout the PSA. On the Metro Bus system alone, there are over 90,000 daily boardings within the PSA. Headways, the time between buses or trains on the same line, are as little as two minutes during peak hours on some lines, and there are dozens of express "freeway flyer" style lines that provide added service during peak periods.

The Metro Rail system extends outward from downtown Los Angeles with 73 track miles and 62 stations. Altogether, it logs about 255,000 daily boardings system-wide. Overall, the countywide Metro Bus and Metro Rail systems average 1.6 million boardings each weekday. The busiest routes travel to the areas east and west of downtown, both of which will have expanded light rail service within the next two years. With downtown Los Angeles firmly established as the center of the regional transit network, improved connections and service efficiency in the PSA will reap benefits for transit users throughout Los Angeles County.

The relatively low population compared to the number of jobs in the PSA results in over 70,000 inbound commuters every day, and many more passing through. With such high travel demand in and out of the PSA, all of the freeways entering downtown Los Angeles operate at LOS F during peak hours, indicating severe congestion and delays. Like the PSA, most areas of Los Angeles County are affected by freeway congestion, though traffic volumes in the PSA are among the worst, as evidenced by Figure ES-14.



Source: U.S. Census Bureau, 2005. *Calculation of 2005 Total Population per square mile.

Figure ES 10 2005 Regional Population Density

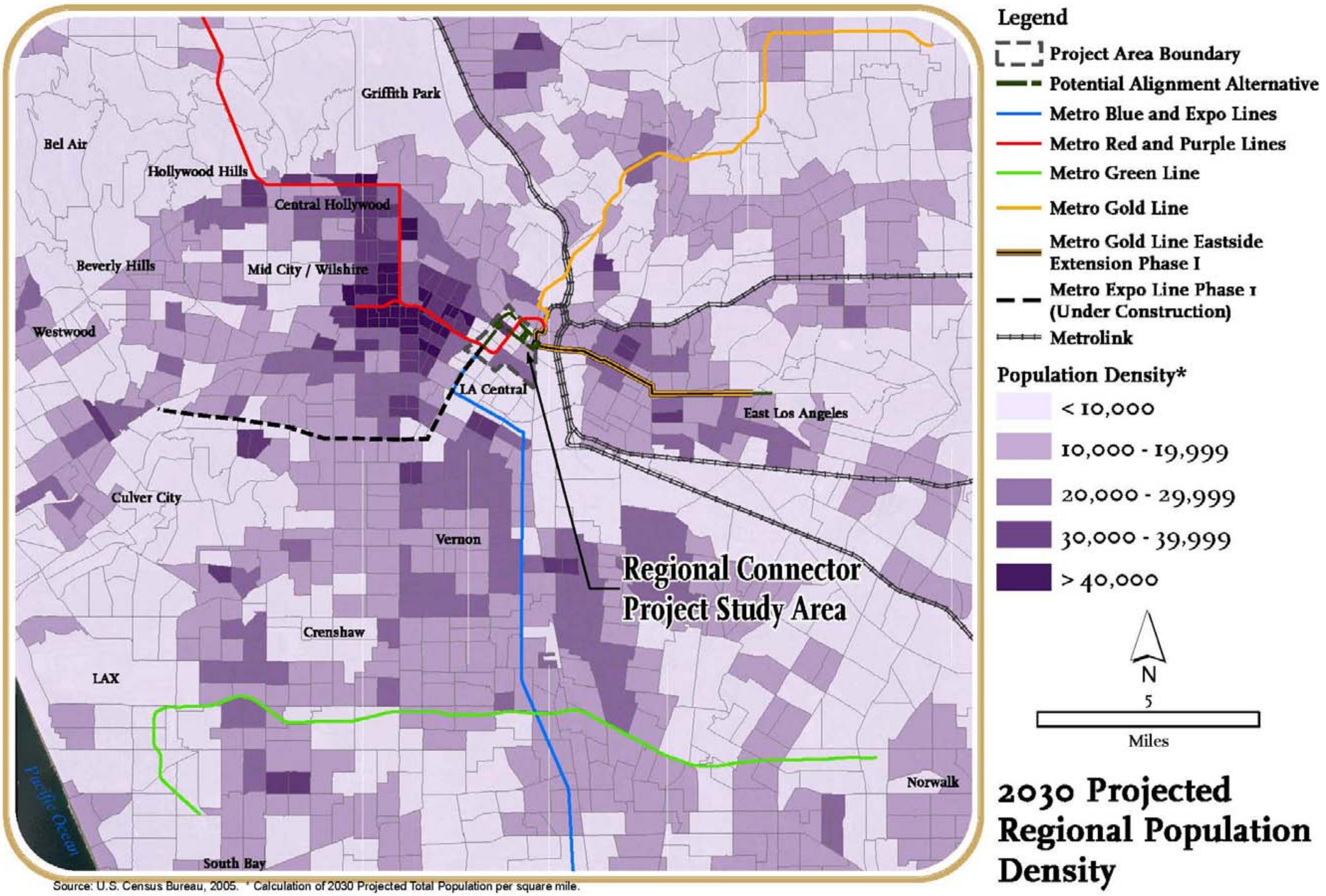
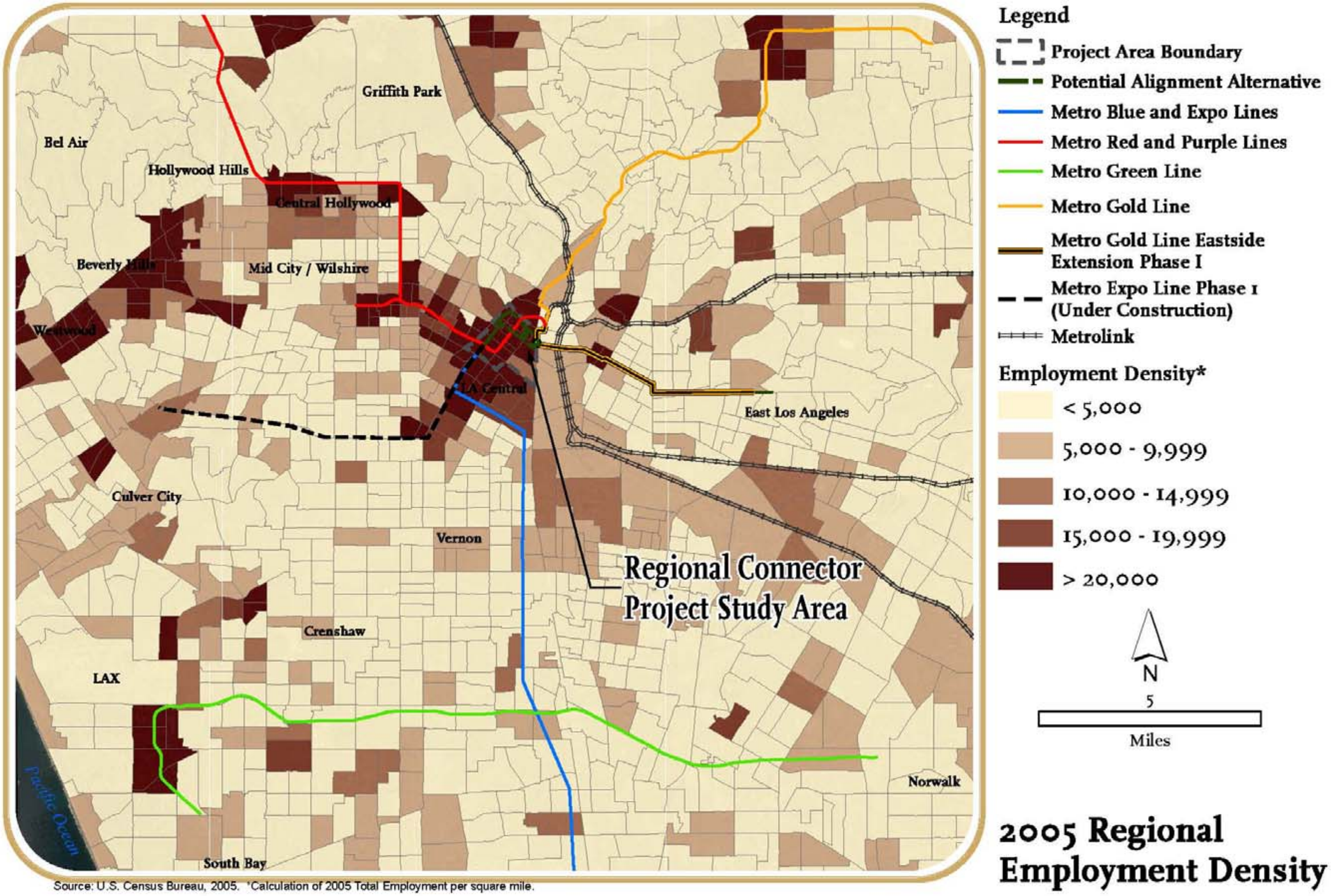
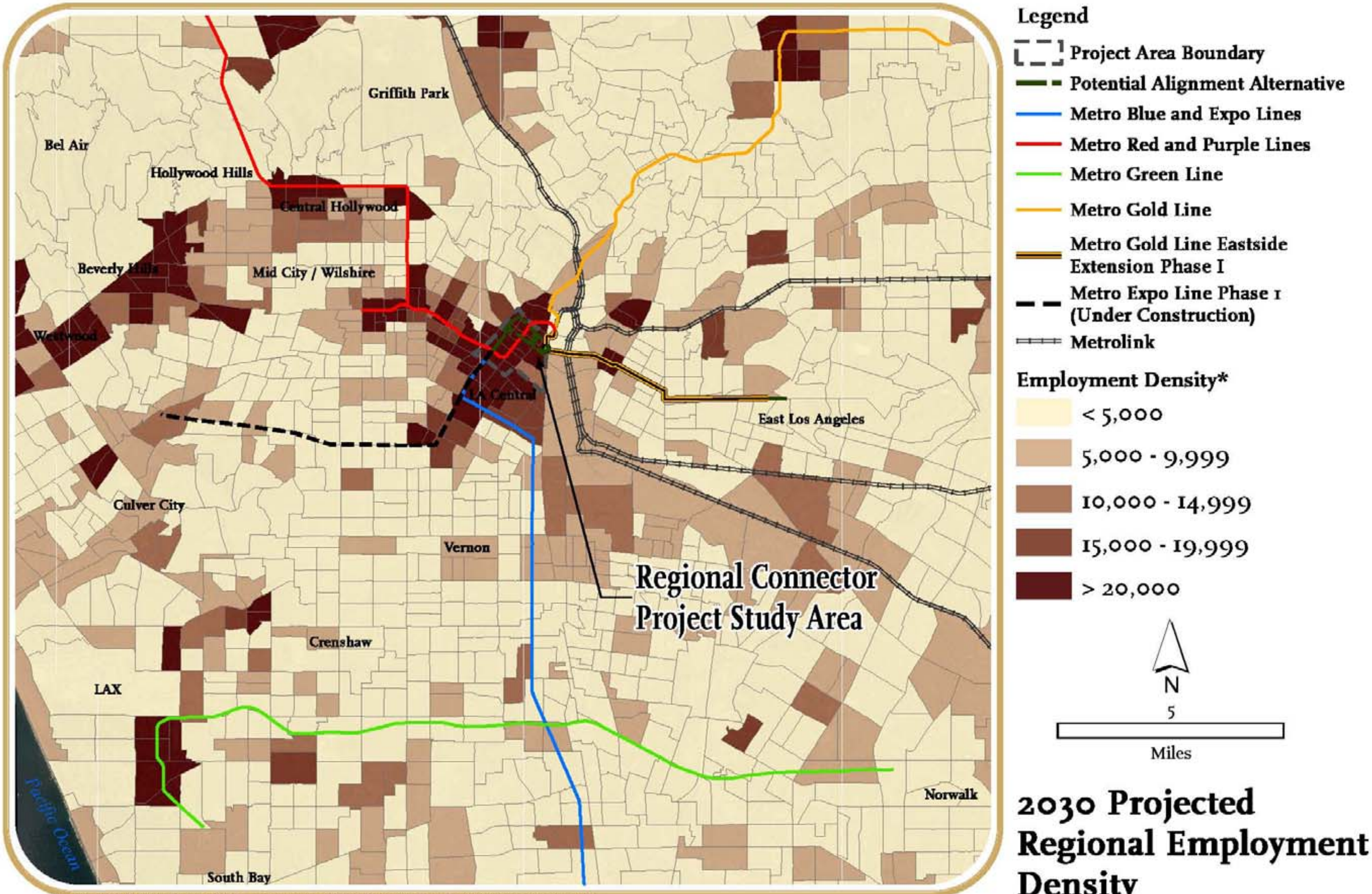


Figure ES-11 2030 Project Regional Population Density



Source: U.S. Census Bureau, 2005. *Calculation of 2005 Total Employment per square mile.

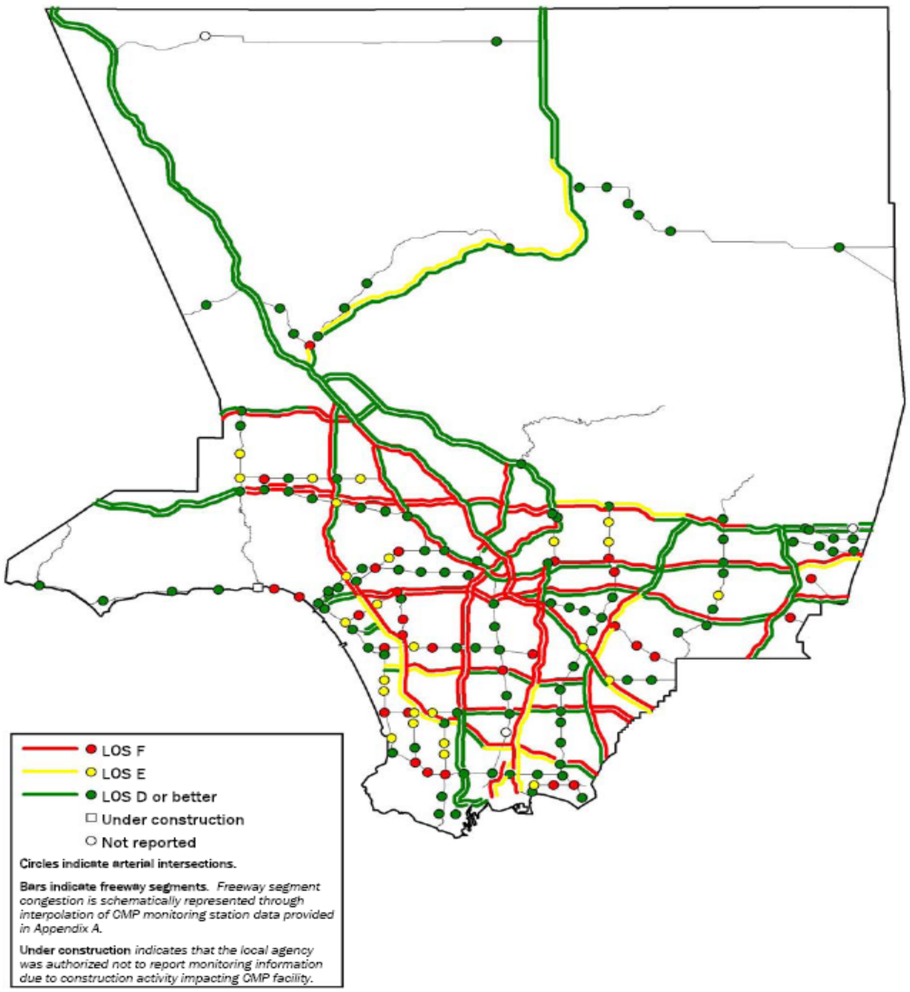
Figure ES 12 2005 Regional Employment Density



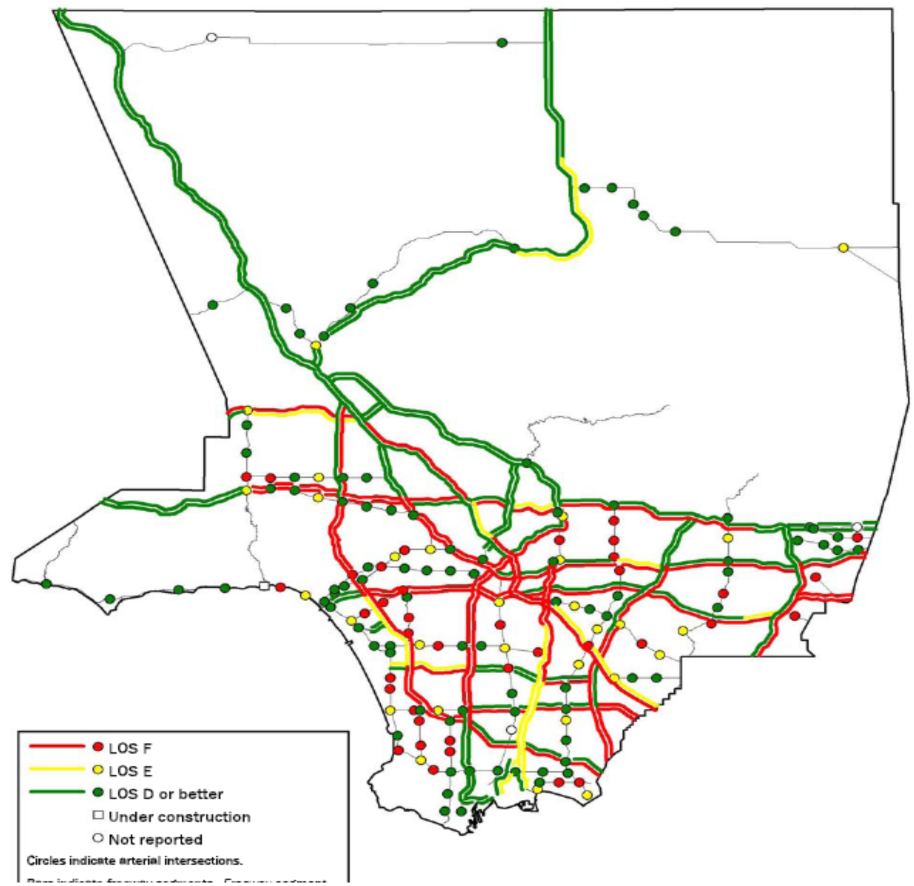
Source: U.S. Census Bureau, 2005. * Calculation of 2030 Projected Total Employment per square mile.

Figure ES-13 2030 Projected Regional Employment Density

2003 CMP HIGHWAY AND ROADWAY SYSTEM AM PEAK HOUR LEVELS OF SERVICE



2003 CMP HIGHWAY AND ROADWAY SYSTEM PM PEAK HOUR LEVELS OF SERVICE



2004 Congestion Management Program for Los Angeles County

Figure ES-14 Freeway Levels of Service

Level of Service definitions are provided in Table ES-4. On surface streets, many intersections in the PSA carry upwards of 4,000 vehicles during their busiest hour, with many of these located on Figueroa and Flower Streets. Some of worst LOS ratings occur at some of the narrow intersections along 2nd St., but the only intersection with a rating of LOS F is at 1st and Alameda Streets. By 2030, two additional intersections are expected to deteriorate to LOS F in the absence of one of the Regional Connector build alternatives. The following tables (Tables S-5 and S-6) summarize the levels of service recently observed (2007) in the PSA.

Table ES-4 Level of Service Definitions

Level of Service	Volume/Capacity Ratio	Definition
A	0.000 - 0.600	FREE FLOW. No vehicle waits longer than one red light and no green light phase is fully used.
B	0.601 - 0.700	REASONABLY FREE FLOW. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 - 0.800	STABLE FLOW. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 - 0.900	APPROACHING UNSTABLE FLOW (acceptable for urban conditions). Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 - 1.000	UNSTABLE FLOW (practical capacity). Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	>1.000	FORCED OR BREAKDOWN FLOW. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. There are tremendous delays with continuously increasing queue lengths.

Source: Transportation Research Board, *Highway Capacity Manual*, 2000

The high intersection traffic volumes are largely attributable to the PSA's position as a major regional employment hub. Travel demand from all directions is high, especially from the areas east and west of the PSA. Of the relatively few home-based work trips originating in the PSA, most are bound for the Central East, Central West, and West Los Angeles areas. This is further illustrated in the spider diagrams in Figure ES-15 and Figure ES-16:

Table ES-5 Existing (2007) Intersection Level of Service				
	AM Peak Hour		PM Peak Hour	
Intersection	V/C Ratio	LOS	V/C Ratio	LOS
Hill St. / 1st St.	0.62	B	0.73	C
Broadway / 1st St.	0.63	B	0.56	A
Spring St. / 1st St.	0.54	A	0.45	A
Main St. / 1st St.	0.44	A	0.55	A
Los Angeles St. / 1st St.	0.53	A	0.58	A
Judge John Aiso St. / 1st St.	0.60	A	0.69	B
Alameda St. / 1st St.	1.03	F	0.88	D
Broadway / 2nd St.	0.84	D	0.46	A
Spring St. / 2nd St.	0.48	A	0.40	A
Main St. / 2nd St.	0.30	A	0.62	B
Los Angeles St. / 2nd St.	0.46	A	0.59	B
San Pedro St. / 2nd St.	0.40	A	0.52	A
Central Ave. / 2nd St.	0.39	A	0.54	A
Alameda St. /2nd St.	0.67	B	0.67	B
Broadway / 3rd St.	0.72	C	0.60	A
Spring St. / 3rd St.	0.59	A	0.55	A
Main St. / 3rd St.	0.53	A	0.73	C
Los Angeles St. / 3rd St.	0.66	B	0.57	A
San Pedro St. / 3rd St.	0.63	B	0.44	A
Central Ave. / 3rd St.	0.58	A	0.41	A
Alameda St. / 3rd St.	0.78	C	0.57	A
Figueroa St. / 3rd St.	0.65	B	0.84	D
Hope St. / Temple St.	0.75	C	0.82	D
Grand Ave. / Temple St.	0.65	B	0.68	B
Broadway / Temple St.	N/A	N/A	0.76	C
Spring St. / Temple St.	0.58	A	0.42	A
Main St. / Temple St.	0.39	A	0.69	B
Los Angeles St. / Temple St.	0.55	A	0.63	B
Judge John Aiso St. / Temple St.	0.36	A	0.50	A
Alameda St. / Temple St.	0.64	B	0.65	B

Table ES-6 Existing (2007) Roadway Segment Average Daily Traffic (ADT) Analysis							
Primary Street	Cross Street	Facility Type	Number of lanes	Capacity	ADT	V/C Ratio	LOS
Flower St.	3rd St.	Secondary	4	28,000	11,177	0.399	A
	5th St.	Secondary	6	45,000	19,920	0.443	A
	6th St.	Secondary	4	30,000	17,386	0.580	A
	Wilshire Blvd.	Secondary	4	30,000	19,434	0.648	B
	7th St.	Secondary	4	30,000	18,908	0.630	B
2nd St.	Alameda St.	Secondary	3	21,000	8,176	0.389	A
	Central Ave.	Secondary	2	14,000	10,452	0.747	C
	Los Angeles St.	Secondary	3	21,000	16,244	0.774	C
	Main St.	Secondary	3	21,000	19,630	0.935	E
	San Pedro St.	Secondary	2	14,000	13,371	0.955	E
	Spring St.	Secondary	4	28,000	14,394	0.514	A
Los Angeles St.	1st St.	Secondary	4	28,000	18,559	0.663	B
	2nd St.	Secondary	4	28,000	17,156	0.613	B
	Temple St.	Secondary	5	35,000	22,036	0.630	B
Main St.	1st St. 1-Way	Major Class II	3	25,500	12,079	0.474	A
	2nd St. 1-Way	Major Class II	3	25,500	13,711	0.538	A
	Temple St.	Major Class II	4	34,000	25,626	0.754	C
Temple St.	Judge John Aiso St.	Major Class II	4	32,000	17,114	0.535	A
	Los Angeles St.	Major Class II	4	32,000	16,809	0.525	A
	Main St.	Major Class II	4	32,000	17,032	0.532	A
1st St.	Alameda St.	Secondary	4	28,000	21,538	0.769	C
	Central Ave.	Secondary	4	28,000	23,081	0.824	D
	Los Angeles St.	Secondary	6	42,000	22,099	0.526	A
	Main St.	Secondary	6	42,000	23,908	0.569	A
	Spring St.	Secondary	6	42,000	20,205	0.481	A
3rd St.	Flower St.	Secondary	4	30,000	19,133	0.638	B
	Spring St.	Secondary	3	22,500	17,564	0.781	C
	Los Angeles St.	Secondary	3	22,500	17,965	0.798	C
	Main St.	Secondary	3	22,500	16,151	0.718	C
Alameda St.	1st St.	Major Class II	4	32,000	30,514	0.954	E
	2nd St.	Major Class II	4	32,000	27,881	0.871	D

Year 2006 Home Based Work Transit Trips
From Outside Districts to the Regional Connector Study Area

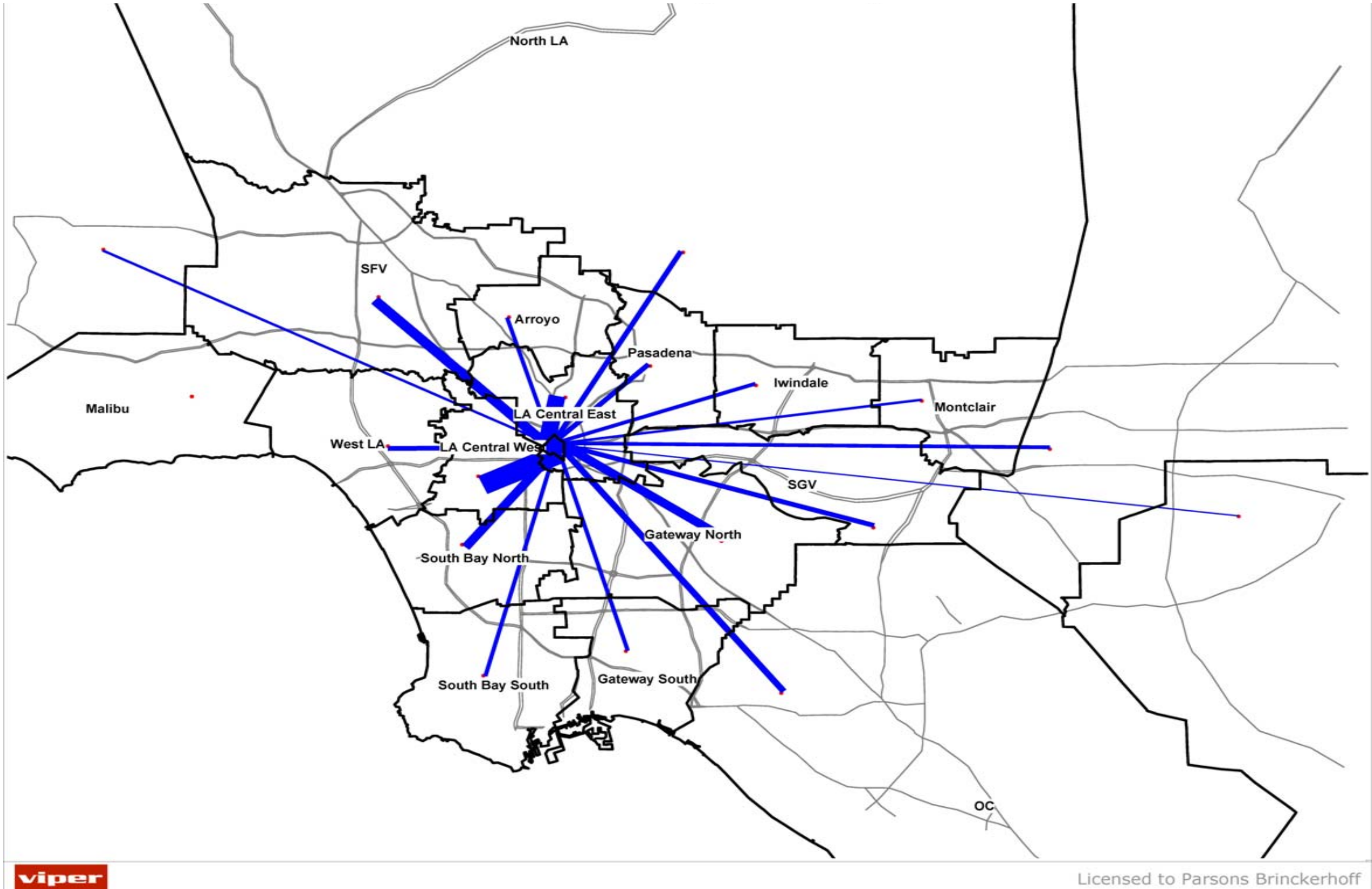
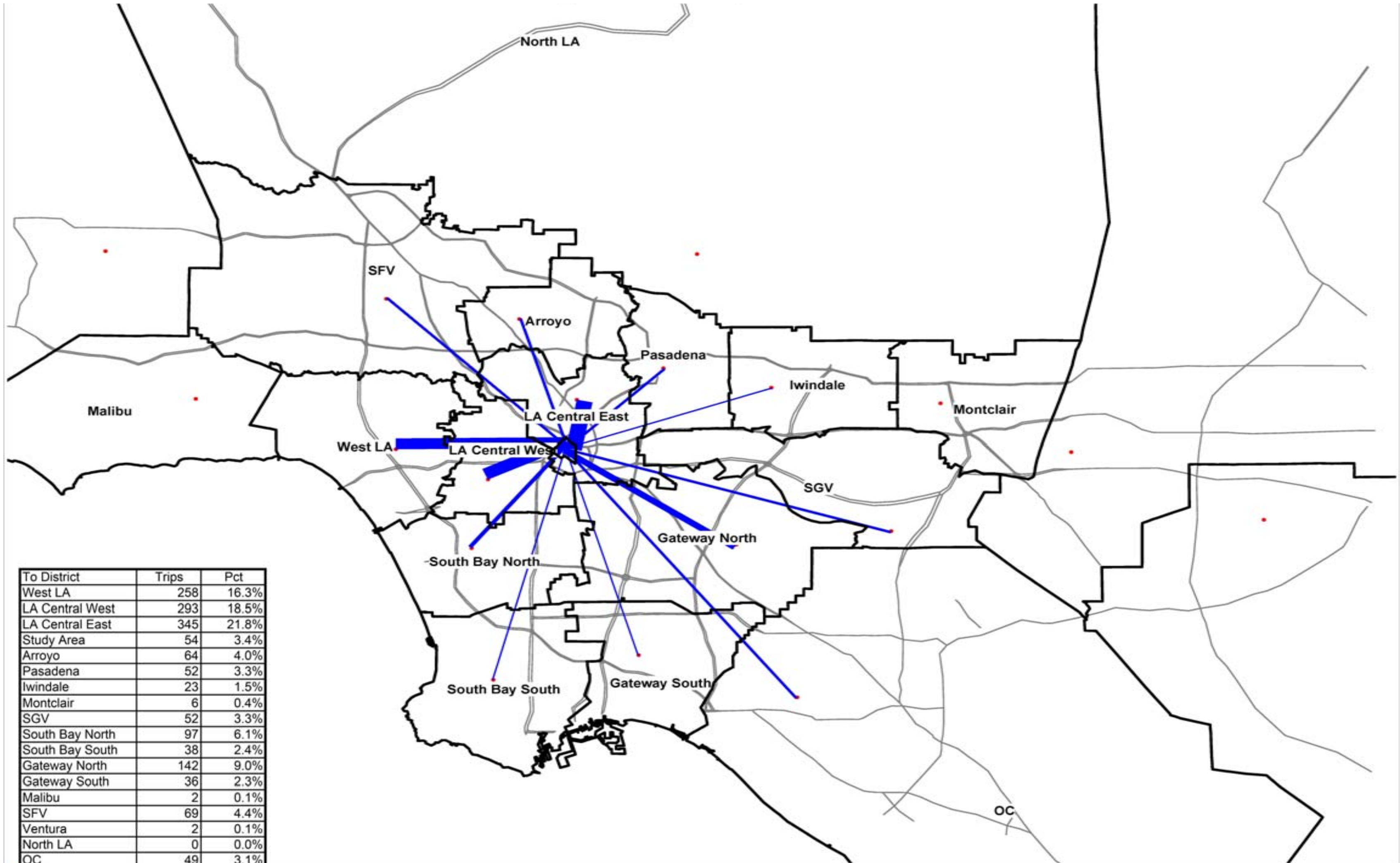


Figure ES-15 Transit Trips to the PSA



To District	Trips	Pct
West LA	258	16.3%
LA Central West	293	18.5%
LA Central East	345	21.8%
Study Area	54	3.4%
Arroyo	64	4.0%
Pasadena	52	3.3%
Iwindale	23	1.5%
Montclair	6	0.4%
SGV	52	3.3%
South Bay North	97	6.1%
South Bay South	38	2.4%
Gateway North	142	9.0%
Gateway South	36	2.3%
Malibu	2	0.1%
SFV	69	4.4%
Ventura	2	0.1%
North LA	0	0.0%
OC	49	3.1%
SBD	2	0.1%
Riverside	0	0.0%
Total	1,584	100.0%

Figure ES-16 Transit Trips from the PSA

Transit-Supportive Land Uses and Activity Centers

In light of the special constraints on roadway expansion and high traffic volumes in the downtown area, several planning entities have included transit-supportive language and projects in their published guidelines and planning documents. The County of Los Angeles, for example, seeks to encourage a range of transportation services for transit dependent populations, support the linking of regional transportation systems, and expand transportation options throughout the county. The Community Redevelopment Agency of the City of Los Angeles (CRA) publishes a set of Downtown Design Guidelines, which call for accessible transportation with an emphasis on walking, biking, and transit, rather than automobiles.

The potential transit markets for the Regional Connector are two-fold: passengers bound for downtown Los Angeles and passengers traveling through downtown Los Angeles on the way to other destinations. As mentioned in previous sections, the project will provide a continuous, transfer-free connection between over 50 miles of light rail lines spanning much of Los Angeles County. In addition, there are many activity centers and major destinations within the PSA that will be more easily accessible from the new Regional Connector stations. Downtown Los Angeles is a primary destination for employment, services, entertainment, and increasingly, housing. The Downtown Center Business Improvement District, which comprises a larger area of the downtown than the PSA, expects 10,000 new residents to move downtown between 2006 and 2009. The continued growth and revitalization of downtown Los Angeles will generate new transit trips both to and within the PSA, heightening the need for increased transit capacity and more efficient operations. Figure ES-17 shows the locations of ongoing development projects in the PSA, all of which will contribute to the activity levels in downtown Los Angeles and heighten the need for additional transit capacity. The figure also provides a photographic representation of the densest areas of downtown Los Angeles.

Major development is expected in the Bunker Hill area, where the proposed Grand Avenue Project will add 3.6 million square feet of new construction, including 449,000 sq. ft. of retail and 2,600 new housing units, nearly doubling the existing total. Similarly, the number of planned and recently completed housing units exceeds 2,000 in Little Tokyo, and planning for new housing is underway at the proposed terminus of the Regional Connector near the Little Tokyo/Arts District Station. The Financial Core is also expected to generate a large number of new trips within the next several years as two projects, Metropolis and Park Fifth, add over 1,000 new residential units and 200 hotel rooms to the PSA. Just south of the PSA, near the Pico Station, the four million square foot entertainment, office, and residential complex, LA Live, will serve as a major attraction that could generate many through-trips on the Regional Connector.

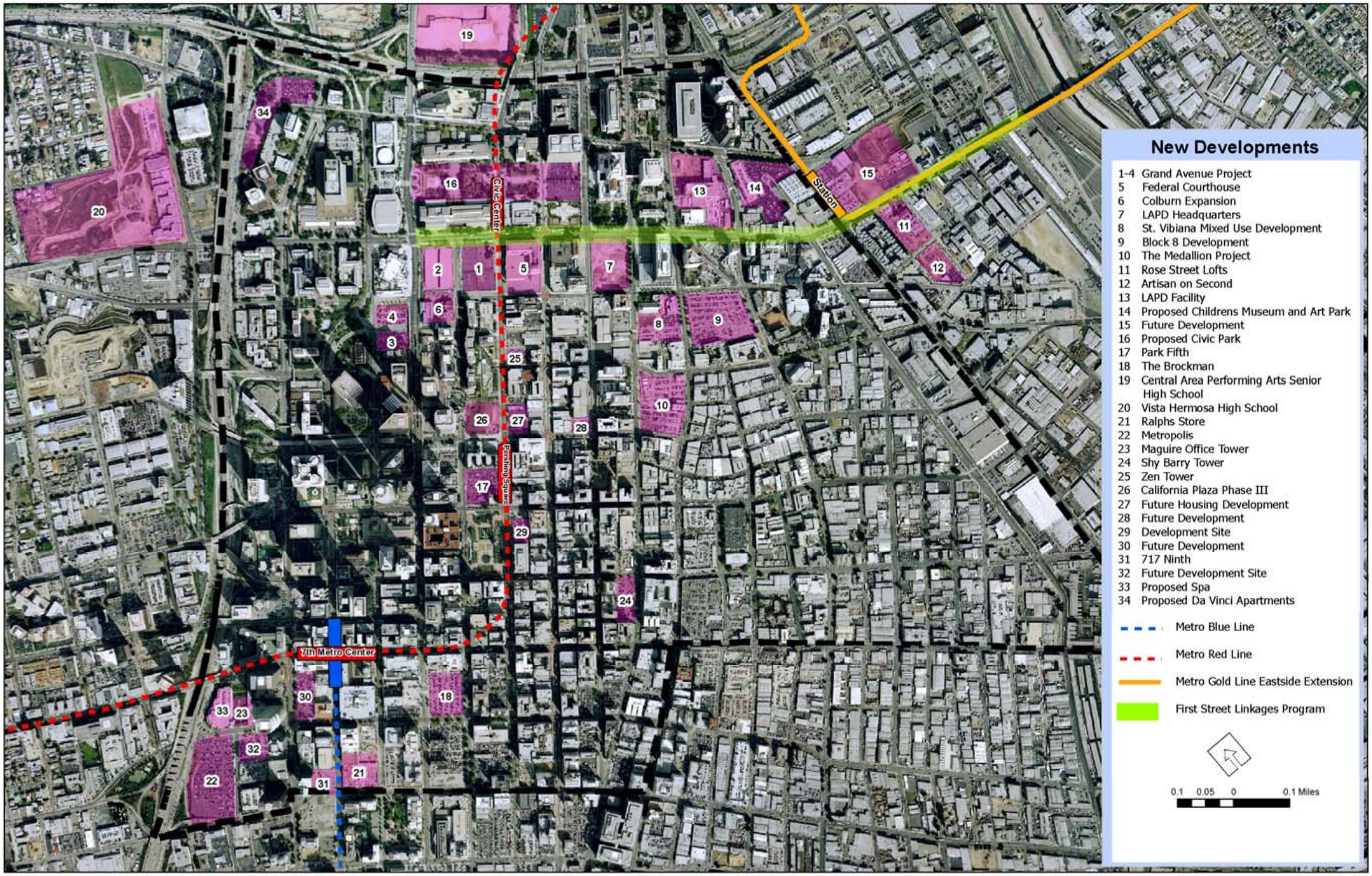


Figure ES-17 New Developments in the PSA

Conclusion

Seamlessly linking all of Metro's light rail lines together will allow for shorter trip times, fewer transfers, better schedule adherence, and more reliable service. All of these benefits are key factors that will improve the transit system's ability to attract high ridership. Los Angeles County has invested over $10 billion in its regional rail system over the past two decades, and the Regional Connector would significantly enhance that investment by improving the operations of the existing system, enabling the system to better accommodate future extensions, and making rail transit more convenient and attractive to potential users. By improving the operation of the entire rail system, the Regional Connector will lure solo drivers from their cars, reduce burdensome passenger loads on the bus network, and improve access to Los Angeles' growing downtown area. In turn, lighter traffic loads on the region's roadways would improve air quality, reduce greenhouse gas emissions, reduce fuel consumption, and represent a step toward a more sustainable transportation system.

ES.5 Community Input Process

In order to ensure that the public was kept informed about the AA study on an ongoing basis and provided with opportunities to comment at key milestones, a detailed Community Outreach and Public Involvement Plan was developed. The Plan included detailed stakeholder identification, communications protocols, public input tracking, a proposed schedule for interfacing with the public and recommendations for how meetings should be conducted at various stages of the study. Additional recommendations for key stakeholder interviews or briefings, inter-agency coordination, topic-specific and other meetings were also included in the Plan. It is important to note that while plans are important, outreach activities, especially on complex projects, were developed to be flexible enough to accommodate changing circumstances and enhanced approaches. Details of this and other outreach efforts can be found in the Community Participation Summary and Report prepared in November 2008.

A series of three public meetings were held respectively in November 2007, February 2008, and October 2008 as part of the ongoing community outreach and public involvement process. The overwhelming majority of comments received supported the need for a Regional Connector to enhance the efficiency of the current and future rail system by providing through service between the Metro Blue Line, Gold Line, Gold Line Eastside Extension and Expo Line, and service to link these rail corridors directly to Union Station. Most comments supported almost equally a Grand Avenue and 1st St. alignment, below-grade (i.e., subway), and utilizing Light Rail Transit (LRT) technology. Several potential stations received wide popularity, including, in order of their level of support, Little Tokyo, 7th St./Metro Center, Bunker Hill, Union Station, Main/1st St. and Civic Center (i.e., in the northern portion of the PSA). No comments were received opposing the Regional Connector, though a few remarks noted that other transit projects may need to receive a higher priority. Many comments specifically pointed out the need to develop a transit system that connects multiple lines, expand the 7th St./Metro Center Station to accommodate enhanced service, and upgrade various operational systems. Of those providing feedback about the evaluation criteria, most thought that access was paramount.

After the initial scoping meetings, a set of two community update meetings was held to present stakeholders with the results of the early scoping process. The majority of those who submitted comments supported a below-grade alignment. There was very little support for an at-grade alignment, particularly in the financial district. There were no concerns expressed about noise and vibration regarding tunneling through downtown Los Angeles. The community expressed interest in identifying ways to minimize transfers between the transit lines, and improved connections to the Metro Red Line.

ES.6 Alternatives Identification and Evaluation Methodology

At the outset of the AA process, Metro considered a wide range of possible modes and alignments to close the gap in the light rail system through downtown Los Angeles. The evaluation and screening process used to compare alternatives is shown in Table ES-8 and described briefly in this section.

At the start of this AA, an initial set of conceptual alternatives to be considered for the Regional Connector was developed by researching previous studies and related reports. Alternatives no longer viable due to changes in the environment were removed from further consideration. Changes in the environment included, but were not limited to, new developments of property previously vacant during the development of an earlier report, changes in land use, and placement of new infrastructure. The initial set of conceptual alternatives was then studied with respect to the following attributes:

- Modes
- Alignments
- Configurations
- Station Locations

Table ES-7 provides a graphic representation of some of the widely-used transit modes and configurations that were considered for the Regional Connector.

During the AA study phase, the project has undergone extensive research and analysis in developing alternatives. This process included:

- Consideration of alternatives previously studied during the 1990's as part of the Los Angeles County Metropolitan Transportation Commission's and Metro's Pasadena Blue Line Project
- Comments received from community involvement activities, including meetings with stakeholders, public agencies, local jurisdiction, and the public during the Initial Scoping phase

- Analysis of the engineering and geographic constraints of building new infrastructure in a dense central business district

- Surveys of land use and travel patterns to determine the most ideal routes and station locations

- Analysis of each alternative's ability to enhance connectivity and reduce transfers within the existing rail system

Based on these attributes, 32 initial conceptual alternatives were identified that would link the 7th St./Metro Center Station and the Metro Gold Line at 1st and Alameda St. (Figure ES-18).

An early scoping process was completed where both the general public and public agencies were engaged and provided input. During this process, goals, objectives and evaluation criteria were developed and documented in the Alternatives Analysis Methodology Report (May 2008). From the early scoping process the following seven goals were established:

Goal 1 Improve Mobility and Accessibility both Locally and Regionally
Develop an efficient and sustainable level of mobility within Los Angeles County to accommodate planned growth and a livable environment.

Goal 2 Provide a Cost Effective Transportation System
Develop a project that provides sufficient regional benefits to justify the investment.

Goal 3 Provide a Safe and Secure Alternative Transportation System
Develop a project that is safe for riders, pedestrians and drivers while meeting the region's need for security.

Goal 4 Achieve a Financially Feasible Project
Develop a project that maximizes opportunity for funding and financing that is financially sustainable.

Goal 5 – Support Public Involvement and Community Preservation
Incorporate the public in the planning process and balance the benefits and impacts while preserving communities in the area, such as Little Tokyo, the Arts District, Bunker Hill, Civic Center and the Historic District.

Goal 6 Support Efforts to Improve Environmental Quality
Develop a project that minimizes environmental impacts.

Goal 7 – Support Community Planning Efforts
Support the progression of the regional center area as an integrated destination and a dynamic and livable area accommodating projected growth in a sustainable manner.

Table ES-7 Modes Considered	
Bus Traditional bus service operates in mixed flow traffic on freeways and arterial streets. Bus service is flexible, easily changed, and has the ability to detour around road obstacles. Service reliability depends heavily on traffic conditions.	
Bus Rapid Transit (BRT) BRT uses buses in exclusive right-of-way or bus-only lanes with traffic signal priority. Exclusive right-of-way could be configured at-grade, underground, or on aerial structures. Buses have the flexibility to leave their right-of-way and detour around road obstacles. Because of the limited use of mixed flow lanes, BRT service quality is less affected by traffic conditions than traditional bus service.	 A BRT bus (Metro Orange Line) operating on dedicated right-of-way in an at-grade configuration
Light Rail Transit (LRT) LRT uses electric trains on conventional rails, powered by overhead wires. Because the power delivery system is overhead, tracks can be installed in mixed flow lanes, exclusive right-of-way with grade crossings, or roadway medians. Automobiles can drive across or along the tracks at grade crossings and on street-running segments. Right-of-way can be at-grade, aerial, or underground. Trains do not have the flexibility to detour around obstacles, and such incidents typically require single tracking and service interruptions. Because of the limited use of mixed flow lanes, LRT service is typically affected little by traffic conditions.	 LRT train (Metro Gold Line) operating in an at-grade configuration

Heavy Rail Transit (HRT)
HRT uses electric trains on conventional rails, powered by a third rail. Because the power delivery system is located at track level, tracks can only run in exclusive right-of-way without grade crossings. Automobiles cannot cross the tracks at all. Right-of-way can be at-grade, aerial, or underground, but at-grade alignments require cross-traffic to use overpasses and underpasses. Trains do not have the flexibility to detour around obstacles, and such incidents typically require single tracking and service interruptions. HRT does not use mixed flow lanes, and service is unaffected by roadway traffic conditions.

HRT train (Purple Line above) operating in an underground configuration

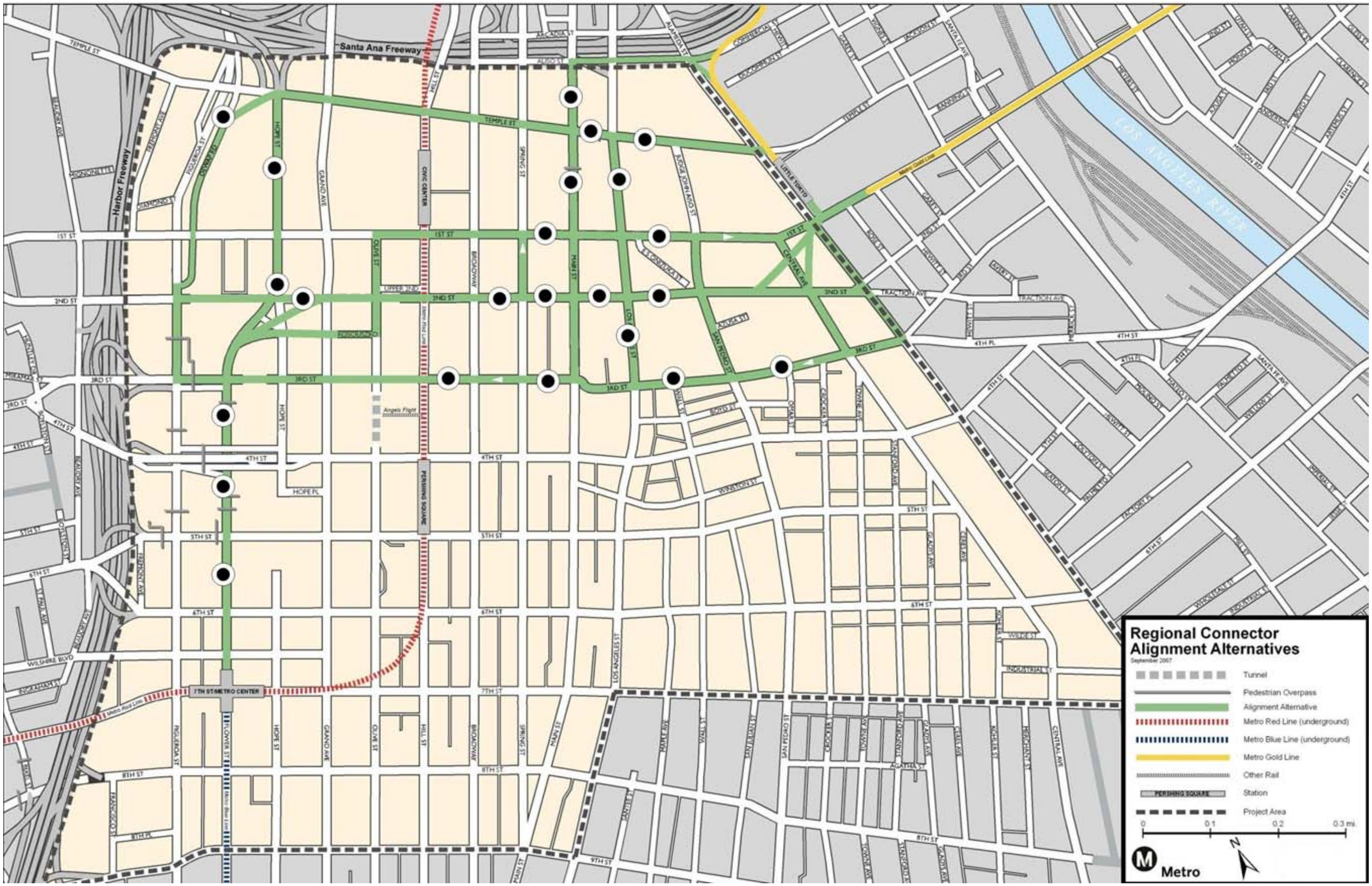


Figure ES-18 Universe of Alternatives Considered

A detailed summary of each of the sub criteria for each of the seven goals is provided in Table ES-8.

The initial set of alternatives was further refined according to the criteria in Table ES-8, and a set of alternatives identified for additional screening was developed. Some of the initial alternatives were developed in 2004 or earlier, and they assumed the use of several then-vacant parcels which now contain new construction or planned developments. These alternatives, along with others where engineering feasibility would have been problematic, were subsequently reconfigured or dropped from consideration. Altogether, a total of eight alternatives were identified with some alternatives having minor variations, as shown in Figure ES-19.

Using the evaluation criteria developed to measure how well each alternative met the goals and objectives for the Regional Connector, the eight alternatives were compared to one another and a final two alternatives, including one alternative having a variation in one station location, were identified. The evaluation took into account level of urban fit, amount of the population served, community acceptability, jobs within a one-quarter mile radius, opportunities for transit-oriented design, number of connections to key activity centers, and other factors pertaining to potential transit benefits. The Initial Screening Report details the routes and configurations of the eight alternatives from which the final two were selected.

ES.7 Alternative Recommendations

Two build alternatives (one with two options) are studied in this AA Report, along with a No Build Alternative and a Transportation System Management (TSM) Alternative, both of which are required by the Federal Transit Administration as part of the New Starts application.

No Build

The No Build Alternative would maintain existing transit service through the year 2030. No new infrastructure would be built, aside from projects currently under construction or identified in Metro's 2008 Long Range Transportation Plan. The rail infrastructure serving the PSA under this alternative is:

- The existing Metro Gold Line from Union Station to Pasadena, a 13.6-mile light rail transit line along the northeastern edge of the PSA.
- The Metro Gold Line Eastside Extension Phase 1 from Union Station to East Los Angeles, a six-mile LRT line scheduled for completion in late 2009.
- The existing Metro Blue Line from 7th St./Metro Center Station to Long Beach, a 22-mile LRT line travelling south from the PSA.
- The Metro Expo Line Phase 1, an 8.5-mile LRT line scheduled to open in 2010, running from 7th St./Metro Center Station to Washington and National Blvds. in Culver City.

Table ES-8 Regional Connector Goals, Objectives, Evaluation Criteria and Performance Measures				
	Goal	Objectives	Initial Screening Criteria (Performance Measures)	Final Screening Criteria (Performance Measures)
1	Support Community Planning Efforts *Support the progression of the regional center area as an integrated destination and a dynamic and livable area accommodating projected growth in a sustainable manner*	• *Support* land use policies and Community Plans • Support and coordinate with development and redevelopment efforts • Support the City's effort to improve urban *design* and the pedestrian environment by contributing to a healthy environment • Support efforts to improve safety and *security* for downtown residents, employees and visitors • *Support* transit dependent communities	• *Population, Population Density, Households, Household Density for year 2030 ¼ mile of alignment* • *Transit Oriented Design supportive plans and policies in place (Score 1 -worst to 5 -best)* • *Number of jobs, employment density for year 2030 within a ¼ mile of alignment* • *Number of direct connections to key activity centers within ¼ mile of alignment (Score 1 -worst to 5 -best)* • *Number of opportunities for redevelopment within ¼ mile of alignment (underdeveloped or underutilized properties along alternative alignment)*	• *Number of planned development projects in the area over the next 10 years, including residential/office space/commercial units within a 1/4 mile of stations* • *Number of connections with sidewalks that support the City's Downtown Street Standards*
2	Support Public Involvement and Community Preservation	• *Balance* the benefits and impacts to low income and minority communities	• *Evaluation of potential disproportionate effects: Environmental justice effects will be evaluated per CEQA/NEPA requirements (Score 1 to 5)*	• *Number of potential acquisitions*

Table ES-8 Regional Connector Goals, Objectives, Evaluation Criteria and Performance Measures				
	Goal	Objectives	Initial Screening Criteria (Performance Measures)	Final Screening Criteria (Performance Measures)
	Incorporate the public in the planning process and balance the benefits and impacts while preserving communities in the area, such as Little Tokyo/Arts District, Bunker Hill, Civic	• Enable *workers* and visitors to gain access to the regional center to increase its economic vitality and benefit from its economic opportunity	• *Initial areas identified for potential acquisitions for stations and alignment (does not include actually in construction) within ¼ mile of alignment* • *Evaluation of potential disproportionate effects: Number of low income HH within¼ mile of proposed alignment* • *Number of residents by ethnicity within ¼ mile of alignment (US Census)* • *Urban fit potential for alignment and for stations, including physical scale, visual fit, and cultural preservation (Score 1 to 5)* • *Percentage of service grade separated* • *Community Acceptance (High, Medium, Low)*	• *Percentage of service grade separated* • *Evaluation of potential disproportionate effects and risk to environmental justice populations related to construction activities (Score 1 to 5)* • *Urban fit potential, including pedestrian accessibility and urban design enhancement opportunities (Score 1 to 5)*
3	Improve Mobility and Accessibility both Locally and Regionally *Develop an efficient and sustainable level of mobility within LA County to accommodate planned growth and a livable environment*	• Improve the connectivity of the regional *transit* service and provide a more attractive travel alternative for residents, workers and visitors in the region • Facilitate sustainable regional *development*	• *Increase in daily transit boardings (amount of transit users increased compared to No Build)* • *New daily transit trips compared to No Build and Transportation System Management (TSM) alternatives*	• *Hours of transportation user benefits* • *Congestion relief (Reduction in highway travel demand in the corridor)*

Table ES-8 Regional Connector Goals, Objectives, Evaluation Criteria and Performance Measures			
Goal	Objectives	Initial Screening Criteria (Performance Measures)	Final Screening Criteria (Performance Measures)
	• Increase ridership of the Metro transit system and reduce single occupancy *trips*	• *Traffic impacts (Number of intersections with E or F Level of Service)*	• *Comparison of highway, bus, and fixed guideway peak period travel times between major travel pairs (Run times, head ways, average speed, station spacing)*
	• Maintain or enhance transit services to the transit dependent	• *Reduction in number of transfers system-wide by operational plan of alignment (daily reductions at US & 7th/Metro)*	• *Peak period travel time (door to door)*
	• Improve travel time for transit users system-wide	• *Total number of lanes reduced (cumulative for all streets)*	• *Travel time savings (Union Station to 7th/Flower)*
	• Improve person throughput	• *Number of potentially impacted intersections*	• *Reduction in Vehicle Miles Traveled (VMT) (VMT compared to No Build)*
	• Reduce *growth* of congestion in corridor	• *Peak period travel time through Regional Connector Alignment (including 5 min for each transfer)* • *Number of left turn pockets affected* • *Number of parking spaces potentially affected* • *Number of driveways affected*	• *Assessment of expandability (Score 1 to 5)*
		• *Daily hours of transportation user benefits (Compared to No Build)*	
4 Support Efforts to Improve Environmental Quality *Minimize adverse environmental impacts*	• Minimize *adverse* environmental impacts	• *Noise (Number of curves for LRT alignment)*	• *Expected level of impacts after mitigation to biological, social, and physical resources will be evaluated per CEQA/NEPA requirements (Score 1 to 5)*
	• Implement mitigation measures to reduce *environmental* effects to acceptable levels	• *Potential visual impacts to notable architectural resources within ¼ mile of alignment (Score 1 to 5)*	• *Reductions in PM10, NOx, and SOx emissions*
	• Reduce *emissions* and improve air quality	• *Number of Potential Sensitive Receptors within ¼ mile of alignment (Score 1 to 5)*	• *Reduction in carbon footprint for average user*

Table ES-8 Regional Connector Goals, Objectives, Evaluation Criteria and Performance Measures

Goal	Objectives	Initial Screening Criteria (Performance Measures)	Final Screening Criteria (Performance Measures)
		• *Potential impacts to historically significant locations within ¼ mile alignment (Score 1 to 5)* • *Geologic and geotechnical issues along alignment (Score 1 to 5)*	
5 Provide a Cost Effective Alternative Transportation System *Develop a system that serves as an alternative to travel economically*	• *Increase* ridership on the Metro system • Minimize cost per passenger • Maximize travel time savings	• *Rough order of magnitude annual O&M (2008$) costs per alignment (millions)* • *User cost - Cost effectiveness compared to No Build ($/hour of transit user benefit)* • *Annual O&M costs*	• *Annualized cost per hour of transit system user benefit compared to No Build and Transportation System Management (TSM) alternatives*
6 Achieve a Financially Feasible Project *Develop a project that maximizes opportunities for funding and financing and that is financially sustainable*	• *Opportunities* for private/public funding • *Opportunities* for Federal and outside funding	• *ROM Capital costs — total and per mile per alignment (2008$) (millions)* • *Evaluation of availability and eligibility of capital funds at federal/state/local levels to construct, operate and maintain (Score 1 to 5)*	• *Capital cost estimate disaggregated by right of way (ROW), guideway, stations, yards, and vehicles on a cost per mile basis*
7 Provide a Safe and Secure Alternative Transportation System	• Secure entire alignment, stations, track and other facilities	• *Safety – determined to be able to provide measures typical of requirements per ADA, per typical CPUC requirements, fire life safety guidelines, and per Metro Design Guidelines for access to and from stations (amount grade separated) (Score 1 to 5)*	• *Number of crossing with high pedestrian activities on a daily basis*

Table ES-8 Regional Connector Goals, Objectives, Evaluation Criteria and Performance Measures			
Goal	Objectives	Initial Screening Criteria (Performance Measures)	Final Screening Criteria (Performance Measures)
Develop a project that is safe for riders, pedestrians, and drivers while meeting the regions needs for security	• Develop direct and indirect safety measures that exceed safety precautions typical of the Metro system • Develop a system that balances the need for accessibility and mobility with security • Develop a system that uses accessibility and mobility as measures for safety and security	• *Number of emergency facilities located within ¼ mile of the alignment, i.e., fire stations, police stations, hospitals.* • *Number of public events within ¼ mile of alignment*	• *Number of events along the alignment* • *Number of potential issues related to accessibility and line of sight for pedestrians and vehicle drivers (Score 1 to 5)*

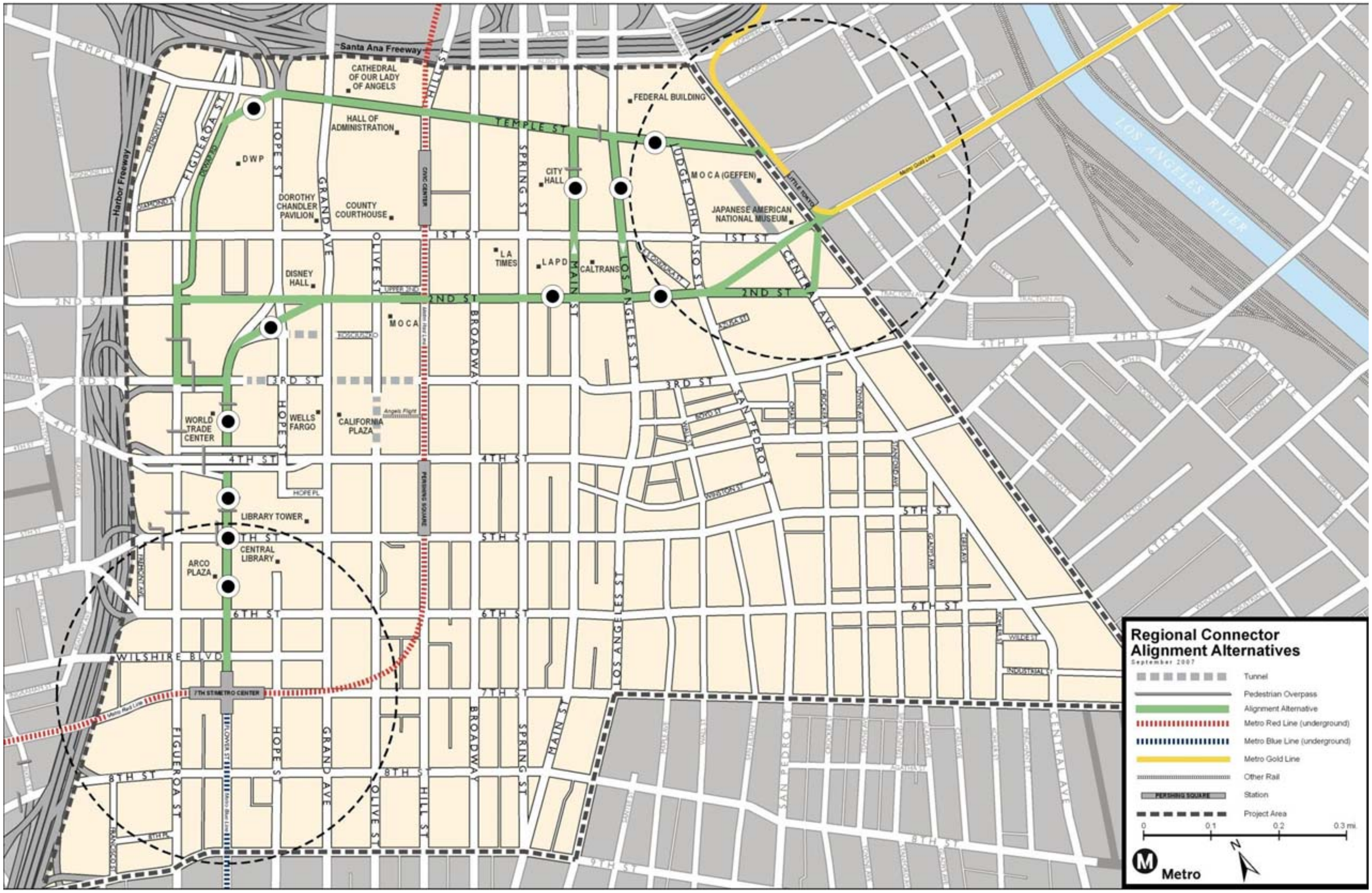


Figure ES-19 Screened Alternatives

- The existing Metro Red Line from Union Station to North Hollywood and the Metro Purple Line from Union Station to Wilshire/Western Station. Together, these routes comprise a 17.4-mile underground HRT system that presently serves as the sole rail connection between Union Station and 7th St./Metro Center Station. LRT trains are not able to operate on HRT tracks, so the Metro Red and Purple Lines are not suitable for carrying Metro Blue, Gold, or Expo Line trains.

- The 20-mile Metro Green Line runs from Norwalk in southeast Los Angeles County to Redondo Beach, primarily in the center median of the I-105 freeway.

TSM

The TSM Alternative would include the provisions of the No Build Alternative and add two shuttle bus routes to simulate the proposed LRT link between 7th St./Metro Center and Union Station, one along Grand Ave. and 1st St., and one along Figueroa, Flower, 2nd, and 3rd Streets. The shuttle buses would use existing bus-only lanes where available, and would be fitted with transit-priority signalization devices similar to those used on Metro Rapid. The following map, Figure ES-20, shows the two routes. Stops would be located every few blocks so as to provide access to all major destinations along the routes.

Based on analysis of the proposed alternatives and the Regional Connector PSA demographic data during the initial screening process, the list of 32 conceptual build alternatives was narrowed to two preferred build alternatives linking the Metro Gold Line on Alameda between 1st and Commercial Streets to the Metro Blue and Expo Lines' terminus at 7th St./Metro Center Station (Flower and 7th Streets). These build alternatives are described below.

At-Grade Emphasis LRT Alternative

The At-Grade Emphasis LRT Alternative would bridge the gap between the Metro Gold Line and the Metro Blue and Expo Lines using an a combination of at-grade and underground tracks along Temple, Main, Los Angeles, 2nd, and Flower Streets. The route is shown in Figure ES-21.

The new tracks would branch off of the Metro Gold Line Eastside Extension at Temple and Alameda Streets in a wye junction. At this location, a new vehicular underpass for through traffic on Alameda St. would be constructed to remove conflicts between trains and the high volumes of truck and automobile traffic frequently observed at this intersection. A new pedestrian bridge structure over the intersection would also reduce the conflicts between pedestrian and trains, and reduce delays for trains passing through the intersection.

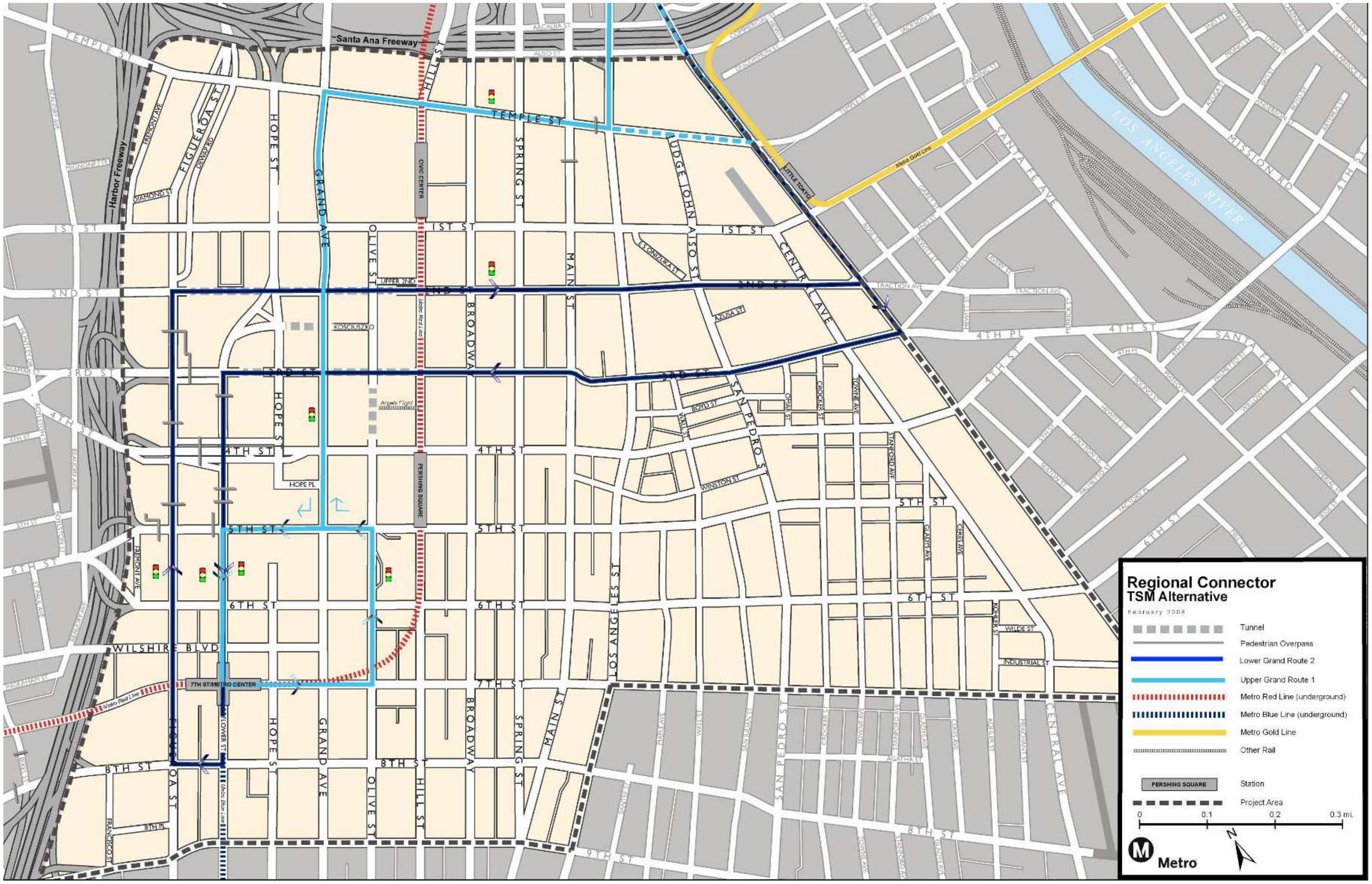


Figure ES-20 Transportation System Management Alternative

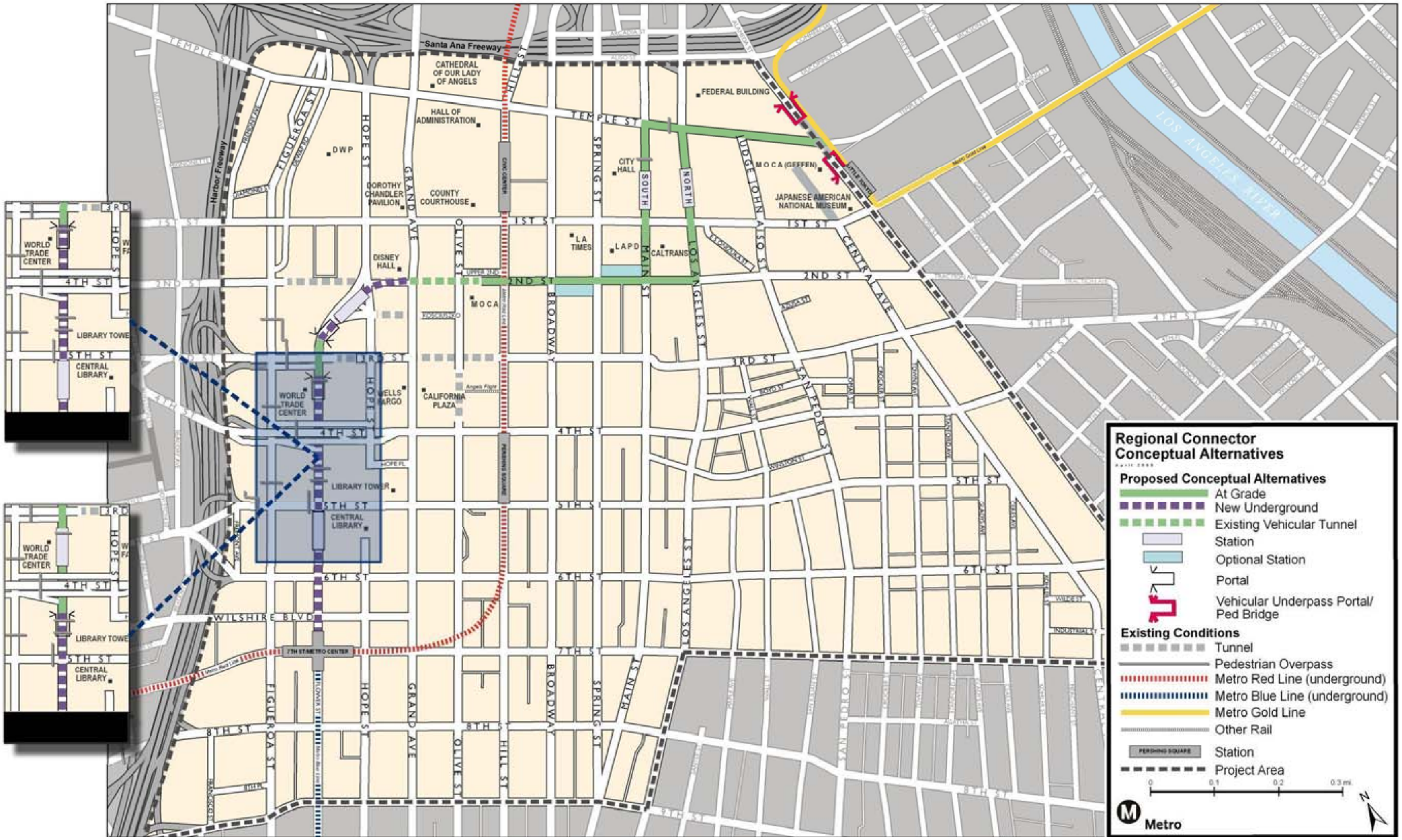


Figure ES-21 At-Grade Emphasis LRT Alternative

Looking Southeast at Temple and Alameda – Before

Looking Southeast at Temple and Alameda – After

The tracks would then continue west on Temple St. to Los Angeles St. Here, the tracks would split into a couplet on Main and Los Angeles Streets in order to travel south to 2nd St. Southbound trains would continue west on Temple St. to Main St., then turn south on Main St. to reach 2nd St. Northbound trains from 2nd and Main Streets would go east on 2nd St. and north on Los Angeles St. to rejoin the southbound tracks at Temple and Los Angeles Streets. Both the northbound and southbound tracks would have a new station along the couplet just north of 1st St.

Main St. at Temple, Looking South – Before

Main St. at Temple, Looking South - After

Continuing west along 2nd St. from Main St., there is an option to have a split-platform station in the vicinity of Broadway or Spring St. After crossing Hill St., the trains will enter the existing 2nd St. tunnel and then veer southward into a new tunnel beneath Bunker Hill linking the 2nd St. tunnel with Flower St.

2nd and Hill, Looking East - Before

2nd and Broadway – Looking East - After

There would be an underground station in this tunnel to allow connections with Bunker Hill. Trains would then surface through the hillside on the northeast corner of 3rd and Flower Streets and cross the intersection at-grade to travel southbound in the median of Flower St.

Looking North on Flower Street at 3rd Street – Before

Looking North on Flower Street at 3rd Street – After

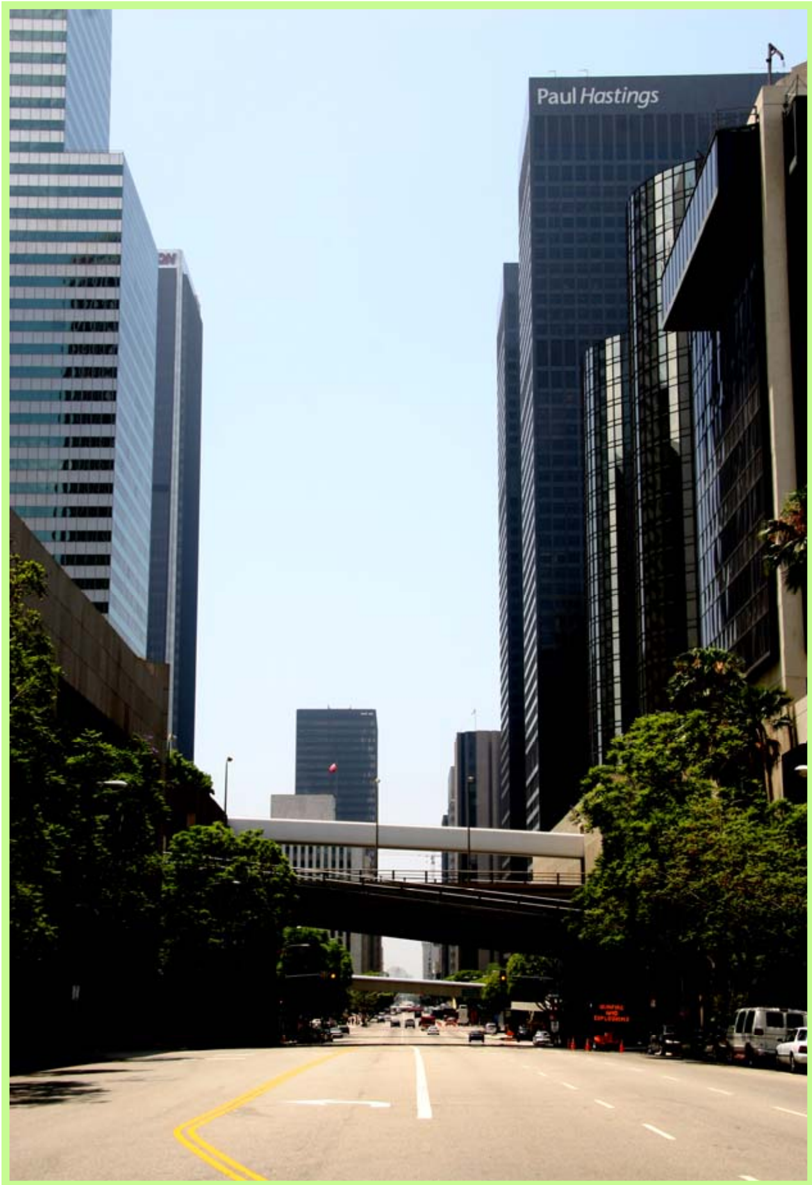
At this point, there are two options for the configuration on Flower St., as described below.

Option A:

After crossing 3rd St., trains would transition to underground tracks and continue south on Flower St. to a new underground station just south of 5th St. From there, trains would proceed underground to 7th St./Metro Center Station and arrive at the existing Metro Blue Line platform.

Option B:

After crossing 3rd St., trains would arrive at an at-grade station in the median of Flower St., just south of 3rd St. From there, trains would continue southward and transition to an underground alignment near 4th St. Trains would then proceed south under Flower St. to 7th St./Metro Center Station and arrive at the existing Metro Blue Line platform.



3rd and Flower, Looking South - Before

3rd and Flower, Looking South - After

Underground Emphasis LRT

The Underground Emphasis LRT Alternative would have a single at-grade crossing at the intersection of 1st and Alameda Streets. The rest of the route would be underground, as shown on the following map (Figure ES-22).

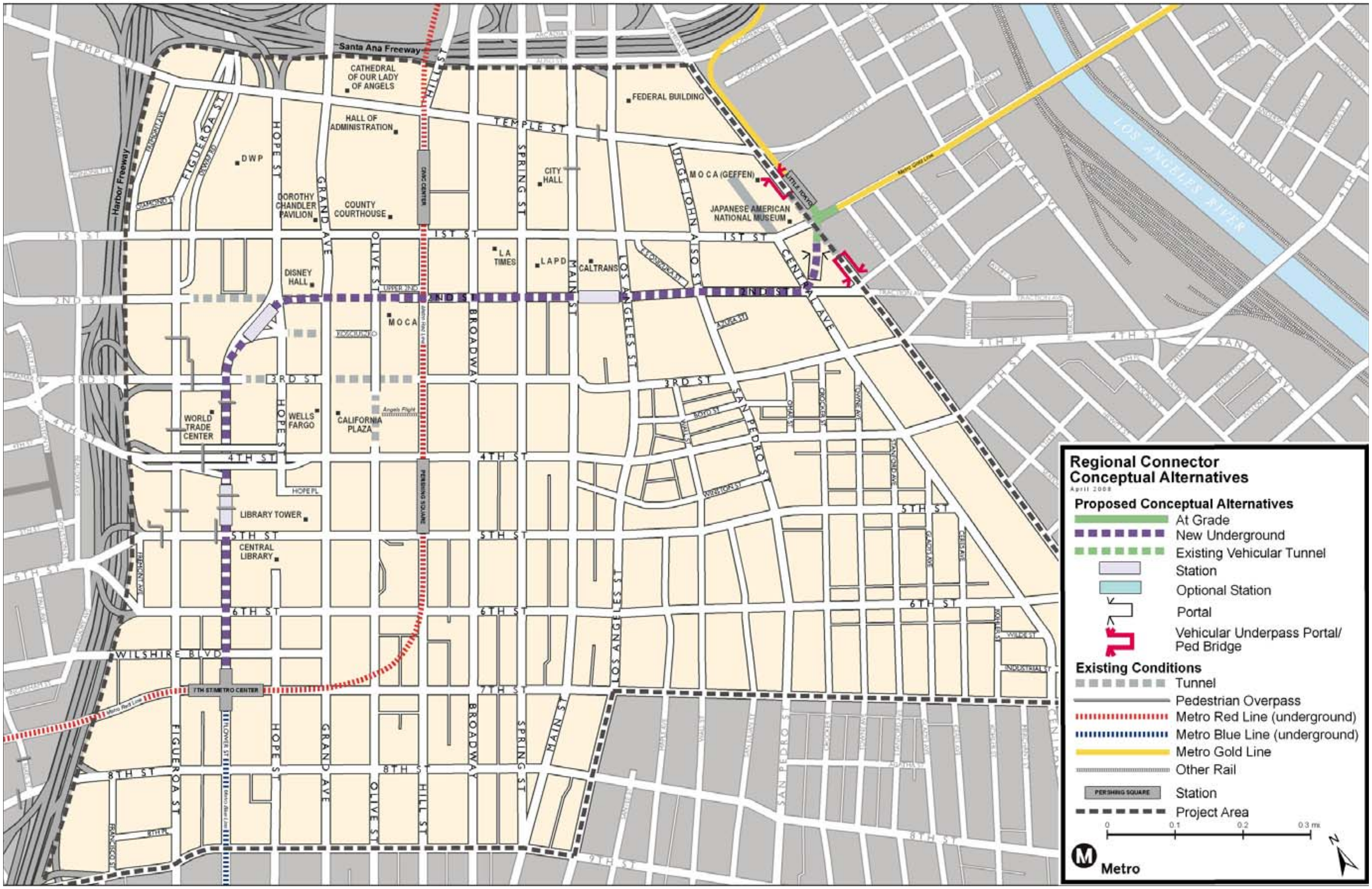
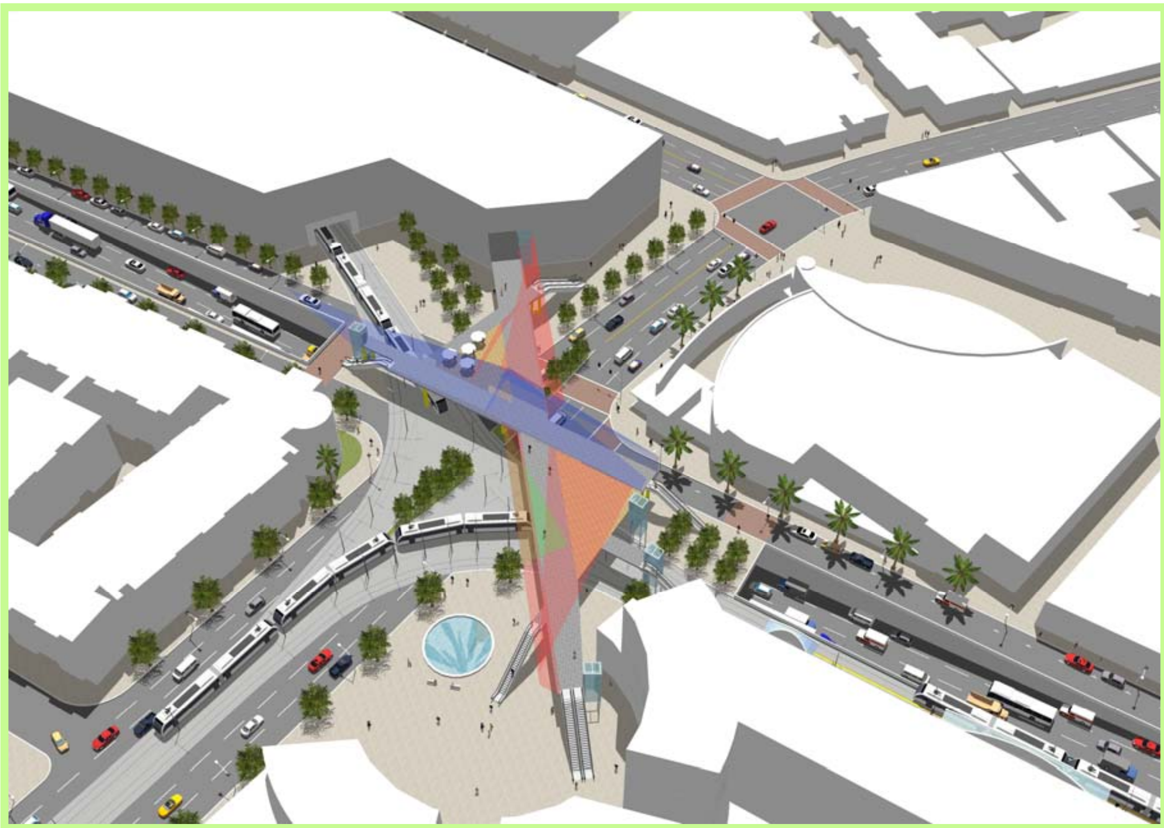


Figure ES-22 Underground Emphasis LRT Alternative

The Underground Emphasis LRT Alternative would branch off from the Metro Gold Line Eastside Extension tracks in a wye junction in the intersection of 1st and Alameda Streets, immediately south of the Little Tokyo/Arts District Station. Trains from East Los Angeles would approach the junction from the east along 1st St, and trains from Pasadena would approach from the north along Alameda St., stopping first at the Little Tokyo/Arts District Station. Both lines would then cross the intersection to reach the southwest corner, where a new tunnel portal would bring the trains underground. At 1st and Alameda Streets, a new underpass would carry car and truck traffic along Alameda St. below the rail junction, and a new overhead pedestrian bridge structure would eliminate most conflicts between pedestrians and trains.



Looking Southwest at 1st and Alameda - After

Once in the tunnel, trains would turn west under 2nd St. to reach a new underground station to be located between Los Angeles St. and Broadway.

2nd and Los Angeles, Looking West - Before

2nd and Los Angeles, Looking West - After

Trains would then proceed west on 2nd St. and turn southward beneath the 2nd St. tunnel. A new station along this stretch of tunnel would provide access to Bunker Hill. After leaving the station, the tunnel would run south underneath Flower St. to reach the next station, just north of 5th St. Trains would then continue south to 7th St./Metro Center Station and arrive on the existing Metro Blue Line platform.

5th and Flower, Looking North - After

ES.8 Transportation Impacts & Benefits

The PSA is currently served by three rail lines and 112 bus lines operated by 10 transit agencies. Service on many of these lines operates very frequently, with vehicles arriving as few as two minutes apart during peak hours. Region-wide commuter rail service (Metrolink) and nationwide passenger rail service (Amtrak) both serve Union Station, just two blocks northeast of the PSA. Two additional LRT extensions, the Metro Gold Line Eastside Extension to East Los Angeles and the Metro Expo Line to Culver City are presently under construction, and are expected to be operational by 2010. The area is also served by several radial freeways branching out toward other major regional destinations, and many of them carry express bus service during peak hours.

Despite the area's dense transportation infrastructure, rapid growth in downtown Los Angeles is overwhelming many of the facilities, including transit transfer stations. Reducing the number of transfers needed to traverse the LRT system would alleviate some of the crowding, particularly at 7th St./Metro Center and Union Station, where two separate portions of the LRT system terminate and many riders must transfer to the HRT Metro Red and Purple Lines to complete their trips. The Regional Connector would improve the link between these two stations and enable transfer-free service throughout much of the LRT network, most notably from Long Beach to Pasadena along the Metro Blue and Gold Lines, and from East Los Angeles to Culver City along the Metro Gold and Expo Lines.

Alternatives Studied

Because the purpose of the Regional Connector is to bridge a gap in the existing LRT system, LRT is the mode that survived the screening process and is under consideration for the build alternatives. Other modes such as HRT, monorail, commuter rail, people mover, etc. were eliminated due to their high cost and inability to allow single-vehicle service throughout the LRT network. The forecasted effects of the build alternatives (At-Grade Emphasis LRT and Underground Emphasis LRT) were compared with those of the No Build and TSM Alternatives to determine the amount of benefits the new LRT link would provide.

Travel Time Savings

The Regional Connector build alternatives would reduce travel times for many trips on the Metro Rail system whose current headways are shown in Table ES-10. Downtown-bound passengers on the Metro Gold Line would no longer have to transfer to reach their destinations, and Metro Blue and Expo Line passengers could also reach the northern and eastern areas of the central business district without changing trains. Riders passing through downtown from East Los Angeles to Long Beach and Pasadena to Culver City would need to make one less transfer, and riders travelling from East Los Angeles to Culver City and Pasadena to Long Beach would have both of their presently required transfers eliminated.

Under the current Pasadena-Long Beach and East Los Angeles-Culver City operating plan, passengers wishing to travel along the Gold Line from Pasadena to East Los Angeles would need to make one transfer at a new Regional Connector station in order to complete their trips. In the case of the Underground Emphasis LRT Alternative, this would be a cross-platform transfer at the new station on 2nd St. For the At-Grade Emphasis LRT Alternative, the transfer would occur at City Hall, and passengers would need to walk one block from the southbound platform on Main St. to the northbound platform on Los Angeles St.

Tables S-10 and S-11 show the potential time savings for passengers travelling along both of the proposed Regional Connector routes (East Los Angeles to Culver City and Pasadena to Long Beach). These estimates include current travel times along existing lines as well as predicted travel times along the lines that are presently under construction. The No Build estimates reflect a transfer from the Metro Gold Line to the Metro Red and Purple Lines at Union Station, which could take from five to 12 minutes at most times of day. This includes the five-minute ride from Union Station to 7th St./Metro Center Station on the Metro Red and Purple Lines and the transfer from the Metro Red and Purple Lines to the Metro Blue Line at 7th St./Metro Center Station, which could take anywhere from two to twelve minutes. The best case scenario for the No Build Alternative is the same as the predicted travel time along some of the build alternatives. However, it should be noted that the rush hour headways are different on every Metro Rail line serving downtown, as shown in Table ES-9, and the best case scenario under the No Build alternative happens only by chance. Most trips take longer.

Table ES-9 Current Peak Hour Headways on Downtown Metro Rail Lines

Metro Rail Line	Headway
Metro Gold Line	8 minutes
Metro Red and Purple Lines	10 minutes each, 5 minutes combined
Metro Blue Line	5 ½ minutes

Table ES-10 East Los Angeles to Culver City (in minutes)

	No Build	At-Grade Option A	At-Grade Option B	Underground
Pomona/Atlantic to Pico/Aliso	14	14	14	14
Pico/Aliso to 7th St./Metro Center	18 to 32*	13	12	8
7th St./Metro Center to Washington/National	26	26	26	26
Total	58 to 72	53	52	48

*via Metro Red and Purple Lines

Table ES-11 Pasadena to Long Beach (in minutes)

	No Build	At-Grade Option A	At-Grade Option B	Underground
Sierra Madre Villa to Union Station	29	29	29	29
Union Station to 7th St./Metro Center	12 to 29*	12	12	10
7th St./Metro Center to Transit Mall	55	55	55	55
Total	96 to 113	96	96	94

*via Metro Red and Purple Lines

Ridership

Model runs predicted the highest overall transit ridership, an increase of 0.7 percent over current levels (about 10,000 new transit trips), for the Underground Emphasis LRT Alternative. This is probably because it bridges the missing link in the LRT system, minimizes transfers, and provides a shorter trip time than the other build alternative. These improvements will increase the attractiveness of the system to people who do not currently ride transit. The rise in the number of rail linked trips is partially offset, however, by a small drop in the number of bus passengers. This indicates that many of the riders attracted to the rail system by the new link will be existing transit riders lured away from buses. However, the increase in rail riders is more than double than the decrease in bus riders, so the majority of the new rail passengers will be new transit users.

Underground-running tracks will eliminate conflicts with surface traffic and allow for faster train speeds.

The At-Grade Emphasis LRT alternative would achieve the same results, but to a slightly lesser extent. Trains would traverse the Regional Connector more slowly because they will need to safely navigate street-running alignments and potentially stop for red lights at intersections. The increase in overall transit ridership would be 0.5 percent, or about 8,000 linked trips.

Trains running at-grade will have to traverse some parts of the At-Grade Emphasis LRT Alternative alignment slowly to navigate 90-degree turns and avoid conflicts with automobiles and pedestrians.

The TSM Alternative would cause overall transit ridership to increase by about 1,000 trips, and cause an additional 1,000 riders to switch from rail to buses. This is likely because the new shuttle buses would provide a convenient new alternative to the Metro Red and Purple Lines for trips entirely within the downtown area, though they would not reduce the number of transfers needed to complete trips into or through downtown.

The No Build Alternative would provide the smallest increase in transit ridership over current levels, since it includes the fewest service improvements. Rail ridership is actually slightly higher under the No Build Alternative than under the TSM Alternative, because there is no competition for riders from the TSM shuttle bus service. Table ES-12 outlines the potential ridership benefits for each alternative in terms of total linked trips system-wide in the year 2030.

Table ES-12 Linked Transit Trip Estimates by Mode

	No Build	TSM	At-Grade Option A	At-Grade Option B	Underground
Bus Linked Trips	1,191,300	1,193,000	1,187,100	1,186,600	1,185,800
Metro Rail Linked Trips	248,200	247,400	260,400	261,700	264,200
Metrolink Linked Trips	76,300	76,400	75,900	75,900	76,000
Total	1,515,800	1,516,800	1,523,400	1,524,200	1,526,000
Increment Over No Build	0	1,000	7,600	8,400	10,200

Roadway Analysis

The traffic impacts of each alternative were compared using volume-to-capacity (V/C) ratio forecasts to identify the predicted amount of congestion. Level of service (LOS) was used to assign degrees of driver comfort to ranges of V/C ratios, with LOS A indicating free-flowing traffic, and LOS F indicating severe congestion. As of 2007, the entire PSA road network was operating at LOS D (acceptable for urban conditions) or better, except the intersection of 1st and Alameda Streets (LOS F) and three roadway segments along 2nd and Alameda Streets (LOS E). Under predicted year 2030 No Build conditions, five additional LOS E and LOS F intersections and nine additional LOS E/F roadway segments were identified. The traffic impacts of the No Build, TSM, and Underground Emphasis LRT Alternatives were found to be minimal and essentially equal, due to their lack of street-running tracks or changes to the road network (Table ES-13).

The At-Grade Emphasis LRT Alternative, on the other hand, would convert traffic lanes, including bus only lanes, along Flower, 2nd, Main, Los Angeles, and Temple Streets to rail rights-of-way, thus reducing the road capacity for automobiles and buses. Numerous turning restrictions would also force additional around-the-block movements and limit access to some parcels. As such, the traffic modeling revealed that roadway congestion in the PSA would increase as a result of the At-Grade Emphasis LRT Alternative (Table ES-14). There would be four additional LOS E/F intersections and two additional LOS E/F roadway segments beyond year 2030 No Build conditions. As a result, this alternative is the least preferable from the standpoint of roadway traffic congestion, and the other alternatives are all equally favorable. Tables S-13 and S-14 show the performance of some roadway segments in the PSA under each of the alternatives. Table ES-15 summarizes the LOS in various intersections in the PSA. The highest number of LOS E and F intersections occur for both Option A and B of the At-Grade Emphasis LRT Alternative.

Table ES-13 Future (2030) Roadway Segment Average Daily Traffic (ADT) Analysis
No Build, TSM and Underground Emphasis LRT Alternatives

Primary Street	Cross Street	Facility Type	Number of lanes	Capacity	ADT	V/C Ratio	LOS
Flower St.	3rd St.	Secondary	4	28,000	15,389	0.550	A
	5th St.	Secondary	6	45,000	27,426	0.609	B
	6th St.	Secondary	4	30,000	23,938	0.798	C
	Wilshire Blvd.	Secondary	4	30,000	26,757	0.892	D
	7th St.	Secondary	4	30,000	26,033	0.868	D
2nd St.	Alameda St.	Secondary	3	21,000	10,279	0.489	A
	Central Ave.	Secondary	2	14,000	13,140	0.939	E
	Los Angeles St.	Secondary	3	21,000	20,421	0.972	E
	Main St.	Secondary	3	21,000	24,679	1.175	F
	San Pedro St.	Secondary	2	14,000	16,810	1.201	F
	Spring St.	Secondary	4	28,000	18,095	0.646	B
Los Angeles St.	1st St.	Secondary	4	28,000	23,331	0.833	D
	2nd St.	Secondary	4	28,000	21,568	0.770	C
	Temple St.	Secondary	5	35,000	27,703	0.792	C
Main St.	1st St. 1-Way	Major Class II	3	25,500	15,185	0.595	A
	2nd St. 1-Way	Major Class II	3	25,500	17,237	0.676	B
	Temple St.	Major Class II	4	34,000	32,216	0.948	E

Table ES-13 Future (2030) Roadway Segment Average Daily Traffic (ADT) Analysis
No Build, TSM and Underground Emphasis LRT Alternatives

Primary Street	Cross Street	Facility Type	Number of lanes	Capacity	ADT	V/C Ratio	LOS
Temple St.	Judge John Aiso St.	Major Class II	4	32,000	21,516	0.672	B
	Los Angeles St.	Major Class II	4	32,000	21,132	0.660	B
	Main St.	Major Class II	4	32,000	21,412	0.669	B
1st St.	Alameda St.	Secondary	4	28,000	27,077	0.967	E
	Central Ave.	Secondary	4	28,000	29,016	1.036	F
	Los Angeles St.	Secondary	6	42,000	27,783	0.661	B
	Main St.	Secondary	6	42,000	30,056	0.716	C
	Spring St.	Secondary	6	42,000	25,401	0.605	B
3rd St.	Flower St.	Secondary	4	30,000	24,053	0.802	D
	Spring St.	Secondary	3	22,500	22,080	0.981	E
	Los Angeles St.	Secondary	3	22,500	22,585	1.004	F
	Main St.	Secondary	3	22,500	20,304	0.902	E
Alameda St.	1st St.	Major Class II	4	32,000	42,364	1.324	F
	2nd St.	Major Class II	4	32,000	38,338	1.198	F

Table ES-14 Future (2030) Roadway Segment Average Daily Traffic (ADT) Analysis At-Grade Emphasis LRT Alternative

Primary Street	Cross Street	Facility Type	Number of Lanes	Capacity	ADT	V/C Ratio	LOS
Flower St.	3rd St.	Secondary	3	21,000	15,389	0.733	C
	5th St.	Secondary	6	45,000	27,426	0.609	B
	6th St.	Secondary	4	30,000	23,938	0.798	C
	Wilshire Blvd.	Secondary	4	30,000	26,757	0.892	D
	7th St.	Secondary	4	30,000	26,033	0.868	D
2nd St.	Alameda St.	Secondary	3	21,000	10,279	0.489	A
	Central Ave.	Secondary	2	14,000	13,140	0.939	E
	Los Angeles St.	Secondary	1	7,000	4,084	0.583	A
	Main St.	Secondary	1	7,000	4,936	0.705	C
	San Pedro St.	Secondary	2	14,000	16,810	1.201	F
	Spring St.	Secondary	1	7,000	3,619	0.517	A
Los Angeles St.	1st St.	Secondary	3	21,000	23,331	1.111	F
	2nd St.	Secondary	4	28,000	21,568	0.770	C
	Temple St.	Secondary	4	28,000	27,703	0.989	D
Main St.	1st St. 1-Way	Major Class II	3	25,500	15,185	0.595	A
	2nd St. 1-Way	Major Class II	3	25,500	17,237	0.676	B
	Temple St.	Major Class II	3	25,500	32,216	1.263	F
Temple St.	Judge John Aiso St.	Major Class II	2	16,000	21,516	1.345	F
	Los Angeles St.	Major Class II	2	16,000	21,132	1.321	F
	Main St.	Major Class II	3	24,000	21,412	0.892	D
1st St.	Alameda St.	Secondary	4	28,000	27,077	0.967	E
	Central Ave.	Secondary	4	28,000	29,016	1.036	F
	Los Angeles St.	Secondary	6	42,000	35,952	0.856	D
	Main St.	Secondary	6	42,000	39,928	0.951	E
	Spring St.	Secondary	6	42,000	32,639	0.777	C
3rd St.	Flower St.	Secondary	4	30,000	24,053	0.802	D
	Spring St.	Secondary	3	22,500	29,318	1.303	F
	Los Angeles St.	Secondary	3	22,500	30,754	1.367	F
	Main St.	Secondary	3	22,500	30,176	1.341	F
Alameda St.	1st St.	Major Class II	4	32,000	42,364	1.324	F
	2nd St.	Major Class II	4	32,000	38,338	1.198	F

Additionally, Table ES-15 also outlines how LOS at each intersection would vary with each alternative.

Table ES-15 Future (2030) Intersection Level of Service
PM Peak Hour

Intersection	No Build		TSM		Option A		Option B		Underground	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Hill St. / 1st St.	0.91	E	0.91	E	0.91	E	0.91	E	0.91	E
Broadway / 1st St.	0.70	B	0.70	B	0.78	C	0.78	C	0.70	B
Spring St. / 1st St.	0.56	A	0.56	A	0.62	B	0.62	B	0.56	A
Main St. / 1st St.	0.67	B	0.67	B	0.91	E	0.91	E	0.67	B
Los Angeles St. / 1st St.	0.71	C	0.71	C	0.88	D	0.88	D	0.71	C
Judge John Aiso St. / 1st St.	0.85	D	0.85	D	1.06	F	1.06	F	0.85	D
Alameda St. / 1st St.	1.10	F	1.10	F	1.10	F	1.10	F	0.87	D
Broadway / 2nd St.	0.57	A	0.57	A	0.54	A	0.54	A	0.57	A
Spring St. / 2nd St.	0.49	A	0.49	A	0.44	A	0.44	A	0.49	A
Main St. / 2nd St.	0.77	C	0.77	C	0.85	D	0.85	D	0.77	C
Los Angeles St. / 2nd St.	0.73	C	0.73	C	0.82	D	0.82	D	0.73	C
San Pedro St. / 2nd St.	0.75	C	0.75	C	0.59	A	0.59	A	0.75	C
Central Ave. / 2nd St.	0.67	B	0.67	B	0.67	B	0.67	B	0.67	B
Alameda St. / 2nd St.	0.89	D	0.89	D	0.89	D	0.89	D	0.89	D
Broadway / 3rd St.	0.74	C	0.74	C	0.92	E	0.92	E	0.74	C
Spring St. / 3rd St.	0.67	B	0.67	B	0.82	D	0.82	D	0.67	B
Main St. / 3rd St.	0.90	D	0.90	D	1.04	F	1.04	F	0.90	D
Los Angeles St. / 3rd St.	0.70	B	0.70	B	0.74	C	0.74	C	0.70	B
San Pedro St. / 3rd St.	0.54	A	0.54	A	0.62	B	0.62	B	0.54	A
Central Ave. / 3rd St.	0.51	A	0.51	A	0.51	A	0.51	A	0.51	A
Alameda St. / 3rd St.	0.70	B	0.70	B	0.70	B	0.70	B	0.70	B
Figueroa St. / 3rd St.	1.22	F	1.22	F	1.22	F	1.22	F	1.22	F
Hope St. / Temple St.	0.96	E	0.96	E	0.96	E	0.96	E	0.96	E
Grand Ave. / Temple St.	0.87	D	0.87	D	0.87	D	0.87	D	0.87	D
Broadway / Temple St.	0.92	E	0.92	E	0.92	E	0.92	E	0.92	E
Spring St. / Temple St.	0.51	A	0.51	A	0.51	A	0.51	A	0.51	A
Main St. / Temple St.	0.85	D	0.85	D	1.00	E	1.00	E	0.85	D
Los Angeles St. / Temple St.	0.77	C	0.77	C	1.34	F	1.34	F	0.77	C
Judge John Aiso St. / Temple St.	0.61	B	0.61	B	0.93	E	0.93	E	0.61	B
Alameda St. / Temple St.	0.80	C	0.80	C	1.04	F	1.04	F	0.80	C
LOS E Intersections	3		3		7		7		3	
LOS F Intersections	2		2		6		6		1	

Parking Evaluation

The number of curb parking spaces that would need to be removed was calculated for both of the build alternatives. Neither the No Build nor the TSM Alternatives would result in the loss of curb parking spaces. The Underground Emphasis LRT Alternative would require the removal of 20 curb parking spaces on the east side of Alameda St. near 1st St. in order to accommodate the new underpass structure. The At-Grade Emphasis LRT Alternative would displace a total of 88 parking spaces. Mitigation measures, such as new off-street parking facilities, may be needed to offset the impact of removing these curb spaces.

Summary

The No Build Alternative would result in the smallest increase in transit ridership over current volumes, and would not address the missing link in the LRT system. However, it would have no negative parking or roadway circulation impacts.

The TSM Alternative would result in a small increase in transit ridership, as well as a redistribution of a small number of passengers from rail to buses. It would augment transit service between both ends of the missing link in the LRT system, but would not eliminate any transfers. Like the No Build alternative, it would have no negative parking or roadway circulation impacts.

The Underground Emphasis LRT Alternative would attract the greatest volume of new riders to the transit system of the alternatives considered, and it would bridge the missing link in the LRT system and allow new, transfer-free service from Long Beach to Pasadena and from East Los Angeles to Culver City. It would have no negative impacts on roadway congestion, but would result in the loss of 20 curb parking spaces.

The At-Grade Emphasis LRT Alternative would attract fewer riders than the Underground Emphasis LRT Alternative because it would operate at lower speeds along the new tracks. It would still bridge the missing link in the LRT system and allow the same transfer-free service between the Metro Blue, Gold, and Expo Lines, but the overall trip times would be longer. The removal of traffic lanes for rail use would increase congestion to severe levels at several locations within the PSA, and would result in the loss of 88 curb parking spaces.

ES.9 Environmental Impacts & Benefits

The challenge of defining a major piece of public transit infrastructure within the urban core of downtown Los Angeles where rail rights-of-way do not exist is making the project fit while not compromising service or the quality of life for the area. The 1.8-mile gap between the operating lines includes major civic, entertainment, historic and cultural districts within a dense, ever-changing, high rise environment. This section summarizes the environmental considerations of the recommended build alternatives. The recommended alternatives will undergo further scoping, analysis and development leading to circulation of a Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/EIR) per NEPA and CEQA in the next phase of this project per authorization by Metro's Board of Directors.

Land Use and Economic Development

The at-grade and underground alternatives follow similar routes through downtown and never stray more than two blocks from each other. The At-Grade Emphasis LRT Alternative could create some additional traffic congestion in the area by removing automobile lanes on 2nd, Main, Temple, and Los Angeles Streets, thus making access to the surrounding businesses by car more difficult. The tracks may also be difficult for pedestrians to traverse, making the area unattractive for walking, especially if existing mid-block crosswalks are removed. However, this impact would be offset by the generation of increased pedestrian trips near the stations.

The Underground Emphasis LRT Alternative would have fewer negative impacts on the existing land-use patterns than the At-Grade Emphasis LRT Alternative because it would not involve removing any existing automobile rights-of-way for rail use. The Underground Emphasis LRT Alternative may also attract more transit trips and business patrons to the area than the At-Grade Emphasis LRT Alternative due to the shorter trip times typically associated with fully grade separated rail.

Displacement and Relocation of Existing Uses

The At-Grade Emphasis LRT Alternative may require reduction of sidewalk widths, and partial or full right-of-way acquisitions at Flower and 3rd Streets (Option A) or Flower and 5th Streets (Option B) where the tracks rise to street level. On Main and Los Angeles Streets, a 5-foot wide strip of land from the existing sidewalk or full or partial right-of-way acquisitions will be needed for station construction. Loss of right-of-way and curb parking is likely along 2nd, Main, Los Angeles, and Temple Streets.

The Underground Emphasis LRT Alternative would require fewer acquisitions, but would necessitate purchasing the entire block bounded by Central Avenue, Alameda Street, 1st Street, and 2nd Street, which is currently occupied entirely by retail and restaurant businesses. Though no residential units are located in this block, the acquisition could still impact local residents due to the loss of some commercial services. No other displacement or loss of curb parking is anticipated.

Community and Neighborhood Impacts

Construction impacts would be temporary, but significant for both of the build alternatives. Noise, vibration, dust, and increased construction vehicle traffic would be necessary during business hours, and road and sidewalk closures could be in effect for months at a time. Both alternatives will have a pedestrian overpass on Alameda St., which will change the appearance of the streetscape.

The At-Grade Emphasis LRT Alternative will significantly alter the character of 2nd, Temple. Main, Los Angeles, and Flower Streets. Twenty-five-foot tall catenary poles would be erected above the street to supply electricity to the trains, and high-platform stations with canopies would be constructed in the roadway medians or along the curb lanes. The street-running tracks could also present new obstructions to pedestrians wishing to cross. Also, the permanent removal of automobile traffic lanes to install tracks and stations may slow both car and bus trips. The removal of left-turn lanes and curb parking spaces would make navigating the area by car more difficult. Metro Rail currently operates from 4 a.m. to 1 a.m. daily, and trains and stations will generate noise in the form of bells, horns, public address announcements, and rail squealing during these times.

The Underground Emphasis LRT Alternative has few surface impacts aside from the placement of station entrances along existing sidewalks. The operational noises may still be heard where the tracks surface at 1st and Alameda Streets, as well as in the vicinity of tunnel ventilation shafts. Noise emanating from the ventilation shafts would be quieter at street level than noise generated along at-grade tracks.

At-grade stations allow pedestrians to move been the sidewalk and the platform quickly without having to navigate stairwells and concourses.

Visual and Aesthetic Impacts

Both alignments will pass within one-quarter mile of over 200 notable architectural resources. The substantial roadway modifications needed during construction will result in potential visual disruption, though the finished infrastructure will be consistent in character with the existing urban landscape. Both alignments will include a pedestrian overpass at Alameda Street, which will impose visual impacts both during and after construction. Platforms, signage, tracks, and overhead wires would be added along PSA streets and sidewalks for the At-Grade Emphasis LRT Alternative, and the wires at some intersections may be numerous enough to produce an overhead web-like effect.

The Underground Emphasis LRT Alternative would add station portals to the PSA, and these would change the appearance of the parcels on which they are located. They would not be tall enough, however, to block views of the surrounding architectural resources. Aside from the portal area at Alameda St., there would be no other visual or aesthetic impacts associated with the Underground Emphasis LRT Alternative. Further study is needed to determine whether the proposed portals would block views of existing public art installations. Though the At-Grade Emphasis LRT Alternative imposes more long-term visual impacts, the Underground Emphasis LRT Alternative would present greater impacts during the construction phase because tunneling takes longer and involves more machinery than installing at-grade tracks.

Air Quality Impacts

Construction-related emissions are expected to be higher for the Underground Emphasis LRT Alternative because it involves significantly more work over a longer period of time than the At-Grade Emphasis LRT Alternative. Changes in intersection configuration, especially under the At-Grade Emphasis LRT Alternative, could cause localized congestion and CO emissions increases. However, on a regional scale, both alternatives would yield fewer vehicle miles traveled (VMT) than the No Build Alternative, and would thus prove beneficial to the region's air quality.

Noise and Vibration

LRT vehicles on both alternatives would generate noise in the form of rail squealing, brakes, propulsion systems, horns, bells, and station platform announcements. The At-Grade Emphasis LRT Alternative may also include crossing bells at street level, and the Underground Emphasis LRT Alternative would have mechanical HVAC systems that could also generate additional noise. The Underground Emphasis LRT Alternative would generate more noise and vibration at track level due to the higher train speeds associated with grade-separated operation, but the amount escaping to the street through the ventilation structures would be minimal and would likely be drowned out by the already-high ambient noise levels in the downtown area. Overall, the At-Grade Emphasis LRT Alternative presents more potential for noise impacts than the Underground Emphasis LRT Alternative, though the magnitude would be similar to bus operations and can be mitigated through careful design and maintenance.

Ecosystems/Biological Resources

There are no protected wildlife areas or waterways within one-quarter mile of the build alternatives. There are also very few locations for vegetation and wildlife to exist in the dense downtown area. As such, the ecosystem impacts of the build alternatives would be minimal. Nesting sites for birds could be affected if construction requires the removal of street trees.

Geotechnical: Subsurface and Hazardous Materials

There are over 500 hazardous materials regulatory database listings located within the PSA, though some sites are listed on multiple databases. There is significant potential for subsurface hazardous materials to be found in the PSA due to the area's long history of commercial and industrial use. The At-Grade Emphasis LRT Alternative would be less likely to encounter these materials than the Underground Emphasis LRT Alternative due to the relatively little tunneling required.

Water Resources

Both build alternatives present relatively low potential for water resources impacts, since the project is not located within one-quarter mile of any major water bodies or flood zones, the downtown area already has very few pervious surfaces, and runoff is monitored and treated before discharge. The Underground Emphasis LRT Alternative is more likely to encounter groundwater during construction because it involves extensive tunneling. Also, the tunneling could open a new pathway for contaminated groundwater to spread quickly. Any dewatering that is needed during construction would be conducted in a manner that does not impact water quality or runoff volumes.

Energy

Both build alternatives would be powered by an overhead catenary system, and the trains' energy requirements would be similar. The Underground Emphasis LRT Alternative's stations would present greater energy needs than the at-grade stations because of the extra lighting, HVAC systems, elevators, and escalators. It would also consume more energy resources during construction due to the complexity of the additional tunneling. Whichever alternative yields the highest volume of new transit riders would impart the greatest reduction in vehicle miles traveled and regional fuel consumption.

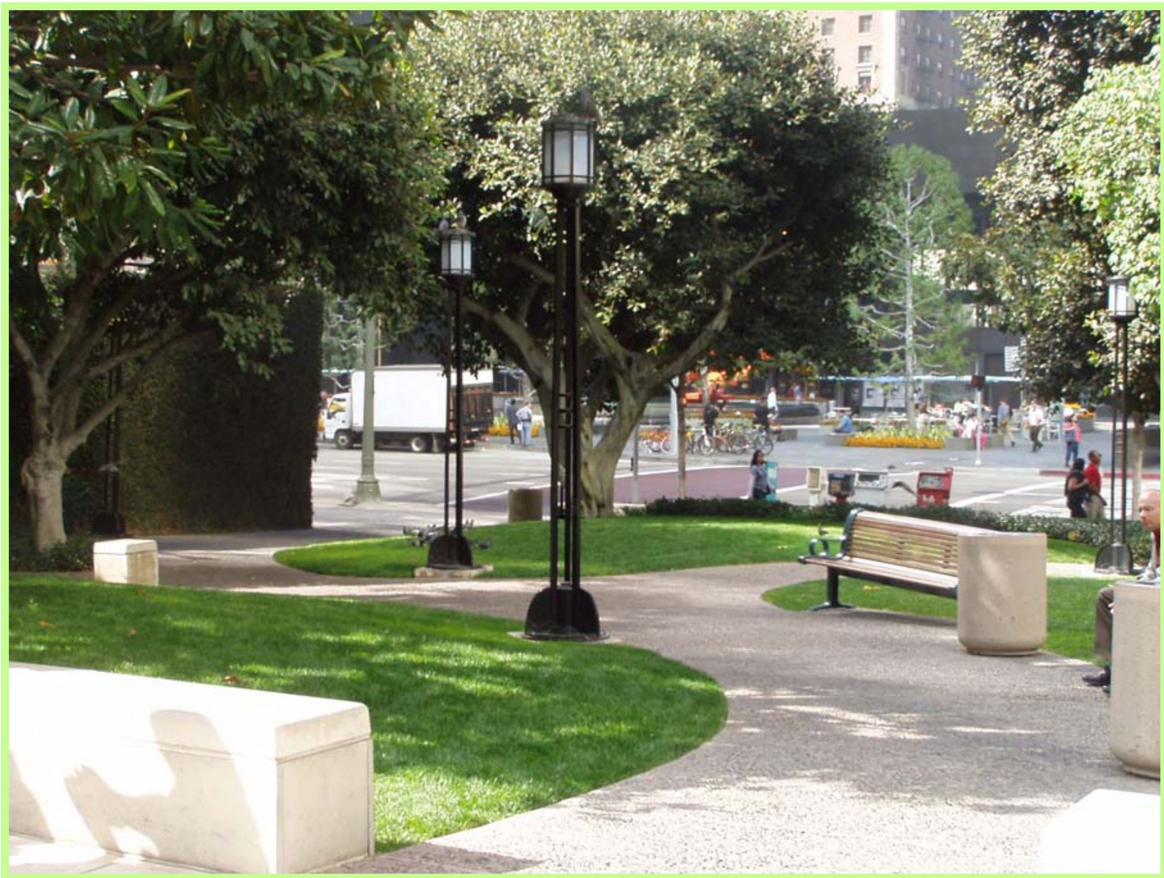
Historic, Archaeological & Paleontological Resources

There are hundreds of known historic resources located within one-quarter mile of each build alternative. Because the routes are located close to each other, the lists are largely the same. There are 21 known archeological resources within one-quarter mile of the At-Grade Emphasis LRT Alternative, versus 11 near the Underground Emphasis LRT Alternative. However, construction of the Underground Emphasis LRT Alternative's tunnels is more likely to disturb these known sites as well as unknown sites that may be uncovered. The increased tunneling involved with the Underground Emphasis LRT Alternative also makes it more likely to damage surrounding historic buildings during construction, and the damage may not be detected until years later. The stations and catenary poles needed for the at-grade alignment could alter the character of any historic districts in which they are located, and potentially alter nearby historic buildings if the wires need to be anchored to their exterior walls. Either construction project would need to be conducted in consultation with a qualified architectural historian and archeologist.

Los Angeles' historic City Hall, as seen from the corner of Main and Temple Streets, adjacent to the alignment of the At-Grade Emphasis LRT Alternative.

Parklands and Other Community Facilities

Public transit service generally enhances access to nearby parklands and community facilities. However, the construction of new light rail infrastructure could impede access to facilities located adjacent to the rights-of-way. The list of nearby community facilities and parklands are similar for both build alternatives, and both call for a potential station portal in the vicinity of the Central Library park space. The At-Grade Emphasis LRT Alternative would require restricted vehicle and pedestrian access at certain points along the alignment, which could impede trips to and from community facilities. The grade crossings could also delay emergency vehicles, which may have to wait for trains to pass. The At-Grade Emphasis LRT Alternative also calls for the removal of 88 curb parking spaces, thus reducing ease of access to community facilities for people arriving by car.



Park space outside of Central Library

The Underground Emphasis LRT Alternative would have fewer impacts on access to community facilities via the road network and circulation of emergency vehicles, although the need for more station entrance portals could necessitate placing them in existing park areas.

Economic & Fiscal Impacts

Construction will be temporarily disruptive to economic activity in the PSA, though its effects will be tempered by the creation of temporary construction jobs. These effects are expected to be more pronounced for the At-Grade Emphasis LRT Alternative Couplet A option than for Couplet B or the Underground Emphasis LRT Alternative. For both alternatives, construction could restrict access to nearby businesses and parking facilities, resulting in fewer customers choosing to visit the area. However, many of the businesses in the Civic Center perform government functions, and do not rely on customers being able to reach their offices.

Both build alternatives will require tunneling, and the method used will determine the extent of the surface street closures and associated access restrictions. The Underground Emphasis LRT Alternative will involve more tunneling and the lane closures will be temporary, whereas the At-Grade Emphasis LRT Alternative calls for permanent removal of curb parking and traffic lanes. The Underground Emphasis LRT Alternative will also require more property acquisitions than the At-Grade Emphasis LRT Alternative, and the loss of tax revenue will be higher. However, the loss of tax revenue associated with both alternatives would be of similar magnitude, and is insignificant when compared to the overall tax revenue generated in the PSA. Over time, the new transit service will cause economic activity in the area to increase, and this is expected to be most noticeable for the At-Grade Emphasis LRT Alternative Couplet A option.

Safety and Security

Pedestrian and vehicular traffic volumes are high in the PSA, and there are significant safety concerns associated with adding light rail trains to the area. The At-Grade Emphasis LRT Alternative is particularly susceptible to pedestrian and automobile safety issues due to the open arrangement of the trackway and stations. Pedestrians could easily walk along the tracks and risk being struck by trains. Also, because trains would cross intersections and crosswalks without crossing arms, there would be no physical barriers to keep the trains from colliding with pedestrians or automobiles. Motorist error could cause an automobile to accidentally swerve into the rail right-of-way and collide with a train. The risk of collision increases with the number of pedestrians, trains, automobiles, and train passengers in the area. Pedestrians may also risk being struck by automobiles when using crosswalks to access stations located in roadway medians. Signal phase timing could be adjusted and additional warning devices could be placed at grade crossings to mitigate the safety hazards.

The Underground Emphasis LRT Alternative presents no pedestrian or motorist safety hazards because the tracks would be located underground for nearly the entire length of the alignment and there would be no grade crossings. Pedestrians might still be injured or struck by a train if the platforms become too crowded or if they are not adequately cautious when trains enter the stations. The stations and tracks along the Underground Emphasis LRT Alternative are concealed from view, and it would be difficult for passersby and local law enforcement officers to notice potential security problems. Underground stations and tracks may also create venues for crime, trespassing, and refuge from the elements for non-domiciled persons. One security benefit, however, is that the Underground Emphasis LRT Alternative would not encounter service delays during demonstrations, civil unrest, and public events taking place on the surface.

Potential for Conflicts between Trains, Automobiles, and Pedestrians will Exist at-grade.

Construction Impacts

Intensive construction activity would be needed for both build alternatives. The heaviest construction activities, including tunneling, trenching, sidewalk construction, and roadway refinishing would last for two to three years. Both projects involve tunneling and the installation of at-grade tracks, and construction staging areas will need to be established. During construction, traffic and emergency vehicle circulation could be impeded, and vibration, noise, dust, and localized short-term air pollution could occur. These effects would be felt over a longer period of time for the Underground Emphasis LRT Alternative, since the construction effort would be more complex.

Growth-Inducing Impacts

New transit service does not typically cause growth. It may, however, redistribute the locations of new growth within a region or cause the growth to be more transit-oriented. Downtown Los Angeles already operates as a transit-oriented area and is well-served by the existing transit system, so the Regional Connector is unlikely to spur additional growth in the PSA. However, the addition of more transit stations to the PSA would help nearby development projects attain their goals of having as many patrons as possible arrive by transit. Since the growth-inducing impacts of the Regional Connector would be minimal, there are no significant differences between the effects of the Underground and At-Grade Emphasis LRT Alternative.

Environmental Justice

The demographic characteristics of the areas within one-quarter mile of the two build alternatives are similar, since the two potential routes are located very close together. Year 2000 census data for both alignments reveals that about 80% of the population within the PSA belongs to a minority group, the median annual household income is approximately $15,000-$19,000, 35% live below the poverty threshold, and about 24% are unemployed. The PSA is home to over two dozen homeless shelters and single room occupancy hotels. The large numbers of low-income residents are likely to be benefited by improved transit service, as this group typically demonstrates the highest degree of transit dependency.

In accordance with federal regulations, several community meetings have been held within the PSA to invite public participation and receive comments about the project. During the public input process, issues of transit service equity, disproportionate impacts borne by low-income or minority communities, health impacts, social and economic impacts, neighborhood impacts, noise, vibration, displacement, and construction impacts were considered. One major difference between the two build alternatives is that the At-Grade Emphasis LRT Alternative would bypass the Little Tokyo neighborhood and add a significant amount of new street-running tracks to the Civic Center area. The Underground Emphasis LRT Alternative would travel through Little Tokyo and the Civic Center beneath 2nd St. and transition to at-grade tracks in the block southwest of 1st and Alameda Streets.

Major Utilities

Both build alternatives will involve tunneling under Flower St., where there are large storm drain and gravity lines spanning the entire route from 3rd St. extending south of 7th St. The deepest of these lines is 15 feet below-grade. The location of these large utility lines will make cut-and-cover tunneling difficult. The Underground Emphasis LRT Alternative will face more conflicts with utilities than the At-Grade Emphasis LRT Alternative, especially in the vicinity of stations. Utilities on 2nd St. extend as far at 16 feet underground, and will need to be relocated or bypassed using tunnel boring machines.

ES.10 Financial Analysis

The At-Grade Emphasis LRT Alternative and the Underground Emphasis LRT Alternative are approximately the same length (1.8 miles). The capital costs are estimated to be $795.7 million in year 2008 dollars for the At-Grade Emphasis LRT Option A, $709.3 million for Option B and $910.4 million for the Underground Emphasis LRT Alternative. The shuttle bus TSM Alternative would cost $62.7 million (Table ES-16).

Table ES-16 Capital Costs of Each Alternative (in millions of dollars)

Alternative	2008 Dollars
No Build	$0.00
TSM	$62.74
At-Grade Emphasis LRT Alternative – Option A	$795.67
At-Grade Emphasis LRT Alternative – Option B	$709.30
Underground Emphasis LRT Alternative	$910.36

For all of the build alternatives, about 62 percent of the capital costs will go toward construction. Two to seven percent would pay for new light rail vehicles, about 21 percent would pay for professional services, and nine percent would be reserved for unallocated contingencies.

The potential funding sources assume 50 percent local funding through transportation sales taxes, benefit assessment districts, and Mello-Roos community facilities districts. Potentially, local congestion pricing revenues and transportation impact mitigation fees may also be used. The strategies also call for at least 50 percent federal funding through the New Starts program, and in the case of the TSM Alternative, the Section 5309 Bus Discretionary Program. Federal Congestion Management and Air Quality Program (CMAQ) funds could potentially be used to finance the Regional Connector, as the project will be capable of reducing congestion and thereby improving air quality. On the state level, a potential source of funding is the California High-Speed Rail Project, which will offer money to connect existing regional rail services to the new project should it be constructed.

ES.11 Issues to be Resolved

Upon Metro Board Authorization, environmental analysis and continued engineering will support further identification and resolution of project challenges. The following lists current identified issues and the need for further study for both of the alternatives.

- Metro will continue to review safety and security considerations in order to make the Regional Connector a reliable, safe, and secure system for pedestrians, riders, autos, and bicyclists.
- Traffic conditions for the At-Grade Emphasis LRT Alternative will continue to be evaluated during the environmental process in close collaboration with LADOT. The use of the 2nd St., including the 2nd St. tunnel, for LRT operations would transform the roadway into a transit mall. This would mean fewer autos, but not necessarily fewer people, using 2nd St. Street. Parking would be removed in this location, but possibly replaced nearby. An additional station on 2nd St. will be analyzed for potential benefits.
- Construction methods will continue to be evaluated for safety, expediency, and impacts on the environment.
- The environmental process will be completed (Environmental Impact Statement/Environmental Impact Report) based on NEPA and CEQA guidelines.
- Approval from the California Public Utilities Commission will be sought for the proposed grade crossings.
- Further engineering will be undertaken to develop detailed estimates of costs, environmental impacts, utility relocation needs, and potential mitigation measures.
- Station entrance locations will be evaluated based on how well certain locations perform in terms of attracting riders, visibility, close proximity to activity centers, and impacts to surrounding properties.
- Station construction and construction staging will be described in more detail during the environmental process.
- Property impacts will be identified.

2nd and San Pedro Streets, looking west - Before

2nd and San Pedro Streets, Looking West – After (Underground Emphasis LRT Alternative)

ES.12 Conclusion

Metro has completed this AA Study in a collaborative effort with the community to determine the need and benefit of linking three rail lines serving the region, to identify alternatives and evaluate which alternatives achieve certain goals and criteria, and to provide the Metro Board of Directors the information needed to select alternatives to be further engineered and analyzed in a Draft Environmental Impact Statement/Draft Environmental Impact Report per NEPA and CEQA. The engineering and environmental analysis for Board selected alternatives will also be used to prepare documents and submission consistent with the requirements of project pursuing FTA New Starts funding, including the request for authorization from the FTA to initiate preliminary engineering.

The following Table ES-17 provides a quick glance summary comparison of the potential alternatives based on the AA analysis.

Table ES-17 Summary Comparison of Alternatives

Alternative	Transportation	Environment	Cost/Public Support
No Build	No additional transportation benefits beyond Metro's Long Range Transportation Plan	No project would be constructed	No capital costs, and no additional operating costs
Transportation System Management (TSM)	- Smallest increase in transit trips (1,000 daily) - No reduction in transfers for rail users - Greatest travel time - Most stops along route	- No parking impacts outside of peak hours, no reduced roadway capacity - Overall fewer impacts than build alternatives - No property acquisitions needed	- Little public support expressed - Lowest capital cost ($63 million) - Greatest annual operating costs ($13.6 million) - Highest cost per hour of user benefit ($97)
At-Grade Emphasis LRT	- Increase in transit trips (7,600-8,400 daily) - Eliminates up to two transfers for some rail trips - Improved travel time from Union Station to 7th St./Metro Center over No Build and TSM (12 minutes)	- Parking impacts and reduced roadway capacity along segments of Flower, 2nd, Main, Los Angeles, and Temple Streets. - Greatest visual and noise impacts - Most alterations to existing streets - Most property acquisitions	- Public concerns over grade crossings and loss of parking - Capital costs range from $709-$796 million - Moderate annual operating costs ($9.6-9.8 million) - Cost per hour of user benefit ranges from $20-25
Underground Emphasis LRT	- Largest increase in transit trips (10,200 daily) - Eliminates up to two transfers for some rail trips - Shortest travel time from Union Station to 7th St./Metro Center (10 minutes)	- Parking impacts and reduced roadway capacity at intersection of 1st and Alameda only - Fewer visual and noise impacts than At-Grade Alternative - Fewer alterations to existing streets than At-Grade Alternative - Fewest property acquisitions of the build alternatives	- Strongest public support, concerns over 1st and Alameda crossing - Highest capital cost ($910 million) - Lowest annual operating costs ($5.2 million) - Lowest cost per hour of user benefit ($19)

Section 1 Purpose and Need

1.1 Introduction

This report describes the purpose and need for transportation investments in the Regional Connector Project Study Area (PSA). The Regional Connector is a transit project planned by the Los Angeles County Metropolitan Transportation Authority (Metro) to provide more convenient transfers between Metro Rail Lines, dozens of bus lines, and regional commuter rail service for passengers traveling to, from, and through downtown Los Angeles.

There are currently no direct trains for Metro Blue Line light rail passengers from Long Beach travelling to the Metro Gold Line to Pasadena, or vice-versa. These passengers must transfer through the Metro Red or Purple Lines and travel between 7th St./Metro Center Station and Union Station for the connection. When the Metro Expo Line from 7th St./Metro Center Station to Washington/National Station in Culver City opens in 2010, its riders will also need to transfer at 7th St./Metro Center Station and Union Station to reach the Gold Line. The Regional Connector would extend the shared Metro Blue/Expo Line tracks from their present terminus at 7th St./Metro Center Station to a junction with the Metro Gold Line near the Little Tokyo/Arts District Station with continuing service to Union Station and beyond. This would provide a one-seat ride for Metro Blue Line passengers travelling from Long Beach to Pasadena. Metro Expo Line passengers would also be able to ride from Washington/National Station in Culver City to East Los Angeles without transferring, via the Regional Connector and the Metro Gold Line Eastside Extension.

The Regional Connector would also provide increased transit coverage of the Civic Center, Bunker Hill, Historic Core, Little Tokyo, and Financial Core as it travels between 7th St./Metro Center Station and the Metro Gold Line.

See Figure 1-1 for a map of the PSA and Figure 1-2 for an overview map of the Metro Rail system.

This Alternatives Analysis (AA) presents an evaluation of alignments, modes, configurations, and station locations under consideration for the Regional Connector. The alternatives are then screened based on defined criteria to identify preferred alternatives. A final AA Study will provide decision makers the information needed to approve further investigation in the form of a Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR).

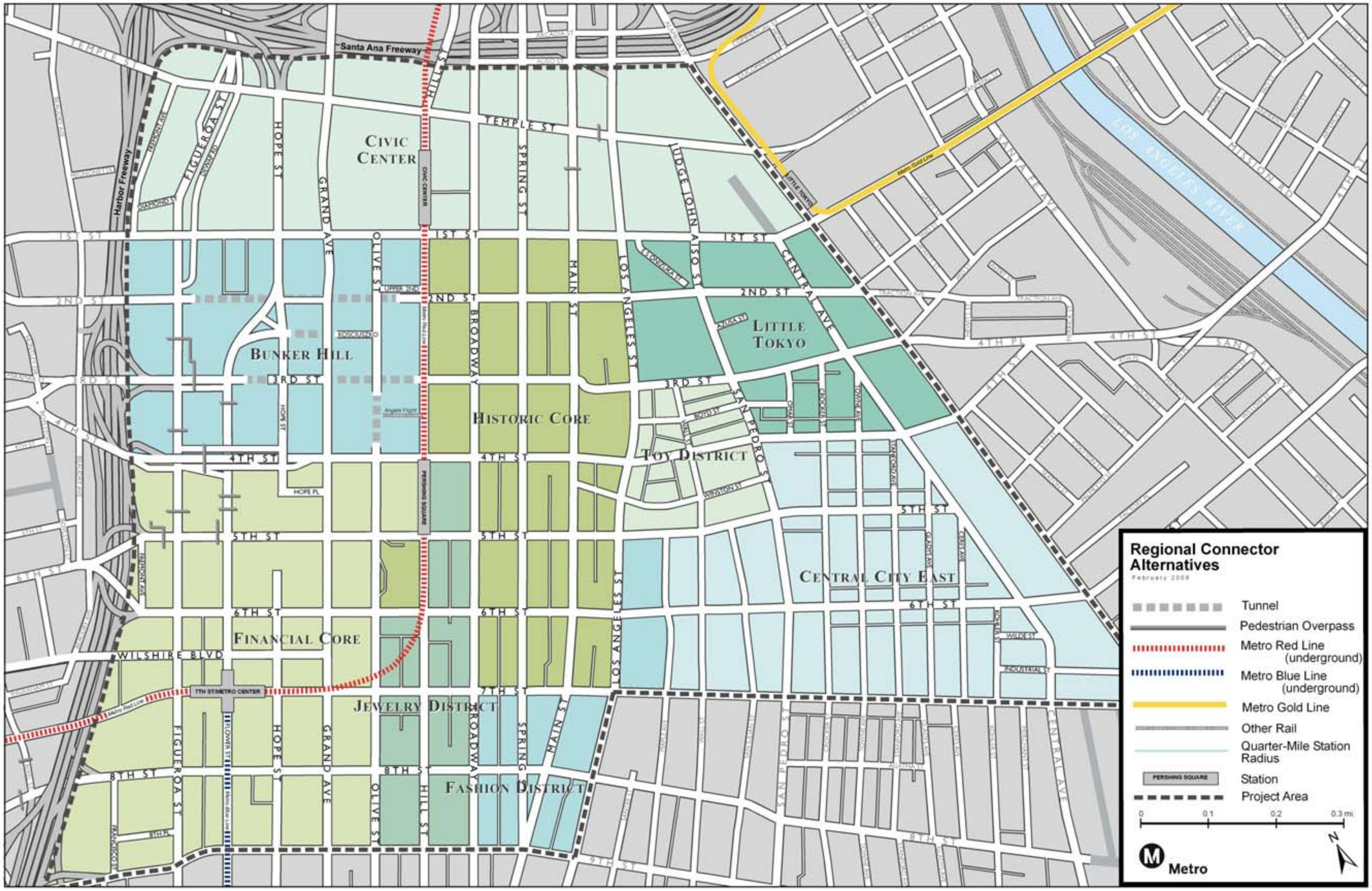


Figure 1-1 Project Study Area (PSA)

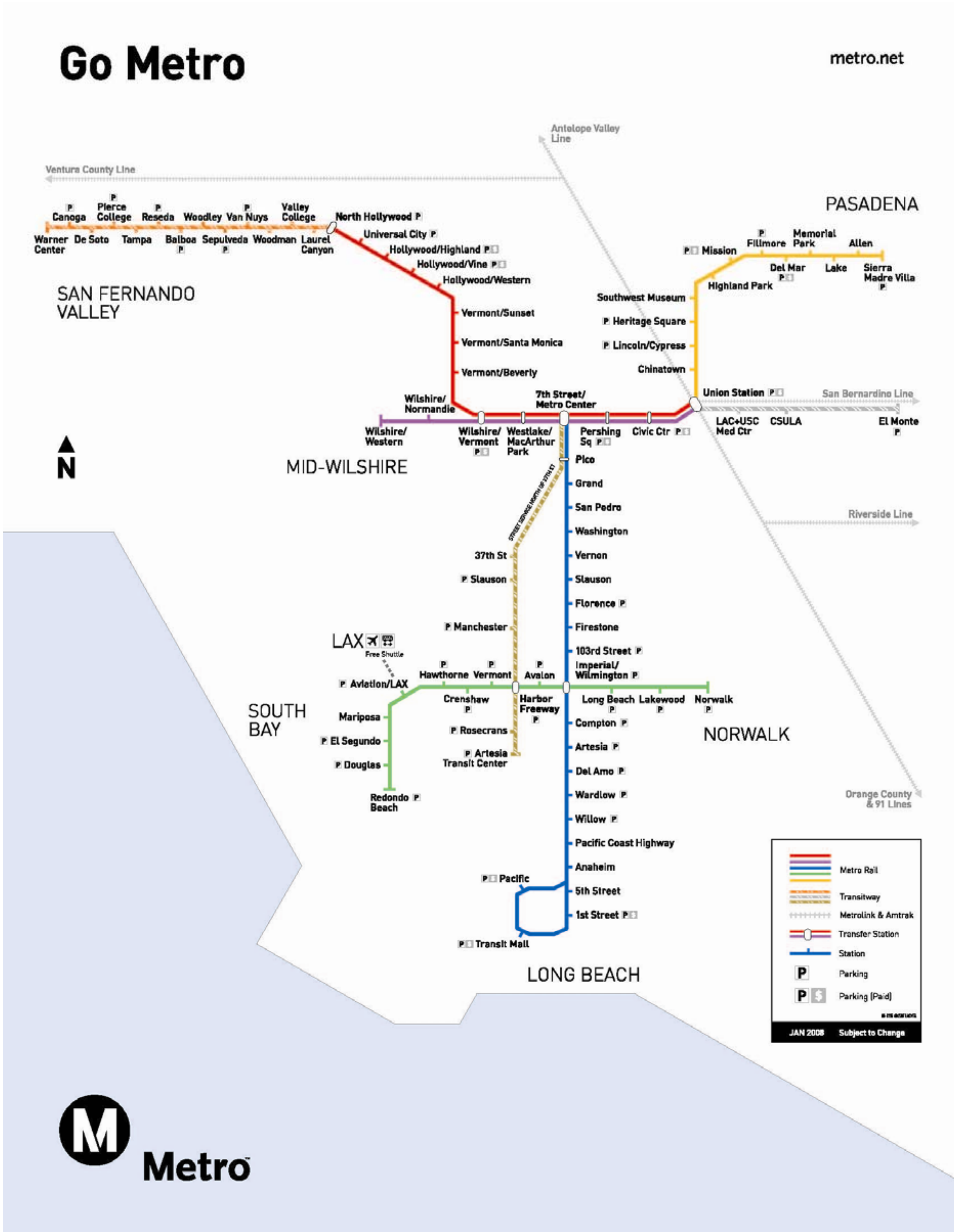


Figure 1-2 Metro Rail Map - Operational System, Fall 2008

1.2 Background

1.2.1 Location

The PSA is located in the downtown area of the City of Los Angeles. The PSA is bounded by the Harbor Freeway (SR-110) on the west, the Santa Ana Freeway (US-101) on the north, Alameda St. on the east, and 7th and 9th Streets on the south. The PSA is within the Central Business District (CBD) of Los Angeles, consisting of a dense urban core with an active Financial District lined with skyscrapers of 40 stories or more, a reviving Historic Core and a thriving cultural and civic center. Because the PSA is built-out, there are no particularly underdeveloped areas that are clear candidates for the Regional Connector. Therefore, all streets and roadways within the PSA are potential candidates for the Regional Connector route.

To the northeast of the PSA lies the Metro Gold Line extending from Union Station south to 1st St. and Alameda St., then heading east on 1st St. with one station just north of 1st St. and east of Alameda. To the southwest of the PSA lies the Metro Blue Line terminus of 7th St./Metro Center Station at 7th St. between Flower and Figueroa Streets.

Because of its central location, the Regional Connector will improve the operation of the entire Metro Rail transit system and provide benefit to the greater Los Angeles County (County) region. The Regional Connector may also replace duplicative bus lines with a single high-capacity link between 7th St./Metro Center Station and Union Station, thus improving bus operations in the County as well.

1.2.2 History

Rail transit in Los Angeles dates to 1872, when Southern Pacific began construction on a passenger rail line from downtown to San Pedro, with the intent of eventually monopolizing the regional transportation system. By the 1920s, the Southern Pacific and Pacific Electric systems had nearly 800 cars in service and hundreds of miles of tracks. Los Angeles Railway also operated a local streetcar system serving the downtown core and the nearby neighborhoods, which carried the bulk of Los Angeles' urban ridership. Notable busy lines included the Aiso St. service to Boyle Heights, the Temple and 2nd St. cable cars on Bunker Hill, and the Angels Flight funicular railway. Pacific Electric's Hollywood, Glendale, and San Fernando Valley trains entered the one-quarter-mile long Belmont Tunnel at the tail end of their trips to the Subway Terminal Building at 4th and Hill Streets in downtown.

Despite the extensive track and power infrastructure, Los Angeles' rail transportation system would last only four more decades. Americans traded streetcars for private automobiles with record speed and moved to neighborhoods beyond the railroads' reach. Rail transit's final zenith came during World War II, when fuel, metal, and rubber rationing briefly forced millions of Americans back onto streetcars to get to their jobs.

With the end of the war came a period of economic and industrial prosperity and the pent-up demand for new automobiles could finally be met. With few rail riders remaining and new diesel bus technology offering a cheap substitute for streetcar service, cash-strapped transit operators nationwide began canceling routes and removing tracks. Los Angeles' system closed entirely, with the last train making its trip from downtown to Long Beach in 1963.

Freed by the heightened mobility that private cars offered, people began working in increasingly suburbanized settings, and the old downtown core plunged into decline for several decades. In recent years, with traffic congestion mounting, the mobility that supported geographically-dispersed job and housing patterns has become increasingly constrained. Longer commute times, ever-climbing gas prices and increased concern about vehicle greenhouse gas emissions leading to climate change have prompted many Los Angeles residents to seek a return to the transit-friendly urban form of decades past. Downtown Los Angeles has seen a recent surge in development and many residents are rediscovering the forgotten urban core.

During the mid-1980s, the Los Angeles County Transportation Commission and Southern California Rapid Transit District began piecing together the railroad rights-of-way abandoned decades earlier with the intent of bringing rail transit back to Los Angeles.

Today, the Metro Rail system consists of 73 track miles and downtown Los Angeles is once again served by a radial network of rail transit lines. The Metro Red Line has assisted in the resurgence of the downtown area, including the PSA, by improving accessibility and facilitating movement between various districts.

In addition, the Southern California Regional Rail Authority has gradually purchased its own right-of-way and developed a 512-mile commuter rail system over the course of the past two decades, linking commuters throughout the region to their downtown jobs.

1.3 Past Studies

Pasadena – Los Angeles Light Rail Transit Project EIR 1988-1993

The concept of a light rail link through the downtown core from 7th St./Metro Center Station to Union Station originated from the Environmental Impact Report (EIR) for the Pasadena-Los Angeles Light Rail Transit Project. This study explored extending the Long Beach-Los Angeles Light Rail Transit line, now the Metro Blue Line, from downtown through Pasadena.

After environmental clearance and public approval, the Pasadena-Los Angeles Light Rail Transit Project, now the Metro Gold Line, was built. The Metro Gold line now runs from the Sierra Madre Villa Station in Pasadena to Union Station.

It was specifically indicated in the study that a Gold Line rail connection is possible between Union Station and 7th/Metro Center Station to reduce transfers between the Metro Red, Gold and Blue Lines.

Blue Line Connection Preliminary Planning Study

In 1993, Metro completed a preliminary planning study to analyze alternatives for connecting the Long Beach Blue Line, already in operation, to the Pasadena Blue Line (now the Metro Gold Line), which was not yet under construction at that time. Although the Metro Gold Line provides a viable service as stand-alone transit from downtown Los Angeles to Pasadena, a potential capacity problem for the Metro Red Line was identified, as it was the sole rail connection between Union Station and the 7th St./Metro Center Station. Metro officials recognized that building a connection between the Long Beach and Pasadena light rail lines would alleviate the capacity issues, and increase the overall usefulness of the system.

Los Angeles Eastside Corridor Final Supplemental EIR/EIS 2002

At the time of the Blue Line Connection Preliminary Planning Study, an extension of the Metro Red Line to Boyle Heights was also being considered. The preferred alternative was a 3.1-mile long heavy rail transit (HRT) subway with 4 stations.

In February 2002, Metro approved the Metro Gold Line Eastside Extension using Light Rail Transit (LRT) in lieu of the Red Line Eastside Extension. Running from Union Station to Atlantic Station in East Los Angeles, this six-mile, eight-station extension traverses Alameda St., 1st St., Indiana St., and 3rd St. A new bridge connects Union Station to the eastern edge of downtown by going south over the US-101 freeway to the intersection of Alameda St. and Temple St. The route is at grade on the eastern side of Alameda St. from Temple St. to 1st St. An at-grade station at 1st and Alameda Streets is sited on the northeast corner of the intersection to minimize traffic impacts.

Regional Light Rail Connector Study 2004

Based on new alignment opportunities created by the approval and construction of the Metro Gold Line Eastside Extension, Metro initiated an engineering study to identify potential alignment, station and configuration alternatives for a new LRT connection between the Metro Blue and Gold Lines. The new alternatives connected the Metro Gold Line Eastside Extension in the vicinity of the Little Tokyo/Arts District Station at 1st and Alameda Streets to the 7th St./Metro Center Station.

Forty-one initial alternatives were developed and initial screening reduced the number of alternatives to 16. The screening was based on characteristics, service area, cost, complexity of engineering and other similar criteria. There was no public input process performed and no preferred alternative identified in this study.

This AA includes several of the alternatives identified in the 2004 study. Some of the other 2004 alternatives are no longer feasible due to changed conditions along the proposed alignments.

1.4 Project Study Area Demographics

Data presented in this section were obtained from the Southern California Association of Governments (SCAG, 2005) and the U.S. Census Bureau (2000). Data are representative of demographic conditions at the time of data-gathering and are used as the basis of evaluation in this AA.

The Regional Connector PSA covers 1.6 square miles, or 0.03 percent of the 4,752 square miles of the County. The total residential population of the PSA is 17,795, or 0.18 percent of the total County population. The average population density within the PSA is 11,685 per square mile, 5.5 times that of the County.

Despite its small size and residential population, the Regional Connector PSA sustains 3.62 percent of the County's Total Employment with 168,328 jobs. Employment density in the PSA is 110,529 employees per square mile which is more than 100 times the County-wide employment density.

Table 1-1 summarizes the PSA and County population and employment information for 2005. Population and employment growth are discussed further with respect to transit dependency in Sections 1.7.4 and 1.7.5.

Table 1-1 Population and Employment

Demographics	PSA	L.A. County	Percent of County
Population	17,795	10,010,315	0.18%
Population Density (people/sq. mi.)	11,685	2107	NA
Total Employment	168,328	4,644,010	3.62%
Employment Density (jobs/sq. mi.)	110,529	977	NA

Source: SCAG, 2005

According to 2000 Census data, the PSA has higher proportions of Asian and Black residents than the County. Black residents compose 30.6 percent of the PSA, compared with 9.6 percent of the County; they reside in the PSA primarily east of Hill St. and south of 1st St.

Asian residents, who live primarily between 1st St. and 5th St., compose 23.5 percent of the PSA, compared with 11.9 percent of the County.

The PSA has significantly lower compositions of White and Hispanic populations when compared to the County.

Table 1-2 shows the racial and ethnic breakdown of the PSA. Figures 1-3 through 1-8 illustrate the population's racial and ethnic distribution throughout the PSA.

Table 1-2 Racial and Ethnic Composition				
Demographics	PSA		Total LA County	
	Number	%	Number	%
Race				
Total Population	17,795	100%	9,519,338	100%
White	4,968	27.9%	4,622,759	48.6%
Black/African American	5,441	30.6%	916,907	9.6%
American Indian	180	1.0%	68,471	0.7%
Asian	4,187	23.5%	1,134,263	11.9%
Pacific Islander/Hawaiian	9	0.1%	27,221	0.3%
Some other race	2,139	12.0%	2,262,925	23.8%
Two or more races	917	5.2%	486,792	5.1%
Ethnicity				
Total Population of PSA	17,795	100%	9,519,338	100%
Hispanic or Latino (regardless of race)	4,258	23.9%	4,242,213	44.6%

Source: U.S. Census Bureau, 2000

Residences in the PSA are categorized in SCAG data as single-family homes, multi-family homes, or group quarter residences, which include military barracks, dormitories, and institutional housing. Data for the number of low, medium, and high-income households in the PSA were available for single-family and multi-family residences only. In 2005, there were 9,673 of these households with a median household income of approximately $45,000. Group quarters added 5,466 residences.

Based on these 2005 data, the PSA is primarily composed of low-income households, with a moderate portion of medium-income household population, as shown in Table 1-3.

Table 1-3 Project Study Area Income Status		
Demographics	PSA	Percent
Total Residences	15,136	N/A
Total Households	9,673	100%
Low Income Households	7,244	75%
Medium Income Households	2,009	21%
High Income Households	417	4%

SCAG, 2005

According to data presented in Table 1-4, only 5.5 percent of the population in the PSA is age 18 or younger, compared to 29.4 percent of the population of the County. The PSA also has a higher percentage of elderly residents (19.7 percent) compared to the County (9.7 percent).

Table 1-4 Population Age				
Age	PSA	%	L.A. County	%
18 and under	976	5.5%	2,798,604	29.4%
65 and over	3,497	19.7%	926,670	9.7%

Source: U.S. Census Bureau, 2000; SCAG, 2005

The young and the elderly have a higher propensity for using public transportation, since these groups are less likely to have driver's licenses or access to private automobiles.

Children and seniors living outside of the PSA will also benefit from the improved mobility and transit access provided by the Regional Connector, especially if they travel to downtown Los Angeles frequently.

The PSA is currently undergoing significant changes in terms of housing and demographics. Within the last four years, new market-rate condominium towers have been completed, historic buildings have been converted to loft housing, and new entertainment centers have been approved for construction, bringing renewed interest to downtown. These activities continue to bring about demographic changes that may not be reflected in data from 2005.

PSA residents use transit more than people in other areas of the County. Twenty-three percent (or 1,025 people) of people age 16 and older who both live and work in the PSA commute via public transportation, compared to seven percent of the entire County.

Figure 1-9 shows the distribution of public transportation users within the PSA. They tend to live in areas where there are high percentages of zero-vehicle households, as shown in Figure 1-10. A much higher proportion of households in the PSA lack vehicle access (69 percent) than in the County as a whole (12 percent).

1.5 Public Transportation Facilities and Services

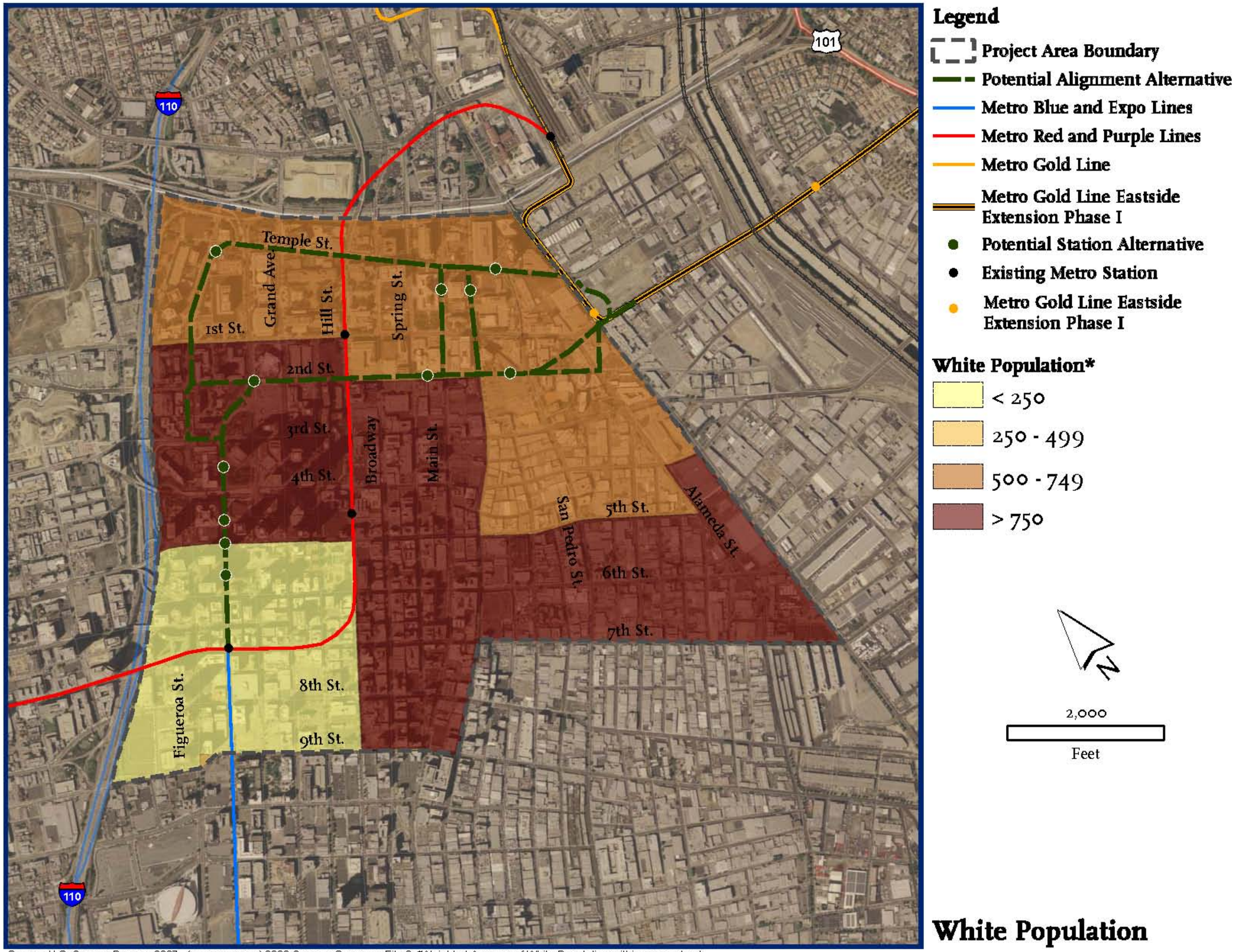
1.5.1 Project Study Area Public Transit Context

Downtown has the highest concentration of transit service of any area in the County. At present, ten transit operators provide service along 112 bus routes and four Metro Rail lines within the PSA, as illustrated in Figure 1-11. There is also heavy pedestrian activity throughout the PSA. The bus and rail lines branch out in all directions from the PSA to many destinations in Los Angeles County. Freeway express service also allows riders to reach destinations in Orange, San Bernardino, and Ventura Counties during peak commute hours.

1.5.2 Transportation Facilities and Services in the Project Study Area

1.5.2.1 Metro Rail

Metro provides rail service to the PSA with the Metro Red Line from Union Station to North Hollywood, the Metro Purple Line from Union Station to Wilshire Center, the Metro Blue Line from the 7th St./Metro Center Station to Long Beach, and the Metro Gold Line from Union Station to Pasadena. The rail service consists of 62 rail stations and 73 track miles.



Source: U.S. Census Bureau, 2007. (ww.cenus.gov) 2000 Census, Summary File 3. *Weighted-Average of White Population within census tract.

Figure 1-3 Race, White Population in PSA

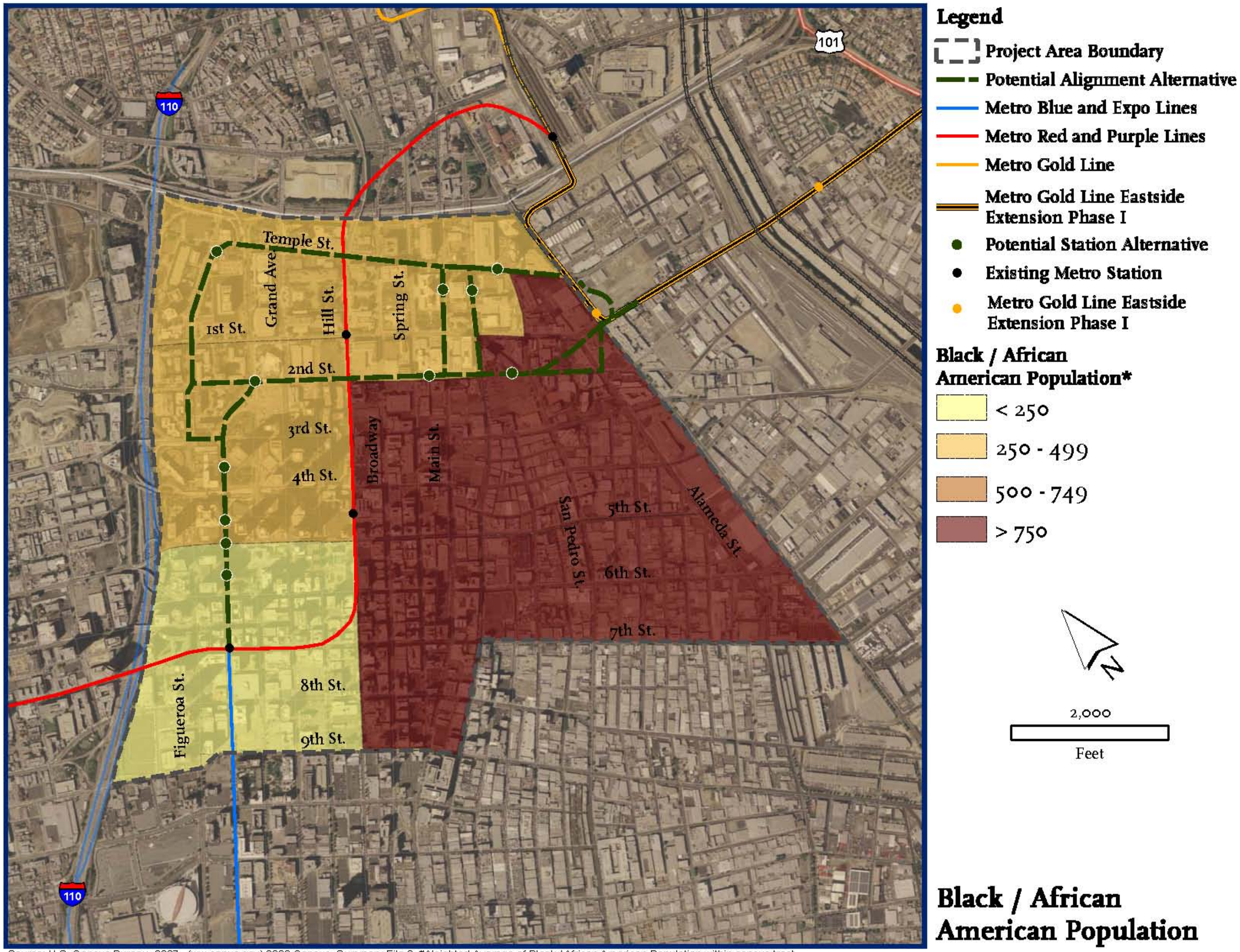
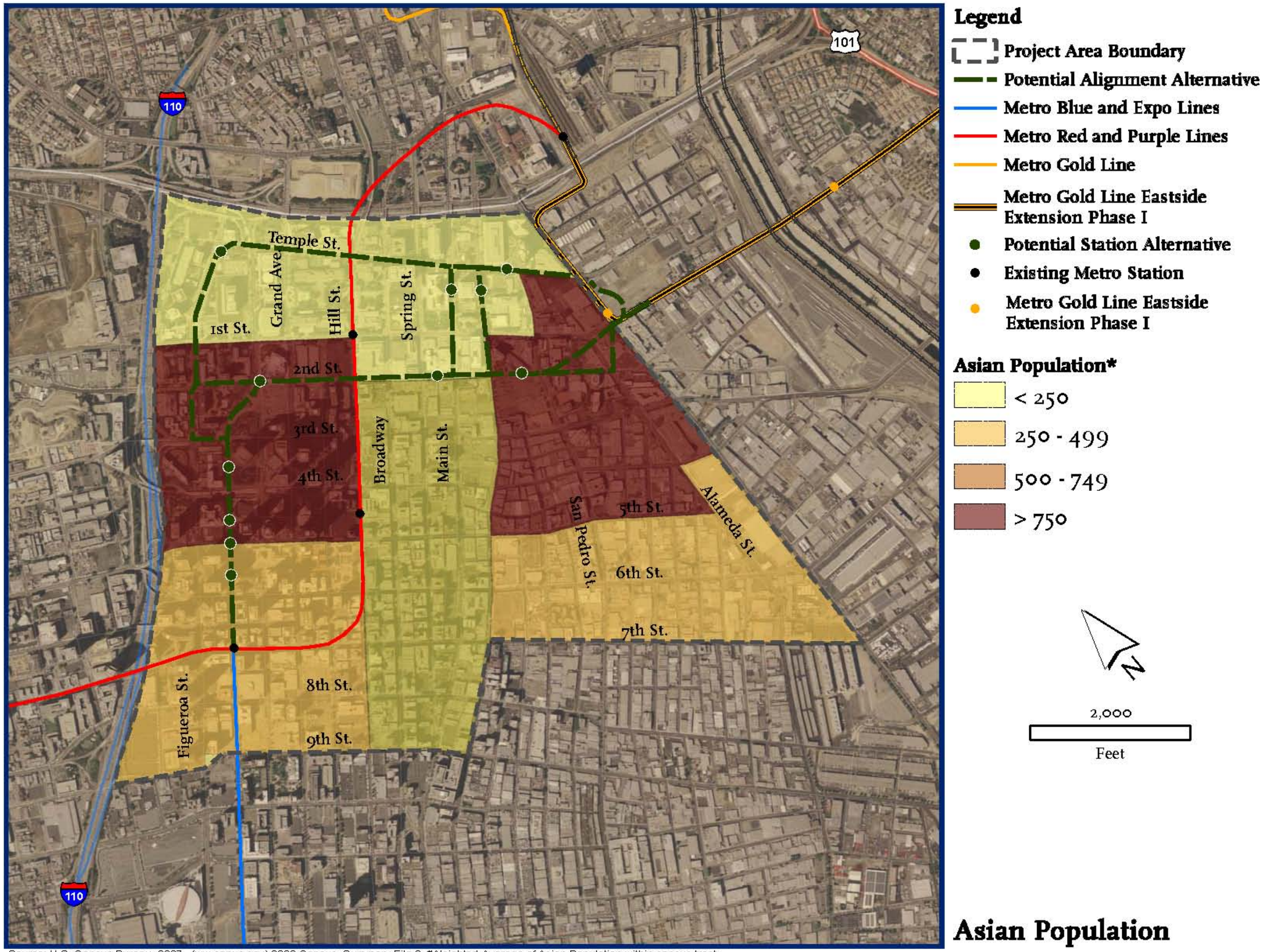


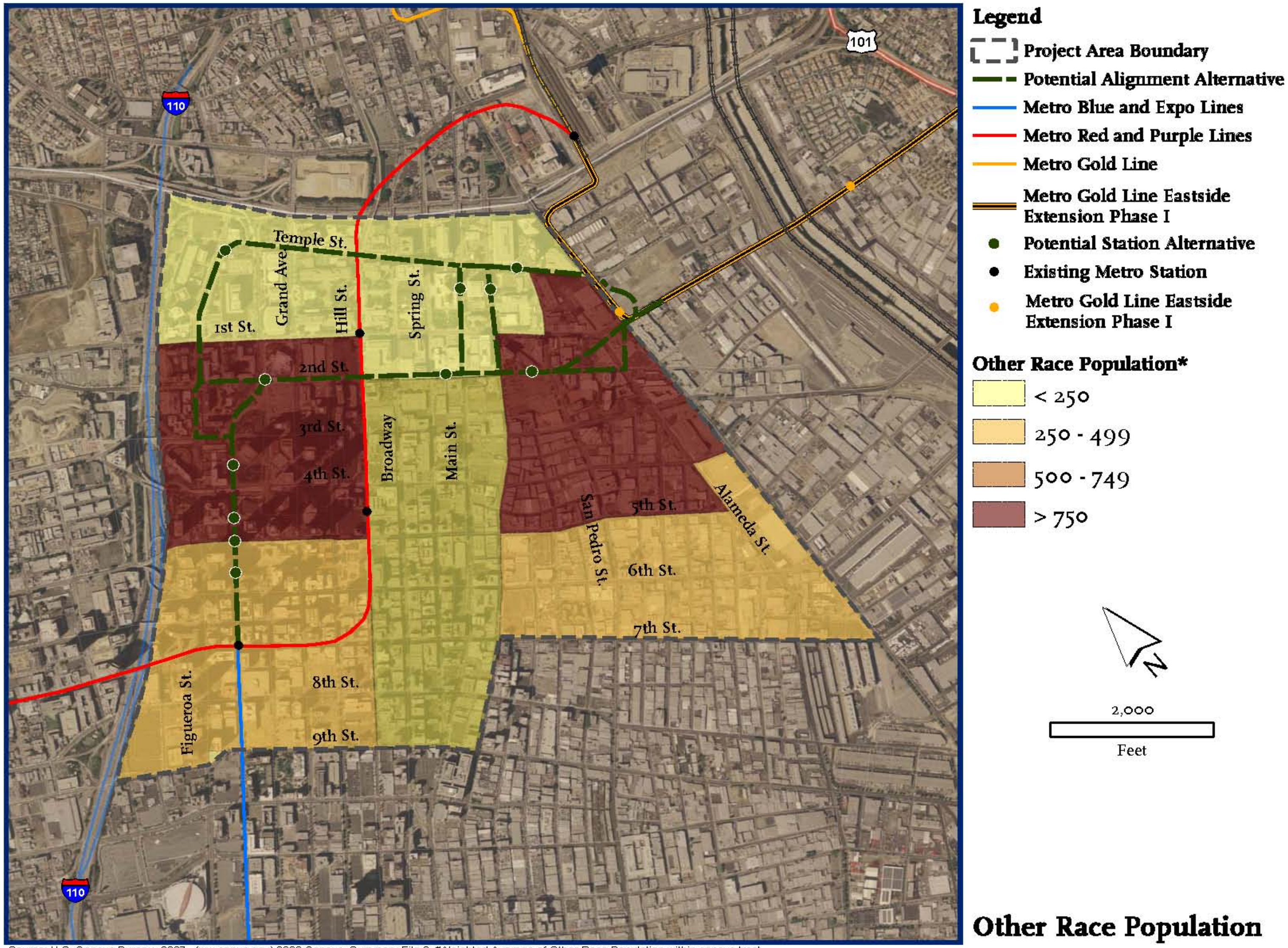
Figure 1-4 Race, Black/African-American Population in PSA



Asian Population

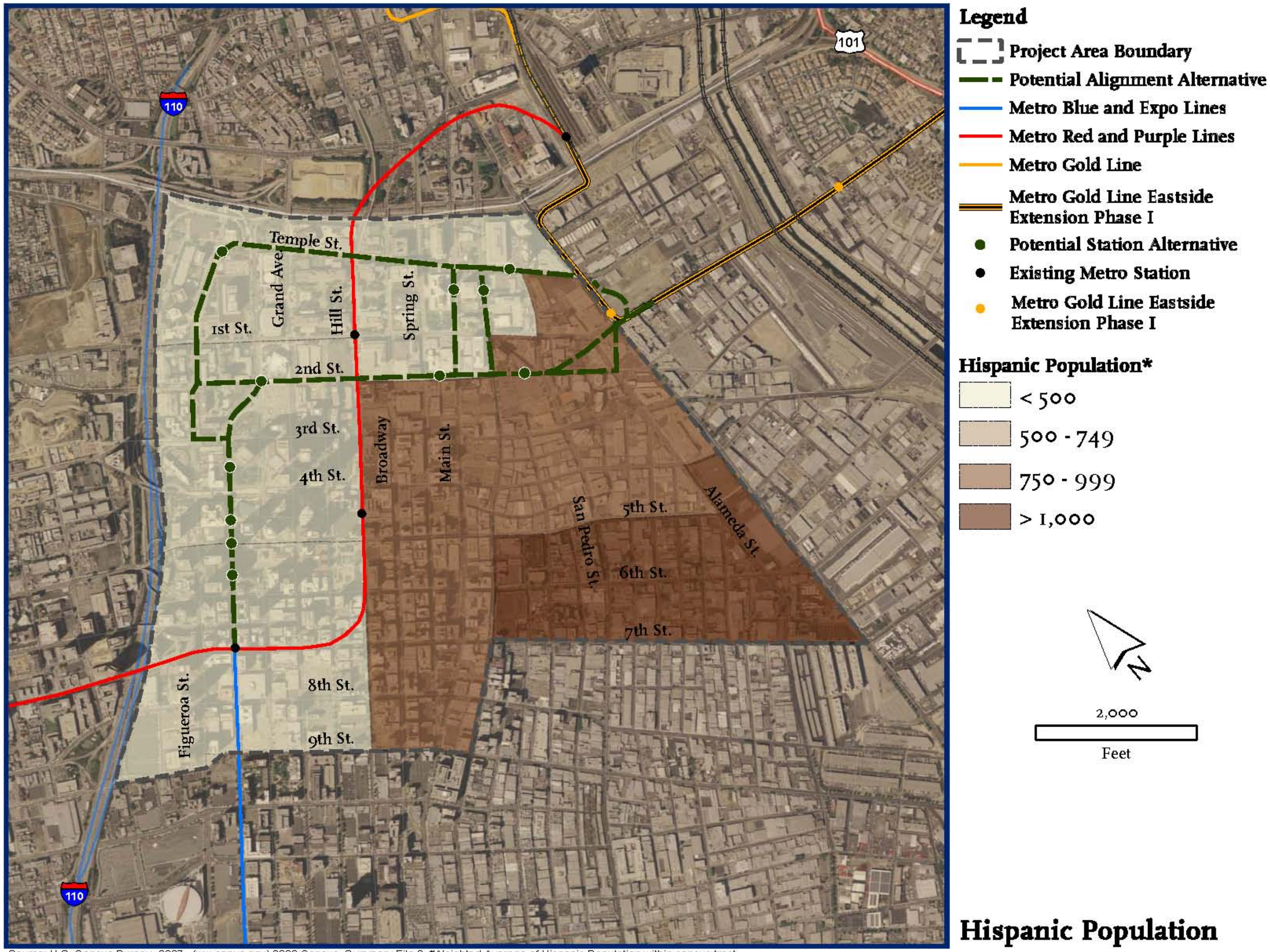
Source: U.S. Census Bureau, 2007. (ww.cenus.gov) 2000 Census, Summary File 3. *Weighted-Average of Asian Population within census tract.

Figure 1-5 Race, Asian Population in PSA



Source: U.S. Census Bureau, 2007. (ww.cenus.gov) 2000 Census, Summary File 3. *Weighted-Average of Other Race Population within census tract.

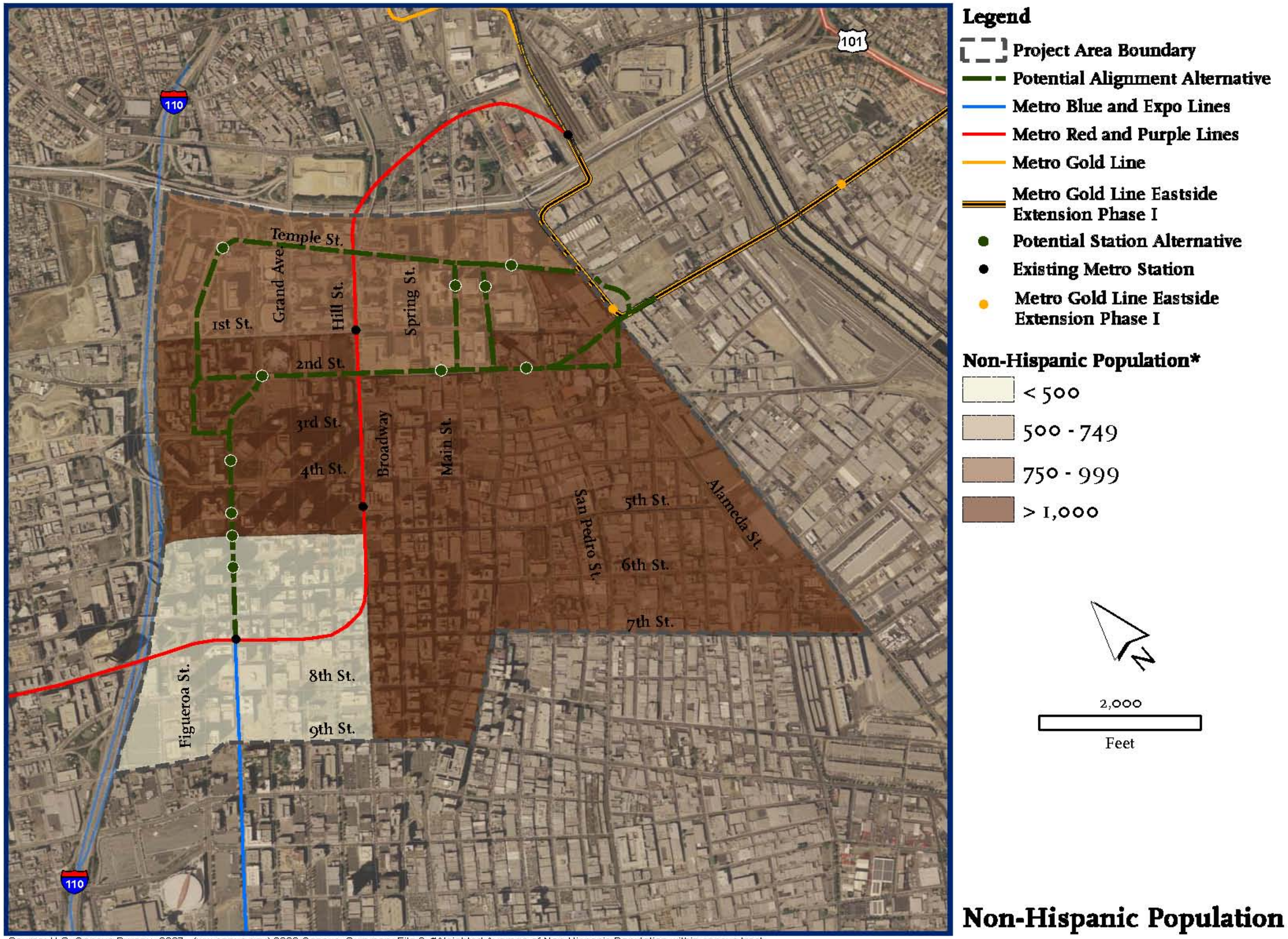
Figure 1-6 Race, Population Identified as "Other Race" in PSA



Hispanic Population

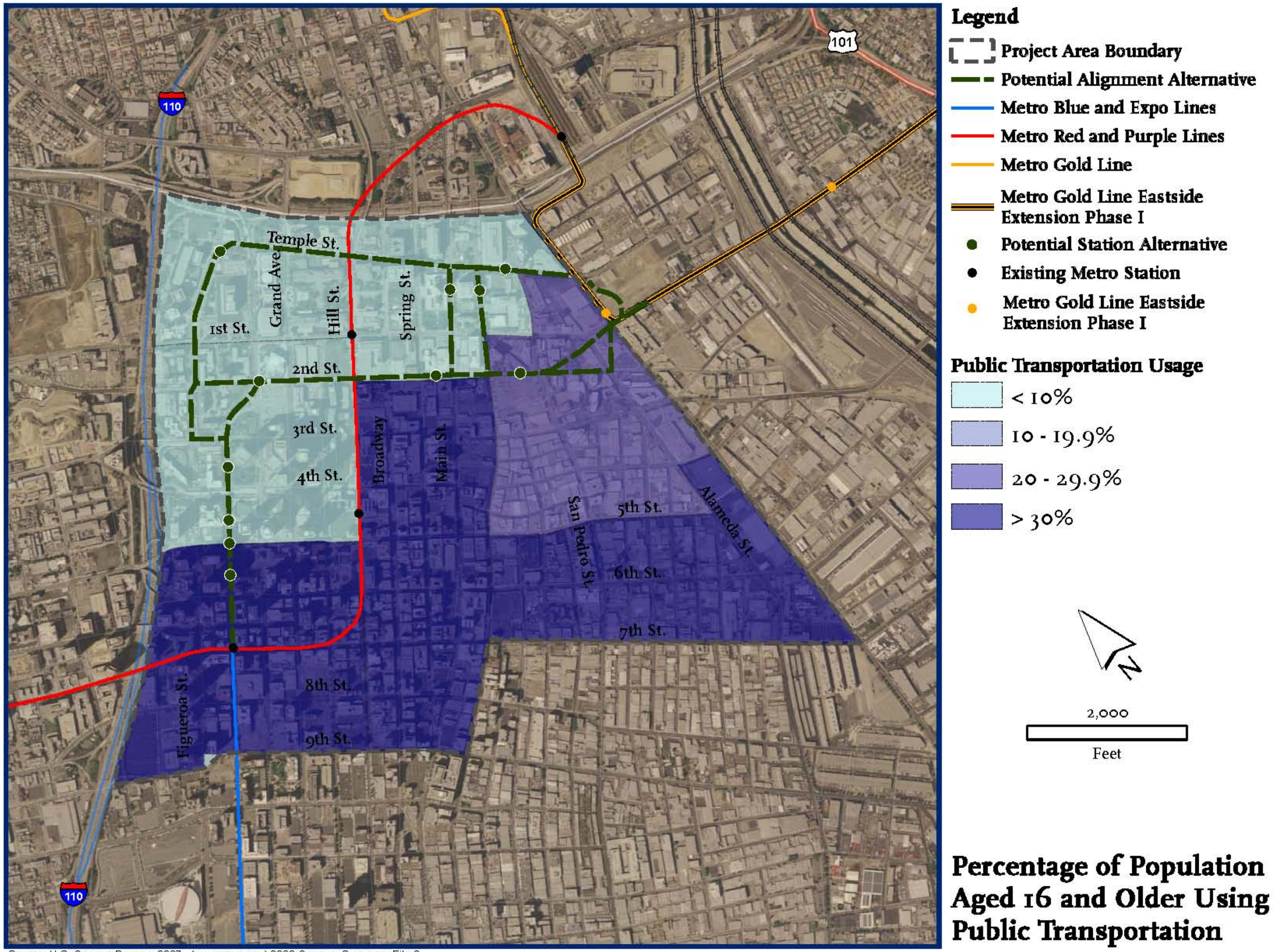
Source: U.S. Census Bureau, 2007. (ww.cenus.gov) 2000 Census, Summary File 3. *Weighted-Average of Hispanic Population within census tract.

Figure 1-7 Ethnicity, Hispanic Population in PSA



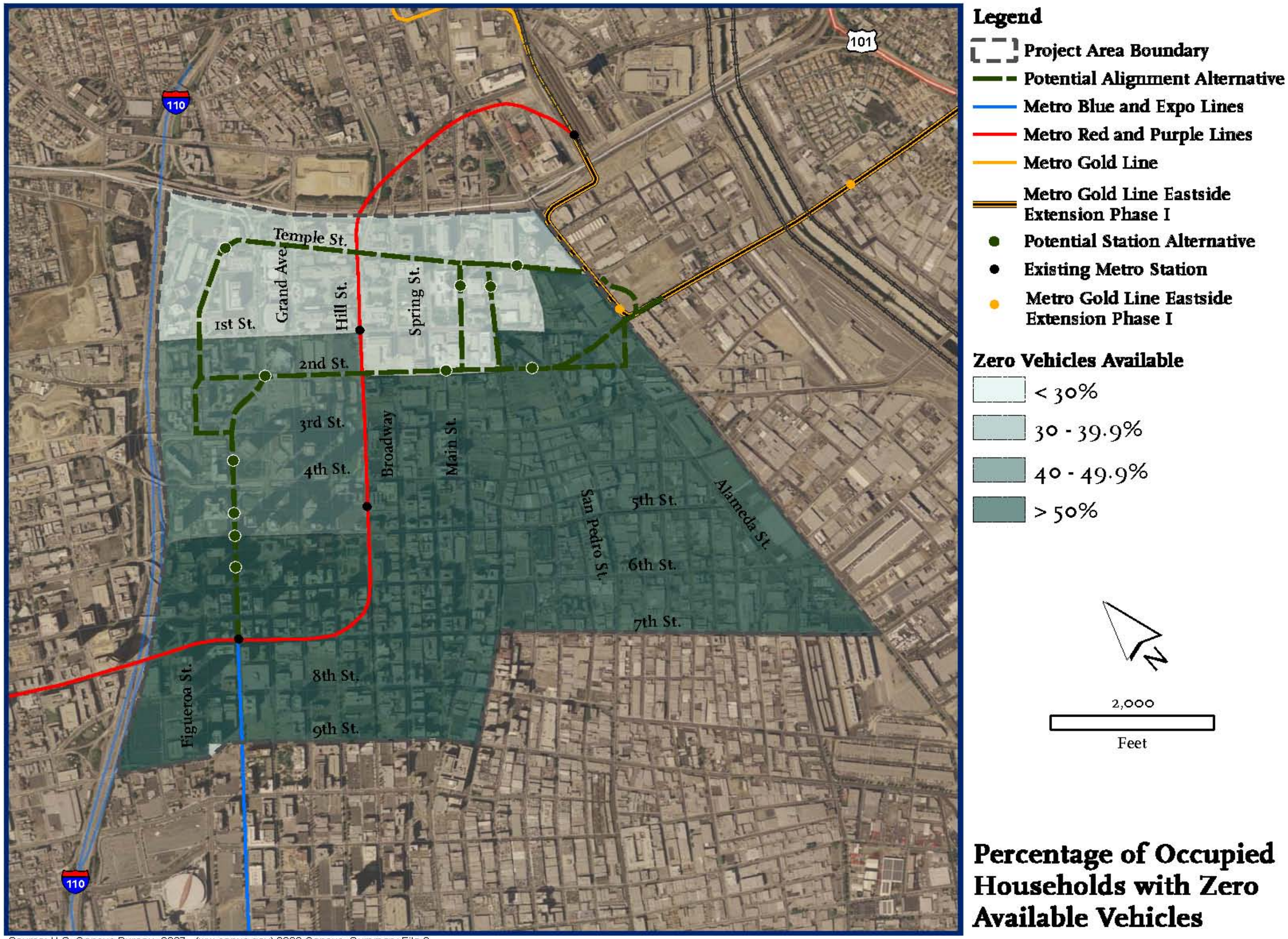
Source: U.S. Census Bureau, 2007. (ww.cenus.gov) 2000 Census, Summary File 3. *Weighted-Average of Non-Hispanic Population within census tract.

Figure 1-8 Ethnicity, Non-Hispanic Population in PSA



Source: U.S. Census Bureau, 2007. (ww.cenus.gov) 2000 Census, Summary File 3.

Figure 1-9 Public Transportation Users in PSA



Percentage of Occupied Households with Zero Available Vehicles

Source: U.S. Census Bureau, 2007. (ww.cenus.gov) 2000 Census, Summary File 3.

Figure 1-10 Zero-Car Households in PSA

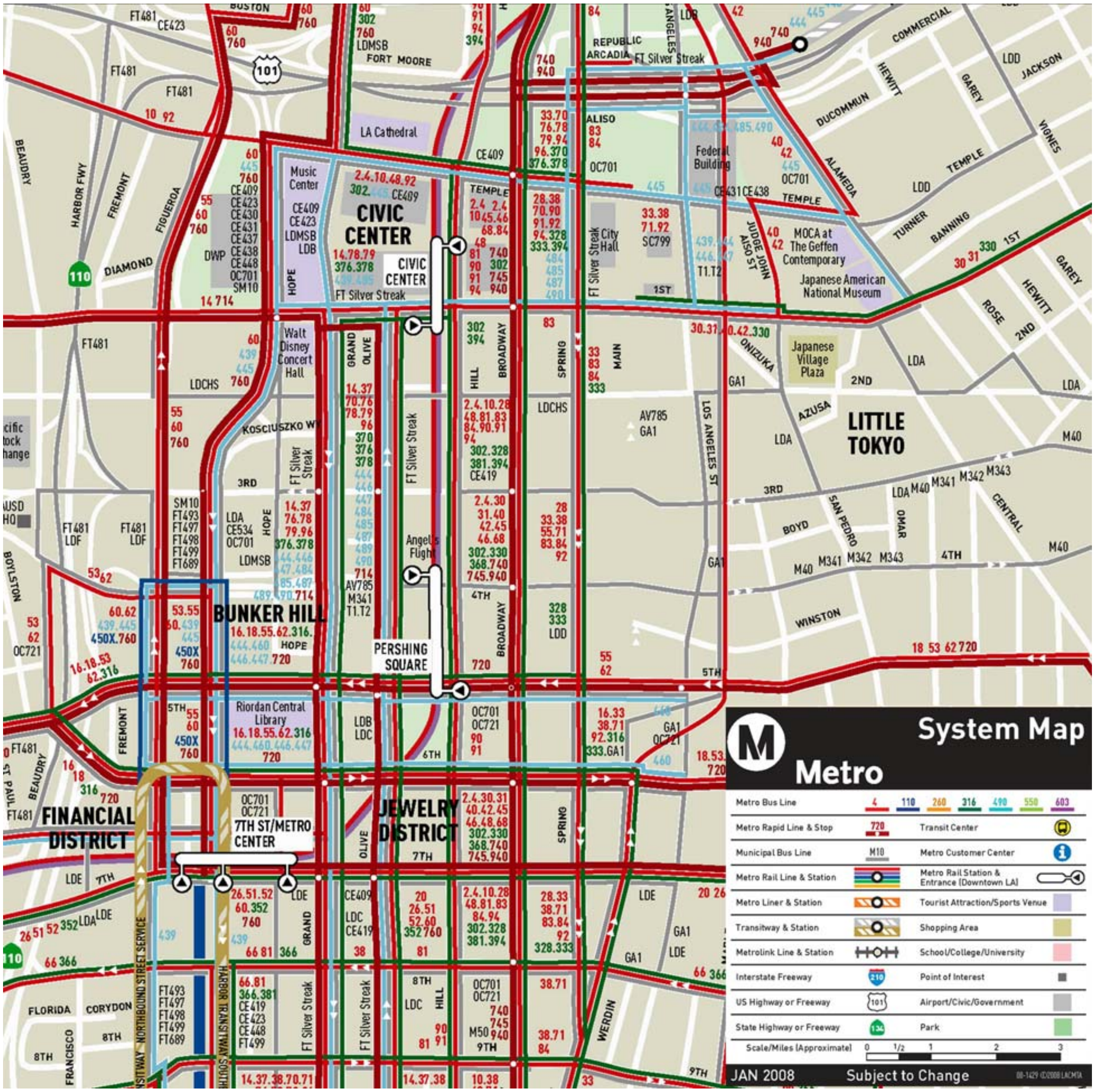


Figure 1-11 Transit in the PSA

Future service will be provided by the light rail extensions currently under construction to East Los Angeles (Metro Gold Line Eastside Extension, scheduled to open in late 2009) and Culver City (Metro Expo Line, scheduled to open in 2010). All Metro Rail stations provide connections to additional public transportation options, including Metrolink and Amtrak commuter rail services and bus service provided by Metro and other transit operators. Table 1-5 summarizes existing and future Metro Rail Lines currently under construction in the PSA.

Table 1-5 Existing and Future Metro Rail Lines in the PSA					
Existing Metro Rail Lines					
Line	Mode	Route	Length	Weekday Ridership	Year Completed
Red/Purple	HRT	Union Station to North Hollywood, Wilshire/Western	17.4 Miles	136,355	1993-2000
Blue	LRT	7th St./Metro Center to Long Beach	22 Miles	77,834	1990-1991
Gold	LRT	Union Station to Sierra Madre Villa	13.6 Miles	19,579	2003
Future (Under Construction) Metro Rail Lines					
Line	Mode	Route	Length	Expected Year 2020 Ridership	Year Complete
Gold	LRT	Union Station to East Los Angeles	6 Miles	23,000	2009
Expo	LRT	7th St./Metro Center to Culver City	8.5 Miles	43,600	2010

Figure 1-12 Metro Red Line

Metro Red Line – This HRT subway line originates from Union Station and travels west (Figure 1-12). The line began operating with service between Union Station and Westlake/MacArthur Park station (5 stations) in 1993. An extension to Wilshire/Western station, part of which was later renamed the "Metro Purple Line," was completed in 1996. The extension of the Metro Red Line northwest from Wilshire/Vermont station to Hollywood/Vine station with an additional 5 stations opened in 1999. Three more stations were added with the opening of the extension to North Hollywood in 2000.

Metro Purple Line – This HRT line originated as an extension of the Metro Red Line with 3 stations from the Wilshire/Vermont Station west to the Wilshire/Western Station. It opened in 1996 and was renamed the Metro Purple Line in 2006. As of the 2007 fiscal year, the Red and Purple Lines experienced approximately 136,355 weekday boardings on 17.4 miles of track.

Metro Blue Line – This line opened in 1990 and was the first LRT system in Los Angeles since the previous rail transit system closed in the 1960s. The 22-mile line has 22 stations and runs from 7th St./ Metro Center Station south to Long Beach. The Blue Line averaged 77,834 weekday boardings in the 2007 fiscal year.

Metro Gold Line – This LRT line from Union Station to Pasadena has 13 stations, 13.6 miles of track, and began operating in 2003 (Figure 1-13). In the 2007 fiscal year, the line averaged 19,579 weekday boardings.

Metro Gold Line Eastside Extension – The first phase of this LRT project is expected to open in 2009, making stops in Little Tokyo, Boyle Heights, and East Los Angeles. The six-mile line will feature eight new stations and connect with the existing Metro Gold Line to Pasadena without requiring riders to transfer at Union Station. Metro estimates that there will be 23,000 riders each weekday on the Eastside Extension by 2020.

Metro Expo Line – The first phase of the Exposition Light Rail Transit line is expected to open in 2010. The 8.5-mile line will run primarily at grade and serve 11 stations from 7th St./Metro Center Station in downtown to the intersection of Washington Blvd. and National Blvd. in Culver City. Average weekday ridership is expected to reach 43,600 by 2020[1].

Figure 1-13 Metro Gold Line

There are three Metro Rail stations located within the PSA. The HRT Metro Red and Purple Line stations are Civic Center Station (Hill St. between Temple and 1st Streets), Pershing Square Station (Hill St. between 4th and 5th Streets), and 7th St./Metro Center Station (7th St. between Figueroa and Hope Streets, and Flower St. between Wilshire Blvd. and 8th St.). The 7th St./Metro Center Station serves as a transfer point to the LRT Metro Blue Line as well. The LRT Little Tokyo/Arts District Station (Alameda St. between Temple and 1st Streets) will be a fourth station when it opens in 2009 as part of the Metro Gold Line Eastside Extension.

The Regional Connector will provide an alternate route between 7th St./Metro Center Station and Union Station, where the existing Metro Red and Purple Lines increasingly experience crowding and capacity issues. The Regional Connector will also provide more capacity to accommodate Metro Blue and Expo Line trains in the downtown area, and will thus enable the planned combined frequency of these two services. It would also reduce the need for Red and Purple Line transfers for downtown-bound Metro Gold, Blue, and Expo Line passengers, who would otherwise need to transfer to reach many destinations in the PSA. Should the Regional

1 www.buildexpo.org, FEIR, 7-123

Connector be constructed as a LRT link, it would allow five-minute headways in each direction. Combined, there could be trains as frequently as every 2 ½ minutes along the Regional Connector.

1.5.2.2 Metro Bus

Because downtown Los Angeles is a regional employment hub, there are numerous bus operators serving the area. These operators are:

- Antelope Valley Transit Authority (AVTA)
- City of Gardena (Gardena Municipal Bus Lines)
- City of Santa Clarita Transit
- City of Santa Monica (Big Blue Bus)
- Foothill Transit
- City of Los Angeles Department of Transportation (LADOT)
- Los Angeles County Metropolitan Transportation Authority (Metro)
- City of Montebello (Montebello Bus Lines)
- Orange County Transportation Authority (OCTA)
- City of Torrance (Torrance Transit)

With the exception of Metro, LADOT, Montebello Bus Lines, and Gardena Municipal Bus Lines, these transit operators run mostly peak commute (rush) hour, peak-direction commuter bus service in and out of the PSA. LADOT provides both long-distance freeway commute service as well as frequent Downtown Area Short Hop (DASH) service along short, mostly circular shuttle routes within the downtown area. In addition to public transit services, several high-rise office tenants within the PSA offer shuttle bus service to Union Station for their employees.

The majority of bus transit service in the PSA, as well as the Los Angeles region, is provided by Metro, which operates a number of short and long-distance radial lines, as well as cross-town service, express service, and limited overnight service. The combined number of transit vehicle boardings and alightings in the PSA on Metro buses alone totals 185,000 on a typical weekday. The 91,823 weekday boardings account for 7.75 percent of the 1,184,720 bus boardings system-wide.

Metro's bus transit services vary considerably in speed and capacity. The most basic routes provide line-haul service to and from downtown along arterial streets. Heavily-traveled routes often have overlaid limited-stop or Metro Rapid bus service.

Metro Rapid bus service includes traffic signal priority, short headways, and limited stops, which increase corridor average bus speeds by about 3-4 mph compared to local service, which typically operates in the 9-12 mph range. Metro currently provides Rapid service into the Regional Connector PSA from major intersections along Beverly Blvd. (during peak hours only), Wilshire Blvd., Whittier Blvd., South Broadway, and Hawthorne Blvd. Six additional Metro Rapid bus lines are scheduled to open by June 2008. Of these future routes, lines 730 (Pico Blvd.) and 753 (Central Ave.) will serve the PSA.

Additionally, Metro Rapid Express rush hour service to downtown commenced in June 2007 with the opening of line 940 (Hawthorne Blvd. Rapid Express). Rapid Express service is essentially the same as Rapid service, but serves only one third of the Rapid route's stops, providing a slight increase in speed.

The Regional Connector will offer the opportunity to consolidate some of this overlapping bus service into one new high-capacity route, thus reducing operating expenses.

The majority of the publicly-provided commuter services originating east of downtown use the El Monte Busway. Constructed in 1976, these high capacity bus-carpool lanes parallel the San Bernardino Freeway (I-10) between the City of El Monte and downtown. Similarly, the commuter buses coming from points south and southeast of downtown primarily use the Harbor Transitway, completed in 1996, which runs along the median of SR-110 between Artesia Blvd. and Adams Blvd.

By linking the Metro Gold, Blue, and Expo Lines, which roughly parallel several of the bus lines along the transitways, the Regional Connector will potentially make the rail system more attractive than the transitway bus service. The Regional Connector would provide better links between the existing LRT stations, many of which are centrally located in dense neighborhoods and business districts. The busway stations are unattractive by comparison because they are located in freeway medians, which are uninviting to pedestrians and usually not immediately adjacent to activity centers.

1.5.2.3 Commuter Rail

Commuter rail service to downtown is provided primarily by Metrolink and Amtrak, with connections to Metro Rail service at Union Station, located one-tenth-mile outside of the PSA. Most passengers arriving at Union Station on Metrolink are bound for the CBD and presently use the Metro Red Line, DASH buses, or employer-provided shuttles to complete their trips. Some passengers may use the Regional Connector if it reduces trip times or transfers.

Metrolink has operated under the Southern California Regional Rail Authority (SCRRA) since 1992, serving the counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura. Metrolink provides 512 miles of service (including tracks shared with Amtrak) to 55 stations on seven routes. Average weekday ridership on Metrolink trains from October through December 2007 was over 42,000 daily boardings, with the majority of trips (56.4 percent) beginning or ending at Union Station.

Amtrak is an inter-city rail system providing passengers at Union Station with regional, statewide, and nationwide service.

1.6 Performance of the Travel System

Southern California is faced with multiple mobility challenges that hinder the region's ability to effectively meet additional travel demand. One of the most pressing issues is population growth. The County alone is expected to increase by 2.2 million people, nearly twice the population of the City of San Diego, to a total of 12.2 million people from 2005 to 2030. This expected population growth will lead to increased travel demand throughout the region.

The transportation network includes 9,000 lane-miles of freeway, more than 42,000 lane-miles of arterials, and several large public transit service providers.[2] Yet growth of the transportation system has not kept pace with population growth and increases in transportation demand. As the population in the region doubled from 1960 to 2000, highway miles increased by less than 30 percent.[3] The congestion caused by insufficient transportation lanes affects both personal travel and goods movement. The majority of the congestion is from travel on the highways and local arterial network regardless of transportation mode. If the current trend persists, travel delays are expected to rise to 5.4 million person hours by 2030, more than double currently experienced delays, which will deeply affect highway productivity.[4]

If inadequately addressed, these challenges could hamper future population growth, economic development, commuter safety, existing infrastructure, goods movement, air quality, and other environmental conditions. If no action is taken to improve transportation mobility, SCAG estimates that daily person hours of delay would increase from 2.2 million hours under the 2000 Base Year to 5.4 million hours under the 2030 Baseline.

To define and address mobility issues, SCAG developed regional performance indicators that help in understanding the problem, setting goals for improvement, and measuring progress towards the goals. The following section describes regional performance indicators and baseline estimates of performance. By providing more attractive alternatives to the automobile, improving transit connections in the downtown Los Angeles area becomes one part of a larger, comprehensive strategy to meet regional travel demand.

1.6.1 Traffic Volumes and Operating Conditions

This section summarizes traffic volumes and operating conditions at key roadway segments and intersections within the PSA. Existing daily, AM peak and PM peak traffic volume data were obtained from LADOT. An analysis of existing conditions was

[2] SCAG 2004 RTP Chapter 2
[3] SCAG 2004 RTP Executive Summary
[4] SCAG 2004 Draft RTP PEIR

performed for the key roadway segments using daily traffic volumes and the key intersections using AM and PM peak hour turning movement data.

The roadway segment analysis was performed using a Volume-to-Capacity (V/C) ratio of the average daily traffic (ADT). Existing volumes were obtained from LADOT and the capacity was based on the roadway's General Plan facility type classification.

For intersections, the AM and PM peak hour volumes were analyzed using the Intersection Capacity Utilization (ICU) methodology, which determines a V/C ratio based on the critical intersection approach movements and a corresponding Level of Service (LOS). LOS is a qualitative measure used to describe traffic flow conditions, ranging from excellent flow (LOS A) to overloaded, stop-and-go conditions (LOS F). Level of service definitions and corresponding V/C ranges are presented in Table 1-6.

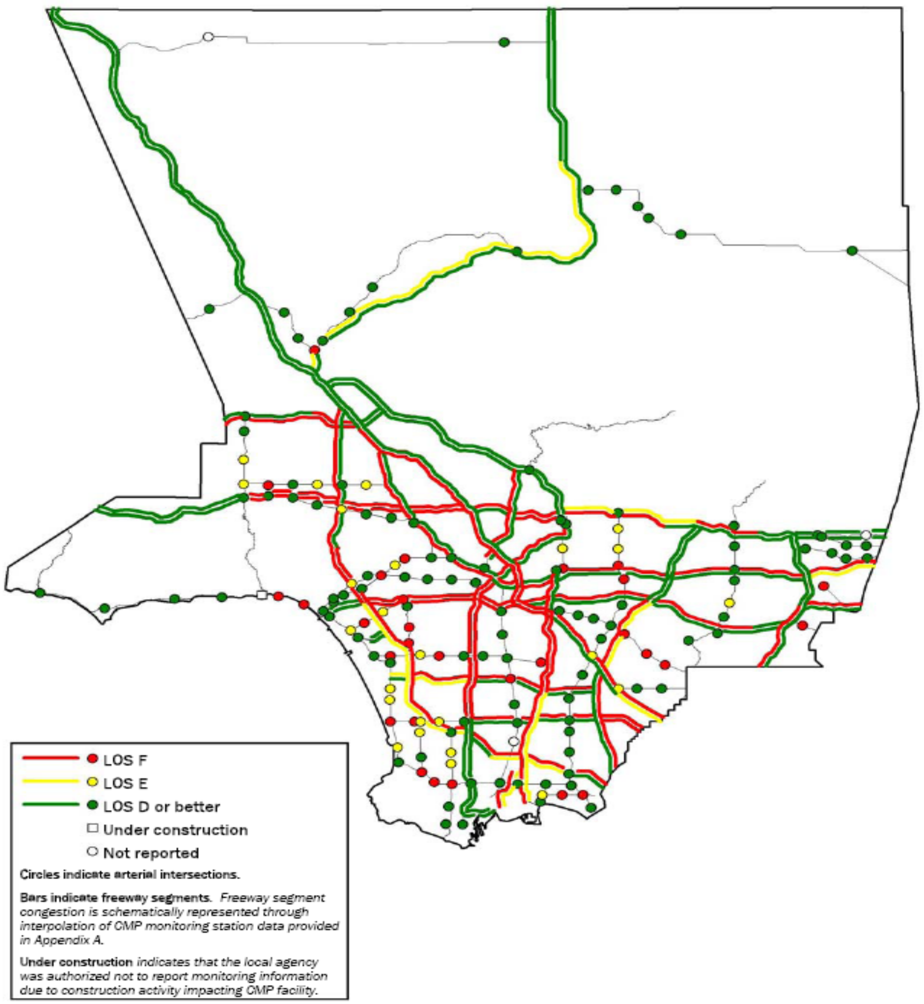
Table 1-6 Level of Service Definitions

Level of Service	Volume/Capacity Ratio	Definition
A	0.000 - 0.600	FREE FLOW. No vehicle waits longer than one red light and no green light phase is fully used.
B	0.601 - 0.700	REASONABLY FREE FLOW. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 - 0.800	STABLE FLOW. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 - 0.900	APPROACHING UNSTABLE FLOW (acceptable for urban conditions). Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 - 1.000	UNSTABLE FLOW (practical capacity). Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	>1.000	FORCED OR BREAKDOWN FLOW. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. There are tremendous delays with continuously increasing queue lengths.

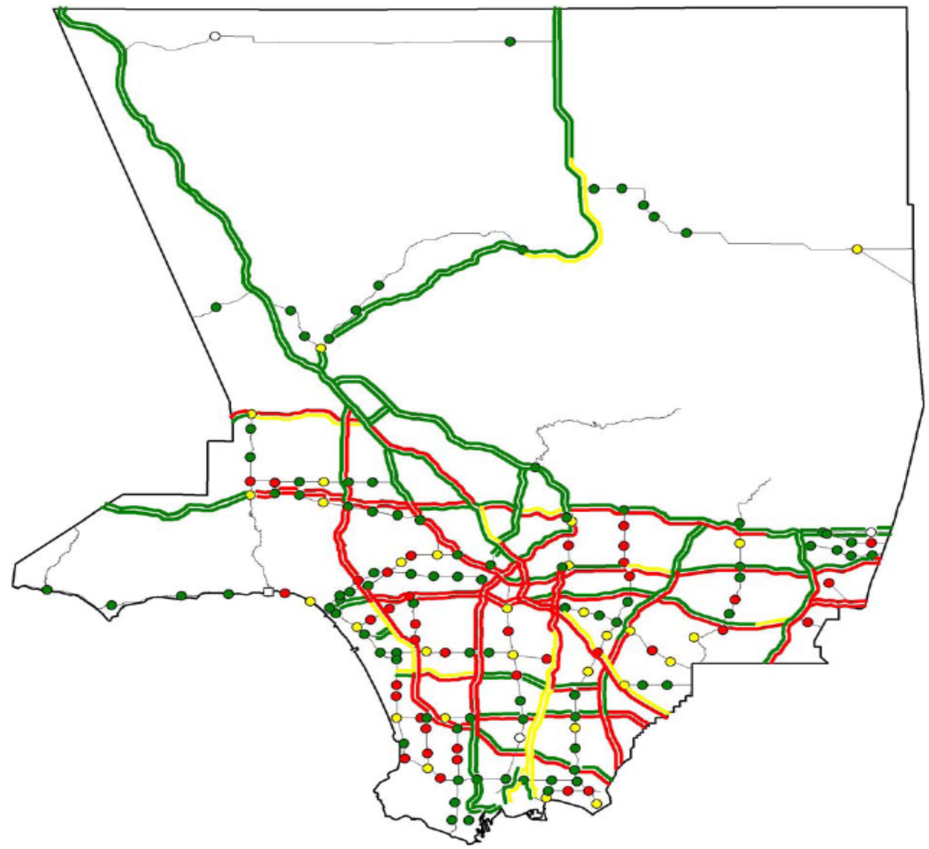
Source: Transportation Research Board, Highway Capacity Manual, 2000

Freeways within the PSA already operate at LOS F during peak hours and, if not addressed, this trend is expected to worsen through the year 2030. Nearly all areas of the County experience freeway congestion during peak hours. However, the congestion on freeways within the PSA is among the worst and occurs during both the morning and evening rush hour periods, as illustrated in Figure 1-14.

2003 CMP HIGHWAY AND ROADWAY SYSTEM AM PEAK HOUR LEVELS OF SERVICE



2003 CMP HIGHWAY AND ROADWAY SYSTEM PM PEAK HOUR LEVELS OF SERVICE



2004 Congestion Management Program for Los Angeles County

Figure 1-14 Freeway Levels of Service

Table 1-7 and Table 1-8 summarize the existing operating conditions for the key intersections and roadway segments in the PSA. All of the key intersections currently operate at LOS D or better during both the AM and PM peak hours. The only exception is the intersection of Alameda and 1st Streets, which currently operates at LOS F in the AM peak hour.

Table 1-7 Existing (2007) Intersection Level of Service

Intersection	AM Peak Hour		PM Peak Hour	
	V/C Ratio	LOS	V/C Ratio	LOS
Hill St. / 1st St.	0.62	B	0.73	C
Broadway / 1st St.	0.63	B	0.56	A
Spring St. / 1st St.	0.54	A	0.45	A
Main St. / 1st St.	0.44	A	0.55	A
Los Angeles St. / 1st St.	0.53	A	0.58	A
Judge John Aiso St. / 1st St.	0.60	A	0.69	B
Alameda St. / 1st St.	1.03	F	0.88	D
Broadway / 2nd St.	0.84	D	0.46	A
Spring St. / 2nd St.	0.48	A	0.40	A
Main St. / 2nd St.	0.30	A	0.62	B
Los Angeles St. / 2nd St.	0.46	A	0.59	B
San Pedro St. / 2nd St.	0.40	A	0.52	A
Central Ave. / 2nd St.	0.39	A	0.54	A
Alameda St. /2nd St.	0.67	B	0.67	B
Broadway / 3rd St.	0.72	C	0.60	A
Spring St. / 3rd St.	0.59	A	0.55	A
Main St. / 3rd St.	0.53	A	0.73	C
Los Angeles St. / 3rd St.	0.66	B	0.57	A
San Pedro St. / 3rd St.	0.63	B	0.44	A
Central Ave. / 3rd St.	0.58	A	0.41	A
Alameda St. / 3rd St.	0.78	C	0.57	A
Figueroa St. / 3rd St.	0.65	B	0.84	D
Hope St. / Temple St.	0.75	C	0.82	D
Grand Ave. / Temple St.	0.65	B	0.68	B
Broadway / Temple St.	N/A	N/A	0.76	C
Spring St. / Temple St.	0.58	A	0.42	A
Main St. / Temple St.	0.39	A	0.69	B
Los Angeles St. / Temple St.	0.55	A	0.63	B
Judge John Aiso St. / Temple St.	0.36	A	0.50	A
Alameda St. / Temple St.	0.64	B	0.65	B

Most of the key roadway segments currently operate at LOS D or better except for three locations which operate at LOS E. Two of these locations are on 2nd St. and the third location is on Alameda St.

Table 1-8 Existing (2007) Roadway Segment Average Daily Traffic (ADT) Analysis

Primary Street	Cross Street	Facility Type	Number of lanes	Capacity	ADT	V/C Ratio	LOS
Flower St.	3rd St.	Secondary	4	28,000	11,177	0.399	A
	5th St.	Secondary	6	45,000	19,920	0.443	A
	6th St.	Secondary	4	30,000	17,386	0.580	A
	Wilshire Blvd.	Secondary	4	30,000	19,434	0.648	B
	7th St.	Secondary	4	30,000	18,908	0.630	B
2nd St.	Alameda St.	Secondary	3	21,000	8,176	0.389	A
	Central Ave.	Secondary	2	14,000	10,452	0.747	C
	Los Angeles St.	Secondary	3	21,000	16,244	0.774	C
	Main St.	Secondary	3	21,000	19,630	0.935	E
	San Pedro St.	Secondary	2	14,000	13,371	0.955	E
	Spring St.	Secondary	4	28,000	14,394	0.514	A
Los Angeles St.	1st St.	Secondary	4	28,000	18,559	0.663	B
	2nd St.	Secondary	4	28,000	17,156	0.613	B
	Temple St.	Secondary	5	35,000	22,036	0.630	B
Main St.	1st St. 1-Way	Major Class II	3	25,500	12,079	0.474	A
	2nd St. 1-Way	Major Class II	3	25,500	13,711	0.538	A
	Temple St.	Major Class II	4	34,000	25,626	0.754	C
Temple St.	Judge John Aiso St.	Major Class II	4	32,000	17,114	0.535	A
	Los Angeles St.	Major Class II	4	32,000	16,809	0.525	A
	Main St.	Major Class II	4	32,000	17,032	0.532	A
1st St.	Alameda St.	Secondary	4	28,000	21,538	0.769	C
	Central Ave.	Secondary	4	28,000	23,081	0.824	D
	Los Angeles St.	Secondary	6	42,000	22,099	0.526	A
	Main St.	Secondary	6	42,000	23,908	0.569	A
	Spring St.	Secondary	6	42,000	20,205	0.481	A
3rd St.	Flower St.	Secondary	4	30,000	19,133	0.638	B
	Spring St.	Secondary	3	22,500	17,564	0.781	C
	Los Angeles St.	Secondary	3	22,500	17,965	0.798	C
	Main St.	Secondary	3	22,500	16,151	0.718	C
Alameda St.	1st St.	Major Class II	4	32,000	30,514	0.954	E
	2nd St.	Major Class II	4	32,000	27,881	0.871	D

1.6.2 Transit Operating Conditions

Bus service runs in a grid pattern through the downtown area, with most lines terminating at the downtown periphery after having passed through. Nearly all streets within the PSA have bus service during peak hours.

On several routes, headways shrink to less than five minutes during rush hour. Some stops are served by over a dozen lines during peak hours. Some of the most heavily transit-served streets in the PSA are 1st St., the 4th St./5th St. couplet, Hill St., Broadway, the Main St./Spring St. couplet, and the Grand St./Olive St. couplet. Downtown streets with the highest bus ridership include Broadway, Hill St., Spring St., Main St., Flower St., and Grand Ave.

Of the numerous bus routes serving downtown, 28 pass within one block of both Union Station and the 7th St./Metro Center Station, the termini of the Regional Connector corridor. Eighteen of these lines are operated by Metro, with nearly 16,000 daily passenger boardings and alightings within the PSA.

Table 1-9 shows the bus lines provided by each bus operator, and the frequency of available service for each bus route.

The four busiest Metro bus lines serving the downtown area all originate in West Los Angeles or Santa Monica. The Metro bus lines with the highest number of boardings within the PSA serve areas east and south of downtown. This establishes the Westside, the Eastside, and South Los Angeles as primary origins and destinations for current bus passengers traveling in and out of the PSA. See Table 1-10 for a summary of Metro bus transit ridership by line and direction.

Of the 18 Metro bus lines that pass within a block of both Regional Connector termini (Union Station and 7th St./Metro Center Station), 11 are freeway commuter lines, and all have only low-to-moderate ridership. Even the busiest of these lines only exhibit a modest number of boardings within the PSA, ranging from 50 to 1400 per day.

Four of the five Metro bus lines with the lowest ridership in downtown are also within a block of both Regional Connector termini (442 – Hawthorne via Harbor Transitway, 489 – Temple City via El Monte Busway, 439 – Aviation Green Line via Culver City, and 445 – San Pedro via Harbor Transitway).

Please see Table 1-11 for a summary of ridership on these lines.

Most of the lines paralleling the Regional Connector route (serving both Union Station and 7th St./Metro Center Station) originate from points east of downtown, and five of them use the El Monte Busway. Most of the lines function primarily as peak hour commuter buses; low ridership compared to other Metro bus lines may be attributable to their lack of off-peak service.

Metro operates 125 bus stops within the PSA. The five busiest Metro bus stops, each with 3,800-7,200 daily boardings, are located along Hill St. and Broadway between 5th and 7th Streets (Table 1-12). All of these stops are within one-quarter mile of the existing Pershing Square Station. If the Regional Connector stops near Broadway, Hill, and Spring Streets, it will enable transfers to the busiest north-south bus corridors in the area.

Table 1-9 Bus Transit Routes and Frequency of Bus Service in Project Study Area

Operator	*Line*	*Mode*	*Weekday Hours of Operation*	*Peak Hour Frequency*	*Route Description*
AVTA	785	Freeway Express Bus	4AM-6AM, 3PM-6PM	20 mins	Palmdale/Lancaster
BBB	10 Express	Freeway Express Bus	6AM-8PM	15 mins	Santa Monica
Gardena	1	Freeway Express Bus	5AM-12AM	15 mins	Gardena/Lawndale
Foothill	481	Freeway Express Bus	6AM-9AM, 3PM-6PM	20 mins	El Monte/Wilshire Center
Foothill	493	Freeway Express Bus	5AM-8AM, 2PM-8PM	10 mins	Pomona/Phillips Ranch
Foothill	497	Freeway Express Bus	5AM-8AM, 2PM-7PM	12 mins	Chino
Foothill	498	Freeway Express Bus	5AM-8AM, 2PM-7PM	7 mins	Covina/Azusa
Foothill	499	Freeway Express Bus	5AM-8AM, 2PM-7PM	12 mins	San Dimas
Foothill	699	Freeway Express Bus	4AM-8AM. 2PM-7PM	9-12 mins	Montclair
Foothill	Silver Streak	Freeway Express Bus	24 Hours	10 mins	Montclair
LADOT	CE 409	Freeway Express Bus	6AM-9AM, 4PM-6PM	15 mins	Sylmar/Sunland/Tujunga/Montrose/Glendale
LADOT	CE 413	Freeway Express Bus	7AM-9AM, 4PM-6PM	25 mins	Van Nuys/North Hollywood/Burbank
LADOT	CE 419	Freeway Express Bus	7AM-9AM, 4PM-7PM	15 mins	Chatsworth/Northridge/Granada Hills/Mission Hills
LADOT	CE 422	Freeway Express Bus	5AM-9AM, 4PM-8PM	8 mins	Hollywood/San Fernando Valley/Agoura Hills/Thousand Oaks
LADOT	CE 423	Freeway Express Bus	7AM-9AM, 4PM-7PM	15 mins	Encino/Woodland Hills/Agoura Hills/Thousand Oaks/Newbury Park
LADOT	CE 430	Freeway Express Bus	6AM-7AM, 5PM-6PM	30-50 mins	Brentwood/Pacific Palisades
LADOT	CE 431	Freeway Express Bus	7AM-9AM, 5PM-6PM	30 mins	Westwood/Rancho Park/Palms
LADOT	CE 437	Freeway Express Bus	7AM-9AM, 4PM-6PM	15-30 mins	Venice/Marina del Rey/Culver City
LADOT	CE 438	Freeway Express Bus	7AM-9AM, 4PM-6PM	15 mins	Redondo Beach/Hermosa Beach/Manhattan Beach/El Segundo
LADOT	CE 448	Freeway Express Bus	7AM-9AM, 4PM-6PM	15 mins	Rancho Palos Verdes/Torrance/Lomita/Wilmington Harbor City

Table 1-9 Bus Transit Routes and Frequency of Bus Service in Project Study Area					
Operator	*Line*	*Mode*	*Weekday Hours of Operation*	*Peak Hour Frequency*	*Route Description*
LADOT	CE 534	Freeway Express Bus	7AM-8AM, 4PM-5PM	30 mins	Century City/Westwood
LADOT	DASH A	Circulator Bus	7AM-7PM	7 mins	Little Tokyo/City West
LADOT	DASH B	Circulator Bus	6AM-7PM	8 mins	Chinatown/Financial District
LADOT	DASH C	Circulator Bus	7AM-7PM	7 mins	Financial District/South Park
LADOT	DASH D	Circulator Bus	6AM-7PM	5 mins	Union Station/South Park
LADOT	DASH E	Circulator Bus	7AM-7PM	5 mins	City West/Fashion District
LADOT	DASH F	Circulator Bus	7AM-7PM	10 mins	Financial District/Exposition
LADOT	DASH CH	Circulator Bus	6AM-6PM	6 mins	City Hall Shuttle
LADOT	DASH DD	Circulator Bus	Weekend Only	20 mins	Downtown Discovery
LADOT	DASH MBH	Circulator Bus	7AM-9AM, 3PM-6PM	10 mins	Metrolink/Bunker Hill
Metro	2/302	Local/Limited Stop Bus	24 Hours	5 mins	Pacific Palisades via Sunset Blvd.
Metro	4	Local Bus	24 Hours	7 mins	Santa Monica via Santa Monica Blvd.
Metro	10	Local Bus	5AM-12AM	7 mins	West Hollywood via Temple St. and Melrose Ave.
Metro	14/37	Local Bus	24 Hours	10 mins	Beverly Hills via Beverly Blvd./West LA via Adams Blvd.
Metro	16/316	Local/Limited Stop Bus	4AM-1AM	3 mins	Century City via 3rd St.
Metro	18	Local Bus	24 Hours	3 mins	Wilshire Center - Montebello via 6th St. and Whittier Blvd.
Metro	20	Local Bus	24 Hours	4 mins	Santa Monica via Wilshire Blvd.
Metro	26/51/52/352	Local/Limited Stop Bus	24 Hours	4 mins	Hollywood - Compton - Artesia Blue Line via Avalon Blvd.
Metro	28	Local Bus	5AM-1AM	8 mins	Century City via Olympic Blvd.
Metro	30/31/330	Local/Limited Stop Bus	24 Hours	4 mins	Pico-Rimpau - Monterey Park via Pico Blvd. and E 1st St.
Metro	33/333	Local/Limited Stop Bus	24 Hours	2 mins	Santa Monica via Venice Blvd.
Metro	38	Local Bus	24 Hours	8 mins	Fairfax and Washington via Jefferson Bl.
Metro	40	Local Bus	24 Hours	6 mins	South Bay Galleria via Hawthorne Blvd., Crenshaw Blvd., and MLK Blvd.
Metro	42/42A	Local Bus	5AM-12AM	12 mins	LAX via MLK Blvd., Stocker St., and La Tijera Blvd.
Metro	45	Local Bus	24 Hours	6 mins	Montecito Heights - Rosewood via Broadway and Mercury Ave.
Metro	48	Local Bus	5AM-11PM	7 mins	Avalon Green Line via Main St. and S. San Pedro St.

Table 1-9 Bus Transit Routes and Frequency of Bus Service in Project Study Area

Operator	*Line*	*Mode*	*Weekday Hours of Operation*	*Peak Hour Frequency*	*Route Description*
Metro	53/350	Local/Limited Stop Bus	24 Hours	5 mins	Carson via Central Ave.
Metro	55/355	Local/Limited Stop Bus	24 Hours	4 mins	Imperial Blue/Green Line via Compton Ave.
Metro	60	Local Bus	24 Hours	6 mins	Artesia Blue Line via Long Beach Blvd.
Metro	62	Local Bus	5AM-11PM	15 mins	Hawaiian Gardens via Telegraph Rd.
Metro	66/366	Local/Limited Stop Bus	4AM-1AM	2 mins	Wilshire Center - Montebello via 8th St. and Olympic Blvd.
Metro	68/84	Local Bus	24 Hours	8 mins	West LA - Montebello via Washington Blvd. and Cesar Chavez Ave.
Metro	70/71/370	Local/Limited Stop Bus	24 Hours	5-9 mins	El Monte via Garvey Ave.
Metro	76/376	Local/Limited Stop Bus	24 Hours	10 mins	Arcadia via Valley Blvd., Huntington Dr. and Las Tunas Dr.
Metro	78/79/378	Local/Limited Stop Bus	5AM-1AM	10 mins	Arcadia via Huntington Dr. and Las Tunas Dr.
Metro	81/381	Local/Limited Stop Bus	5AM-1AM	5 mins	Eagle Rock - Exposition Park via Figueroa St.
Metro	83	Local Bus	24 Hours	10 mins	Eagle Rock via York Ave.
Metro	90/91	Local Bus	5AM-12AM	10 mins	Sunland via Foothill Blvd., Cañada Blvd., and Glendale Ave.
Metro	92	Local Bus	24 Hours	12 mins	Burbank via Glendale
Metro	94/394	Local/Limited Stop Bus	5AM-1AM	5 mins	Sylmar via San Fernando Rd. and Spring St.
Metro	96	Local Bus	5AM-8PM	20 mins	Sherman Oaks via Griffith Park Dr. and Riverside Dr.
Metro	439	Freeway Express Bus	5AM-9PM	40-60 mins	Aviation Green Line via Culver City
Metro	442	Freeway Express Bus	6AM-8AM, 4PM-6PM	30 mins	Hawthorne via Harbor Transitway, Manchester Blvd., and La Brea Ave.
Metro	444	Freeway Express Bus	5AM-8PM	10-20 mins	Rancho Palos Verdes via Harbor Transitway and Hawthorne Blvd.
Metro	445	Freeway Express Bus	5AM-7PM	30 mins	San Pedro via Harbor Transitway, 1st St., and Pacific Ave.
Metro	446/447	Freeway Express Bus	5AM-12AM	15 mins	San Pedro via Harbor Transitway, Avalon Blvd., and Pacific Ave.
Metro	450X	Freeway Express Bus	6AM-9AM, 4PM-6PM	15 mins	South Bay Express via Harbor Transitway
Metro	460	Freeway Express Bus	5AM-12AM	30 mins	Disneyland via Harbor Transitway, I-105, and I-5
Metro	484	Freeway Express Bus	5AM-12AM	5 mins	Pomona via El Monte Busway and Valley Blvd.
Metro	485	Freeway Express Bus	5AM-12AM	20 mins	Altadena via El Monte Busway, Oak Knoll Ave., and Lake Ave.

Table 1-9 Bus Transit Routes and Frequency of Bus Service in Project Study Area					
Operator	*Line*	*Mode*	*Weekday Hours of Operation*	*Peak Hour Frequency*	*Route Description*
Metro	487	Freeway Express Bus	6AM-9PM	30 mins	Sierra Madre Villa Gold Line via El Monte Busway
Metro	489	Freeway Express Bus	6AM-8AM, 3PM-5PM	12 mins	Temple City via El Monte Busway and Rosemead Blvd.
Metro	490	Freeway Express Bus	5AM-11PM	10 mins	Pomona via El Monte Busway and Ramona Blvd.
Metro	704	Rapid Bus	6AM-8PM	8 mins	Santa Monica Blvd. Rapid
Metro	714	Rapid Bus	6AM-9AM, 3PM-6PM	15 mins	Beverly Blvd. Rapid
Metro	720	Rapid Bus	4AM-1AM	4 mins	Wilshire Blvd. - Whittier Blvd. Rapid
Metro	728	Rapid Bus	5AM-8PM	8 mins	Olympic Blvd. Rapid
Metro	740	Rapid Bus	5AM-8PM	10 mins	Hawthorne Blvd. Rapid
Metro	745	Rapid Bus	5AM-8PM	5 mins	South Broadway Rapid
Metro	760	Rapid Bus	5AM-8PM	8 mins	Long Beach Blvd. Rapid
Metro	770	Rapid Bus	6AM-6PM	12 mins	Garvey Ave. - Cesar Chavez Ave. Rapid
Metro	940	Rapid Express Bus	6AM-8AM, 4PM-6PM	30 mins	Hawthorne Blvd. Rapid Express
Metro	Blue Line	Light Rail	5AM-12AM	5 mins	Long Beach via South Los Angeles, Willowbrook, and Compton
Metro	Red Line	Heavy Rail	5AM-12AM	5 mins	Wilshire Center and North Hollywood
Montebello	40	Local Bus	5AM-10PM	8 mins	Montebello and Whittier via Beverly Blvd.
Montebello	50	Local Bus	5AM-12AM	30 mins	Whittier and La Mirada via Washington Blvd.
Montebello	341	Limited Stop Bus	7AM-9AM, 4PM-6PM	30 mins	Montebello and Whittier via Beverly Blvd.
Montebello	342	Limited Stop Bus	7AM, 5PM	One Trip	Montebello and Whittier via Beverly Blvd.
Montebello	343	Limited Stop Bus	7AM-8AM, 5PM-6PM	30 mins	Montebello and Whittier via Beverly Blvd.
OCTA	701	Freeway Express Bus	5AM-6AM, 4PM-5PM	20 mins	Huntington Beach
OCTA	721	Freeway Express Bus	6AM-9AM, 3PM-6PM	30 mins	Fullerton
Santa Clarita	799	Freeway Express Bus	5AM-7AM, 3PM-7PM	20 mins	Valencia/Santa Clarita
Torrance	1	Freeway Express Bus	6AM-9AM, 4PM-10PM	30 mins	Torrance via Harbor Transitway and Artesia Transit Center
Torrance	2	Freeway Express Bus	7AM-7PM	60 mins	Torrance via Harbor Transitway

Source: Antelope Valley Transit Authority, City of Santa Monica, Foothill Transit, City of Los Angeles Department of Transportation, Los Angeles County Metropolitan Transportation Authority, Montebello Bus Lines, Orange County Transportation Authority, Santa Clarita Transit, Torrance Transit, 2007-2008

Table 1-10 Metro Bus Ridership, Fiscal Year 2007

Line	Direction	Average Daily Boardings within PSA	Average Daily Alightings within PSA	Line Ridership
2/302	East	335	1825	25440
	West	1779	609	
4/304	East	238	1402	35170
	West	1220	361	
10	East	786	1624	15659
	West	1736	979	
14/37	North	909	882	20370
	South	791	874	
16/316	East	359	4594	30561
	West	4302	333	
18	East	2506	4847	27163
	West	4001	2603	
20	East	586	1627	20897
	West	1630	323	
26/51/52/352	East	3214	3177	29036
	West	2314	2818	
28/328	North	2148	2075	31916
	South	1263	1721	
30/31/330	East	2548	2514	28238
	West	2435	1915	
33/333	East	268	1072	26199
	West	1051	290	
38/71	East	532	527	10510
	West	546	734	
40	North	511	1790	20645
	South	2033	465	
42/42A	North	296	819	4982
	South	807	223	
45/46	North	1394	2041	21558
	South	2537	1377	
53/350	North	763	2503	14668
	South	2590	684	
55/355	North	69	821	12571
	South	919	88	
60	North	2678	5526	30509
	South	5985	2913	
62	East	732	168	4354
	West	298	875	
66/366	East	2221	2692	27336
	West	2450	2374	
68/368	North	1512	1121	23393
	South	1293	1393	
70/370	East	1200	169	15569
	West	130	1081	

Table 1-10 Metro Bus Ridership, Fiscal Year 2007				
Line	Direction	Average Daily Boardings within PSA	Average Daily Alightings within PSA	Line Ridership
76/376	East	1011	139	11106
	West	97	877	
78/79/378	East	1277	153	11868
	West	128	1254	
81/381	North	1763	1037	20006
	South	1379	2387	
90	North	1035	124	7387
	South	69	1009	
92	North	897	127	8864
	South	79	955	
94/394	North	1910	250	13287
	South	127	1571	
96	North	288	55	3407
	South	55	342	
439	North	15	112	946
	South	126	20	
442	North	2	59	249
	South	54	7	
444	North	22	295	3132
	South	263	79	
445	North	13	230	1243
	South	197	38	
446/447	North	19	242	4373
	South	270	55	
450X	Clockwise	166	168	619
460	East	445	27	3630
	West	11	437	
484	East	1375	45	8914
	West	18	1290	
485	North	423	17	3683
	South	8	572	
487	East	392	25	2985
	West	18	394	
489	North	114	5	584
	South	8	245	
490	East	625	16	5568
	West	6	763	
714	East	5	163	1860
	West	156	15	
720	East	2020	2896	46351
	West	3360	2388	
740	North	104	1040	9182
	South	1227	130	

Table 1-10 Metro Bus Ridership, Fiscal Year 2007

Line	Direction	Average Daily Boardings within PSA	Average Daily Alightings within PSA	Line Ridership
745	North	210	2135	8632
	South	2121	239	
	TOTAL	**91823**	**93276**	**654620**
		TOTAL BOARDINGS AND ALIGHTINGS IN PSA	**185099**	

Source: Los Angeles County Metropolitan Transportation Authority, 2007

Table 1-11 Metro Bus Ridership on Lines Passing Within One Block of Both Union Station and 7th St./Metro Center Station, Fiscal Year 2007

Line	Average Daily Boardings within PSA	Average Daily Boardings for Entire Line	Route Description
78/79/378	1405	11868	Arcadia via Huntington Dr. and Las Tunas Dr.
484	1393	8914	Pomona via El Monte Busway and Valley Blvd.
70/370	1330	15569	El Monte via Garvey Ave.
76/376	1108	11106	Arcadia via Valley Blvd., Huntington Dr. and Las Tunas Dr.
490	631	5568	Pomona via El Monte Busway and Ramona Blvd.
485	431	3683	Altadena via El Monte Busway, Oak Knoll Ave., and Lake Ave.
487	410	2985	Sierra Madre Villa Gold Line via El Monte Busway
446/447	289	4373	San Pedro via Harbor Transitway, Avalon Blvd., and Pacific Ave.
444	285	3132	Rancho Palos Verdes via Harbor Transitway and Hawthorne Blvd.
445	210	1243	San Pedro via Harbor Transitway, 1st St., and Pacific Ave.
439	141	946	Aviation Green Line via Culver City
489	122	584	Temple City via El Monte Busway and Rosemead Blvd.
442	56	249	Hawthorne via Harbor Transitway, Manchester Blvd., and La Brea Ave.
TOTAL	7811		

Source: Los Angeles County Metropolitan Transportation Authority, 2007

Most of the other busy Metro bus stops in the PSA are located in the Financial Core and Civic Center areas, both of which will be served by the Regional Connector. Additionally, other transit operators have bus stops within the PSA, although their ridership data were not available for this AA.

Table 1-12 Average Daily Boardings and Alightings at Metro Bus Stops Within the Project Study Area, Fiscal Year 2007

East/West Street	North/South Street	Average Daily Boardings	Average Daily Alightings
6TH	BROADWAY	6,523	7,438
7TH	BROADWAY	7,187	5,493
5TH	BROADWAY	6,172	4,516
7TH	HILL	3,804	4,425
5TH	HILL	3,891	3,586
9TH	BROADWAY	2,657	3,875
1ST	HILL	2,242	3,078
5TH	SPRING	2,801	2,275
5TH	GRAND	2,028	2,574
6TH	HILL	1,192	3,315
7TH	FLOWER	3,075	1,244
7TH	SPRING	2,101	2,117
6TH	HOPE	1,613	2,502
1ST	BROADWAY	1,973	2,141
8TH	BROADWAY	2,365	1,623
7TH	MAIN	1,932	2,038
8TH	HILL	1,949	1,834
3RD	BROADWAY	2,158	1,456
7TH	OLIVE	2,175	1,138
4TH	BROADWAY	1,420	1,311
5TH	OLIVE	1,897	507
7TH	SAN PEDRO	1,134	1,085
3RD	HILL	885	1,311
TEMPLE	BROADWAY	1,171	1,024
5TH	LOS ANGELES	1,270	910
TEMPLE	HILL	904	1,136
7TH	GRAND	949	1,074
8TH	HILL	853	1,170
TEMPLE	SPRING	925	1,027
8TH	SPRING	963	904
9TH	MAIN	812	1,047
6TH	MAIN	612	1,047
7TH	HOPE	338	1,303
7TH	ALAMEDA	740	853
1ST	SPRING	808	769
6TH	SPRING	773	736
6TH	CENTRAL	786	703
7TH	MAPLE	768	718
7TH	FIGUEROA	335	1,104
7TH	CENTRAL	690	713
6TH	LOS ANGELES	480	822
5TH	FLOWER	915	288
4TH	HILL	643	434
5TH	WALL	798	255
4TH	SPRING	360	641

Table 1-12 Average Daily Boardings and Alightings at Metro Bus Stops Within the Project Study Area, Fiscal Year 2007

East/West Street	North/South Street	Average Daily Boardings	Average Daily Alightings
9TH	HILL	341	615
7TH	LOS ANGELES	521	413
8TH	OLIVE	599	299
6TH	GRAND	184	708
6TH	SAN PEDRO	273	539
9TH	OLIVE	319	479
6TH	WALL	253	528
3RD	GRAND	173	603
WILSHIRE	FLOWER	381	361
9TH	GRAND	293	396
6TH	ALAMEDA	344	339
5TH	SAN PEDRO	492	188
TEMPLE	GRAND	107	522
GENERAL THADDEUS	OLIVE	395	224
8TH	FLOWER	361	256
1ST	HOPE	344	265
8TH	GRAND	335	272
1ST	MAIN	248	356
3RD	SPRING	291	298
WILSHIRE	FIGUEROA	251	284
6TH	GLADYS	112	361
8TH	MAIN	141	306
1ST	CENTRAL	199	234
7TH	TOWNE	157	208
7TH	CERES	58	292
1ST	JUDGE JOHN AISO	190	148
9TH	HOPE	136	198
7TH	GLADYS	258	66
5TH	CENTRAL	198	121
1ST	OLIVE	269	39
8TH	FIGUEROA	151	122
5TH	TOWNE	212	60
1ST	LOS ANGELES	85	167
9TH	FIGUEROA	111	134
TEMPLE	FIGUEROA	79	160
7TH	FRANCISCO	99	129
ALISO	SPRING	200	20
6TH	TOWNE	57	152
ALISO	LOS ANGELES	143	62
6TH	KOHLER	69	134
5TH	FIGUEROA	34	160
TEMPLE	LOS ANGELES	77	108
1ST	GRAND	10	160
6TH	FLOWER	105	57
3RD	MAIN	76	81
WINSTON	MAIN	63	70

Table 1-12 Average Daily Boardings and Alightings at Metro Bus Stops Within the Project Study Area, Fiscal Year 2007

East/West Street	North/South Street	Average Daily Boardings	Average Daily Alightings
3RD	CENTRAL	116	6
3RD	LOS ANGELES	115	5
DIVISION 1 LAYOVER		68	52
TEMPLE	JUDGE JOHN AISO	60	57
4TH	FLOWER	82	34
1ST	SAN PEDRO	60	55
2ND	SPRING	32	80
TEMPLE	MAIN	27	67
WILSHIRE	HOPE	4	89
5TH	MAIN	18	65
4TH	TOWNE	4	76
2ND	GRAND	12	59
4TH	WALL	6	56
4TH	LOS ANGELES	9	51
4TH	SAN PEDRO	3	56
DIAMOND	FIGUEROA	2	51
JAMES M WOOD	FRANCISCO	28	25
TEMPLE	HOPE	45	7
3RD	FLOWER	24	25
3RD	FIGUEROA	5	41
4TH	MAIN	15	29
2ND	OLIVE	21	22
3RD	SAN PEDRO	39	2
2ND	MAIN	19	21
4TH	FIGUEROA	37	3
2ND	FIGUEROA	5	28
6TH	MAPLE	13	9
4TH	ALAMEDA	8	2
1ST	ALAMEDA	4	4
9TH	FLOWER	5	3
2ND	HILL	2	5
8TH	FRANCISCO	4	3
1ST	FIGUEROA	0	3
MAPLE LOT		1	1

Source: Los Angeles County Metropolitan Transportation Authority, 2007

1.6.3 Regional Objectives

SCAG is responsible for regional transportation planning for six counties within Southern California: Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. In 2004, SCAG released "Destination 2030, the Regional Transportation Plan (RTP)." In May 2008, it released an update entitled "Making the Connections." The documents provide a basic policy and program framework to improve the transportation system and integrate it with the population growth patterns for the region through 2030.

Destination 2030 is a performance-based plan with the following goals:

- maximize mobility and accessibility,
- ensure safety and reliability,
- preserve our transportation system,
- maximize productivity of our system,
- protect the environment, and
- encourage land-use and growth patterns that complement our transportation system.

SCAG developed performance indicators and measures to quantify the goals and evaluate progress towards achieving the goals. Table 1-13 lists the performance indicators, associated measures, and final projected outcomes. The outcomes are estimated for the Plan as a whole for 2030, and not for individual projects.

If no action is taken, performance in the region will worsen. SCAG projects that between Base Year 2000 and 2030:

- Daily vehicle miles traveled in the region will increase by 35 percent from 361.5 million to 488.8 million.
- Average travel speed will reduce by 11 percent from 35.9 miles per hour (mph) to 31.9 mph.
- Daily person-hours of delay will increase by 250 percent from 2.2 million hours to 5.4 million hours.
- Average daily delay per person will increase by 78 percent from 8.0 minutes to 14.2 minutes.
- The percentage of peak period evening work trips completed within 45 minutes for autos will decrease from 88 percent to 82 percent; for public transit, it will decrease from 33 percent to 29 percent.
- Home to work average travel times will increase by 25 percent from 21.6 minutes to 25.9 minutes.

The Regional Connector would contribute to alleviating the mobility problem in the region and to achieving the Destination 2030 goals. It would do this by:

- extending the reach and connectivity of all but one of Metro's operational and under-construction LRTs;

- broadening the range of downtown destinations reachable with one transfer from the Metro Red and Metro Purple Lines;
- alleviating congestion on the downtown bus network; and
- increasing the availability of direct service to multiple destinations in Los Angeles County for passengers arriving on intercity services at Union Station.

The Regional Connector offers a public transit connection that would improve mobility and accessibility in the region and provide commuters with a simplified and reliable transportation option.

The area from which Regional Connector ridership is expected to be drawn includes several freeways and major intersections that have significant traffic congestion and long delays. The improved convenience of the Regional Connector would encourage use of a public transit alternative that would reduce daily vehicle trips, miles traveled, and congestion on the region's roadways.

The Regional Connector would augment public transportation service originating in areas with high population densities and households dependent on public transit. This would increase potential ridership, thereby increasing the project benefits and making it more cost-effective. In addition, the Regional Connector's service area covers the County's most highly-concentrated employment area and a major cultural, entertainment, and tourist destination.

1.7 Project Purpose

The purpose of this project is to improve the region's public transit service and mobility by linking the Metro Rail services of the Metro Gold Line, Metro Gold Line Eastside Extension, Metro Blue Line, and Metro Expo Line, thereby providing direct access to one of the region's major employment centers.

Since the completion of studies on the Metro Blue Line to Pasadena performed in 1993 and 1994, the Metro Rail system has grown substantially, with rail lines in operation or under construction extending over 70 track-miles within Los Angeles County. Currently, the Metro Red and Metro Purple subway lines serve as an interim connection between the Metro Blue Line at 7th St./Metro Center and the Metro Gold Line at Union Station, but the transfers involved are time-consuming, contribute to crowding on the subway platforms and trains, and may dissuade passengers from riding.

Table 1-13 Performance Indicators, Measures, and Outcomes of Destination 2030 Goals					
Performance Indicator	Performance Measure		Plan 2030	Base Year 2000	Baseline 2030
Mobility	Average Daily Speed (Miles per Hour)		35.2	35.9	31.9
	Average Daily Delay (Daily Person Hours in millions)		3.2	2.2	5.4
Accessibility	Percent PM peak period work trips within 45 minutes of home	Autos Transit	90% 37%	88% 33%	82% 29%
Reliability	Percent variation in travel time	6AM-7AM 7AM-8AM 8AM-9AM 3PM-4PM 4PM-5PM 5PM-6PM 6PM-7PM	10% 13% 13% 19% 18% 17% 20%	11% 15% 15% 21% 20% 19% 22%	N/A
Safety	Daily accident rates per million persons	Fatalities Injuries Property Damage	0.27 10.7 17.5	0.28 11.0 18.2	0.28 11.0 18.2
Productivity	Roadway capacity – vehicles per hour/lane (Lost Lane Miles)	AM peak PM peak	377 302	332 266	N/A
Sustainability	Total cost per capita to sustain current system performance		Plan 2030 estimates an additional cost of $20 per capita per year over base year		
Preservation	Maintenance cost per capita to preserve system at base year conditions (base year 2002, constant 2002 dollars)		~$80	~$63 (2002)	N/A
Environmental	Emissions generated by travel (over Baseline 2030)	CO PM10 Exhaust PM10	Plan 2030 estimates: 6-8% reduction 6-8% reduction 8-11% reduction		
Environmental Justice	Benefit vs. Burden by quintiles – Auto Percentage of Tax Paid and Time Savings (Quintile 1=lowest income, Quintile 5=highest income)		Plan 2030 estimates:		
			Expenditure	Time Savings	
		1 2 3 4 5	9% 13% 18% 24% 37%	6% 14% 21% 29% 30%	
	Benefit vs. Burden by quintiles – Local Transit Percentage of Tax Paid and Time Savings (Quintile 1=lowest income, Quintile 5=highest income)		Plan 2030 estimates:		
			Expenditure	Time Savings	
		1 2 3 4 5	9% 13% 18% 24% 37%	23% 30% 23% 16% 8%	

Source: SCAG Destination 2030, 2004

The Regional Connector will improve service for communities locally and across the region, allowing greater mobility and accessibility while supporting the revitalization of downtown. New stations will provide greater coverage of the downtown area, thus enhancing the convenience of the existing rail and bus system.

1.8 Major Themes Supporting Transit Needs in the Project Study Area

In evaluating the mobility problem and travel conditions within the PSA, several themes emerge which reinforce the need for transportation improvements. These themes are listed below, while subsequent sections address each theme in greater detail.

- Need for Transit Improvements Based on Current and Future Transit Conditions
- Transit Usage within the PSA
- Significant Transit Dependent Populations
- Regional Population and Employment Growth
- Population and Employment Densities
- Travel Demand Justifies Need for Transit Services
- Local Land Use Policies and Guidelines that Support Transit

1.8.1 Need for Transit Improvements Based on Current and Future Transit Conditions

According to Metro's 2004 Metro Rail Onboard Survey, 42 percent of Metro Gold Line riders indicated that they rode two trains on their one-way trips, and seven percent rode three trains. Additionally, Sierra Madre Villa Station to 7th St./Metro Center Station and Lake Station to 7th St./Metro Center Station were among the most popular station pairs on the Metro Rail system. Since Union Station is the only current rail-to-rail transfer point on the Metro Gold Line, these results suggest that a large portion of Metro Gold Line riders are transferring to the Metro Red Line to complete their trips. See Table 1-14 for a summary of survey results.

Table 1-14 Train/Bus Use per Trip

	All Lines	Blue	Red	Green	Gold
1 Train	53%	47%	60%	56%	49%
2 Trains	38%	44%	34%	31%	42%
3 Trains	7%	8%	4%	10%	7%
4 Trains	2%	1%	2%	2%	1%
1 Bus/Train	22%	16%	26%	20%	24%
2 Bus/Train	34%	34%	41%	26%	38%
3 Bus/Train	25%	28%	21%	29%	21%
4+ Bus/Train	19%	21%	13%	24%	17%

Source: 2004 Metro Rail Onboard Survey

Upon completion of the Metro Gold Line Eastside Extension, passengers bound for the PSA will generate many additional Metro Red and Purple Line transfers at Union Station, as well as new bus and Metrolink transfers. Metro Red and Purple Line trains typically layover at Union Station with their doors open for several minutes before departing, so patrons may be able to board waiting trains immediately upon entering the station, thereby potentially reducing platform crowding issues. However, the extent to which the opening of the Eastside Extension will affect platform crowding at Union Station remains to be seen.

Crowding in the passageways and rail platforms may, however, become a significant issue at 7th St./Metro Center Station. Once in operation, Metro Expo Line trains from Culver City will share the existing Metro Blue Line terminal platforms, where trains already operate on five-minute headways during peak hours. This could create rail congestion and rush hour delays at locations where existing facilities to reverse light rail trains consist of scissor crossovers at either end of the station. Scissor crossovers are diamond-shaped crossovers that allow trains to switch from one track to the other, but block all other train movements.

The Metro Blue Line boarding area consists of two side platforms, but typically only one of the platforms is used, and this currently contributes to passenger crowding at the station. Metro Red and Purple Line passengers wishing to use the Flower St. escalators must also share the crowded passageways leading to the Metro Blue Line platform. Metro Expo Line passengers would add to the crowds on the existing Metro Blue Line platform, as transfers to the Metro Red and Purple Lines also contribute to crowding on the lower platform. In such crowded conditions, the ability to quickly evacuate the station in an emergency could be compromised.

The proposed Regional Connector LRT services are shown in Figure 1-15.

The Regional Connector would eliminate many transfers and alleviate crowding at 7th St./Metro Center Station. In addition, it will reduce the number of transfers from the Metro Gold Line to the Metro Red and Purple Lines at Union Station by providing new single-vehicle LRT service through the downtown area. This will shorten walking distances and trip times for all rail passengers bound for the Bunker Hill area.

The Regional Connector would also eliminate many transfers at Union Station, as many of the passengers traveling to the Financial District from East Los Angeles or Pasadena would likely stay on the Metro Gold Line trains and continue along the Regional Connector instead of transferring to the Metro Red Line. Metro's 2004 Metro Rail Onboard Survey indicates that relatively few Metro Gold Line riders currently continue beyond 7th St./Metro Center Station toward Long Beach on the Metro Blue Line. This could indicate a lack of travel demand between Pasadena and Long Beach.

Downtown-bound Metro Blue Line and Metro Expo Line trains will merge onto a single set of tracks at Washington Blvd. and Flower St. and travel along the existing Flower St. right-of-way to 7th St./Metro Center Station. Trains would then continue along the Regional Connector to Little Tokyo where the lines would again split, with Metro Blue Line trains continuing to Union Station and Pasadena, and Metro Expo Line trains traveling to East Los Angeles. If Long Beach-Pasadena service and East Los Angeles-Culver City service each operate with 5-minute peak hour headways, the Regional Connector tracks would see trains every 2 ½ minutes in each direction. This means that any at-grade intersections would see trains approximately every 75 seconds, or one to two trains per signal cycle.

The Regional Connector would allow for more efficient train maintenance, as it would link the Metro Gold Line and Metro Blue Line maintenance facilities via new LRT track. Because the Metro Gold Line has only a light-duty maintenance yard, trains must currently be loaded onto trucks and driven to the Metro Blue Line yard in Long Beach when they require major services. The Regional Connector would allow Metro Gold Line trains to simply deadhead to Long Beach along the service tracks, eliminating the need for costly trucking and expediting their arrival to the yard.

In addition, connecting the LRT lines as a single network enables vehicles to be stored and operated on multiple lines. Currently, storage surplus on one LRT network is not available to the other network. The Regional Connector would make centralized vehicle maintenance and storage facility serving the entire network possible.

1.8.2 Transit Usage

As the largest employment center in Los Angeles County, there are unique opportunities in the PSA for residents to live near their jobs in an area with dense transit service. While the Regional Connector would not extend rail transit service into previously un-served regions of the County, it will broaden coverage within downtown Los Angeles and speed rail trips through the area by eliminating transfers. Both of these improvements would result in time savings; new stations mean shorter walking distances for many current passengers and fewer transfers mean less time spent waiting for trains and buses.

The ridership benefits of increasing trip speeds have been demonstrated in Los Angeles by the Metro Rapid program. The 2002 Demonstration Program Final Report noted that the implementation of the rapid bus service led to 23-29 percent improvement in trip speeds, an increase from 9mph to 12mph. While this difference may seem small, ridership on the Wilshire/Whittier corridor increased by 42 percent as a result. The other demonstration corridor, Ventura Blvd., experienced a ridership increase of 27 percent.

The Regional Connector is expected to result in similar increases in ridership among Metro Blue Line and Gold Line passengers. The transfer between the Red/Purple and Blue Lines at 7th St./Metro Center can currently take one to five minutes during peak hours, three to ten minutes during off-peak hours, and five to eight minutes on weekends. The transfer between the Metro Red or Purple Line and Gold Lines at Union Station takes three to eight minutes during peak hours, five minutes during off-peak hours, and five minutes on weekends.

By eliminating these transfers, assuming speeds similar to the Metro Red Line, the Regional Connector could reduce travel times by:

- five to 13 minutes during peak times,
- eight minutes during off-peak times, and
- eight minutes on weekends.

1.8.3 Regional Population and Employment Growth

Much of the greater Los Angeles metropolitan area consists of fairly dense populations which are expected to grow by the year 2030. Figures 1-16 and 1-17 show the regional population densities in 2005 and the 2030 projection, respectively. In 2005, areas of highest population density were found in Central Los Angeles, Hollywood, Southgate, East Los Angeles, and the Westside.

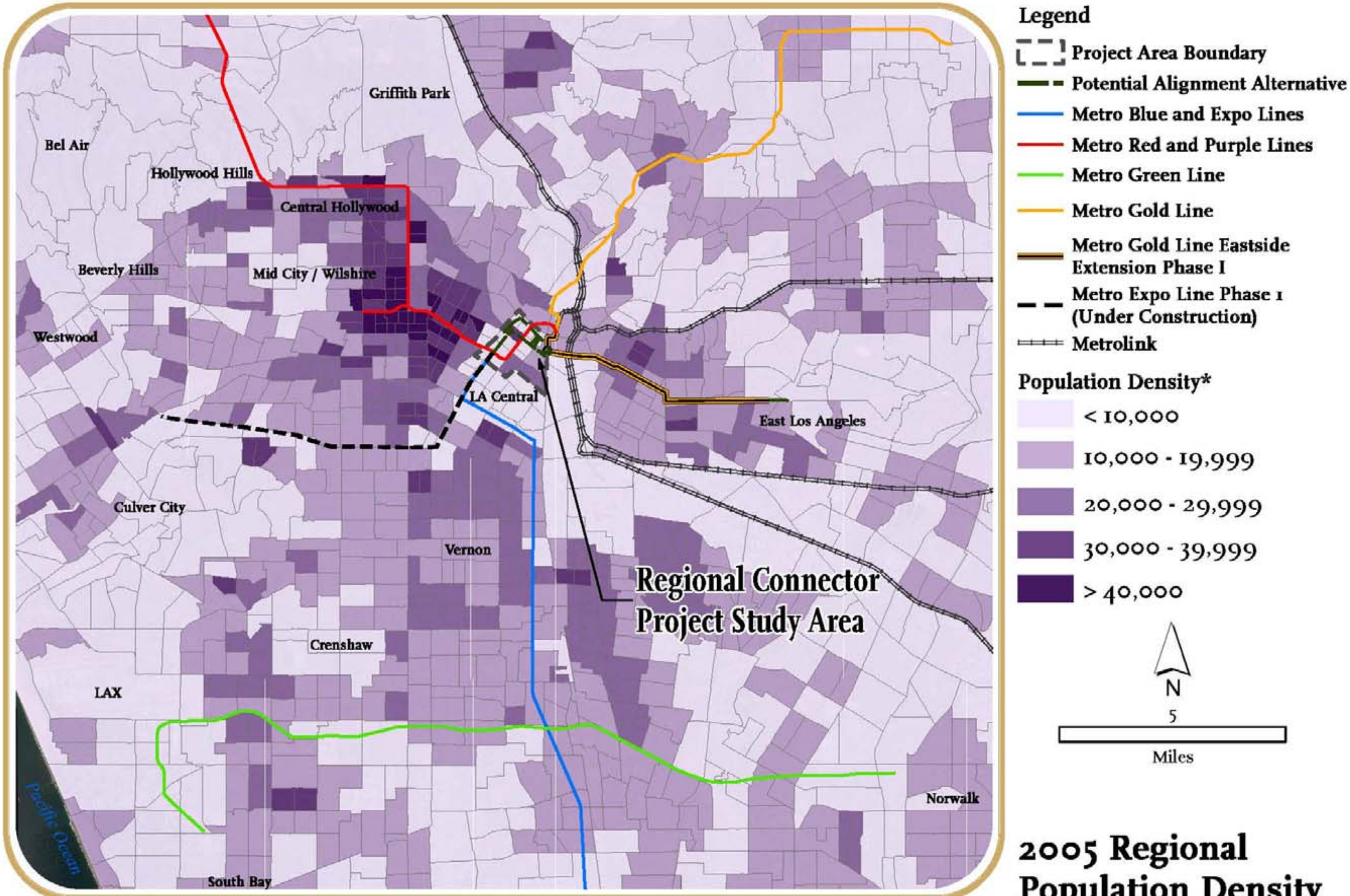
Population densities will increase throughout the region, particularly in those with already-high density. Significant increases in density will develop in the South Bay and the Eastside, particularly along the I-10 corridor.

Areas of high population density tend to have workers who need to travel to employment centers throughout the region. Figures 1-18 and 1-19 show the regional employment densities in 2005 and projected in 2030, respectively.

In 2005, the highest employment densities overlapped the PSA in Central Los Angeles. Areas of moderate employment density included Westwood, Santa Monica, Hollywood, Culver City, Pasadena, the South Bay and East Los Angeles. Employment densities are expected to increase in census tracks around these employment centers. The improvement of transit services in downtown will help bring workers from areas of higher population density and lower employment density to the PSA, where the highest concentration of employment opportunities is located. The Regional Connector will also improve access to areas of moderate employment density by eliminating transfers and reducing travel time for commuters.

Current transit usage in the region is the highest in Central Los Angeles, with additional areas of moderate transit usage in the Westside, Hollywood, Pasadena, the South Bay, and Pasadena, as shown in Figure 1-20. Transit usage is projected to increase in these areas by 2030, as shown in Figure 1-21. The highest transit usage areas are found along the existing Metro Red Line and Metro Purple Line corridors. There is also high transit usage in the Westside area where there are many students who are reliant on public transportation.

Additional transit opportunities created by the Regional Connector for commuters on the Metro Blue and Gold lines are expected to increase the number of trips along the corridors of both. The Regional Connector will alleviate congestion on the already heavily-used Metro Red and Purple Lines by eliminating the need for Metro Blue and Gold line commuters to transfer through them.



2005 Regional Population Density

Source: U.S. Census Bureau, 2005. *Calculation of 2005 Total Population per square mile.

Figure 1-15 2005 Regional Population Density

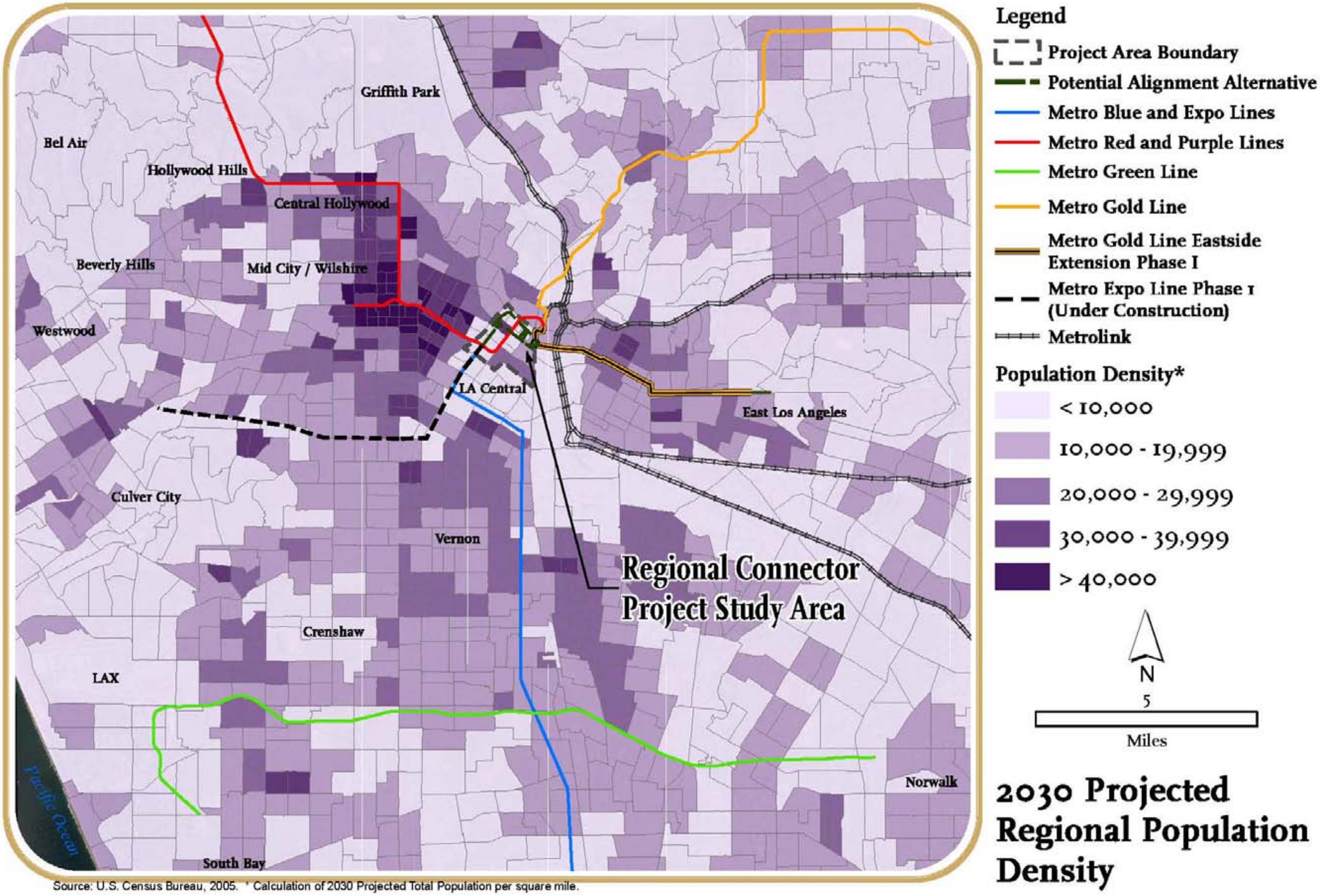


Figure 1-16 2030 Regional Population Density

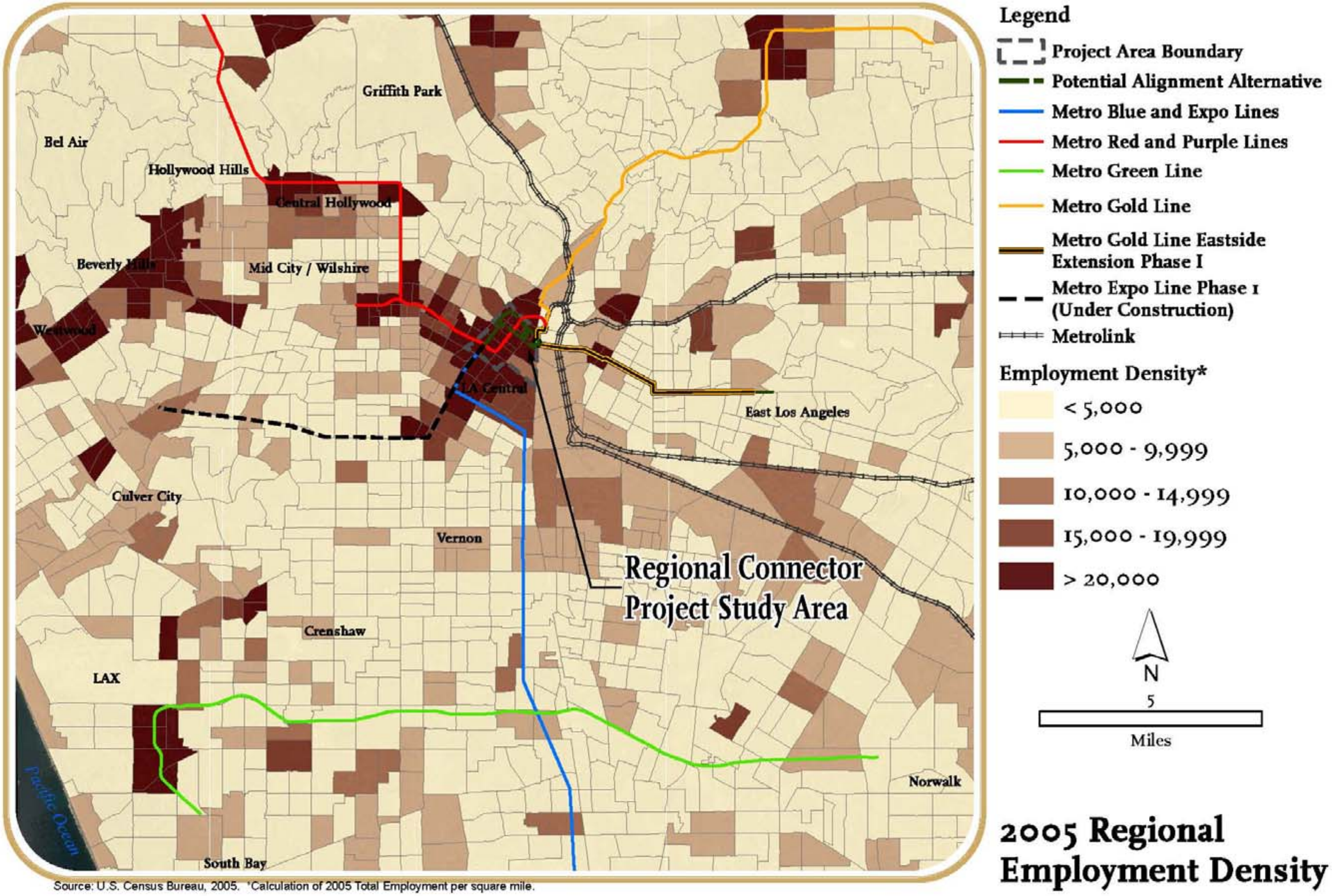
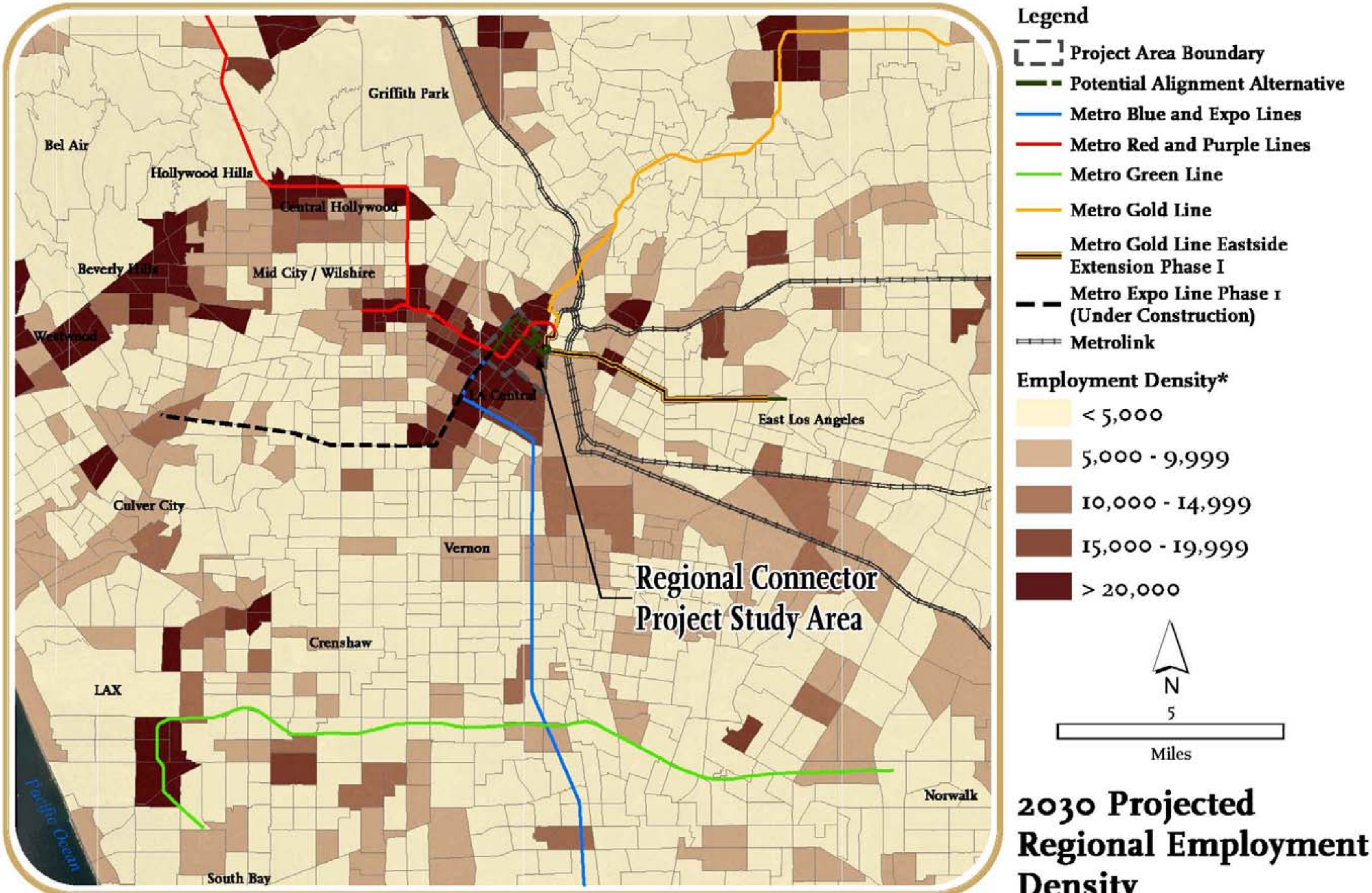
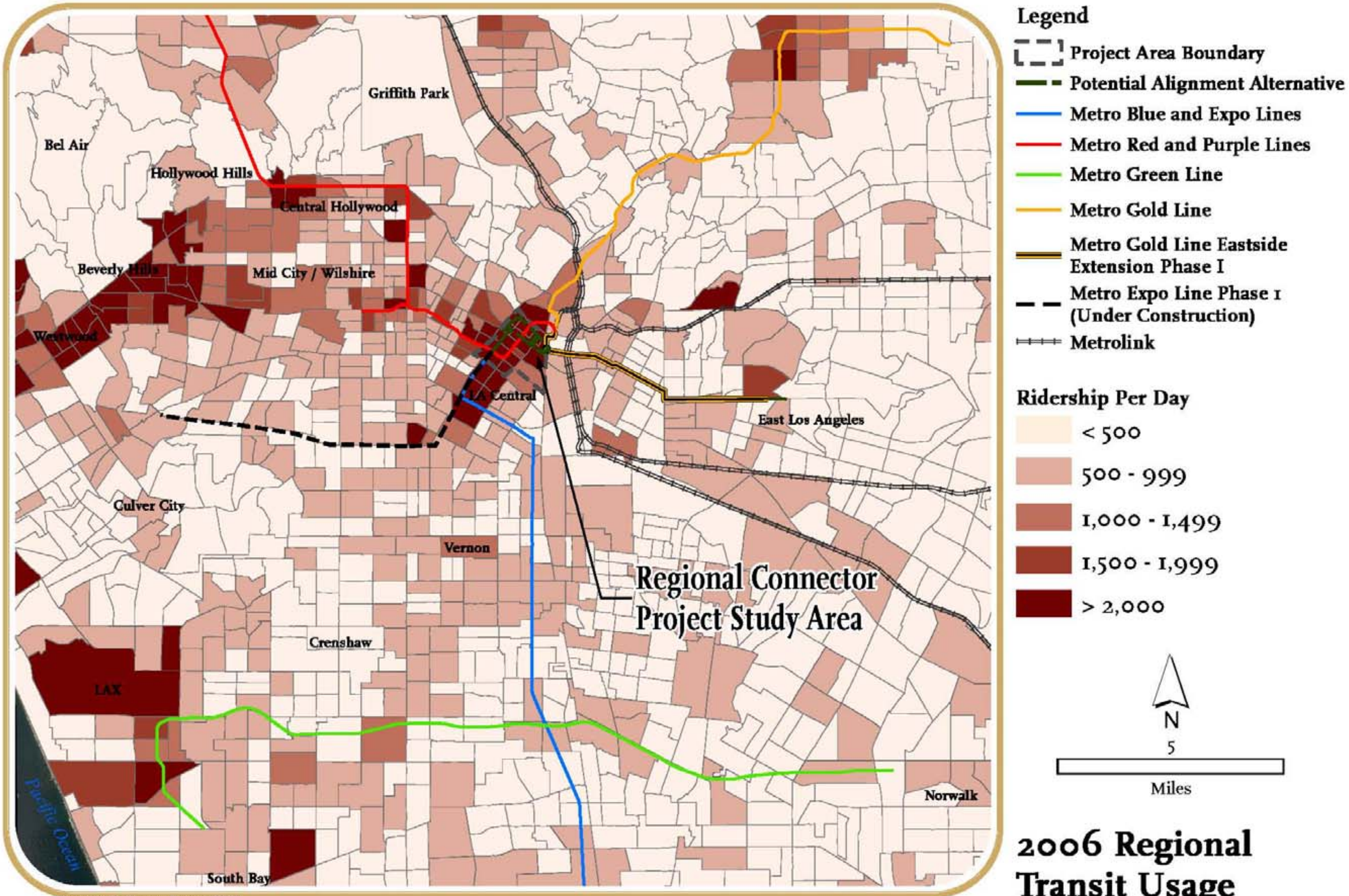


Figure 1-17 2005 Regional Employment Density



Source: U.S. Census Bureau, 2005. * Calculation of 2030 Projected Total Employment per square mile.

Figure 1-18 2030 Regional Employment Density



Source: U.S. Census Bureau, 2006.

Figure 1-19 2006 Regional Transit Usage

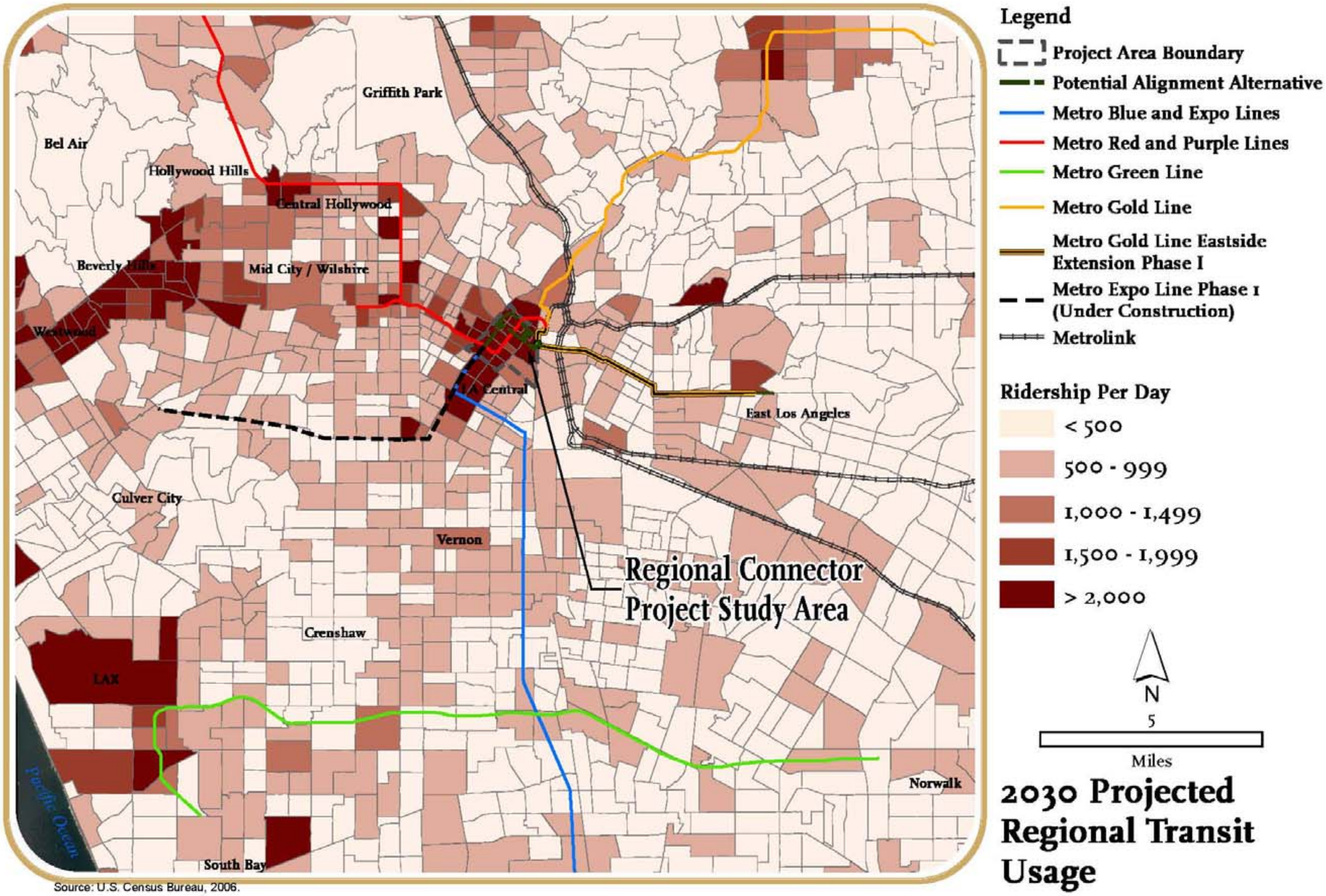


Figure 1-20 2030 Regional Transit Usage

1.8.4 Significant Transit-Dependent Populations in the Project Study Area

The PSA can be characterized as more transit-dependent than the County as a whole because of its dense population, proportionately low income levels, number of households with zero vehicles, and public transportation users. A significant portion of the County's transit riders live and/or work within the PSA; this is projected to increase through 2030. Improvements in transit service would help to mitigate impacts associated with the increased concentration of transit-dependent communities in and around the Regional Connector PSA.

Population, Households, and Employment

Census tracts with the largest populations (greater than 2000 people) are found within the PSA east of Main St. between 1st St. and 7th St. and east of San Pedro St. between Temple St. and 1st St. According to SCAG projections, in 2030, slightly less growth is expected in the PSA compared to the whole County. The population in the PSA is expected to grow by about 18 percent from about 18,000 in 2005 to 21,000 people in 2030.

The largest growth in the PSA is projected in two locations:

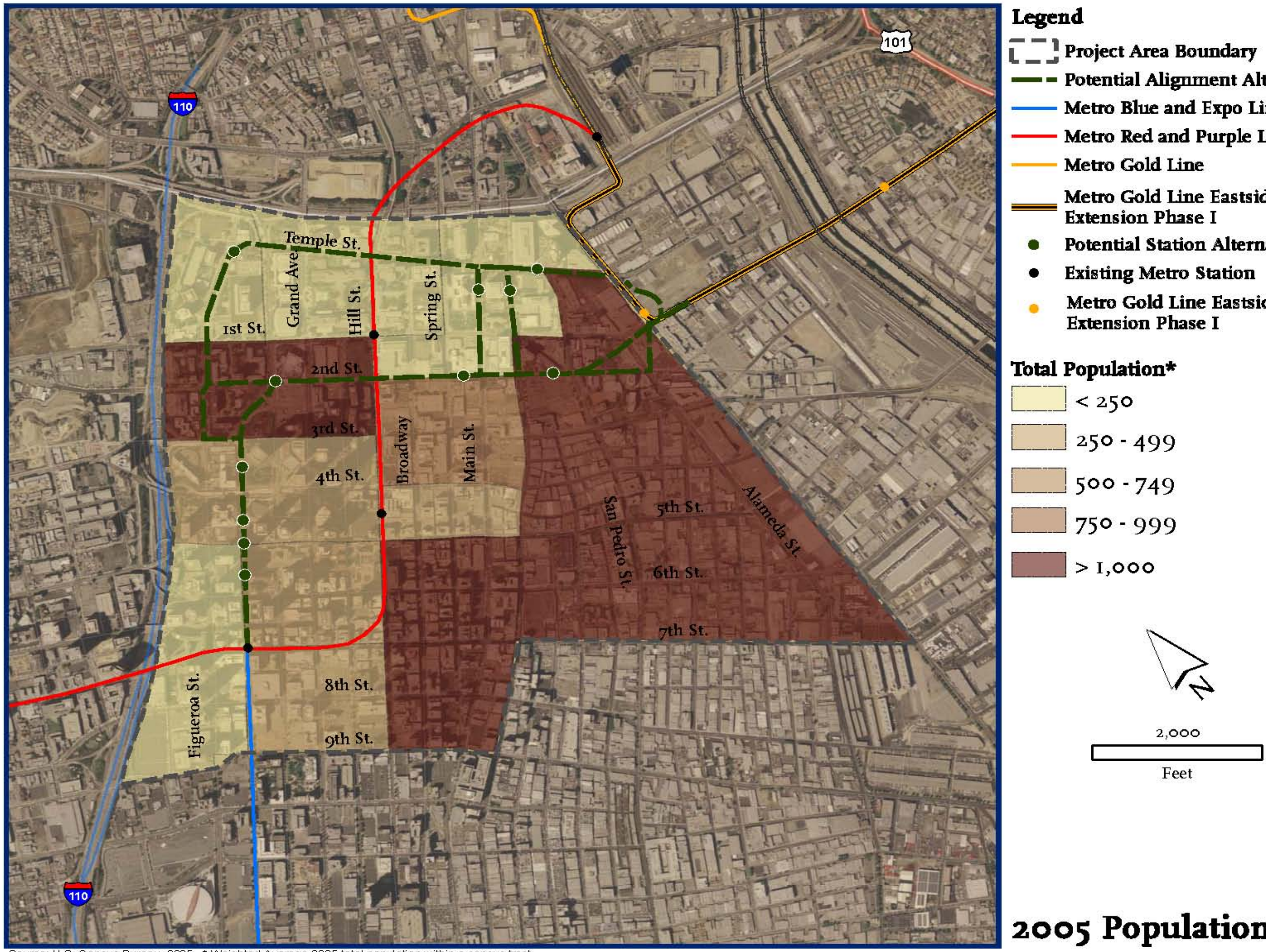
- the area bounded by SR-110, Hill St., 1st St., and 3rd St., which will increase from between 1,500 to 1,999 people to over 2,000 people; and
- the area bounded by Hill St., Main St., 7th St., and 9th St., which will increase from 1,000 to 1,499 people to 1,500 to 1,999 people.

Projected population is based on fairly conservative estimates made by SCAG in 2005. Figures 1-22 and 1-23 show the distribution of existing and projected total population within the PSA.

Several planned high-rise residential projects in the PSA contribute to the high level of expected growth. These include the Park Fifth condominium project at 5th and Hill Streets, the Block 8 condominium and rental project under construction between 2nd, 3rd, San Pedro, and Los Angeles Streets, and the 8th & Grand condominium and retail project at 8th St. and Grand Ave.

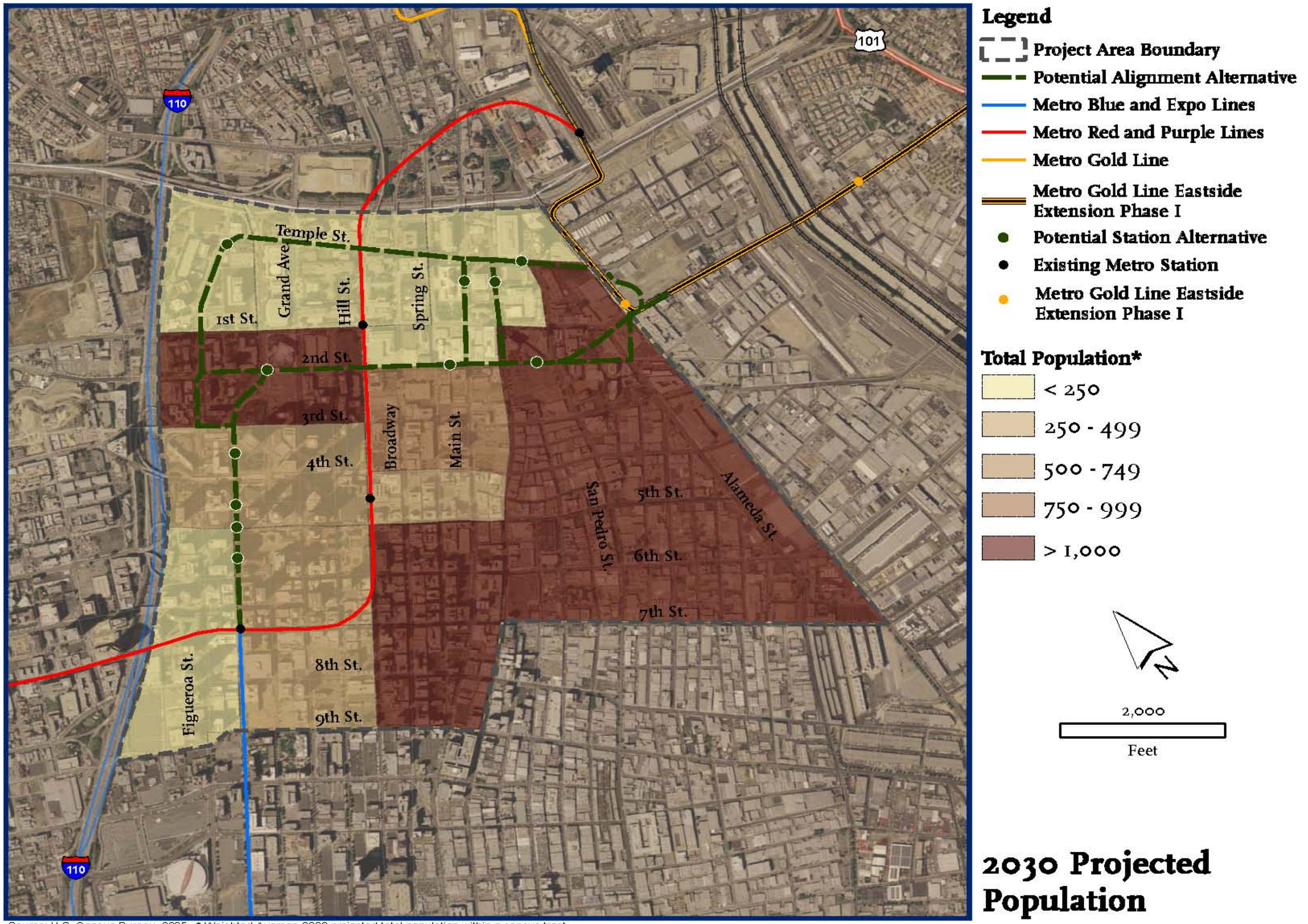
The total number of households are also projected to increase 27 percent from about 9,600 in 2005 to 12,200 in 2030, which is higher than the 25 percent projected for the County.

The employment base is projected to increase by about 12 percent from over 168,000 individuals in 2005 to over 188,000 in 2030. Current and projected employment within the PSA are both between three and four percent of total County employment.



Source: U.S. Census Bureau, 2005. * Weighted-Average 2005 total population within a census tract.

Figure 1-21 2005 Population in PSA



Source: U.S. Census Bureau, 2005. * Weighted-Average 2030 projected total population within a census tract.

Figure 1-22 2030 Population in PSA

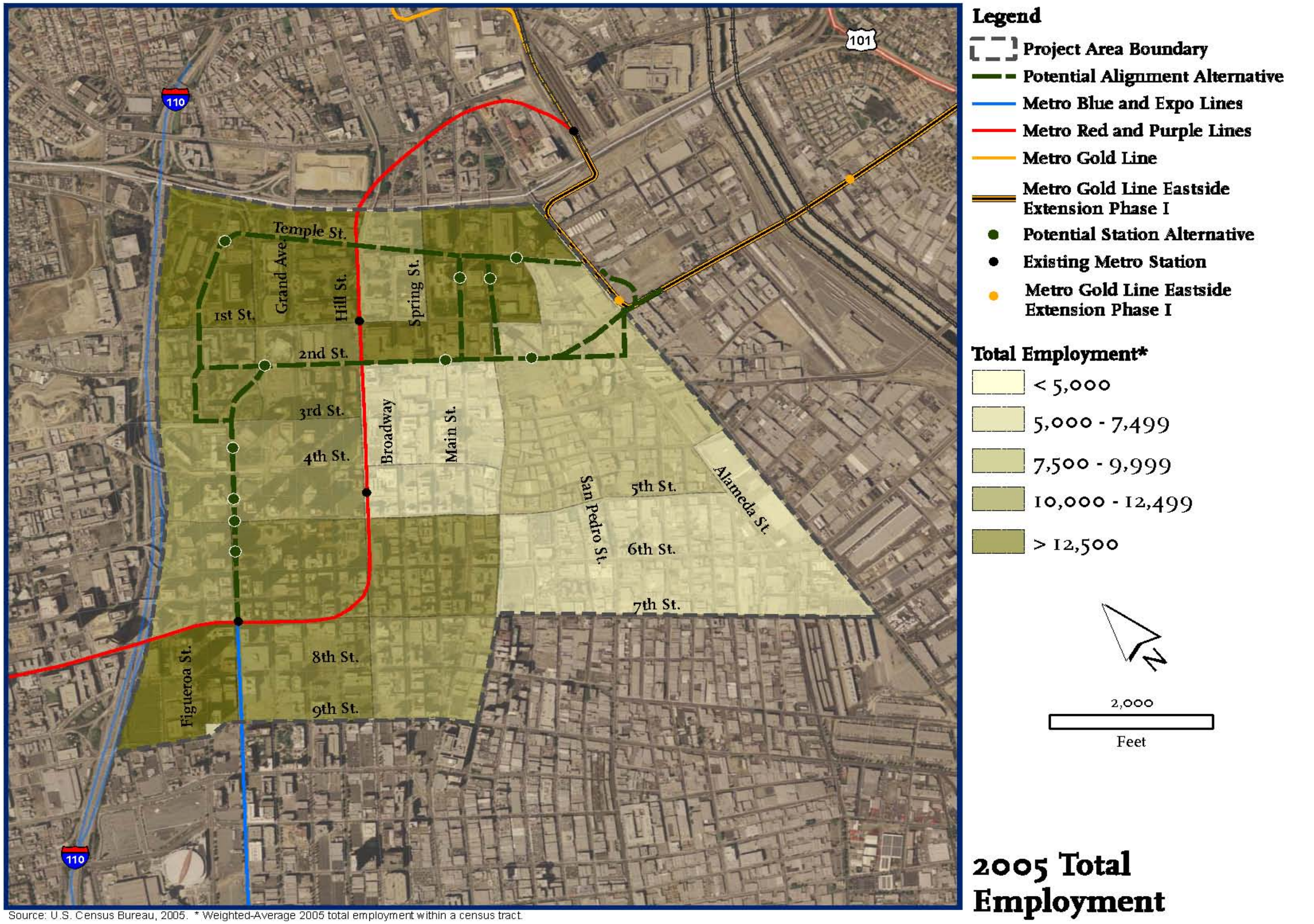
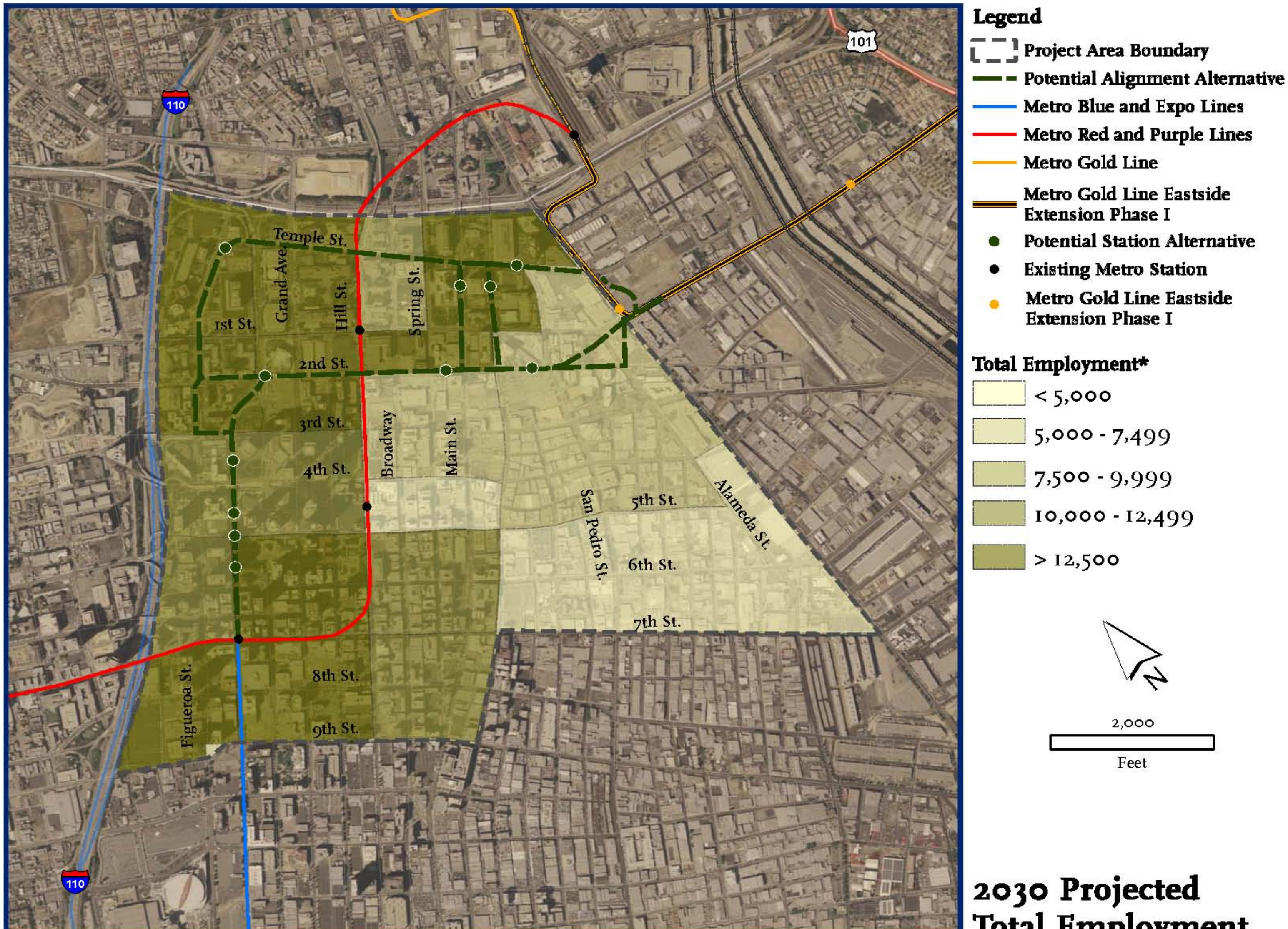


Figure 1-23 2005 Employment in PSA



Source: U.S. Census Bureau, 2005. * Weighted-Average 2030 projected total employment within a census tract.

Figure 1-24 2030 Employment in PSA

Figure 1-24 shows the distribution of employment in the PSA in 2005. At that time, total employment in a majority of the census tracts within the PSA was over 5,000, with areas of highest concentration (greater than 12,500 jobs) in three locations:

- the area bounded by SR-110, Flower St., 7th St., and 9th St.;
- the area bounded by SR-110, Hill St.,US-101, and 1st St.; and
- part of the area bounded by Hill St., Alameda St., US-101, and 2nd St.

A large employment base indicates that a significant number of workers commute within, into, and out of the PSA. Figure 1-25 shows the projected distribution of employment in 2030.

Table 1-15 summarizes the PSA's projected growth in population, households and employment relative to the entire County.

Table 1-15 Population, Household, and Employment Growth

	2005	2030	Forecast Increase Between 2005-2030
Population			
PSA	17,795	20,738	16.5%
LA County	10,010,315	12,193,030	21.8%
PSA % of LA County	0.18%	0.17%	---
Households			
PSA	9,673	12,287	27.0%
LA County	3,298,210	4,116,567	24.8%
PSA % of LA County	0.29%	0.39%	---
Employment			
PSA	168,328	188,591	12.0%
LA County	4,644,010	5,651,043	21.7%
PSA % of LA County	3.62%	3.34%	---

Source: SCAG, 2005 data and 2030 projections

Household Income

Socioeconomic trends in the PSA are correlated to transit-dependent communities; household income is an important factor. In 2005, the PSA had about 7,000 low-income households, about 2,000 medium-income households, and only about 400 high-income households.

Low-income households include those households considered to be living in poverty. The US Census Bureau's defined 2005 poverty threshold as an annual average salary of $12,755 for a two-person household. Low-income households represented about 75 percent of the PSA's total households. The high proportion of low-income households underscores the need for public transit.

Figure 1-26 shows the distribution of low-income households in 2005. Census tracts within the PSA that have greater than 1,000 low-income households were:

- the area bounded by SR-110, Hill St., 1st St., and 3rd St.; and
- the area bounded by Hill St., Alameda St., 5th St., and 7th St.

Figure 1-27 shows the projected distribution of low income households in 2030. The number of low-income households is projected to increase by roughly 26 percent to about 9,000 in 2030.

Age Distribution

Demographic data are presented in 1.4 Demographics. Figure 1-28 shows the distribution of residents age 65 and over in the PSA. The senior population is highest west of Hill St. and south of 1st St. Figure 1-29 shows the distribution of residents age 18 and under in the PSA. The youth population is found primarily in the southern part of the PSA, south of 5th St.

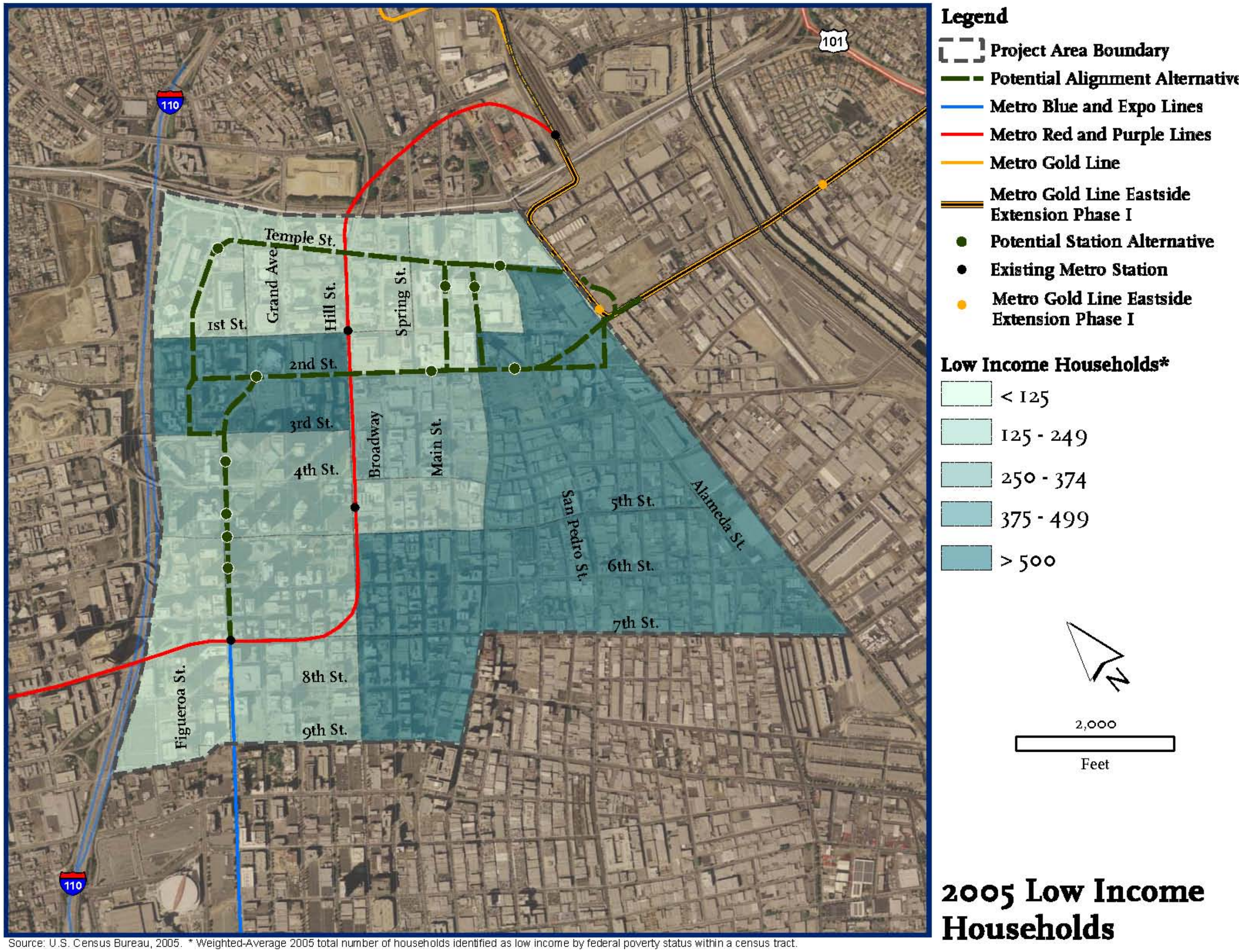
Young and elderly residents within the PSA are more likely to depend on public transit because of inability to drive or lack of private vehicle accessibility.

Public Transportation Ridership and Vehicle Accessibility

Nearly 70 percent of the households in the PSA have no car. Figure 1-9 shows the distribution of households with no available vehicles.

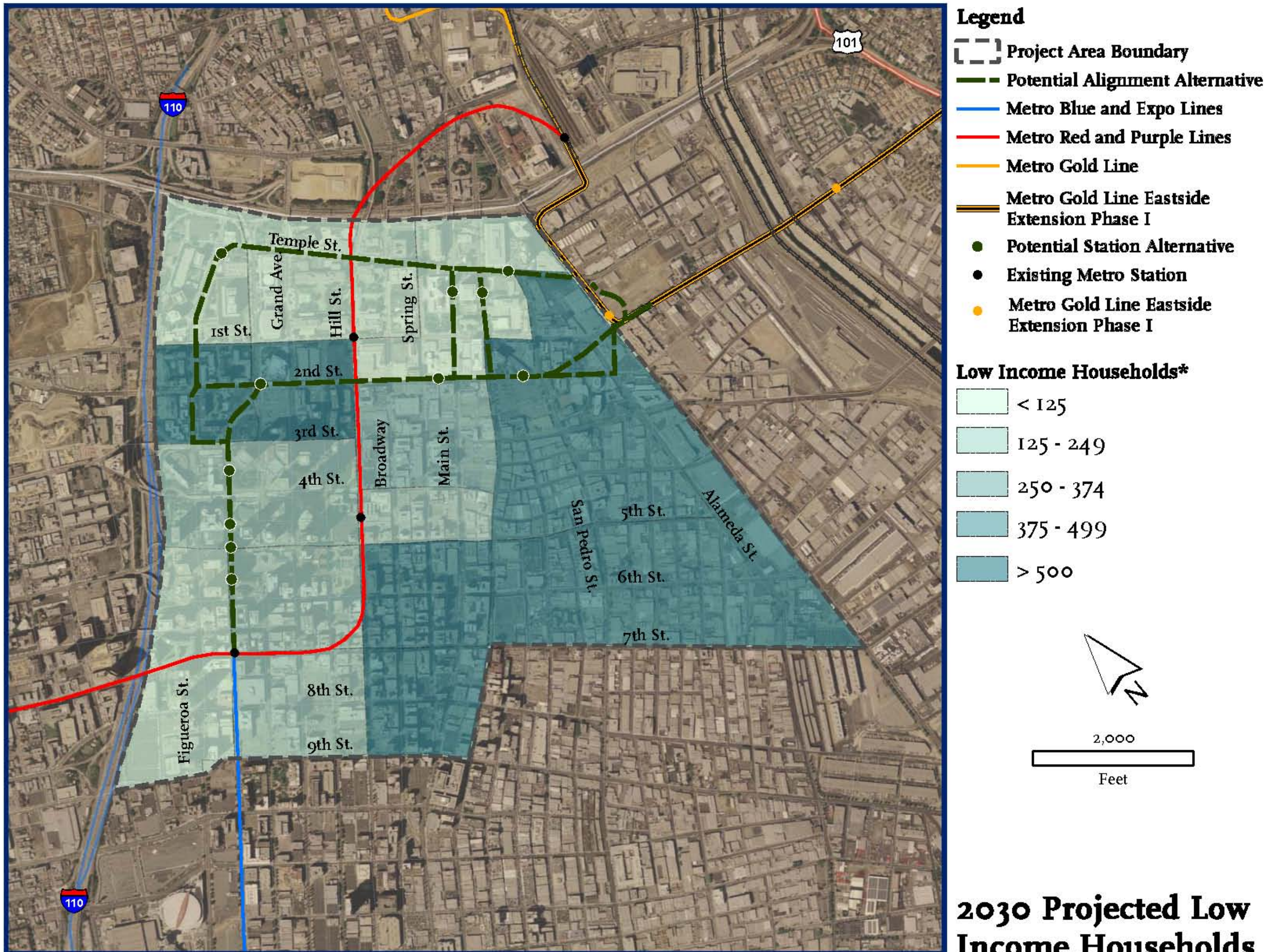
Figure 1-30 shows the percentage of the employed population age 16 and over who lived in the PSA relied on public transportation in 2005. Twenty-three percent of employed residents age 16 and over rely on public transit for their commuting needs. Some of the PSA's transit-dependent population live within convenient walking distance (one-quarter to one-half mile) of the Regional Connector termini, while the rest will be able to easily access the Regional Connector with a bus or rail transfer. When comparing vehicle accessibility and public ridership patterns in the Regional Connector PSA, the trends suggest that even households in the PSA with one or more cars have a higher propensity to use public transportation than similar households elsewhere in the County.

There are also a large number of commuters from outside the PSA who utilize transit to get to employment and other opportunities within the PSA. As explained earlier in this section, they will benefit from the development of the Regional Connector.



Source: U.S. Census Bureau, 2005. * Weighted-Average 2005 total number of households identified as low income by federal poverty status within a census tract.

Figure 1-25 2005 Low Income Households



2030 Projected Low Income Households

Source: U.S. Census Bureau, 2005. * Weighted-Average 2030 projected total number of households identified as low income by federal poverty status within a census tract.

Figure 1-26 2030 Low Income Households

Table 1-16 summarizes the transit dependency characteristics in the PSA relative and the entire County.

Table 1-16 Transit Dependent Demographic Information			
	PSA	LA County	PSA % of LA County
Population	17,795	10,010,315	0.18%
Under 18 years	976	2,798,604	0.03%
Over 65 years	3,497	926,670	0.38%
Households	9673	3,298,210	0.29%
No vehicle households	8586	671,214	1.28%
Use public transportation	1025	254,091	0.40%
Low income households	7,244	1,481,896	0.49%
Total employment	168,328	4,644,010	3.62%

Source: SCAG, 2005 data and 2030 projections

1.8.5 Project Study Area Population and Employment Growth

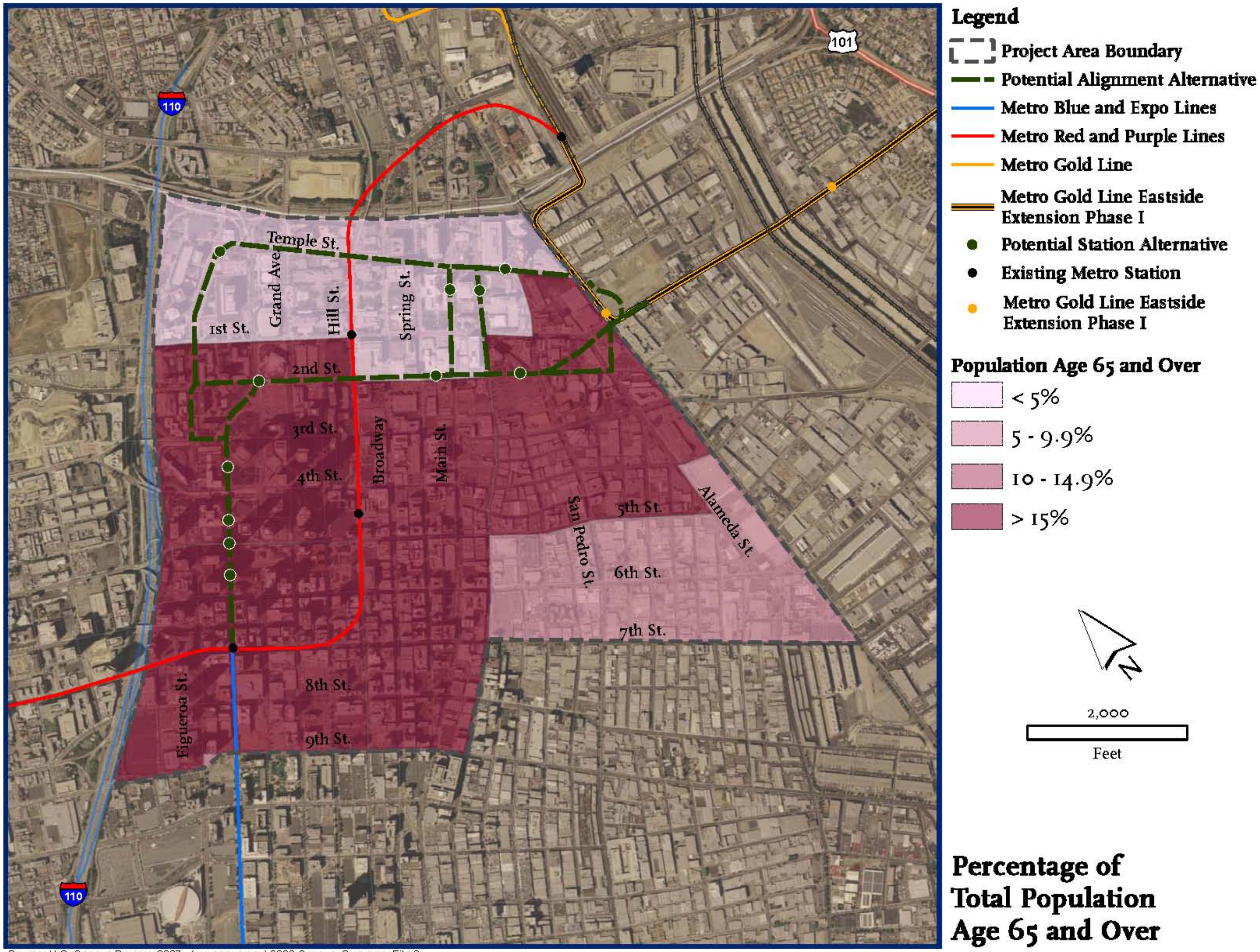
Providing public transportation to densely-populated areas can increase ridership by making transit more accessible to a larger population. Population and employment density data for the PSA are presented in 1.4 Project Study Area Demographics. The areas of highest population density are found in two locations within the PSA:

- the area bounded by 1st St., 3rd St., SR-110, and Hill St.; and
- the area south of 5th St. and east of Hill St.

Figure 1-31 shows the distribution of population densities in 2005.

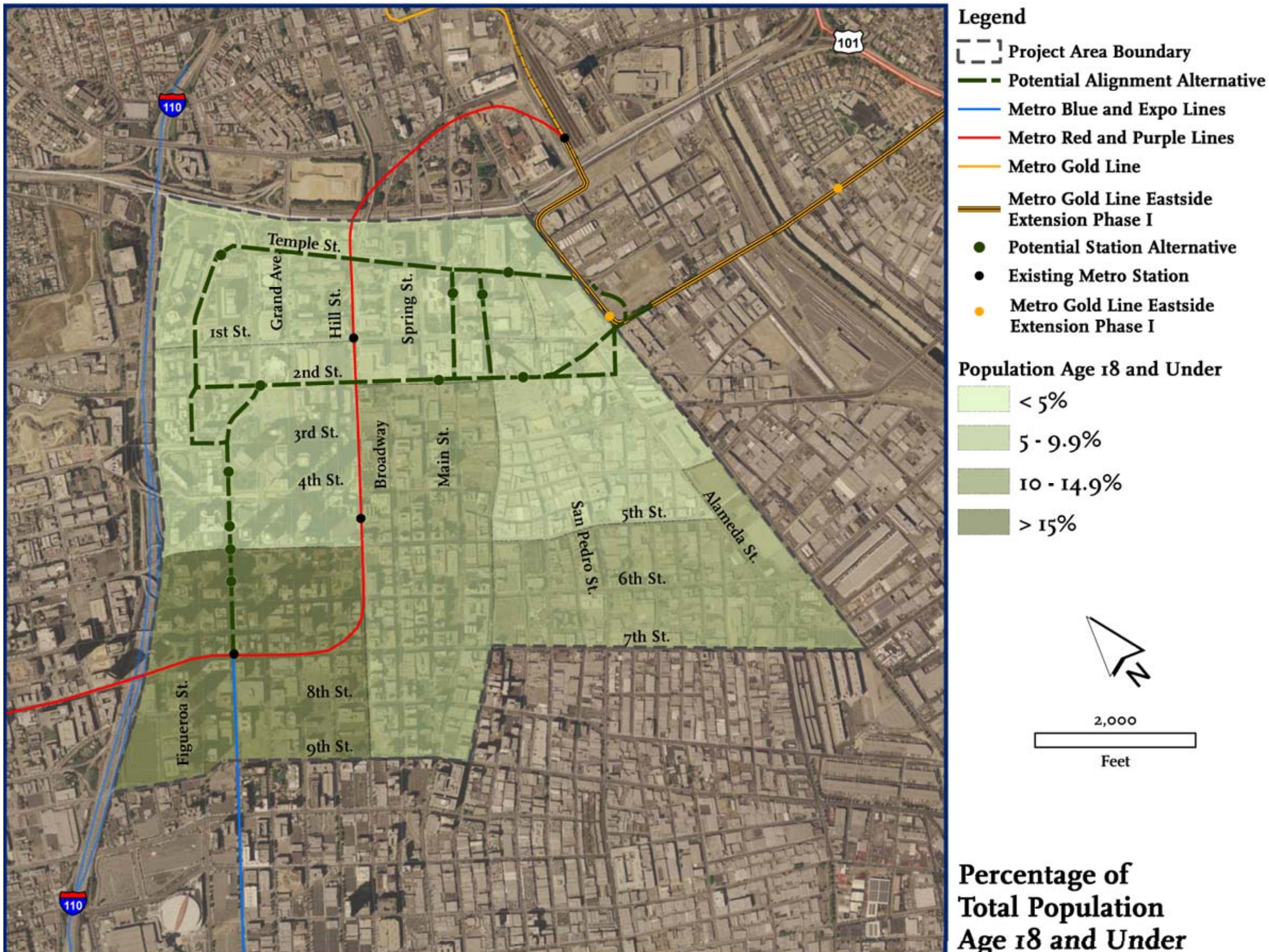
The highest employment density exists in the PSA in the area bounded by US-101, 3rd St., SR-110, and Hill St. Figure 1-32 shows the distribution of employment densities in 2005.

Population and employment densities are projected to increase in the PSA in 2030. Average population density is projected to grow to roughly 13,600 persons per square mile, and average employment density is expected to be nearly 124,000 employees per square mile. Figures 1-33 and 1-34 show projected 2030 population and employment densities.



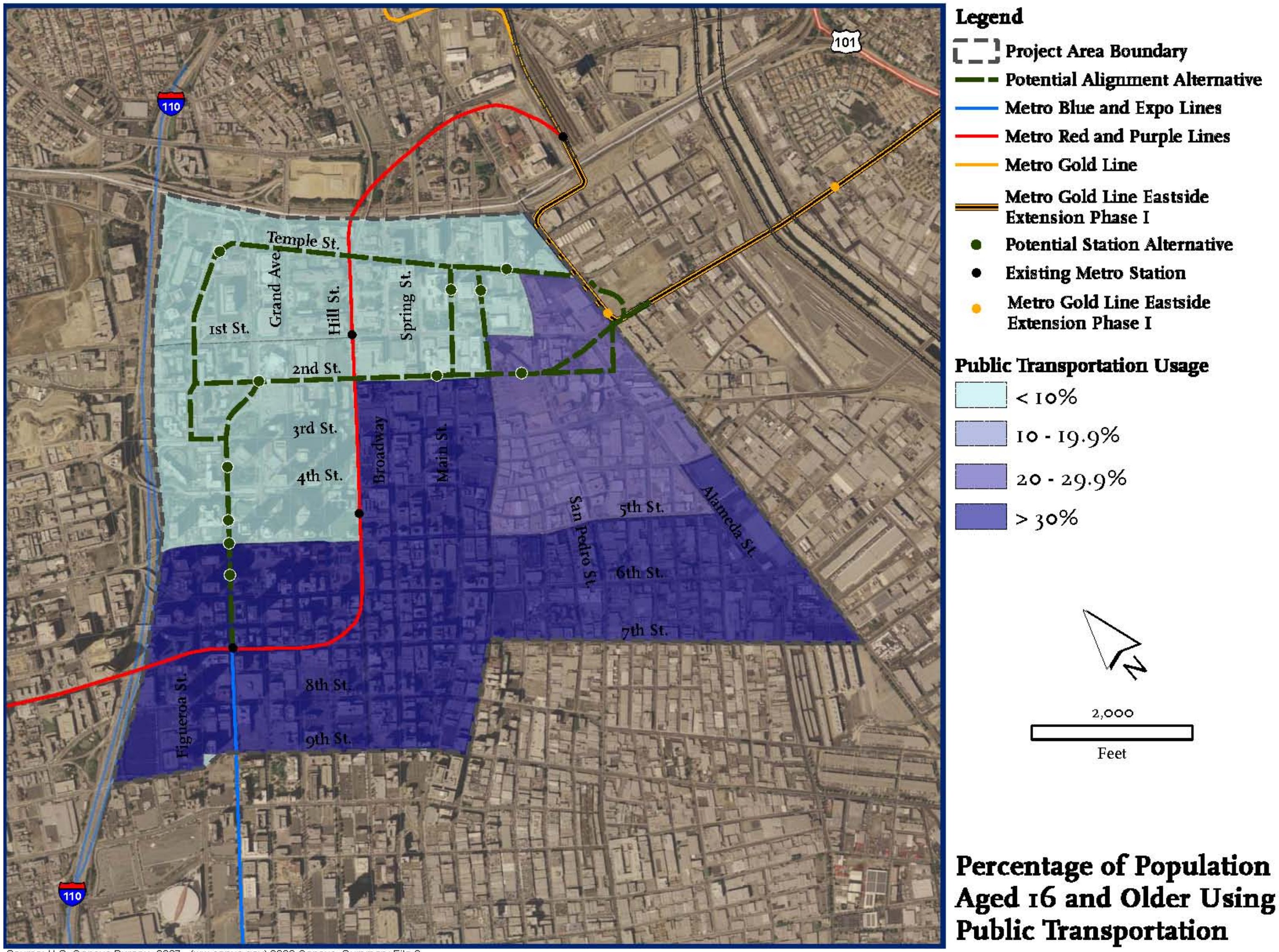
Source: U.S. Census Bureau, 2007. (ww.cenus.gov) 2000 Census, Summary File 3.

Figure 1-27 Population Age 65 and Over



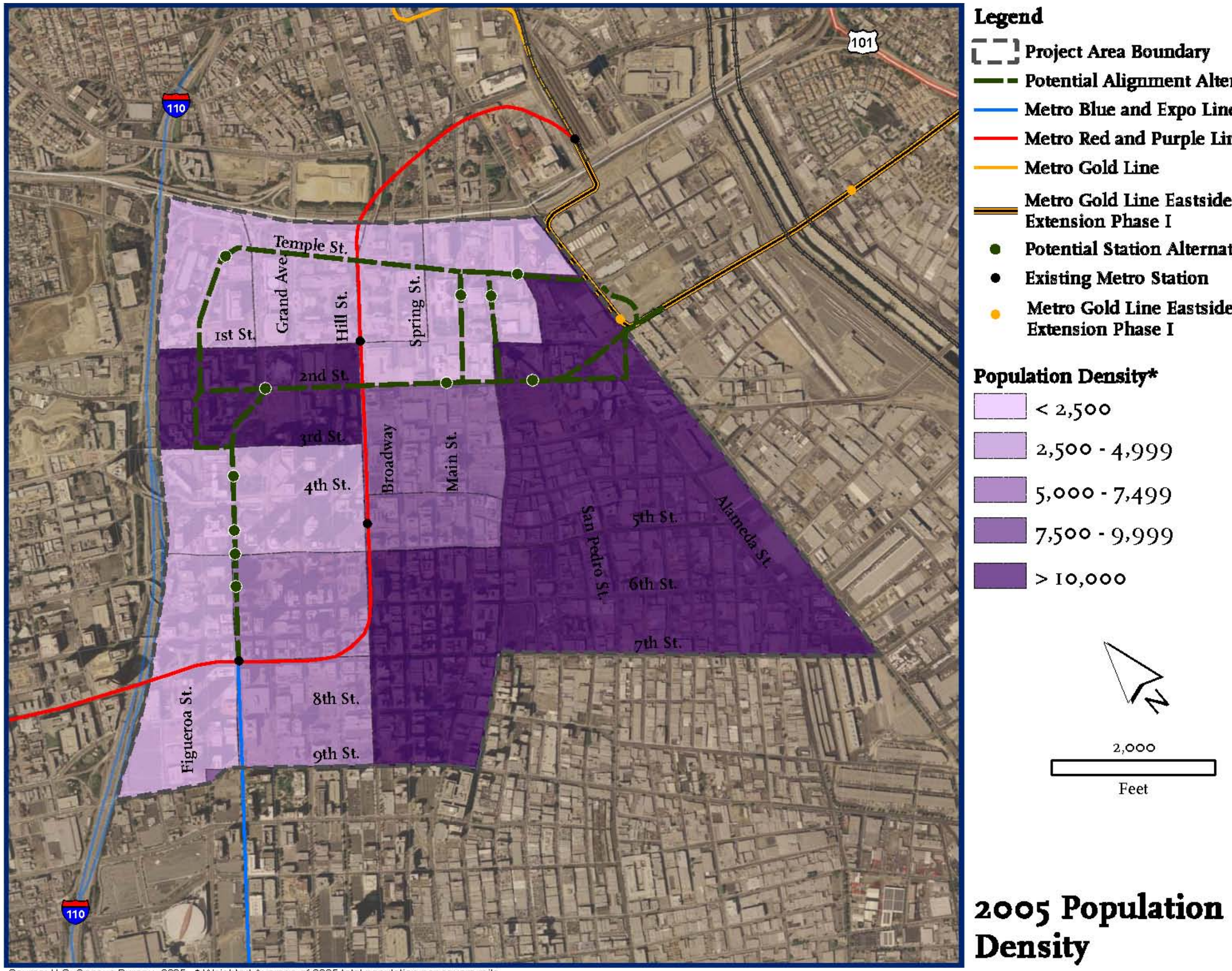
Source: U.S. Census Bureau, 2007. (ww.cenus.gov) 2000 Census, Summary File 3.

Figure 1-28 Population Age 18 and Under



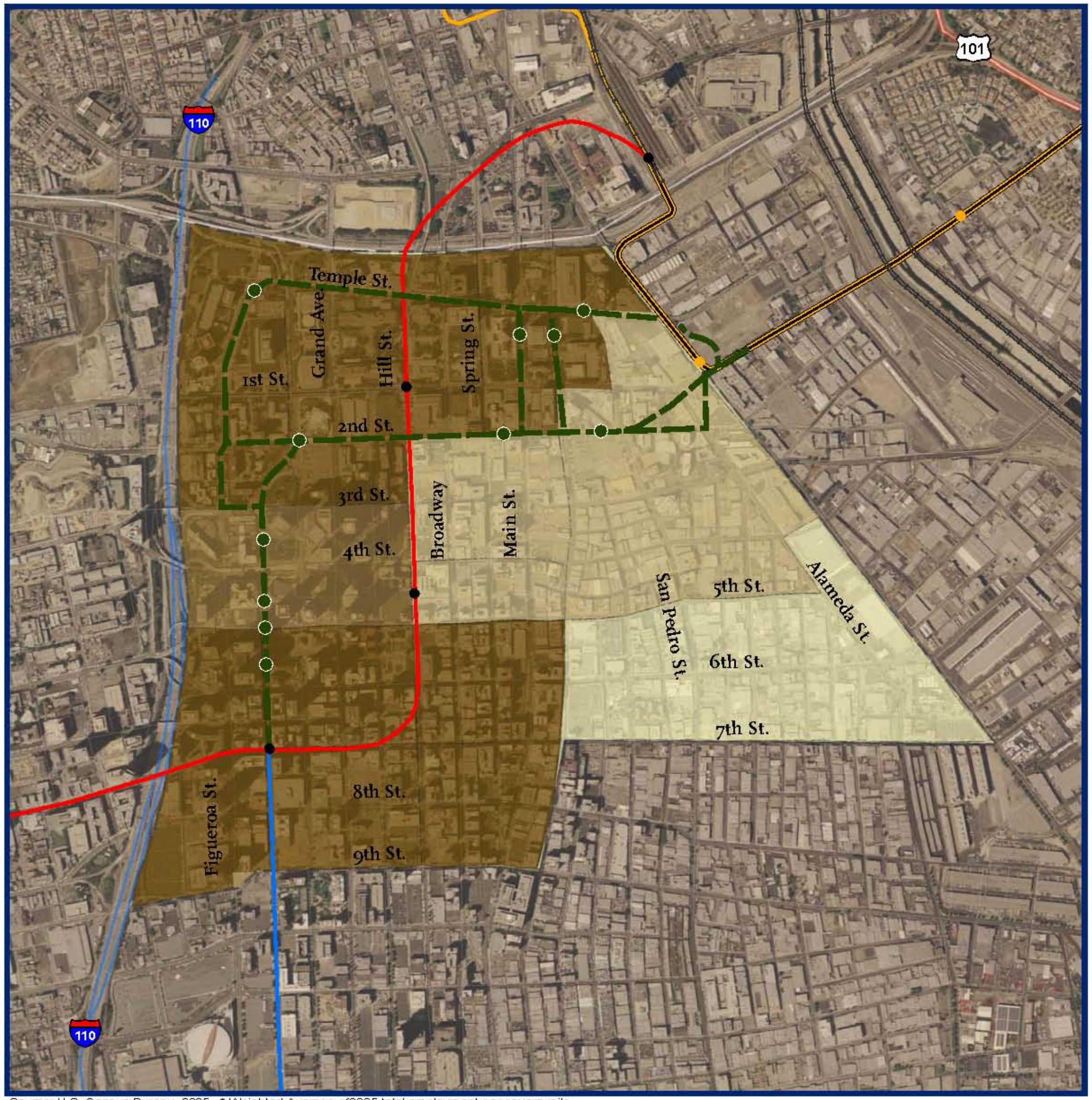
Source: U.S. Census Bureau, 2007. (ww.cenus.gov) 2000 Census, Summary File 3.

Figure 1-29 Population Age 16 and Over Who Use Public Transportation



Source: U.S. Census Bureau, 2005. * Weighted-Average of 2005 total population per square mile.

Figure 1-30 2005 Population Density



Legend

- Project Area Boundary
- Potential Alignment Alternative
- Metro Blue and Expo Lines
- Metro Red and Purple Lines
- Metro Gold Line
- Metro Gold Line Eastside Extension Phase I
- Potential Station Alternative
- Existing Metro Station
- Metro Gold Line Eastside Extension Phase I

Employment Density*

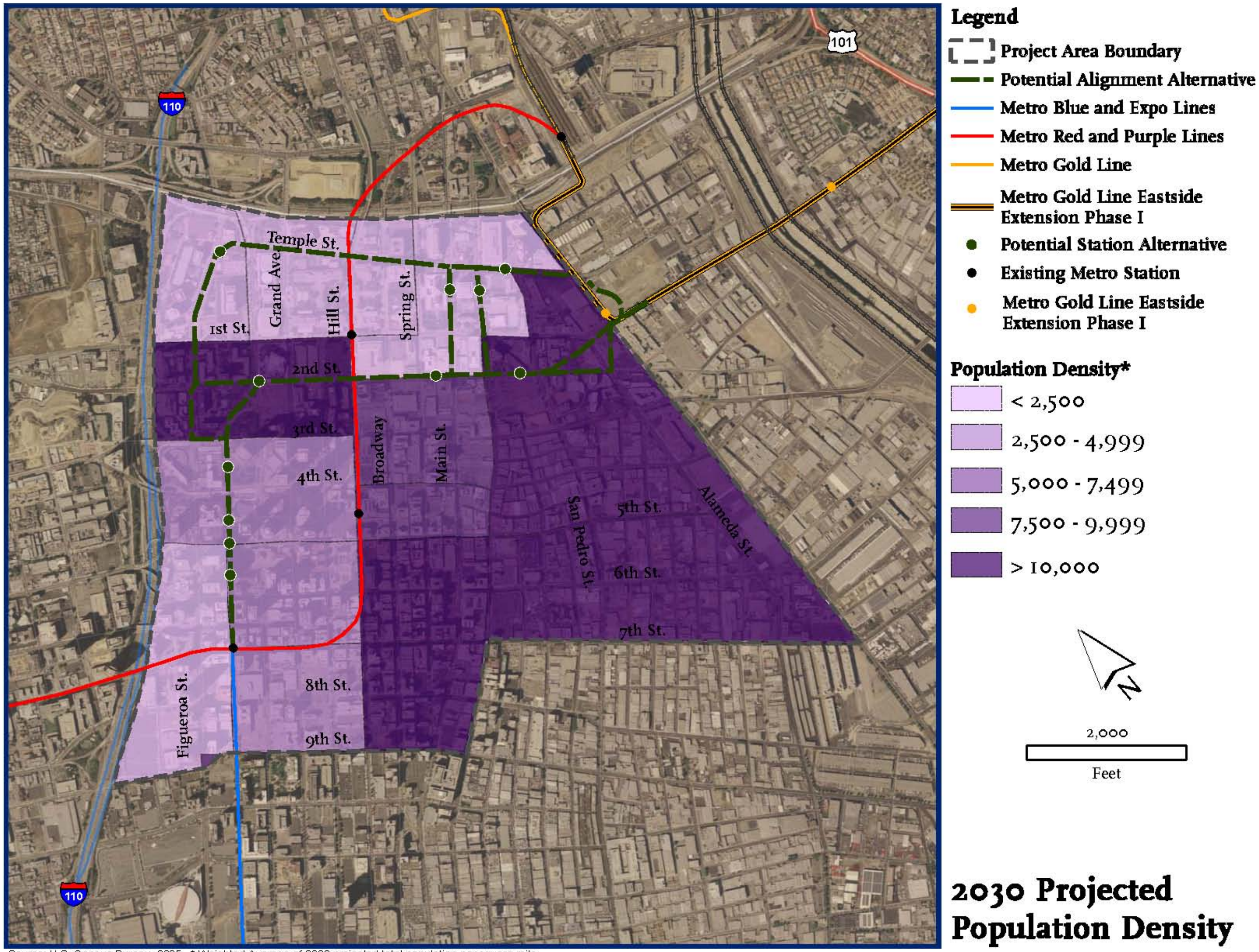
- < 25,000
- 25,000 - 49,999
- 50,000 - 74,999
- 75,000 - 99,999
- > 100,000

2,000
Feet

2005 Employment Density

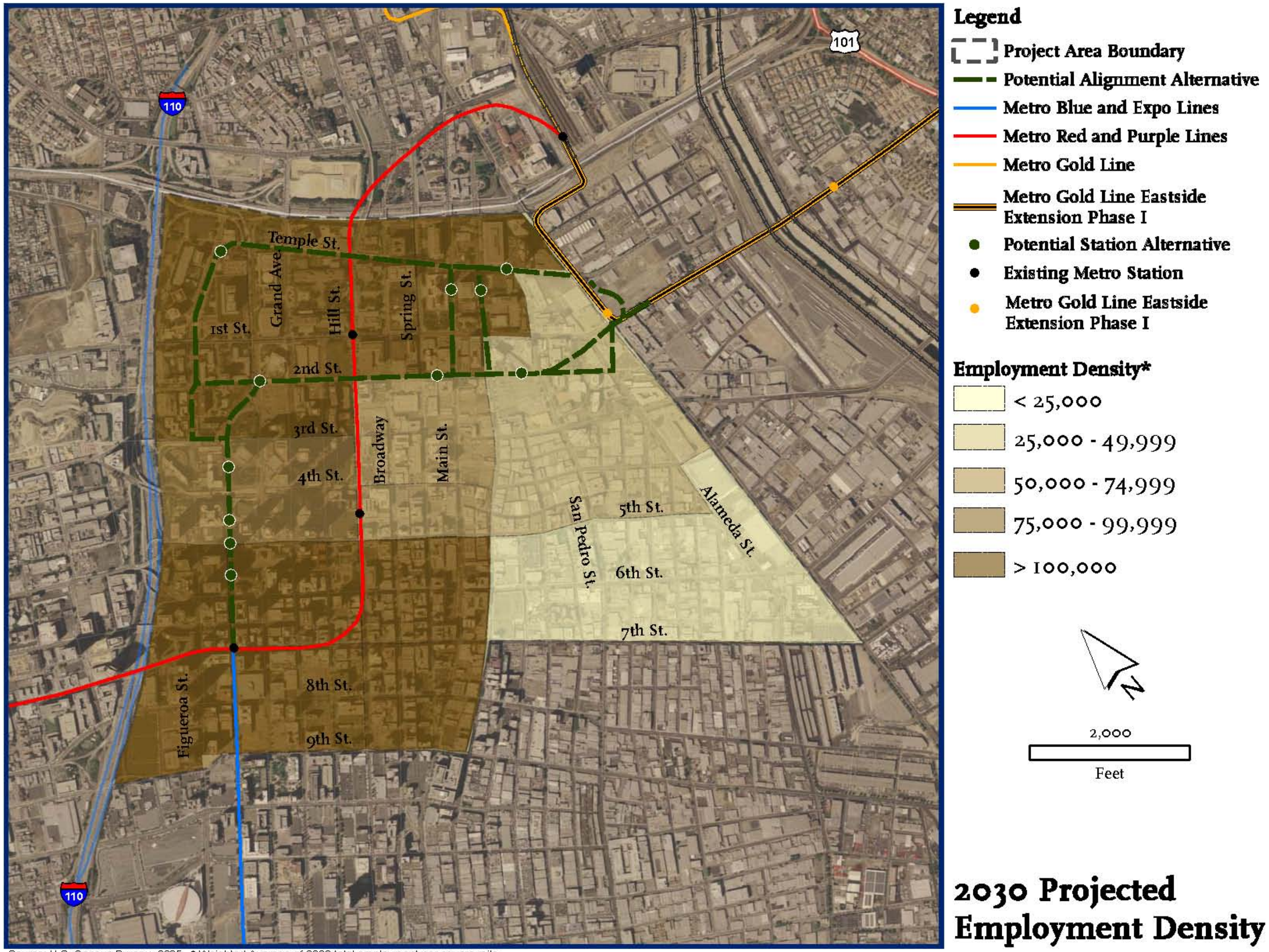
Source: U.S. Census Bureau, 2005. * Weighted-Average of2005 total employment per square mile.

Figure 1-31 2005 Employment Density



Source: U.S. Census Bureau, 2005. * Weighted-Average of 2030 projected total population per square mile.

Figure 1-32 2030 Population Density



2030 Projected Employment Density

Source: U.S. Census Bureau, 2005. * Weighted-Average of 2030 total employment per square mile.

Figure 1-33 2030 Employment Density

1.8.6 Travel Demand Justifies the Need for Transit Services

Traffic patterns in the PSA are discussed in 1.6 Performance of the Travel System. Table 1-17 presents traffic volumes within the PSA, illustrating the high volume of vehicles on the arterial network. These high volumes in concert with high pedestrian traffic result in blockages at many intersections within the PSA. The result is a strong and growing demand for a high-capacity transit alternative.

1.8.7 Local Land Use Policies and Guidelines that Support Transit

Recognizing the significant limitations on construction or expansion of roadways within the PSA, there is increased focus on increasing the use of public transit rather only making roadway improvements for personal vehicle travel.

County of Los Angeles General Plan

The County's General Plan establishes a number of goals and corresponding policies that support the development of public transit.

- Goal C-1: An accessible circulation system that ensures the mobility of people and goods throughout the County.
  - Policy C1.1: Expand the availability of transportation options throughout the County
  - Policy C1.2: Encourage a range of transportation services at both the regional and local levels, especially for transit dependent populations.
  - Policy C1.3: Secure an affordable countywide transportation system for all users.
  - Policy C1.4: Maintain transportation right-of-way corridors for future transportation.
- Goal C-2: An efficient circulation system that effectively utilizes and expands multi-modal transportation options.
  - Policy C2.1: Support the linking of regional transportation systems.
  - Policy C2.2: Expand transportation options throughout the County.

Table 1-17 Arterial Traffic Volumes by Intersection

Intersection	Time	Total Number of Vehicles at Intersection									
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	TEMPLE
ALAMEDA	AM	3913	2546	4267	NA	NA	NA	NA	NA	NA	3022
	PM	4120	2755	2927	NA	NA	NA	NA	NA	NA	3427
BROADWAY	AM	3430	3189	2739	2370	2599	2069	2170	1834	2494	NA
	PM	3357	2290	2704	2897	2574	2717	3273	2854	2807	3509
CENTRAL	AM	2443	1506	3041	NA	NA	NA	NA	NA	NA	NA
	PM	2711	1799	1904	NA	NA	NA	NA	NA	NA	NA
FIGUEROA	AM	NA	NA	3863	2786	4021	4353	3679	2498	4540	1990
	PM	NA	NA	5862	4002	5565	4780	3630	3913	3297	2025
FLOWER	AM	NA	NA	NA	NA	NA	NA	NA	2150	2515	NA
	PM	NA	NA	NA	NA	NA	NA	NA	3758	3347	NA
GRAND	AM	3562	NA	NA	NA	2614	2828	2889	2105	NA	2603
	PM	4148	NA	NA	NA	3028	2484	3379	2778	NA	3306
HILL	AM	3649	NA	3309	2635	2660	2316	2360	2034	2164	NA
	PM	4551	NA	3520	3068	2500	2607	3382	2649	2702	NA
HOPE	AM	NA	NA	NA	NA	NA	NA	NA	1567	NA	2693
	PM	NA	NA	NA	NA	NA	NA	NA	2318	NA	3342
LOS ANGELES	AM	2919	1822	2797	NA	1825	1745	NA	NA	NA	3041
	PM	3398	2236	2324	NA	2072	2374	NA	NA	NA	3466
MAIN	AM	2249	1263	2176	1473	1710	1552	1821	NA	NA	1730
	PM	3308	2783	2923	3060	2514	2324	2509	NA	NA	3382
OLIVE	AM	2590	NA	NA	2029	2609	2461	2838	2329	2986	NA
	PM	3655	NA	NA	2765	3430	2950	2823	2632	2374	NA
SAN PEDRO	AM	2256	1437	3040	1653	NA	NA	NA	NA	NA	1456
	PM	2737	2036	2197	2764	NA	NA	NA	NA	NA	1729
SPRING	AM	3445	2131	2555	1996	2149	1646	2058	1548	2681	2973
	PM	2919	1851	2431	2284	1704	2125	2231	1791	3171	2167

Source: Data compiled from recent traffic studies conducted for downtown projects.

Downtown Design Guidelines

The Community Redevelopment Agency of the City of Los Angeles (CRA) has drafted design guidelines for all new developments within downtown Los Angeles. These guidelines provide incentives for residential development by complementing or modifying code requirements such as density limits. With the overall goal of creating a livable downtown, guidelines focus on providing the following:

- a broad range of housing types;
- accessible transportation with emphasis on walking, biking, and transit other than autos;
- shops and services within walking distance to housing;
- safe, visually-pleasing and walkable streets;
- parks and other gathering places near to shops and services; and
- public recreational open space within walking distance to home.

The guidelines set forth specific standards for design and construction, including use of sustainable materials and practices, preserving historically- and culturally-significant buildings, and supporting environmental and aesthetic resources. The guidelines ultimately call for developers to consider pedestrians and not cars in their design process. The objective is to create a cohesive transition along blocks while creating inviting and open spaces that encourage pedestrian traffic. As outlined above, increasing public transit options is one way to meet this objective.

Little Tokyo Planning & Design Guidelines

As a result of recent resurgence and popularity in the Little Tokyo district of downtown (see Figure 1-1 for a map), a set of design guidelines was created with the intent of encouraging individual expression and continuity of the surrounding environment through building and street design, while enhancing elements and aesthetics that are significant to the Japanese-American Community. In addition to the preservation of existing physical and cultural spaces, the guidelines identify specific standards for new developments and streetscapes in order to maintain continuity throughout. Street dedication requirements, such as those in place for new development east of Alameda St. between Temple St. and 1st St., promote pedestrian- and transit-friendly designs which support cohesiveness through the corridor while maintaining cultural integrity. This, in turn, will enhance pedestrian activity and increase the attractiveness of walking and transit use in the area.

CommuteSmart®

Metro provides services through CommuteSmart® to help people find alternatives to a single-person car commute such as carpooling, vanpooling, park-and-ride, and public transit. CommuteSmart® also assists employers to set up rideshare programs, create incentives for commuting, and perform ongoing assessments and training. Improvement of public transit options while promoting the use of public transit would increase ridership more than either done alone.

1.9 Potential Transit Markets

Potential transit markets are two-fold for the Regional Connector:

- the activity centers and major destinations that include public and private uses, density of population and employment, and major travel patterns that traverse the PSA;
- travel patterns through the PSA, since the Regional Connector would link over 50 miles of Metro LRT service from Pasadena to Long Beach, and from Culver City to the Eastside and everywhere in between.

This AA will result in projections of ridership generated by people moving within the PSA and through the PSA to get to and from homes, jobs, services, and entertainment.

Key advantages for the Regional Connector presented by the PSA are the easy bus connections provided by the dense transit network, convenient regional and intercity rail interface, and the location of activities and services within walking and biking distance of each other.

1.9.1 Activity Centers and Destinations

Several activity centers exist within the PSA. These include Educational, Recreational, Business/Industrial and Commercial centers. Figure 1-35 illustrates activity centers within the PSA.

Downtown has long been considered a major destination for employment and services; it is experiencing a resurgence as a center for entertainment and the arts, and increasingly, residential living.

Bunker Hill

The Bunker Hill District is located generally between First St. on the north, Hill St. on the east, Third St. on the south, and Figueroa St. on the west. Major downtown destinations located within Bunker Hill include the Walt Disney Concert Hall, Museum of Contemporary Art (MOCA) and several high-rise office towers, senior and market-rate housing, hotels and commercial/retail centers. Bunker Hill offers over 3,200 residential units mainly in mid- and high-rise buildings.

Large development projects planned for this area include Civic Park and the Grand Avenue Development Project, which will transform this area into a regional arts, entertainment, and residential destination. The Grand Avenue Development is a $3 billion project that includes 3.6 million square feet of development with 449,000 square feet of retail. It is currently planned for 2,600 housing units, almost doubling the existing number of units in the area.

Civic Center

Bordering Bunker Hill to the northeast is the Civic Center, which serves as a hub for City, County, State, and Federal government with the second-largest concentration of civic buildings in the country. The Cathedral of Our Lady of the Angels, the Ahmanson Theater, Mark Taper Forum, and the Dorothy Chandler Pavilion are other major destinations in this district.

Civic Center is undergoing active redevelopment. The new headquarters for the state Department of Transportation (Caltrans) District 7 has recently been completed, development of the new Los Angeles Police Department Headquarters is underway, and construction of a U.S. Federal Courthouse is soon to begin.

Little Tokyo

East of Civic Center is Little Tokyo, which serves as the center of the largest Japanese-American community in the continental United States. The Japanese American National Museum and The Geffen Contemporary at MOCA are located here, along with a lively shopping district.

The popularity of Little Tokyo is evidenced by the active residential development underway, with recently completed and current projects adding more than 2,000 residential units. Significant developments in the early planning stages include a 4.5-acre site adjacent to the Little Tokyo Arts District Station of the Metro Gold Line. Early concepts from developers identified high-density combination of office and housing with strong connections to the adjacent Metro Gold Line Eastside Expansion.

Toy District

The Toy District is a 12-block shopping area with over 500 retail businesses located south of Little Tokyo and north of Central City East. Development here is centered on mixed-use. The proposed Medallion building, one of several projects currently under construction, will provide 192 residential lofts and over 200,000 square feet of retail space.

Financial Core

The Financial Core District is located south of Bunker Hill and is dominated by high-rise office buildings. The Central Library, built in 1926, destroyed by fire in 1986, and rebuilt, expanded, and re-opened in 1993 is located here. Other landmarks in this district include the Millennium Biltmore Hotel (built in 1923) and Pershing Square (dating back as far as 1866 as a park).

The proposed 2.7-million square-foot, four-phase Metropolis mixed-use development will be located in the southwestern end of the Financial District. Phase I of this project, which began construction in 2008, will provide 360 residential units. Park Fifth is another major planned 76-story high-rise development across from Pershing Square and will include over 700 condos and a 200-room hotel.

Historic Core

To the east of the Financial Core is the Historic Core District, containing a large concentration of historic and architecturally-significant buildings, including the Bradbury Building (built in 1893). The Grand Central Market (dating back to 1917 as an open-air market) and the Broadway Historic Theater District (with theaters dating back to the early 1900s) are destinations in this district.

Development here is focused on conversion of old neglected buildings into lofts and apartments. The Historic Core experiences high volume retail sales on Broadway St., which is a largely sidewalk-oriented retail district. Due to the shortage of parking in the area, the retail district is reliant on public transit to bring patrons to the neighborhood.

Jewelry District

The largest jewelry district in the U.S. and second largest in the world is located southwest of the Historic Core, where 5,000 businesses generate billions of dollars in revenue.

Development in this area includes the proposed construction of 875 condominium units at 8th St. and Grand Ave. Like the Historic Core, parking is in short supply and the district attracts a high volume of retail sales.

Central City East

The Central City East District is located south of the Toy District and consists primarily of commercial uses, including wholesale buildings and warehouses. The Flower Market, produce, fish and food processing industries as well as import/export businesses employ nearly 20,000 people in this area. Housing in this district consists mainly of the 6,500 single-room occupancy hotel units. This area is also important in providing social services, including alcohol treatment, mental health services, and job training.

Outside of the Project Study Area

Other important downtown development projects outside of the PSA include the recently-opened LA Live, a 4-million square foot complex of retail, restaurants, office, theater, hotel, parking, and residential space adjacent to the Staples Center.

Regional Activity Centers and Destinations

Due to the improved linkages provided by the Regional Connector, LRT will be enhanced throughout the region thereby attracting new ridership on existing lines.

Key regional activity centers that will attract riders to ride seamlessly through the PSA to get destinations that, today, require more than one transfer, include:

- University of Southern California via Metro Expo Line
- Los Angeles Trade Technical College via Metro Blue Line
- Downtown Long Beach via Metro Blue Line

- Downtown Culver City via Metro Expo Line
- Crenshaw District via Metro Expo Line
- Downtown Pasadena via Metro Gold Line
- Old Town Pasadena via Metro Gold Line
- South Pasadena via Metro Gold Line
- Chinatown via Metro Gold Line
- City of Compton via Metro Blue Line
- Highland Park via Metro Gold Line
- Boyle Heights via Metro Gold Line Eastside Extension
- Arts District via Metro Gold Line Eastside Extension
- East Los Angeles Civic Center via Metro Gold Line Eastside Extension
- East Los Angeles College via Metro Gold Line Eastside Extension
- Los Angeles Coliseum via Metro Expo Line
- Los Angeles County Museum of Natural History via Metro Expo Line
- Watts via Metro Blue Line

1.9.2 Local Redevelopment Plans and Transit Improvements

Many of the communities in the PSA are focusing on redevelopment projects to meet increasing residential and commercial demands. Several large commercial centers or mixed-use developments have been identified within the PSA. These centers are typically ideal locations for public transit services due to the large number of patrons and opportunity to alleviate inbound and outbound traffic congestion.

Following are some of the current CRA projects in the PSA:

- 2nd St. Connection – This project, financed mostly by Metro and Surface Transportation Program-Local funds, will complete Upper 2nd St. between Grand Ave. and Olive St. Construction on the connection is underway.
- Bunker Hill Design for Development – This project would amend the 1971 Design for Development (DFD) and increase the maximum floor area ratio in the Bunker Hill Redevelopment Area from 5.0 to 6.0. This would in turn allow 20 percent more square footage than the current DFD. The project is currently in the Environmental Impact Report (EIR) phase.

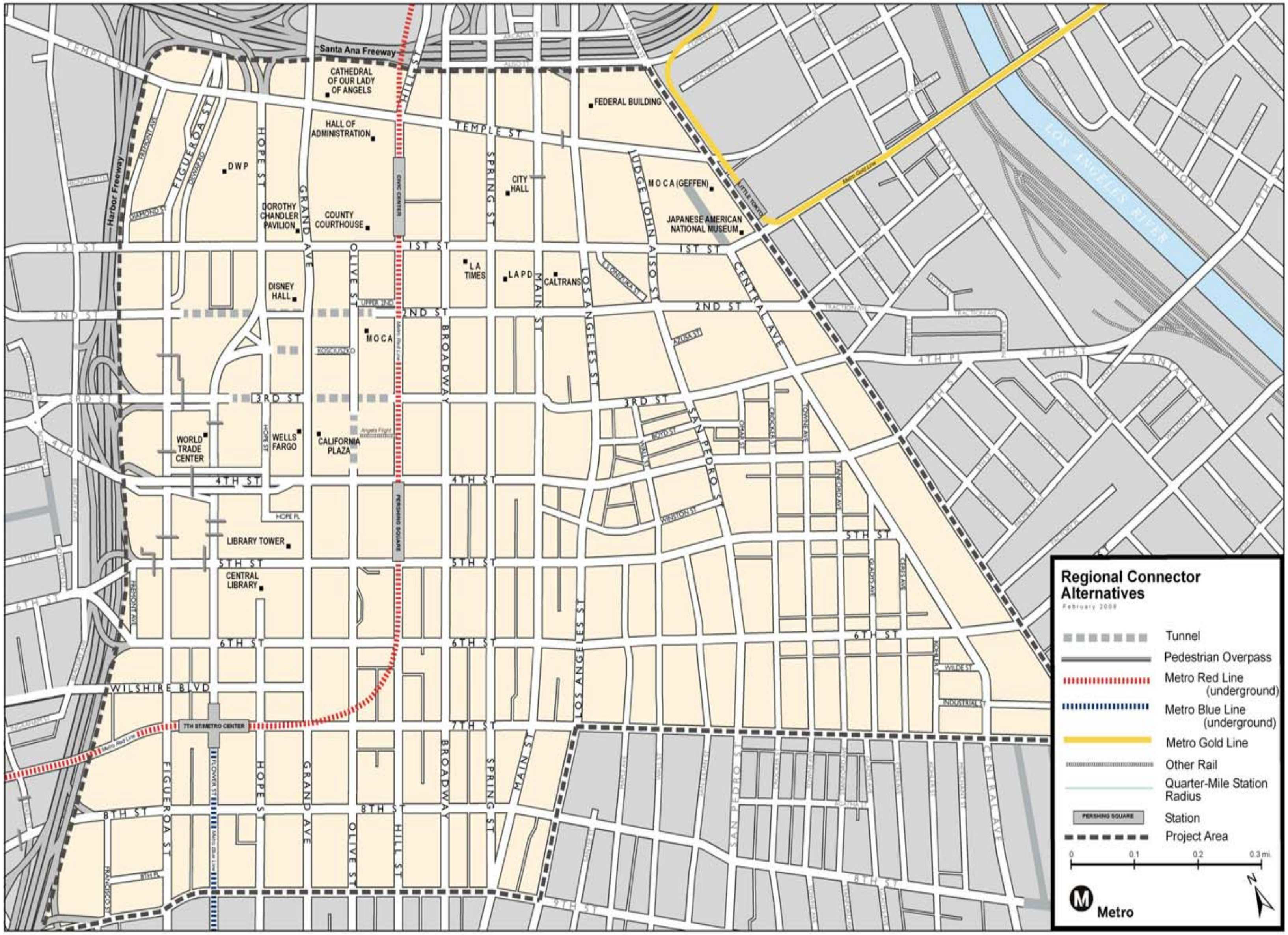


Figure 1-34 Activity Centers within PSA

- Grand Avenue Project – This project consists of a full-scale redesign of Grand Ave. as well as the addition of a 16-acre park in the Civic Center and 3.9 million square feet of retail, hotel, and office space.

- Parcel Y-1 Development – Under this plan, the existing Angels' Knoll Park will be developed into a third California Plaza office tower, potentially with retail and residential space. The project is currently in the DFD and EIR phase.

- Los Angeles Sports and Entertainment District/L.A. Live! – Large portions of this project are open as of this writing, but some are still under development. This project creates a major sports and entertainment destination just south of the Financial District, surrounding the existing Los Angeles Convention Center and Staples Center. Additional auditoriums and theaters, as well as retail and office space, will be added by the end of 2009. Condominium and rental apartment buildings are presently under construction. This redevelopment project is located one block south of the PSA, within one-quarter mile of the Pico Ave. on the Metro Blue and Expo Lines. The Regional Connector LRT alternatives directly connect the Metro Gold Line and Eastside Expansion lines to the complex.

- Park Fifth – An EIR is currently being prepared for a new high-rise residential building on 5th St. between Hill and Olive Streets, proposed as the tallest U.S. residential structure west of Chicago. The project will contain market-rate condominium units, a five-star hotel, and ground floor commercial space.

- 8th & Grand – This is a condominium project with ground floor restaurants and retail located on 8th St. between Grand Ave. and Olive St. The project was approved by the CRA Board and the City Council in 2006.

- Mangrove Site – CRA issued a request for proposals which closed in late 2007 for the parcel adjoining the future Metro Gold Line Little Tokyo/Arts District Station at 1st and Alameda Streets. CRA hopes to pursue a mixed-use project on the site with market rate and affordable residential units, commercial space, and public parking. The site is located east across Alameda St. from the PSA.

- Block 8 Mixed Use – This parcel in Little Tokyo is located between 2nd, 3rd, San Pedro, and Los Angeles Streets. The proposed development will include affordable rental units, market-rate condominium and rental units, commercial space, and open space. The site plan includes a mid-block walkway between San Pedro and Los Angeles Streets and is currently under construction.

- Metropolis Project – Located on the southwest corner of 8th and Francisco Streets, this recently-approved development will add 2.8 million square feet of new condominium, office, hotel, and retail space.

- Little Tokyo Central Avenue Art Park – This project involves redeveloping the closed section of Central Ave. between Temple and 1st Streets into a landscaped community park and underground parking facility linking the existing MOCA, The Japanese American National Museum, and Go For Broke monument.

- The Medallion – This project seeks to replace a surface parking lot with market-rate apartments and commercial space on a site located between Main, Los Angeles, 3rd, and 4th Streets. Construction on Phase 1 of the project has begun, and Phase 2 relies on the demolition of the existing Downtown Women's Center (see next project).

- Downtown Women's Center Relocation/Expansion – This project will remove the existing Downtown Women's Center on San Pedro St. between 4th and 5th Streets in order to make way for The Medallion. The City will renovate its Renaissance Building as the new Women's Center, and will provide an additional 75 permanent housing units and eight day rest beds for homeless women. CRA is currently reviewing development plans for the relocation/expansion project.

- Residential Hotels Rehabilitation Program – Under this plan, CRA will acquire approximately 30 single-room occupancy hotels, lease them to non-profit housing operators, and preserve the units as low-income housing. CRA cites public ownership as a means of cleaning up crime-ridden slum hotel areas within the PSA.

Additionally, CRA is preparing development plans for the Central Industrial District, located in the southeast portion of the PSA. The City does not have any Specific Plan areas within the PSA; however there are three in the downtown area that border the PSA:

- Alameda District (North of the PSA) covers Union Station and the surrounding parcels.

- Los Angeles Sports and Entertainment District (South of the PSA) includes the L.A. Live development, Staples Center, the Convention Center, and surrounding parcels slated for high-density development.

- Central City West (West of the PSA) covers the area immediately west of the 110 freeway.

1.9.3 Air Quality and Environmental Sustainability

The City is one of the most congested metropolitan areas in the nation and has been designated as a federal non-attainment area for air quality. The growing concern over global climate change and poor air quality is a predominant concern for Southern California. The use of fossil fuels for transportation generates large amounts of carbon dioxide (a greenhouse gas) emissions, which continue to disrupt progress toward improved air quality. Vehicle-related emissions account for over one-third of all air pollutants in the County.[5]

[5] SCAG 2006 State of the Region Report Executive Summary

During the 1990s, the County saw a significant increase in transit use. In 2002, SCAG reported that the City ranked 7th in the nation in public transit usage.[6] These changes are due in large part to investments in the regional public transportation system.

Investments in public transportation can contribute to alleviating the air quality challenges faced by the region and mitigating the negative effects suffered by Southern California residents. The Regional Connector will contribute to improved mobility by increasing the speed and convenience of the rail system, thereby providing a more viable alternative to the automobile. As a result, projected degradation of air quality will be reduced (at a minimum) or reversed (at a maximum) through reduced automobile-related greenhouse gas emissions in the region.

1.9.4 Travel Demand and Patterns

Historic growth patterns have resulted in a multi-centered region with multiple transportation corridors converging in the PSA. The transportation network includes 9,000 lane-miles of freeway, more than 42,000 lane-miles of arterials, and several large public transit service providers.[7] Yet growth of the transportation system has not kept pace with population growth and increases in transportation demand. As the population in the region doubled from 1960 to 2000, highway miles increased by less than 30 percent.[8] The congestion caused by insufficient transportation lanes affects both personal travel and goods movement. The majority of the congestion is from travel on the highways and local arterial network regardless of transportation mode. If the current trend persists, travel delays are expected to rise to 5.4 million person hours by 2030, more than double currently experienced delays, which will deeply affect highway productivity.[9] Expanding the public transportation system will provide more choices for commuters and potentially reduce travel demand and patterns on major highway and arterial systems.

The PSA is at the central core of activity for the County. The PSA is ranked very high as a destination zone for people coming from outside of the PSA. For instance, over 50,000 daily trips (approximately 25 percent of external trip destinations) are made for work from the greater Eastside, to Central Los Angeles. The CBD is also one of the top attractors of trips from the Westside. In 2006, of the more than 53,000 daily person trips from the PSA to other parts of Central Los Angeles, 11,000 were on public transit.

Among passengers riding on the Metro Gold Line from Pasadena to Union Station, nearly three-quarters transfer to the Metro Red Line for continued service into other parts of the City. Figures 1-36 and 1-37 illustrate travel patterns to and from the PSA.

[6] SCAG 2002 State of the Region Score Card
[7] SCAG 2004 RTP Chapter 2
[8] SCAG 2004 RTP Executive Summary
[9] SCAG 2004 Draft RTP PEIR

1.9.5 Summary of Public Transit Markets

The PSA is located in the crossroads of the region's transportation system because of historic development and population growth patterns. It contains the highest concentration of jobs in the County. Improving access to and through the PSA is a vital part of a larger strategy for meeting the economic, social, and environmental goals of the region.

Areas with large and growing populations represent a large public transit market because of high travel demands on already-congested public transit, roads, and freeways. As described in Section 1.8.4, the total population in the PSA is projected to increase by almost 25 percent by 2030, increasing the population density. High population densities can increase potential ridership on public transit.

Increasing economic development and employment opportunities in the PSA also increases the size of the public transit market. Employment is expected to increase by about 15 percent by 2030. This will increase demands for public transit from commuters wishing to avoid travel in private vehicles during peak traffic hours on roads and freeways.

Improving public transit connectivity in the PSA offers opportunities to increase ridership through access to regional transit markets. Balanced local land use and transportation policies can reduce auto travel and support more pedestrian-friendly, mixed-use and transit-oriented developments throughout the region.

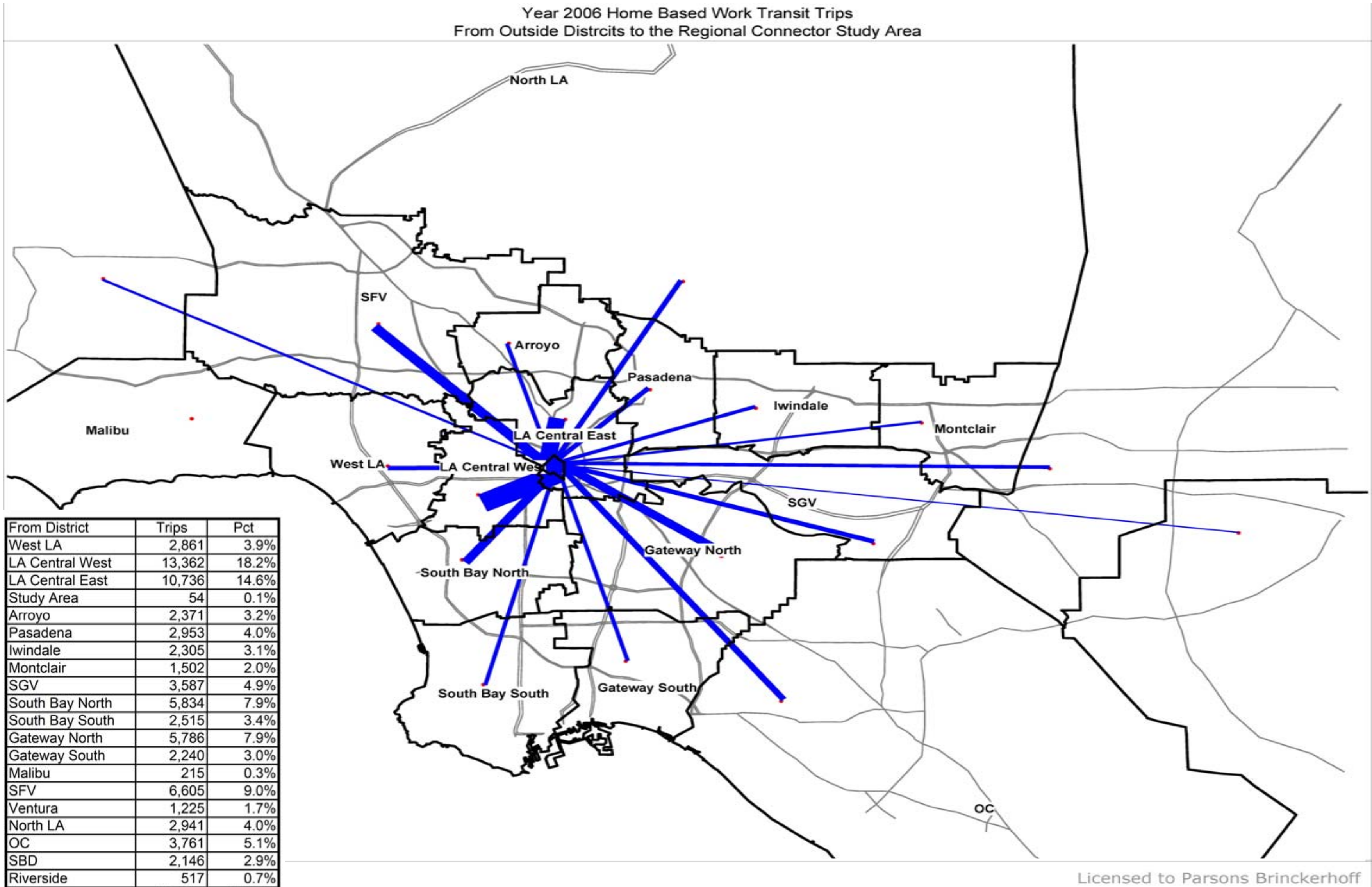
Public transit provides an alternative means of personal mobility, supports increases in demands to alternatives to private transportation, and contributes to improving the quality of life in metropolitan communities.

Transit facilities, services and centers are best when they are customer-friendly, community-oriented and well-designed. A network of transit-based centers and corridors, supported by in-fill development, maximizes the use of existing infrastructure, supports transit ridership, reduces automobile air pollution and preserves natural areas. These improvements will help improve the region's economic vitality, quality of life, and environment.

1.10 Goals and Objectives

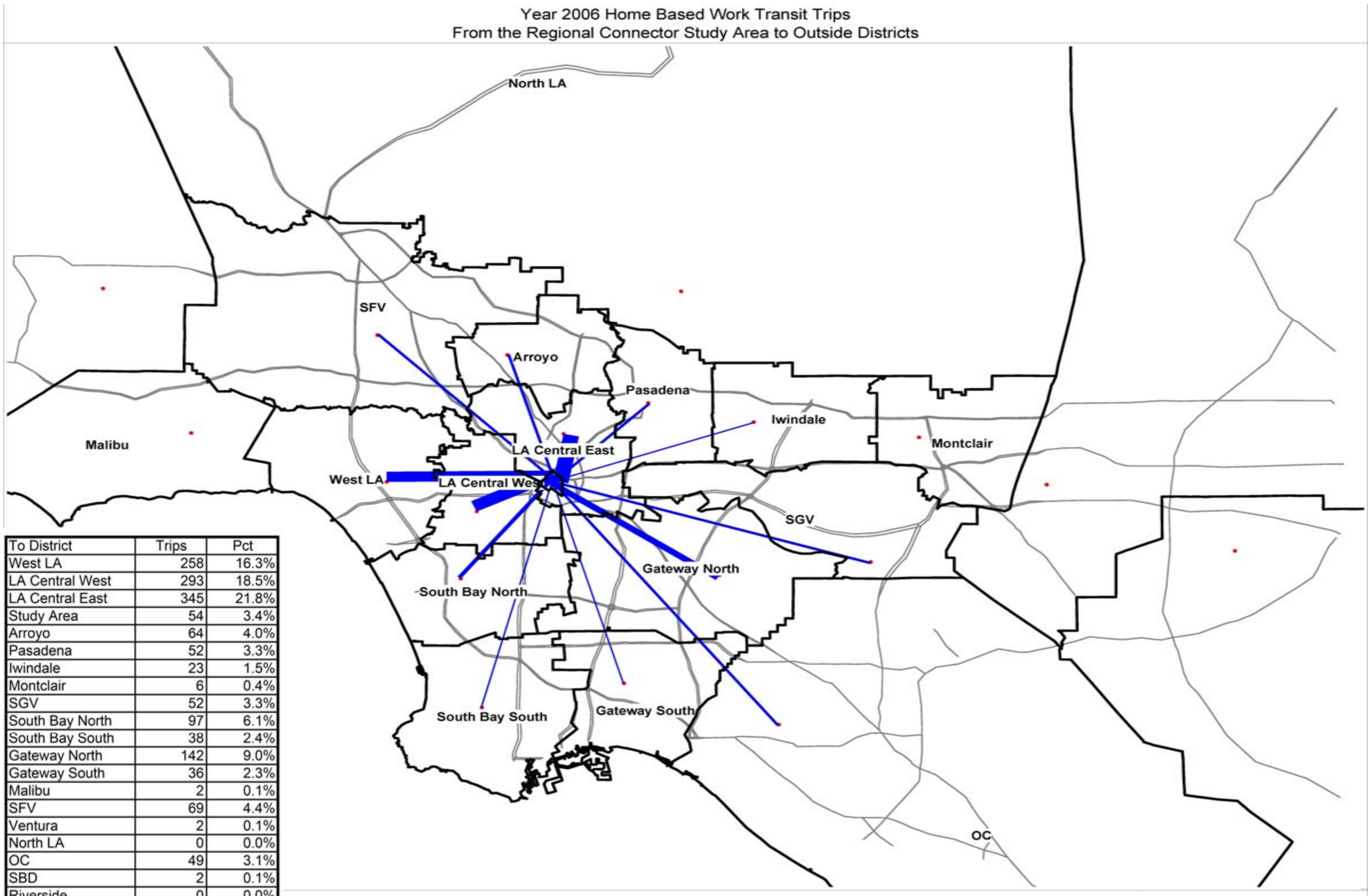
The purpose of the Regional Connector is to improve the connections within the existing Metro Rail system and eliminate the need for existing transfers. The project will also expand Metro Rail coverage within downtown. A set of goals was identified at the outset of the project to identify the potential of each alternative to meet these objectives.

These goals and objectives were generated during the early scoping process to reflect input from public agencies, community groups, and individual stakeholders. They address major considerations regarding:



From District	Trips	Pct
West LA	2,861	3.9%
LA Central West	13,362	18.2%
LA Central East	10,736	14.6%
Study Area	54	0.1%
Arroyo	2,371	3.2%
Pasadena	2,953	4.0%
Iwindale	2,305	3.1%
Montclair	1,502	2.0%
SGV	3,587	4.9%
South Bay North	5,834	7.9%
South Bay South	2,515	3.4%
Gateway North	5,786	7.9%
Gateway South	2,240	3.0%
Malibu	215	0.3%
SFV	6,605	9.0%
Ventura	1,225	1.7%
North LA	2,941	4.0%
OC	3,761	5.1%
SBD	2,146	2.9%
Riverside	517	0.7%
Total	73,516	100.0%

Figure 1-35 Travel Patterns to PSA in 2006



To District	Trips	Pct
West LA	258	16.3%
LA Central West	293	18.5%
LA Central East	345	21.8%
Study Area	54	3.4%
Arroyo	64	4.0%
Pasadena	52	3.3%
Iwindale	23	1.5%
Montclair	6	0.4%
SGV	52	3.3%
South Bay North	97	6.1%
South Bay South	38	2.4%
Gateway North	142	9.0%
Gateway South	36	2.3%
Malibu	2	0.1%
SFV	69	4.4%
Ventura	2	0.1%
North LA	0	0.0%
OC	49	3.1%
SBD	2	0.1%
Riverside	0	0.0%
Total	1,584	100.0%

Figure 1-36 Travel Patterns from PSA in 2006

- maximization of transportation benefits,
- integration of the project with local land use enhancements, and
- building a system that is compatible with the dense downtown environment.

The goals are:

Goal 1 - Improve Mobility and Accessibility both Locally and Regionally

Develop an efficient and sustainable level of mobility within the County to accommodate planned growth and a livable environment.

Goal 2 - Provide a Cost Effective Transportation System

Develop a project that provides sufficient regional benefits to justify the investment.

Goal 3 - Provide a Safe and Secure Alternative Transportation System

Develop a project that is safe for riders, pedestrians and drivers while meeting the region's need for security.

Goal 4 - Achieve a Financially Feasible Project

Develop a project that maximizes opportunity for funding and financing that is financially sustainable.

Goal 5 – Support Public Involvement and Community Preservation

Incorporate the public in the planning process and balance the benefits and impacts while preserving communities in the area, such as Little Tokyo, the Arts District, Bunker Hill, Civic Center, and the Historic Core.

Goal 6 - Support Efforts to Improve Environmental Quality

Develop a project that minimizes environmental impacts.

Goal 7 – Support Community Planning Efforts

Support the progression of the regional center as an integrated destination and a dynamic and livable area accommodating projected growth in a sustainable manner.

1.11 Role of This Alternatives Analysis

This AA is intended to provide a more in-depth review of the most promising alternatives identified during prior screening processes. The report describes how eight alternatives were identified from an initial 32 conceptual alternatives for screening. The report then summarizes the evaluation leading to the selection of the two most-promising alternatives for final screening and refinement.

To determine which of the two most-promising alternatives would best achieve the project goals, the AA compares each alternative's transportation benefits and impacts, environmental effects, financial feasibility, and level of community support. The report concludes with a comparative summary of each screened alternative's performance under these criteria and recommends a shorter list of preferred alternatives for further study in a subsequent DEIS/DEIR phase.

2.1 Evaluation Method

The process used to develop alternatives, screen them, and select a Locally Preferred Alternative (LPA) is shown in Figure 2-1 and described below.

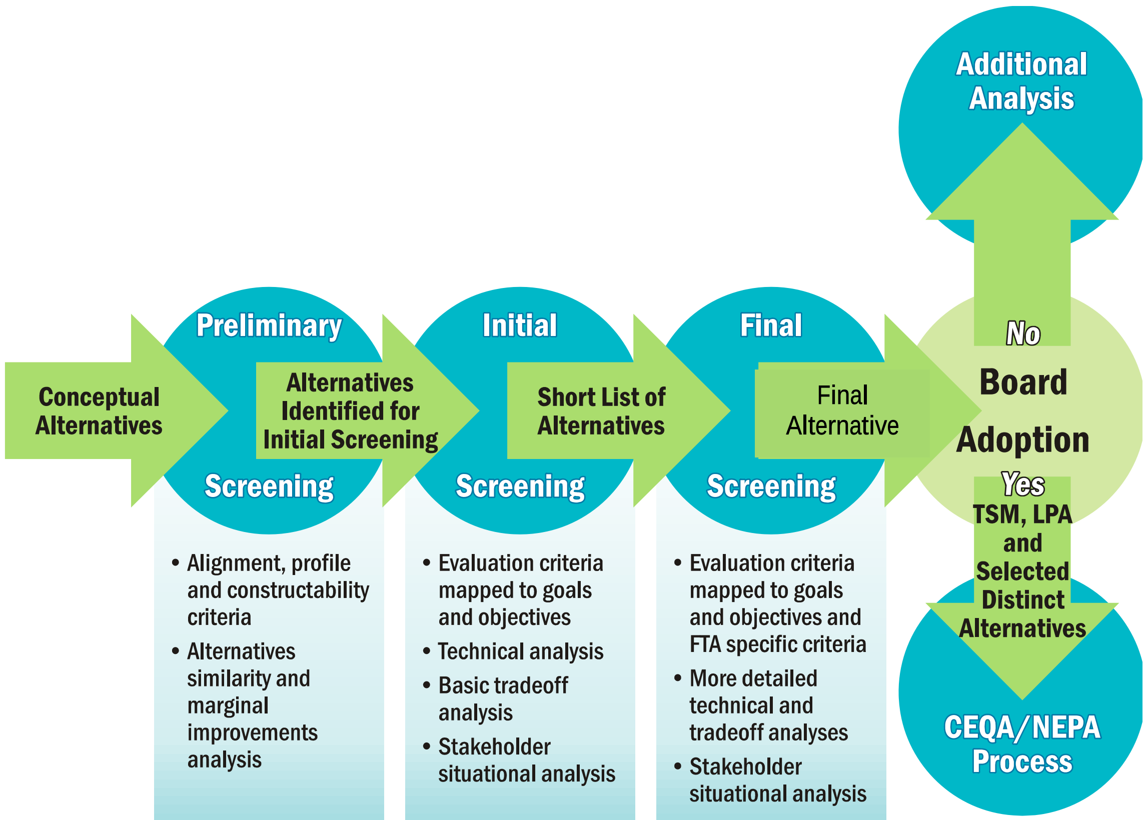


Figure 2-1 Project Process

- Conceptual Alternatives – Alternatives were identified based on previous studies and an evaluation of changed conditions. Alternatives previously studied but no longer viable due to changes in land use, availability of property, and/or efficiency, flexibility, and cost due to construction of new Metro Rail lines were eliminated. There were 36 Conceptual Alternatives identified, the extents of which are shown in Figure 2-2.

Figure 2-2 Regional Connector Potential Corridors

- Preliminary Screening – Based on input received from the Early Scoping process and initial engineering analysis, the initial set of conceptual alternatives was screened based on clear issues related to constructability, right-of-way constraints, impacts of configurations and operational concerns. This preliminary screening resulted in eight Alternatives Identified for Initial Screening. The preliminary screening is documented in the Draft Alternatives Identification Report (January 2008).
- Initial Screening – The eight Alternatives Identified for Initial Screening were evaluated according to the goals, objectives, and evaluation criteria established for the Regional Connector using a multi-criteria comparison method. The Initial Screening resulted in a reduced set of promising alternatives for which details for engineering, environmental and urban design opportunities and issues will be developed. The Initial Screening is documented in the Draft Initial Screening of Alternatives Report (April 2008).

These steps are discussed in more detail below.

2.1.1 Previous Studies

The Regional Connector was originally conceived in 1993 as part of the Metro Blue Line extension to Pasadena. The project was not pursued due to lack of funding availability as well as a plan to use the Metro Red Line as an interim link until the system matured. Since 1993, a few studies were conducted to determine new alternatives considering the changing land uses and expanding Metro Rail system. An overview of these past studies is presented in Section 1.3, Past Studies.

2.1.2 Metro/FTA Scoping

According to the Federal Transit Administration (FTA) New Starts criteria, a scoping period during the AA must be conducted in order to inform the public, organizations, and local, regional, state, and federal agencies on all issues concerning the project, including benefits, costs, and impacts. Early Scoping for the Regional Connector was initiated with the publication of the Early Scoping Notice in the Federal Register on October 31, 2007 and continued for 30 days.

A Public Notice was developed to inform the public of Early Scoping on the project, associated meetings, and other opportunities to provide input concerning the scope of the AA. A copy of the Public Notice, as well as other detailed Scoping Information, can be found in the Project Early Scoping Report, March 2008.

2.1.3 Screening Criteria

The Alternatives Identified for Screening were selected based on their feasibility given the street configuration and dense development in downtown. Several light rail alignments were adapted from previous studies and reports, and additional ones were added and synthesized from combinations of others. Particular thought was given to routes providing better coverage of major activity centers within the PSA between 7th St./Metro Center Station and the Metro Gold Line Eastside Extension.

Some of the formerly proposed routes were not considered because they made use of previously vacant parcels where new dense developments have since been constructed. Some of these parcels included the new location of City Police Department (LAPD) Headquarters, the Grand Avenue Project, and Caltrans Headquarters. Alignments which required a significant number of acquisitions and/or relocation were also removed from consideration. Some smaller, narrow street alignments that were previously surrounded by industrial uses now have adjacent dense residential developments nearby; these noise-sensitive land uses would be incompatible with light rail in a narrow right-of-way.

Some previous studies had identified alternatives that included a significant amount of aerial configuration, as seen in Figure 2-3, with the purpose of reducing impacts to vehicular traffic and allowing for easier grade changes. However, comments received during the Early Scoping period showed little public support for aerial configurations due to aesthetics and sensitive land uses. Also, it was determined that traffic improvements would not be fully achieved as lane reductions would still be necessary for aerial beam supports.

Figure 2-3 Aerial Bridge

Other alignments which were screened and removed from consideration included those which considered a new extension from the recently constructed Metro Gold Line LRT bridge over US-101, as seen in Figures 2-4 and 2-5. Those proposed alignments would require a major alteration and, in some instances, complete demolition and reconstruction. These options would not be financially feasible for the project.

Figure 2-4 LRT Bridge over US-101

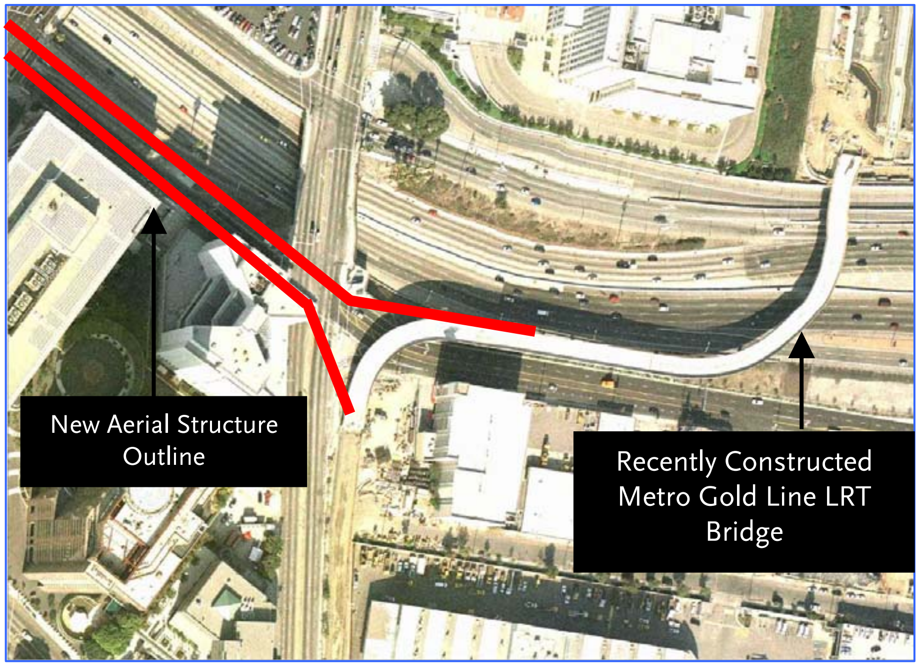


Figure 2-5 LRT Bridge Extension

Finally, a number of previous studies included the possible use of the 3rd St. tunnel for one segment. After further evaluation to the current conditions of the tunnel, it was determined that the tunnel could not be used in either a single or dual-track configuration. The tunnel, as seen in Figure 2-6, is located directly below residential housing. Modifications could result in increased noise and vibration for residents, and constructability difficulties due to the narrow width.

Figure 2-6 3rd St. Tunnel

2.1.4 Screening Criteria Development

Beginning with the goals discussed in Section 1, specific objectives were developed for the Regional Connector. Initial and Final Screening Criteria for each objective were developed during Early Scoping with input from the community and public agencies. The Initial and Final Screening Criteria were developed in the form of specific and detailed performance measures. Table 2-1 summarizes the Regional Connector goals, objectives, Initial Screening Criteria, and Final Screening Criteria.

2.2 Alternatives Identified for Initial Screening

Following completion of Preliminary Screening, eight Alternatives for Initial Screening were identified. A corridor description is provided for each alternative, including alignment configurations and station locations, in Table 2-2. Maps and engineering plans for each alternative are shown in Figure 2-7 to 2-17. A summary of known issues and opportunities is presented in Table 2-3.

2.3 Result of Initial Screening

Each of the alternatives was evaluated in detail with regard to the Initial Screening Criteria. Table 2-4 through Table 2-10 summarizes the results of Initial Screening for Goals 1 though 7, respectively, of the project.

2.4 Short List of Alternatives

Following Initial Screening, two of the most promising alternatives were selected for the Short List of Alternatives: the At-Grade Emphasis LRT Alternative and the Underground Emphasis LRT Alternative. Final Screening will include these alternatives, along with a No Build Alternative and Transportation System Management (TSM) Alternative, which are described below.

2.4.1 No Build Alternative

The No Build Alternative includes all existing transportation facilities as well as all committed transportation projects outlined in the Metro Long-Range Transportation Plan (2001) and SCAG Regional Transportation Plan (2004). This includes the Metro Gold Line Eastside Extension scheduled to open by the end of 2009, the first and second phases of the Metro Expo Line scheduled to open in 2010, and the second phase of the Metro Rapid Bus expansion plan scheduled to be completed in 2008.

These transportation options were discussed in detail in Section 1.5 Transportation Facilities and Services and Section 1.6 Performance of the Travel System. Figure 2-18 shows the existing public transportation system in the PSA that serves as the No Build Alternative. Appendix B contains a list of transit lines serving the PSA and Appendix C shows the lines that closely parallel the general route of the Regional Connector.

Table 2-1 Regional Connector Goals, Objectives, and Performance Measures

	Goal	Objectives	Initial Screening Criteria (Performance Measures)	Final Screening Criteria (Performance Measures)
1	Support Community Planning Efforts *Support the progression of the regional center area as an integrated destination and a dynamic and livable area accommodating projected growth in a sustainable manner*	▸ Support land use policies and Community Plans ▸ Support and coordinate with development and redevelopment efforts ▸ Support the City's effort to improve urban design and the pedestrian environment by contributing to a healthy environment ▸ Support efforts to improve safety and security for downtown residents, employees and visitors ▸ Support transit dependent communities	▸ Population, *Population Density, Households, Household Density for year 2030 ¼ mile of alignment* ▸ Transit *Oriented Design supportive plans and policies in place (Score 1 -worst to 5 -best)* ▸ Number *of jobs, employment density for year 2030 within a ¼ mile of alignment* ▸ Number *of direct connections to key activity centers within ¼ mile of alignment (Score 1 -worst to 5 -best)* ▸ Number *of opportunities for redevelopment within ¼ mile of alignment (underdeveloped or underutilized properties along alternative alignment)*	▸ *Number of planned development projects in the area over the next 10 years, including residential/office space/commercial units within a 1/4 mile of stations* ▸ *Number of connections with sidewalks that support the City's Downtown Street Standards*
2	Support Public Involvement and Community Preservation *Incorporate the public in the planning process and balance the benefits and impacts while preserving communities in the area, such as Little Tokyo/Arts District, Bunker Hill, Civic*	▸ Balance the benefits and impacts to low income and minority communities ▸ Enable workers and visitors to gain access to the regional center to increase its economic vitality and benefit from its economic opportunity	▸ *Evaluation of potential disproportionate effects: Environmental justice effects will be evaluated per CEQA/NEPA requirements (Score 1 to 5)* ▸ *Initial areas identified for potential acquisitions for stations and alignment (does not include actually in construction) within ¼ mile of alignment* ▸ *Evaluation of potential disproportionate effects: Number of low income HH within¼ mile of proposed alignment* ▸ *Number of residents by ethnicity within ¼ mile of alignment (US Census)* ▸ *Urban fit potential for alignment and for stations, including physical scale, visual fit, and cultural preservation (Score 1 to 5)* ▸ *Percentage of service grade separated* ▸ *Community Acceptance (High, Medium, Low)*	▸ *Number of potential acquisitions* ▸ *Percentage of service grade separated* ▸ *Evaluation of potential disproportionate effects and risk to environmental justice populations related to construction activities (Score 1 to 5)* ▸ *Urban fit potential, including pedestrian accessibility and urban design enhancement opportunities (Score 1 to 5)*

Table 2-1 Regional Connector Goals, Objectives, and Performance Measures

Goal	Objectives	Initial Screening Criteria (Performance Measures)	Final Screening Criteria (Performance Measures)
3 Improve Mobility and Accessibility both Locally and Regionally *Develop an efficient and sustainable level of mobility within LA County to accommodate planned growth and a livable environment*	▸ Improve the connectivity of the regional transit service and provide a more attractive travel alternative for residents, workers and visitors in the region ▸ Facilitate sustainable regional development ▸ Increase ridership of the Metro transit system and reduce single occupancy trips ▸ Maintain or enhance transit services to the transit dependent ▸ Improve travel time for transit users system-wide ▸ Improve person throughput ▸ Reduce growth of congestion in corridor	▸ *Increase in daily transit boardings (amount of transit users increased compared to No Build)* ▸ *New daily transit trips compared to No Build and Transportation System Management (TSM) alternatives* ▸ *Traffic impacts (Number of intersections with E or F Level of Service)* ▸ *Reduction in number of transfers system-wide by operational plan of alignment (daily reductions at US & 7th St./Metro)* ▸ *Total number of lanes reduced (cumulative for all streets)* ▸ *Number of potentially impacted intersections* ▸ *Peak period travel time through Regional Connector Alignment (including 5 min for each transfer)* ▸ *Number of left turn pockets affected* ▸ *Number of parking spaces potentially affected* ▸ *Number of driveways affected* ▸ *Daily hours of transportation user benefits (Compared to No Build)*	▸ *Hours of transportation user benefits* ▸ *Congestion relief (Reduction in highway travel demand in the corridor)* ▸ *Comparison of highway, bus, and fixed guideway peak period travel times between major travel pairs (Run times, head ways, average speed, station spacing)* ▸ *Peak period travel time (door to door)* ▸ *Travel time savings (Union Station to 7th/Flower)* ▸ *Reduction in Vehicle Miles Traveled (VMT) (VMT compared to No Build)* ▸ *Assessment of expandability (Score 1 to 5)*

Table 2-1 Regional Connector Goals, Objectives, and Performance Measures

	Goal	Objectives	Initial Screening Criteria (Performance Measures)	Final Screening Criteria (Performance Measures)
4	Support Efforts to Improve Environmental Quality *Minimize adverse environmental impacts*	▸ Minimize adverse environmental impacts ▸ Implement mitigation measures to reduce environmental effects to acceptable levels ▸ Reduce emissions and improve air quality	▸ *Noise (Number of curves for LRT alignment)* ▸ *Potential visual impacts to notable architectural resources within ¼ mile of alignment (Score 1 to 5)* ▸ *Number of Potential Sensitive Receptors within ¼ mile of alignment (Score 1 to 5)* ▸ *Potential impacts to historically significant locations within ¼ mile alignment (Score 1 to 5)* ▸ *Geologic and geotechnical issues along alignment (Score 1 to 5)*	▸ *Expected level of impacts after mitigation to biological, social, and physical resources will be evaluated per CEQA/NEPA requirements (Score 1 to 5)* ▸ *Reductions in PM10, NOx, and SOx emissions* ▸ *Reduction in carbon footprint for average user*
5	Provide a Cost Effective Alternative Transportation System *Develop a system that serves as an alternative to travel economically*	▸ Increase ridership on the Metro system ▸ Minimize cost per passenger ▸ Maximize travel time savings	▸ *Rough order of magnitude annual O&M (2008$) costs per alignment (millions)* ▸ *User cost - Cost effectiveness compared to No Build ($/hour of transit user benefit)*	▸ *Annualized cost per hour of transit system user benefit compared to No Build and Transportation System Management (TSM) alternatives* ▸ *Annual O&M costs*
6	Achieve a Financially Feasible Project *Develop a project that maximizes opportunities for funding and financing and that is financially sustainable*	▸ Opportunities for private/public funding ▸ Opportunities for Federal and outside funding	▸ *ROM Capital costs — total and per mile per alignment (2008$) (millions)* ▸ *Evaluation of availability and eligibility of capital funds at federal/state/local levels to construct, operate and maintain (Score 1 to 5)*	▸ *Capital cost estimate disaggregated by right of way (ROW), guideway, stations, yards, and vehicles on a cost per mile basis*

Table 2-1 Regional Connector Goals, Objectives, and Performance Measures

Goal		Objectives	Initial Screening Criteria (Performance Measures)	Final Screening Criteria (Performance Measures)
7	Provide a Safe and Secure Alternative Transportation System *Develop a project that is safe for riders, pedestrians, and drivers while meeting the regions needs for security*	▸ Secure entire alignment, stations, track and other facilities ▸ Develop direct and indirect safety measures that exceed safety precautions typical of the Metro system ▸ Develop a system that balances the need for accessibility and mobility with security ▸ Develop a system that uses accessibility and mobility as measures for safety and security	▸ *Safety – determined to be able to provide measures typical of requirements per ADA, per typical CPUC requirements, fire life safety guidelines, and per Metro Design Guidelines for access to and from stations (amount grade separated) (Score 1 to 5)* ▸ *Number of emergency facilities located within ¼ mile of the alignment, i.e., fire stations, police stations, hospitals.* ▸ *Number of public events within ¼ mile of alignment*	▸ *Number of crossing with high pedestrian activities on a daily basis* ▸ *Number of events along the alignment* ▸ *Number of potential issues related to accessibility and line of sight for pedestrians and vehicle drivers (Score 1 to 5)*

Table 2-2 Alternatives Identified for Initial Screening Stations and Configurations				
Alternative	Mode	Configuration	Stations	Comments
1a	LRT	Underground / At-Grade	2 : One underground station located on Flower St. between 5th St. & 6th St. One at-grade station located on 2nd St. between Spring St. & Main St.	Underground Segments: Flower St. headed north from 7th St./Metro Center until north of 4th St., just below 3rd St. At-Grade Segments: Remaining alignment including under 2nd St. tunnel
1b	LRT	Underground / At-Grade	2: One at-grade station located on Flower St. between 4th St. & 3rd St. One at-grade station located on 2nd St. between Spring St. & Main St.	Underground Segments: Flower St. headed north from 7th St./Metro Center until north of 5th St., just below 4th St. At-Grade Segments: Remaining alignment including under 2nd St. tunnel
2	LRT	Underground / At-Grade / Aerial	3: One underground station located on Flower St. between 5th St. & 6th St. One aerial station located on Dewap Rd. & Temple St. One at-grade station located on Temple St. between Los Angeles St. & Judge John Aiso	Underground Segments: Flower St. headed north from 7th St./Metro Center until north of 4th St. , just below 3rd St. At-Grade Segments: 3rd St. and Figueroa St. and Temple St. Aerial Segments: Dewap Rd. headed north to Temple St.
3a	LRT	Underground / At-Grade	3: One underground station located on Flower St. between 5th St. & 4th St. One underground station located under Grand Ave Development One at-grade split station located adjacent to City Hall parcel, between Main St. & Los Angeles St.	Underground Segments: Flower St. headed north from 7th St./Metro Center until north of 4th St., just below 3rd St. and partial underground before 'punch' through 2nd St. tunnel. At-Grade Segments: Remaining alignment including under 2nd St. tunnel
3b	LRT	Underground / At-Grade	3: One at-grade station located on Flower St. between 3rd St. & 4th St. One underground station located under Grand Ave Development One at-grade split station located adjacent to City Hall parcel, between Main St. & Los Angeles St.	Underground Segments: Flower St. headed north from 7th St./Metro Center until north of 5th St., just below 4th St. and partial underground before 'punch' through 2nd St. tunnel. At-Grade Segments: Remaining alignment including under 2nd St. tunnel
4a	LRT	Underground / At-Grade	3: One at-grade station located on Flower St. between 3rd St. & 4th St. One underground station located under Grand Ave Development One at-grade station located on 2nd St. between Spring St. & Main St.	Underground Segments: Flower St. headed north from 7th St./Metro Center until north of 5th St., just below 4th St. and partial underground before 'punch' through 2nd St. tunnel. At-Grade Segments: Remaining alignment including under 2nd St. tunnel
4b	LRT	Underground / At-Grade	3: One underground station located between 4th St. & 5th St. One underground station located under Grand Ave Development One at-grade station located on 2nd St. between Spring St. & Main St.	Underground Segments: Flower St. headed north from 7th St./Metro Center until north of 4th St., just below 3rd St. and partial underground before 'punch' through 2nd St. tunnel. At-Grade Segments: Remaining alignment including under 2nd St. tunnel

Alternative	Mode	Configuration	Stations	Comments
5	LRT	Underground / At-Grade	3: One underground station located on Flower St. between 4th St. & 5th St. One underground station located under Grand Ave Development One underground station located on 2nd St. between Spring St. & Main St.	Underground Segments: Flower St. headed north from 7th St./Metro Center, under 2nd St. tunnel, until the vicinity of Central Ave. At-Grade Segments: Segment crossing Office Depot parcel
6	LRT	Underground / At-Grade	3: One underground station located at intersection of Flower St. & 5th St. One underground station located under Grand Ave Development One underground station located on 2nd St. between Los Angeles St. & San Pedro St.	Underground Segments: Entire alignment
7	LRT	Underground / At-Grade	3: One underground station located on Flower St. between 5th St. & 6th St. One underground station located under Grand Ave Development One at-grade station located on Los Angeles St. between Temple St. & 1st St.	Underground Segments: Flower St. headed north from 7th St./Metro Center until north of 4th St., just below 3rd St. and partial underground before 'punch' through 2nd St. tunnel. At-Grade Segments: Remaining alignment including 2nd St. tunnel
8	LRT	Underground / At-Grade	3: One underground station located on Flower St. between 4th St. & 5th St. One underground station located under Grande Ave Development One underground station located on Office Depot parcel	Underground Segments: Entire alignment

Table 2-2 Alternatives Identified for Initial Screening Stations and Configurations

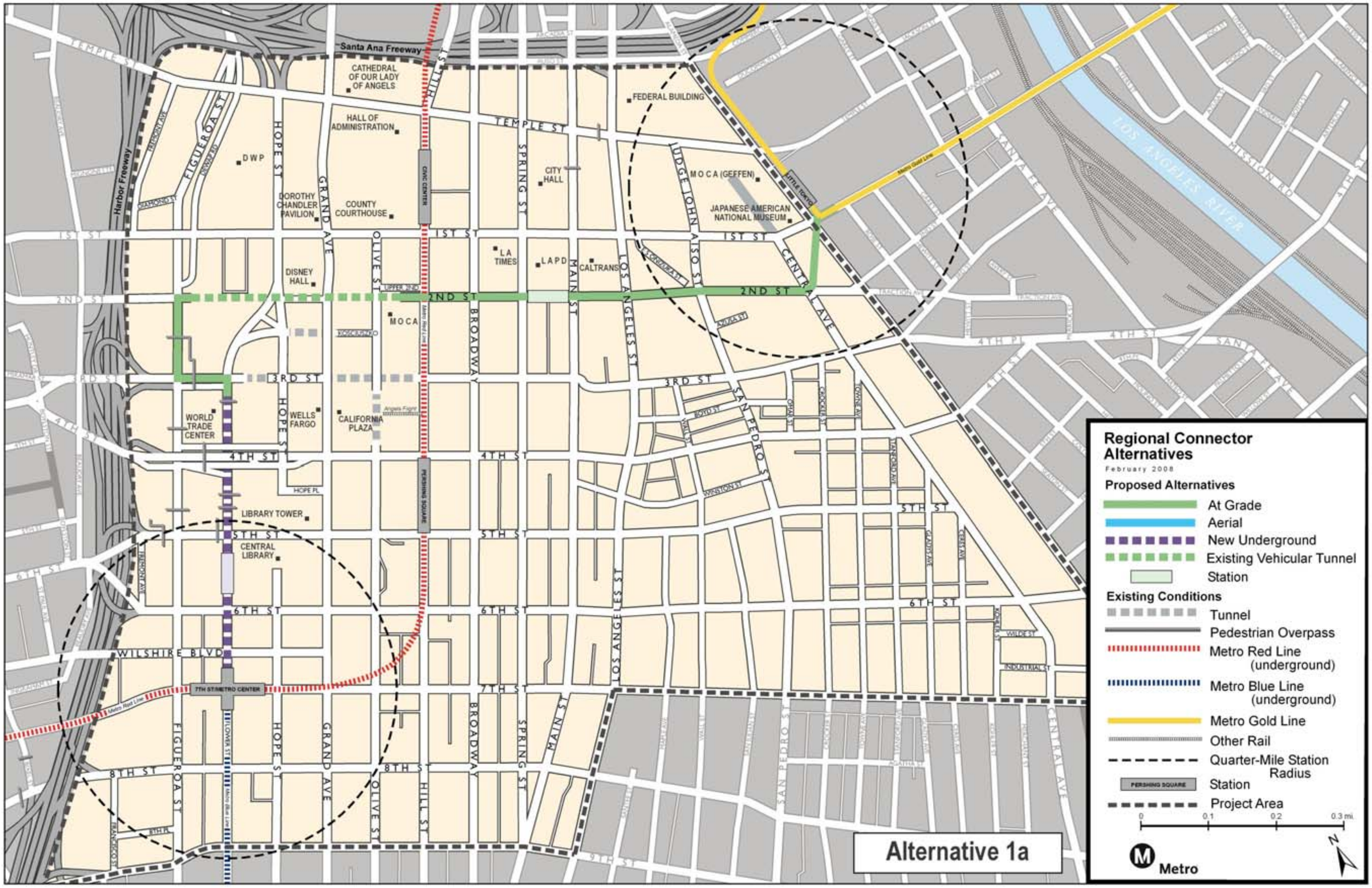


Figure 2-7 Alternative 1a

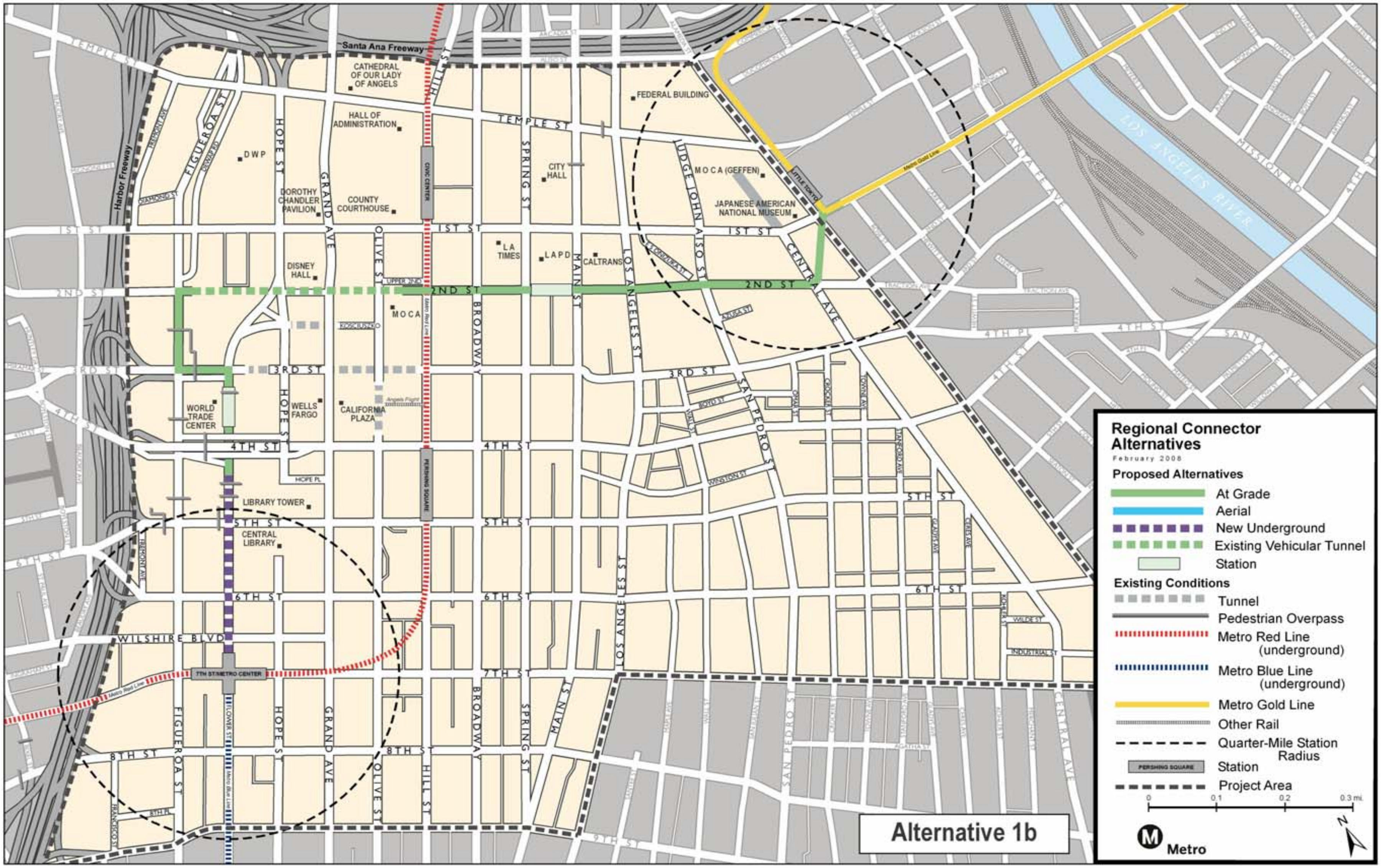


Figure 2-8 Alternative 1b

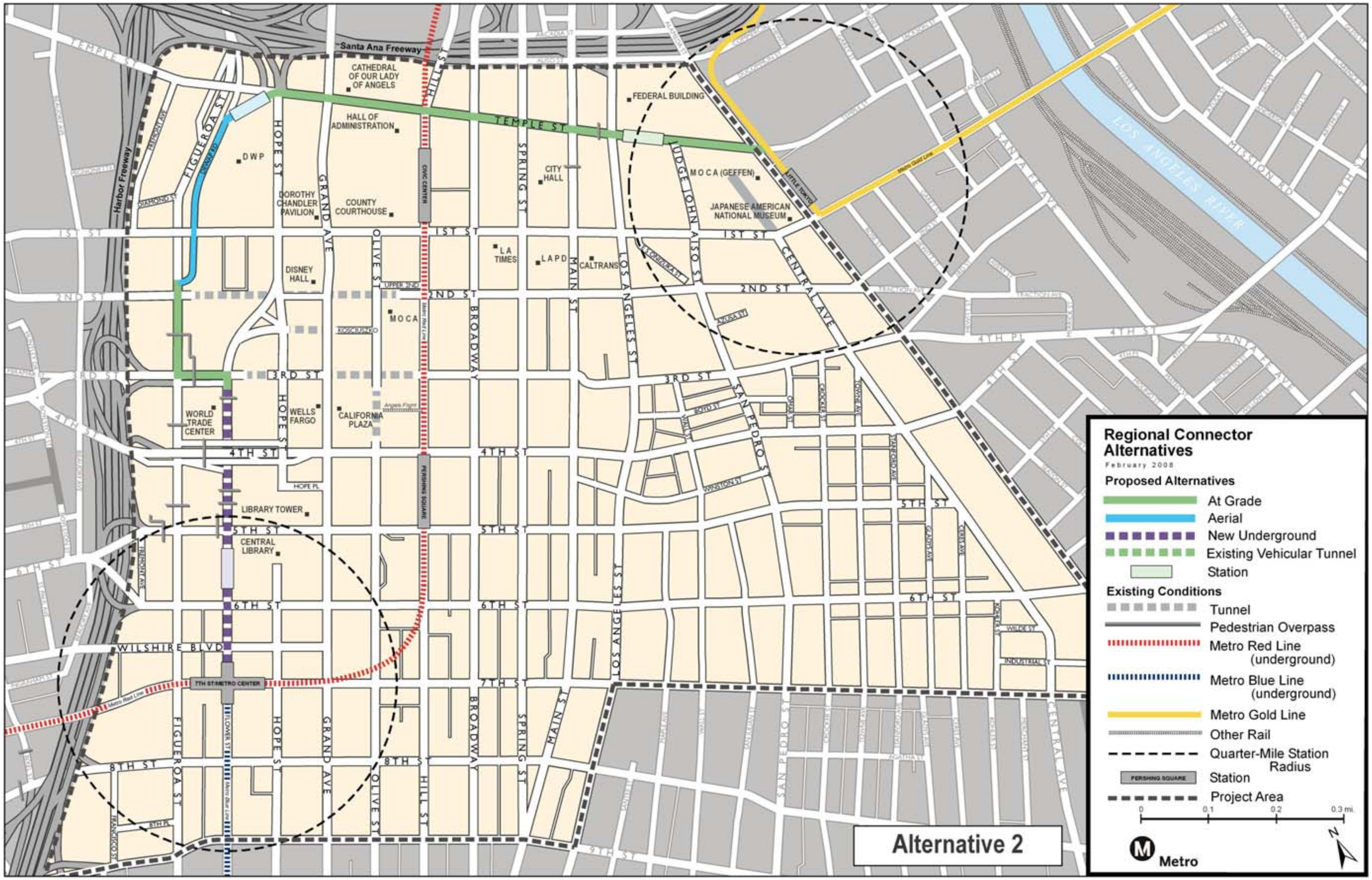


Figure 2-9 Alternative 2

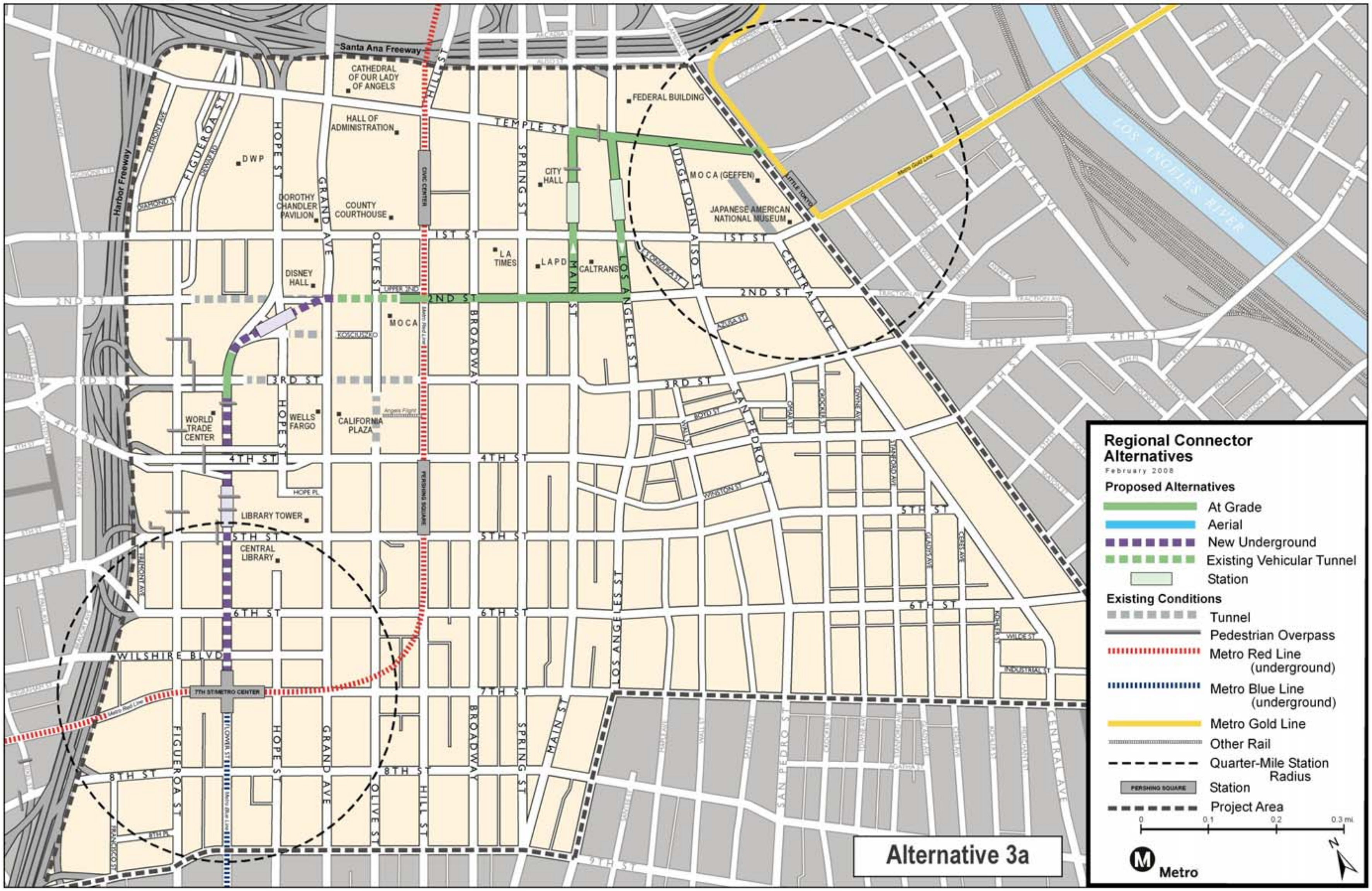


Figure 2-10 Alternative 3a

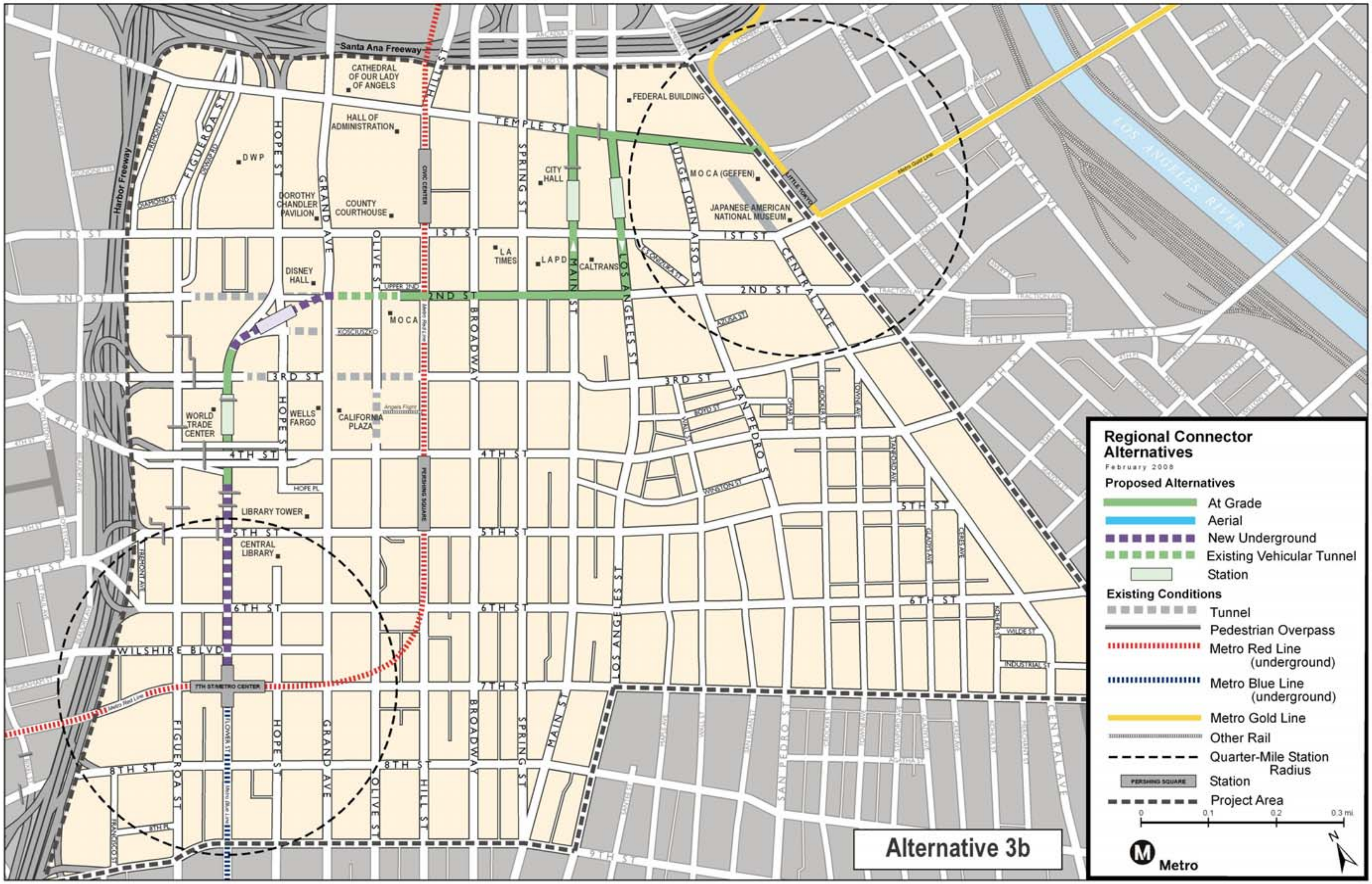


Figure 2-11 Alternative 3b

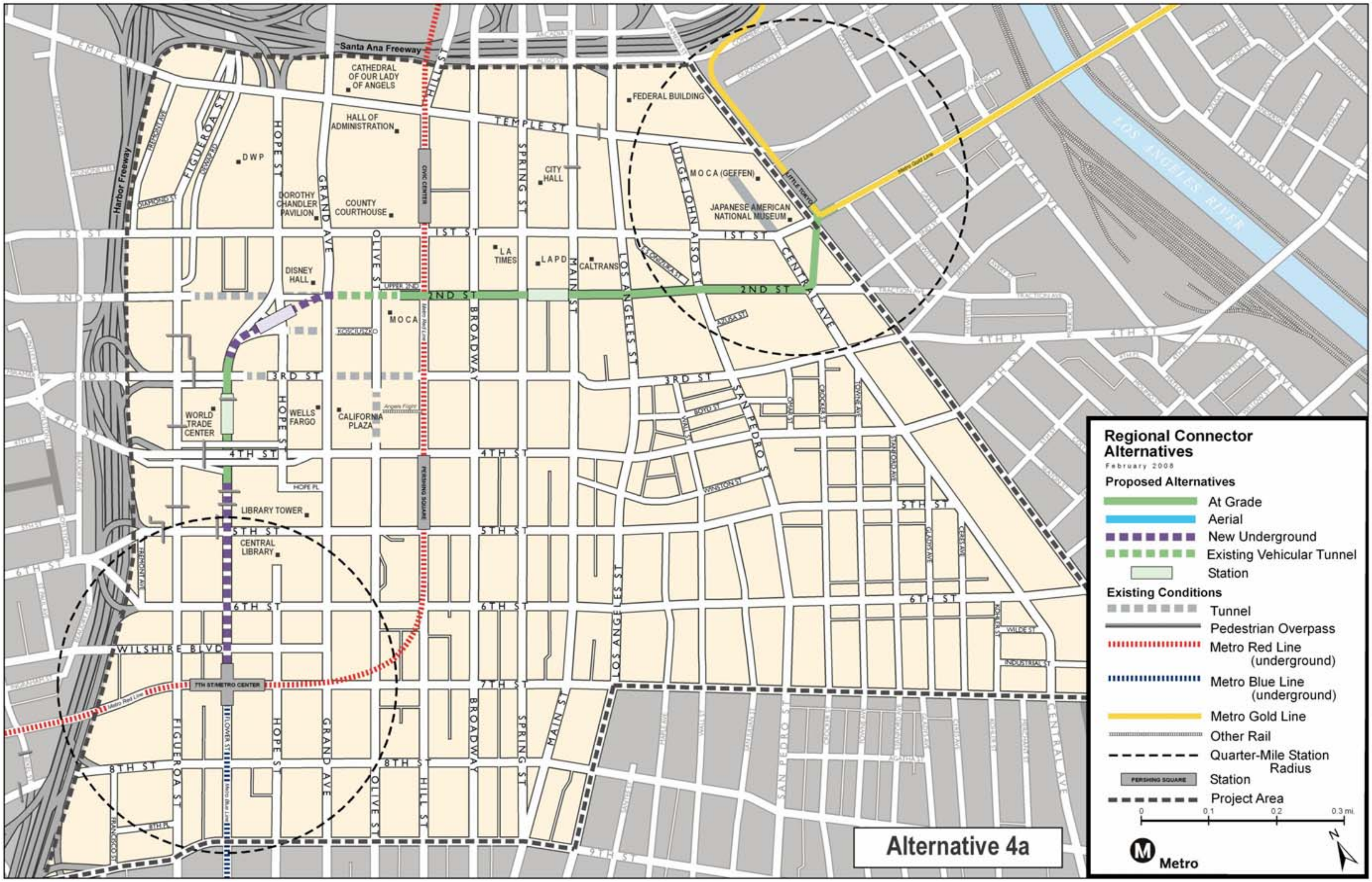


Figure 2-12 Alternative 4a

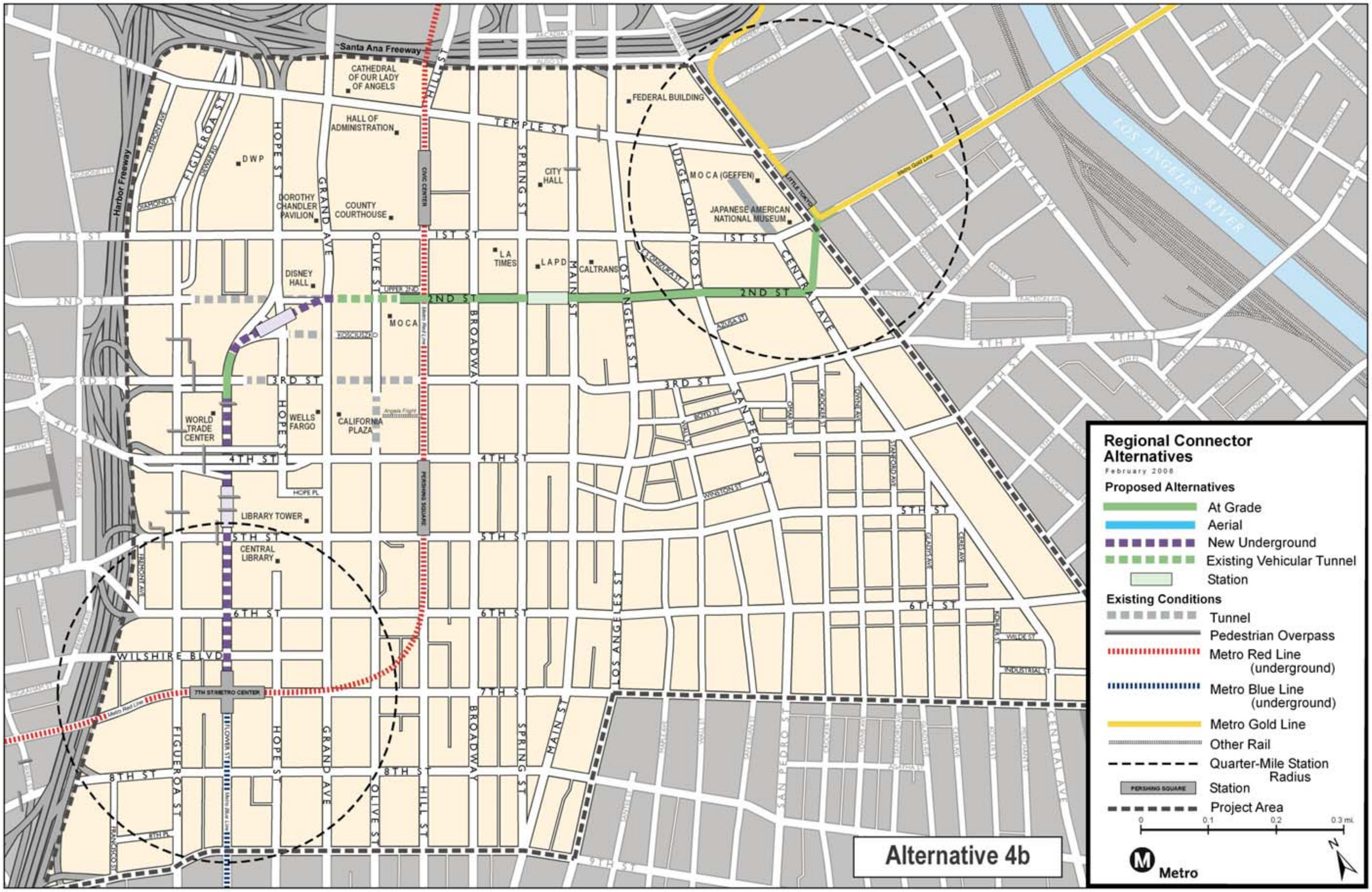


Figure 2-13 Alternative 4b

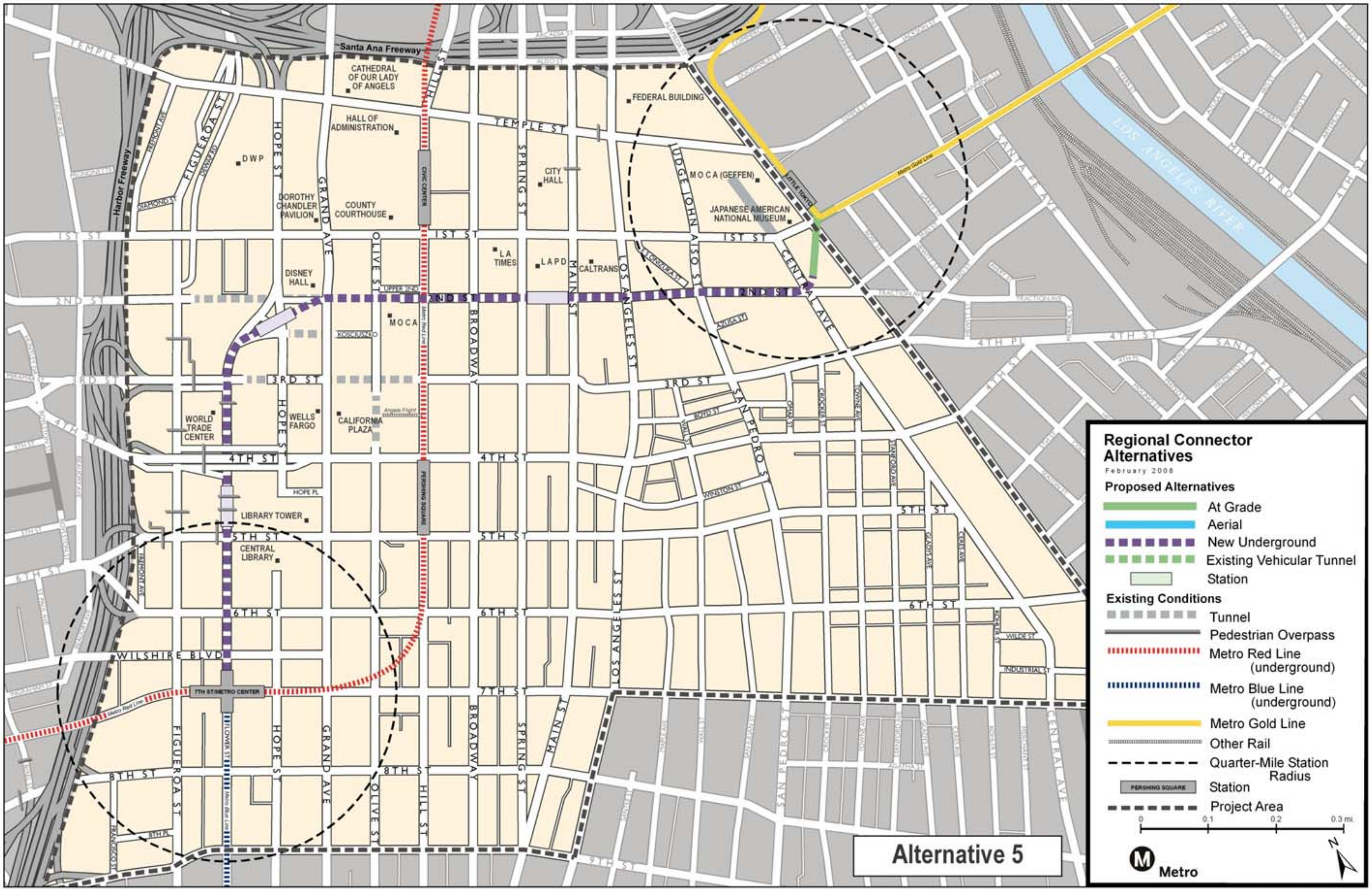


Figure 2-14 Alternative 5

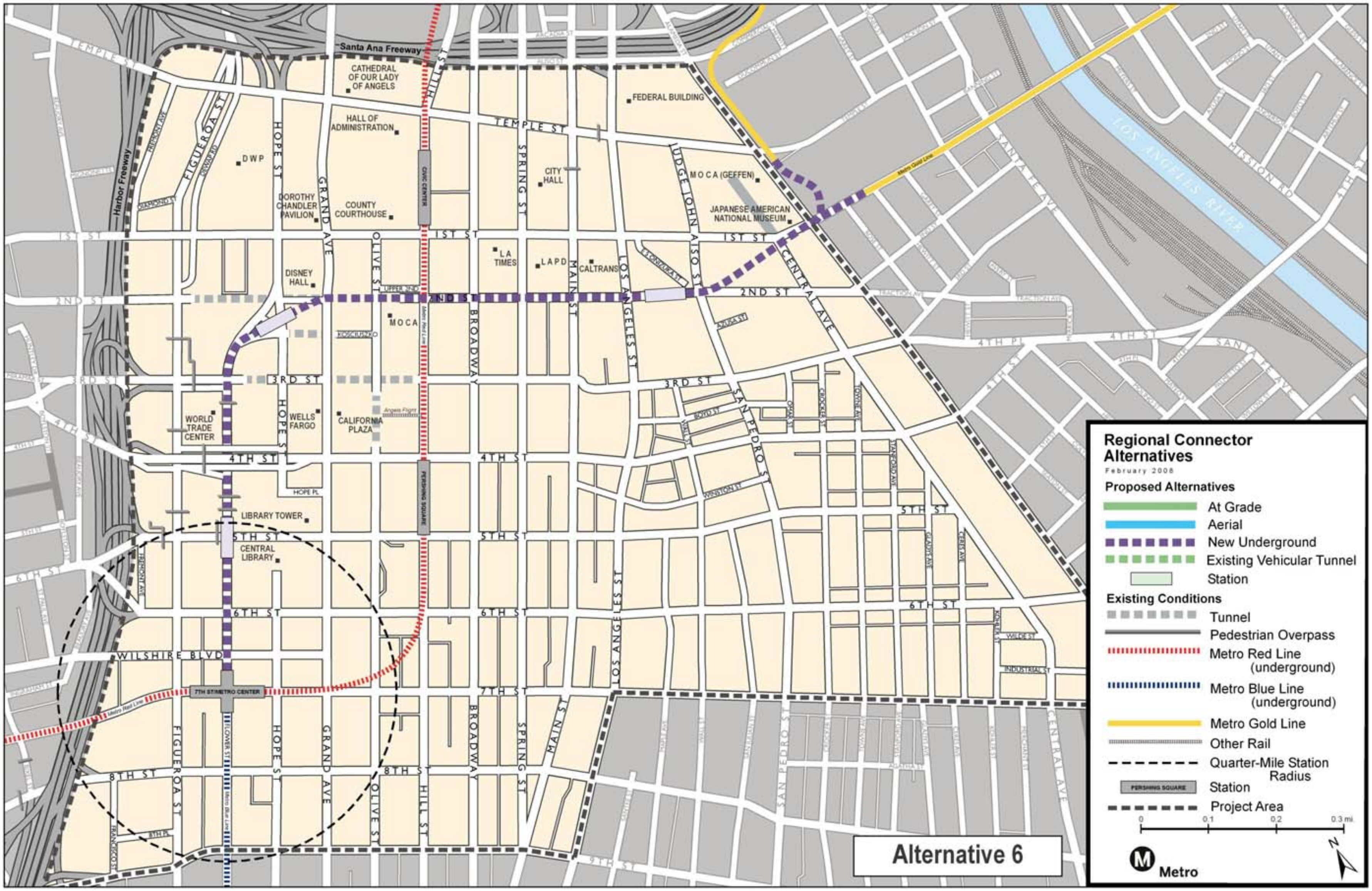


Figure 2-15 Alternative 6

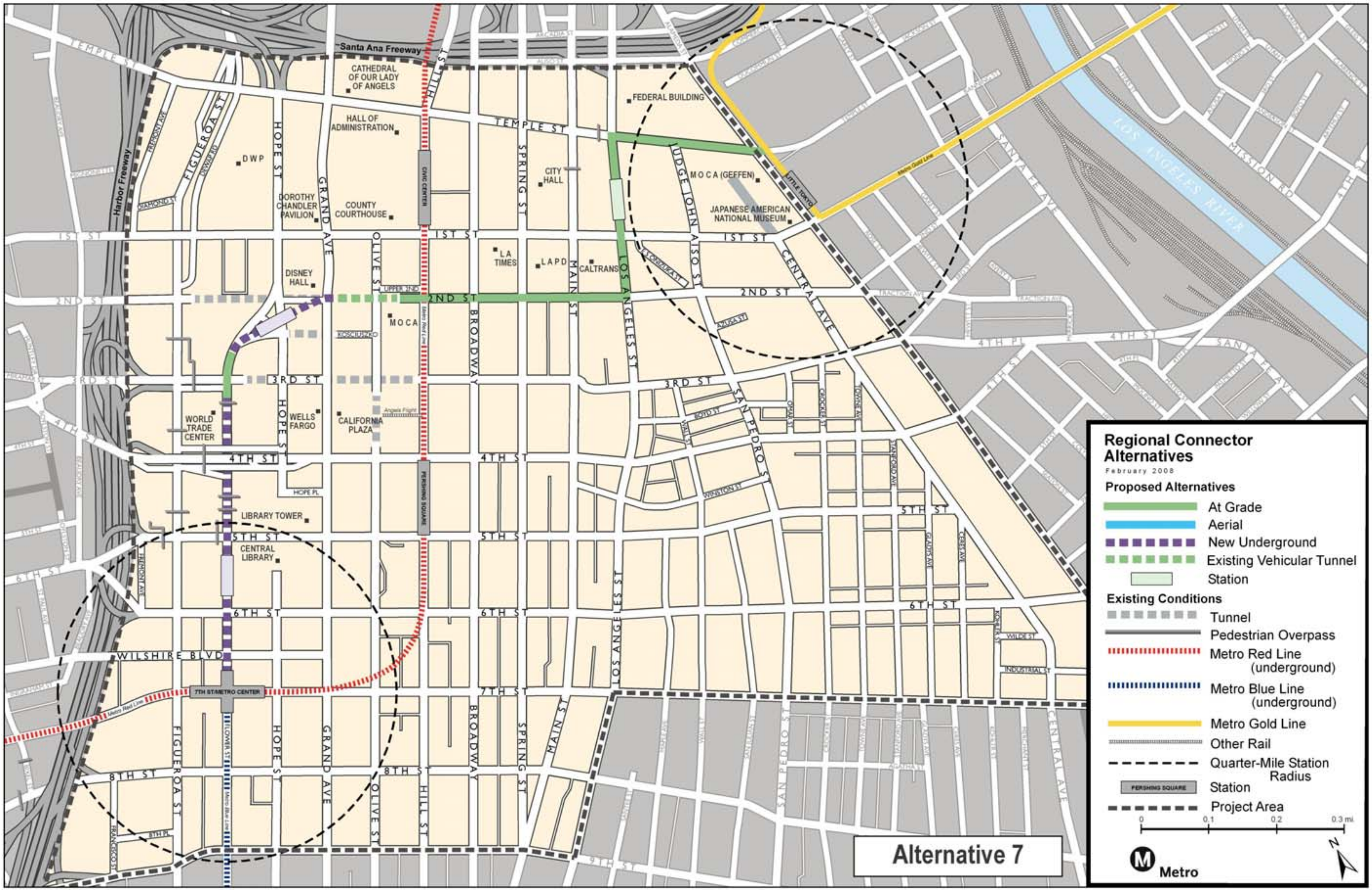


Figure 2-16 Alternative 7

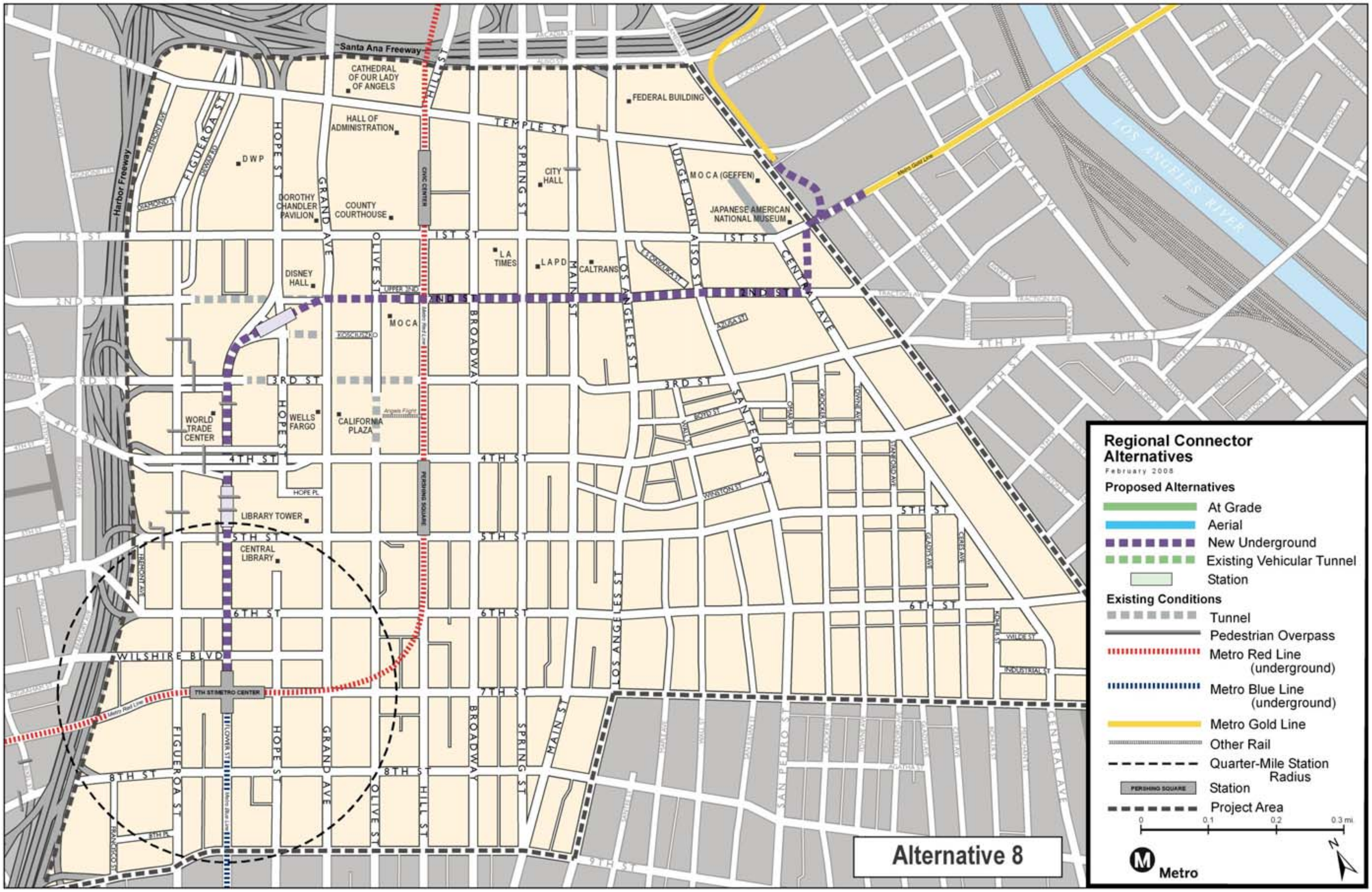


Figure 2-17 Alternative 8

Table 2-3 Constraints and Opportunities

General Station Location	Alignment	Constraints/Issues	Opportunities
2nd St. between Main St. and Spring St.	1a, 1b, 4a, 4b	*Narrow ROW on 2nd St *LAPD Headquarters currently under construction may cause traffic/emergency issues *Pedestrian safety outside high volume location *Station set back from street onto LAPD property	*Newly revitalized 2nd St. restaurants/bars/art spaces would be easily accessible *Station would be located in central location to LA Times, LAPD, Caltrans and only 1 block from City Hall and Civic Center *Modern/architectually significant design can be incorporated into LAPD Headquarters *Station will serve adjacent Little Tokyo community and Block 8 residential housing
Flower St. between 5th St and 6th St.	1a, 2, 7	*Station must be located considerably below Arco Plaza underground shopping center- geotechnical/soil issues *Arco Plaza underground shopping center - physical as well as noise, vibration	*Opportunity to incorporate station into Arco Plaza shopping center *Opportunity to incorporate station into Central Library *Central location to financial/business core
Flower St. between 3rd St and 4th St.	1b, 3b, 4a	*Station is located in partially isolated area *Station is located underneath pedestrian bridge - contrsuction issues *Station may cause security issues at World Trade Center	*Station is located adjacent to World Trade Center *Station is located within walking distance of business as well as residential properties
Temple St. between Los Angeles St. and Judge John Aiso St.	2	*Station is located adjacent to federal buildings as well as new metropolitan detention center which may cause security issues *Transient activity at station would need constant vigilance	*Station is adjacent to Civic Center *Station is located next to arts' centers such as MOCA's Geffen, The Japanese American Museum, and the future Children's Art Park *Station design may tie into the adjacent arts institutions *Opportunities to revitalize the LA Mall
Dewapp St. between Figueroa St. and Hope St.	2	*Structural issues on elevated Dewapp St. *DWP popety availability *Pedestrian safety at station and Hope St. due to 101 fwy on/off ramps	*Station serves city offices such as DWP, Health Services Administration, and the Los Angeles building *Station is located adjacent to Grand Ave Project and arts' centers such as Dorothy Chandler and Disney Hall *Station is one block from Our Lady of the Angels Cathedral
Flower St. between 4th St. and 5th St.	3a, 4b, 5, 8	*Station located under Bonaventure Hotel - noise/vibration issues	*Station is located in central location to financial core and LA Library *Central location and popular stop among tourists and visitors to downtown Los Angeles
Grand Avenue Development	3a, 3b, 4a, 4b, 5, 6, 7, 8	*Adverse effects to 2nd St. tunnel structure *Incorporation of station into residential housing above *Incorporation of station adjacent to Grand Ave Project underground parking/storage/facilities *Location of entrance/exit portal on street level	*Incorporation of station design and artwork with the Grand Ave Development *Ideal location for tourists and visitors to arts/theater districts - encourage activity *Exit from station would be located at the top of Bunker Hill, making for easier pedestrian movement *Station portals can serve both upper Grand Ave as well as businesses on 3rd and Flower
Main St. and Los Angeles St. between Temple St. and 1st St. (Couplet)	3a, 3b	*Station is located on City Hall Parcel - possible security issues *Station would cause for removal of public open space	*Station serves Civic Center and public services buildings *Station is located one block from Little Tokyo district *Station can serve as 'link' for the eastern portion of future Civic Park
Los Angeles St. between Temple St. and 1st St.	7	*Station would require removal of center median/trees on Los Angeles St. *Station is adjacent to metropolitan detention center - possible security issues	*Station serves Civic Center and public services buildings *Station is located one block from Little Tokyo district
2nd St. between Main St. and Spring St.	5,8	*Station may conflict with LAPD underground facilities *Station may conflict with LA Times underground facilities	*Station does not impact surface level traffic and/or narrow 2nd St. ROW *Station serves surrounding Civic and arts establishments *Station is within reasonable walking distance of Little Tokyo district and Historic Core
2nd St. between Los Angeles St. and San Pedro St.	6	*Station and portals may cause noise issues for Block 8 residential development above	*Station is adjacent to Little Tokyo district and may incorporate art/cultual architecture *Station is in relatively close distance to all Little Tokyo residential housing *Opportunity to incorporate station into Block 8 development *Station is located adjacent to Historic Core and new Arts districts along 3rd St.
5th St. and Flower St. (Under Intersection)	6	*Station must be located considerably below Arco Plaza underground shopping center- geotechnical/soil issues *Arco Plaza underground shopping center - physical as well as noise, vibration	*Opportunity to incorporate station into Arco Plaza shopping center *Opportunity to incorporate station into Central Library *Central location to financial/business core

Table 2-4 Goal 1: Support Community Planning Efforts

Goal 1: Support Community Planning Efforts

*Support land use policies and Community Plans
*Support and coordinate with development and redevelopment efforts
*Support the City's efforts to improve urban design and the pedestrian environment by contributing to a healthy environment
*Support efforts to improve safety and security for downtown residents, employees and visitors
*Support transit dependent communities

Alternative	1a	1b	2	3a	3b	4a	4b	5	6	7	8
Total Length of Alignment (Miles)	1.83	1.83	1.88	2.03	2.03	1.62	1.62	1.62	1.65	1.69	1.67
Total Area within One Quarter Mile of Alignment	1.04	1.04	1.11	1.02	1.02	0.98	0.98	0.98	0.98	1	0.98
1.a Population, Population Density, Households, Housing Density for year 2030 within 1/4 mile of alignments											
Population (within 1/4 mile of alignment)	11,926	11,926	11,323	10,889	10,889	10,997	10,997	10,997	10,997	10,760	10,997
Population (within 1/4 mile of all stations)	2,038	4,073	3,091	6,578	8,245	7,786	6,119	6,119	6,437	5,449	6,119
Population Density (within 1/4 mile of alignment)	11,467 persons per square mile	11,467 persons per square mile	10,201 persons per square mile	10,675 persons per square mile	10,675 persons per square mile	11,201 persons per square mile	11,201 persons per square mile	11,201 persons per square mile	11,201 persons per square mile	10,760 persons per square mile	11,201 persons per square mile
Households (within 1/4 mile of alignment)	9,122	9,122	7,794	8,523	8,523	8,744	8,744	8,744	8,744	8,467	8,744
Households (within 1/4 mile of all stations)	1,611	3,047	2,128	5,002	6,183	5,770	4,589	4,589	5,003	4,132	4,589
Household Density (within 1/4 mile of alignment)	8,771 units per square mile	8,771 units per square mile	7,022 units per square mile	8,356 units per square mile	8,356 units per square mile	8,922 units per square mile	8,922 units per square mile	8,922 units per square mile	8,922 units per square mile	8,467 units per square mile	8,922 units per square mile
1.b Transit Oriented Design supportive plans and policies in place (Score 1 -worst- to 5-best)											
	Low number of stations to take advantage of TOD plans and policies *LA City General Plan *CRA 2006 Streetcar Study *CRA Identified Redevelopment Areas *CRA City Center Redevelopment Plan *Little Tokyo Planning & Design Guidelines 2	Same as 1a 2	*LA City General Plan *CRA 2006 Streetcar Study *CRA City Center Redevelopment Plan *Little Tokyo Planning & Design Guidelines 2	*LA City General Plan *CRA 2006 Streetcar Study *CRA Identified Redevelopment Areas *CRA City Center Redevelopment Plan *Little Tokyo Planning & Design Guidelines 4	Same as 3a 4	Track alignment on 2nd Street between Central and Los Angeles is inconsistent with TOD plans *LA City General Plan *CRA 2006 Streetcar Study *CRA Identified Redevelopment Areas *CRA City Center Redevelopment Plan *Little Tokyo Planning & Design Guidelines 3	Track alignment on 2nd Street between Central and Los Angeles is inconsistent with TOD plans *LA City General Plan *CRA 2006 Streetcar Study *CRA Identified Redevelopment Areas *CRA City Center Redevelopment Plan *Little Tokyo Planning & Design Guidelines 3	Same as 3a 5	This alternative requires removal of the existing Little Tokyo/Artst District Station which is inconsistent with TOD plans. *LA City General Plan *CRA 2006 Streetcar Study *CRA Identified Redevelopment Areas *CRA City Center Redevelopment Plan *Little Tokyo Planning & Design Guidelines 2	Same as 1a 5	This alternative requires removal of the existing Little Tokyo/Artst District Station which is inconsistent with TOD plans. *LA City General Plan *CRA 2006 Streetcar Study *CRA Identified Redevelopment Areas *CRA City Center Redevelopment Plan *Little Tokyo Planning & Design Guidelines 2
1.c Number of jobs, employment density for year 2030 within 1/4 mile of alignment											
Employment (within 1/4 mile of alignment)	129,833	129,833	150,997	133,888	133,888	124,110	124,110	124,110	124,110	132,547	124,110
Employment (within 1/4 mile of all stations)	46,153	44,062	76,366	107,310	109,174	79,395	77,531	77,531	71,066	84,699	77,531
Employment Density (within 1/4 mile of alignment)	129,833 jobs per square mile	124,839 jobs per square mile	136,033 jobs per square mile	131,263 jobs per square mile	131,263 jobs per square mile	126,643 jobs per square mile	126,643 jobs per square mile	126,643 jobs per square mile	126,643 jobs per square mile	132,547 jobs per square mile	126,643 jobs per square mile
1.d Number of direct connections to key activity centers within 1/4 mile of alignment (Score 1 -worse to 5-best)	2 (based on the number of stations for this alternative)	2 (based on the number of stations for this alternative)	3	5	5	5	5	5	3 (based on the removal of the Little Tokyo/Arts District Station for this alternative)	4 (based on single platform versus split platform)	3 (based on the removal of the Little Tokyo/Arts District Station for this alternative)
Scores by Station:	2nd @ Spring, Main & Broadway 5	2nd @ Spring, Main & Broadway 5	Temple between Los Angeles Streets and Aliso 5	Split Platforms @ Main and Los Angeles 5	Split Platforms @ Main and Los Angeles 5	2nd @ Spring, Main and Broadway 5	2nd @ Spring, Main & Broadway 5	2nd between Spring & Main 5	2nd between Los Angeles & San Pedro 5	Los Angeles between 1st & Temple 5	2nd between Spring & Main 5
	Between 5th & 6th on Flower 5	Between 3rd & 4th on Flower 3	Temple Street, Dewap Road and Hope Streets 4	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5
			Between 5th & 6th on Flower 5	Between 4th & 5th on Flower 5	Between 3rd & 4th on Flower 3	Between 3rd & 4th on Flower 3	Between 4th & 5th on Flower 5	Between 4th & 5th on Flower 4	5th & Flower 5	Between 5th & 6th on Flower 5	Between 4th & 5th on Flower 5
1.e Number of opportunities for redevelopment within 1/4 mile of alignment (underdeveloped or underutilized properties along alternative alignment)	9	9	5	8	8	9	9	9	9	8	9

*** NOTE: Score 1-5 is use for some criteria where 1 = WORST and 5 = BEST**

Table 2-5 Goal 2: Support Public Involvement and Community Preservation

Goal 2:
Support Public Involvement and Community Preservation

*Balance the benefits and impacts to low income and minority communities
*Enable workers and visitors to gain access to the regional center to increase its economic vitality and benefit from its economic opportunity

Alternative	1a	1b	2	3a	3b	4a	4b	5	6	7	8
Total Length of Alignment (Miles)	1.83	1.83	1.88	2.03	2.03	1.62	1.62	1.62	1.65	1.69	1.67
Total Area within One Quarter Mile of Alignment	1.04	1.04	1.11	1.02	1.02	0.98	0.98	0.98	0.98	1	0.98
2.a Evaluation of potential disproportionate effects : Environmental justice effect will be evaluated per CEQA/NEPA requirements (Score 1 to 5)	1	1	4	4	4	1	1	2	5	4	5
2.b Initial areas identified for potential acquisitions for stations and alignment (does not include actually in construction) within 1/4 mile of alignment	4 Locations	3 Locations	2 Locations	2 Locations	1 Location	4 Locations	5 Locations	4 Locations	5 Locations	2 Locations	5 Locations
2.c Evaluation of potential disproportionate effects: Number of low income HH within 1/4 mile of proposed alignment											
# of Low income HH	3,390/9,602 or 35.3%	3,390/9,602 or 35.3%	2,590/8,830 or 29.3%	3,702/10,680 or 34.7%	3,702/10,680 or 34.7%	3,390/9,602 or 35.3%	3,390/9,602 or 35.3%	3,390/9,602 or 35.3%	3,390/9,602 or 35.3%	3,702/10,680 or 34.7%	3,390/9,602 or 35.3%
Number of SROs and Shelters	20 (approximately 1,042 beds/rooms)	20 (approximately 1,042 beds/rooms)	16 (approximately873 beds/rooms)	19 (approximately 997 beds/rooms)	19 (approximately 997 beds/rooms)	20 (approximately 1,042 beds/rooms)	20 (approximately 1,042 beds/rooms)	20 (approximately 1,042 beds/rooms)	20 (approximately 1,042 beds/rooms)	19 (approximately 997 beds/rooms)	20 (approximately 1,042 beds/rooms)
Number of Homeless Service Providers	9	9	5	9	9	9	9	9	9	9	9
2.d Number of residents by ethnicity within 1/4 mile of alignment (US Census)											
	White 3,163	White 3,163	White 2,146	White 3,105	White 3,105	White 3,163	White 3,163	White 3,163	White 3,163	White 3,105	White 3,163
	African American 3,390	African American 3,390	African American 2,359	African American 3,437	African American 3,437	African American 3,390	African American 3,390	African American 3,390	African American 3,390	African American 3,437	African American 3,390
	American Indian/Eskimo 119	American Indian/Eskimo 119	American Indian/Eskimo 54	American Indian/Eskimo 103	American Indian/Eskimo 103	American Indian/Eskimo 119	American Indian/Eskimo 119	American Indian/Eskimo 119	American Indian/Eskimo 119	American Indian/Eskimo 103	American Indian/Eskimo 119
	Asian 4,699	Asian 4,699	Asian 8,635	Asian 8,978	Asian 8,978	Asian 4,699	Asian 4,699	Asian 4,699	Asian 4,699	Asian 8,978	Asian 4,699
	Hawaiian/PI 23	Hawaiian/PI 23	Hawaiian/ PI 23	Hawaiian/PI 23	Hawaiian/PI 23	Hawaiian/PI 23	Hawaiian/PI 23	Hawaiian/PI 23	Hawaiian/PI 23	Hawaiian/PI 23	Hawaiian/PI 23
	Other 54	Other 54	Other 48	Other 60	Other 60	Other 54	Other 54	Other 54	Other 54	Other 60	Other 54
	Two or More 322	Two or More 322	Two or More 275	Two or More 334	Two or More 334	Two or More 322	Two or More 322	Two or More 322	Two or More 322	Two or More 334	Two or More 322
	Hispanic 7,769	Hispanic 7,769	Hispanic 8,810	Hispanic 5,861	Hispanic 5,861	Hispanic 7,769	Hispanic 7,769	Hispanic 7,769	Hispanic 7,769	Hispanic 5,861	Hispanic 7,769
2.e Urban fit potential for alignments and for stations, including physical scale, visual fit, and cultural preservation	1	1	3	4	4	2	2	4	3	4	3
Scores by Station:	2nd @ Spring, Main& Broadway 3	2nd @ Spring, Main& Broadway 3	Temple & Los Angeles 5	Split Platform @ Los Angeles Street and Main Street 5, 4	Split Platform @ Los Angeles Street and Main Street 5,4	2nd @ Spring, Main& Broadway 4	2nd @ Spring, Main& Broadway 4	2nd between Main and Spring 4	Los Angeles and San Pedro on 2nd 3	Los Angeles Street between 1st and Temple 5	2nd between Main and Spring 4
	Between 5th & 6th on Flower 5	Between 3rd & 4th on Flower 2	Temple Street, Dewap Road & Hope Street 4	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5	2nd & Hope under Grand Avenue Development 5
			Between 5th & 6th on Flower 5	Between 4th & 5th on Flower 3	Between 3rd & 4th on Flower 2	Between 3rd & 4th on Flower 2	Between 4th & 5th on Flower 3	Between 4th & 5th on Flower 3	5th on Flower 5	Between 5th & 6th on Flower 5	Between 4th & 5th on Flower 3
2.f Percentage of service grade separated	22%	13%	39%	34%	21%	24%	34%	91%	103%	32%	103%
Total underground - new tunnel & existing 2nd St. tunnel	44%	33%	36%	46%	38%	49%	60%	94%	*103% (includes grade separating some of the Eastside Extension)	56%	103%
2.g Community Acceptance (High, Medium, Low)	Low	Low	Medium	High	High	Medium	Medium	High	Low	Medium	Low

*** NOTE: Score 1-5 is use for some criteria where 1 = WORST and 5 = BEST**

Table 2-6 Goal 3: Improve Mobility and Availability both Locally and Regionally

Goal 3:
Improve Mobility and Accessibility both Locally and Regionally

*Improve the connectivity of the regional transit service and provide a more attractive travel alternative for residents, workers and visitors in the region
*Facilitate sustainable regional development
*Increase ridership of the Metro transit system and reduce single occupany trips
*Maintain or enhance transit services to the transit dependent
*Improve travel time for transit users system-wide
*Improve person throughput
*Reduce growth of congestion in corridor

Alternative	1a		1b		2		3a		3b		4a		4b		5		6		7		8	
Total Length of Alignment (Miles)	1.83		1.83		1.88		2.03		2.03		1.62		1.62		1.62		1.65		1.69		1.67	
Total Area within One Quarter Mile of Alignment	1.04		1.04		1.11		1.02		1.02		0.98		0.98		0.98		0.98		1		0.98	
3.a Increase in daily transit boardings (amount of transit users increased compared to No Build)	9,570	1	9,570	1	8,590	1	10,125	2	10,125	2	11,524	2	11,524	2	19,768	5	14,457	3	10,125	2	14,457	3
3.b New daily transit trips compared to No Build and Transportation System Management (TSM) alternatives																						
No Build	5,787	2	5,787	2	4,670	1	5,165	2	5,165	2	6,984	4	6,984	4	8,099	5	7,548	4	5,165	2	7,548	4
3.c Traffic impacts (**Number of intersections** with E or F Level of Service)	5		5		4		3		3		5		5		1		1		2		1	
3.d Reduction in number of transfers system-wide by operational plan of alignment (Daily reductions at US & 7th/Metro)	21,100	2	21,100	2	18,400	1	20,600	2	20,600	2	22,100	3	22,100	3	25,900	5	23,200	3	20,600	2	23,200	3
3.e Total number of lanes reduced (cumulative for all streets)	19		22		21		24		27		20		17		0		0		21		0	
3.f Number of potentially impacted intersections	11		12		12		12		13		10		9		1		1		10		1	
3.g Peak period travel time through Regional Connector Alignment (including 5 min foe each transfer)																						
North-South : US to 7th/Metro	12.60 min		12.60 min		11.80 min		11.50 min		11.50 min		12.30 min		12.30 min		7.60 min		7.10 min		11.50 min		7.10 min	
East-West: 1st /Utah (to US) to 7th/Metro	10.70 min		10.70 min		12.55 min		11.95 min		11.95 min		10.40 min		10.40 min		6.85 min		6.40 min		11.95 min		6.40 min	
3.h Number of Left Turn Pockets affected	3		5		15		8		10		2		0		4		3		10		3	
3.i Number of on-street public parking spaces	99		99		31		88		88		99		99		0		0		70		0	
3.j Number of driveways affected	21		25		21		26		30		22		18		2		0		21		0	
3.k daily hours of transportation user benefits (Compared to No Build)	8,855		8,855		7,231		8,938		8,938		9,271		9,271		12,045		11,222		8,938		11,222	

*** NOTE: Score 1-5 is use for some criteria where 1 = WORST and 5 = BEST**

Note for 3c,3e,3f,3h,3i:
Assumptions:
-Center running LRT with center stations.
-Train envelope (influence area) for one center running track and no station is 13 feet = one lane width.
-Train envelope (influence area) for one center running track with center station is 26 feet = two lane widths.
-Train envelope (influence area) for two center running tracks and no station is 26 feet = two lane widths.
-Train envelope (influence area) for two center running tracks with center station is 39 feet = three lane widths.
-For all alternative alignments it is assumed that at least one traffic lane will be available and operational in each direction.
-Right of way will be provided if difference between the street curb to curb width and the train envelope is less than the width needed to accomodate a traffic lane in each direction of travel.

Table 2-7 Goal 4: Support Efforts to Improve Environmental Quality

Goal 4:
Support Efforts to Improve Environmental Quality

*Minimize adverse environmental impacts
*Implement mitigation measures to reduce environmental effects to acceptable levels
*Reduce emissions and improve air quality

Alternative	1a	1b	2	3a	3b	4a	4b	5	6	7	8
Total Length of Alignment (Miles)	1.83	1.83	1.88	2.03	2.03	1.62	1.62	1.62	1.65	1.69	1.67
Total Area within One Quarter Mile of Alignment	1.04	1.04	1.11	1.02	1.02	0.98	0.98	0.98	0.98	1	0.98
4.a Noise (Number of curves for LRT alignment)	5	5	5	6	6	3	3	3	2	4	2
4.b Potential visual impacts to notable architectural resources within 1/4 mile of alignment (Score 1 to 5)	2	5	3	1	2	5	3	4	5	1	5
4.c Number of Potential Sensitive Receptors within a 1/4 mile of alignment (Score 1 to 5)	5	5	4	5	5	5	5	5	5	5	5
4.d Potential impacts to historically significant locations within 1/4 of alignment (Score 1 to 5)	203 4	203 4	188 5	217 2	217 2	203 4	203 4	203 4	203 4	209 3	203 4
4.e Geologic and geotechnical issues along alignment (Score 1 to 5)	3	4	3	2	2	2	2	1	1	2	1
Length Underground	2,000 ft	1200 ft	1900 ft	3,000 ft (w/punch)	2,050 ft (w/punch)	2,000 ft (w/punch)	2,800 ft (w/punch)	7,500 ft	8,200 ft	3,000 ft (w/punch)	8,300 ft

*** NOTE: Score 1-5 is use for some criteria where 1 = WORST and 5 = BEST**

Table 2-8 Goal 5: Provide a Cost Effective Alternative Transportation System

Goal 5:
Provide a Cost Effective Alternative Transportation System

*Increase ridership on the Metro system
*Minimize cost per passenger
*Maximize travel time savings

Alternative	1a	1b	2	3a	3b	4a	4b	5	6	7	8
Total Length of Alignment (Miles)	1.83	1.83	1.88	2.03	2.03	1.62	1.62	1.62	1.65	1.69	1.67
Total Area within One Quarter Mile of Alignment	1.04	1.04	1.11	1.02	1.02	0.98	0.98	0.98	0.98	1	0.98
5.a Rough order of magnitude annual O & M (2008 $) costs per alignment (Millions)	$17 M 1	$17 M 1	$17 M 1	$17 M 1	$17 M 1	$17 M 1	$17 M 1	$2 M 5	$2 M 5	$17 M 1	$2 M 5
5.b User cost - Cost Effectiveness compared to Bo Build ($/hour of transit user benefit)	21 2	19 3	26 1	25 1	23 2	21 2	23 2	13 5	15 4	25 1	15 4

*** NOTE: Score 1-5 is use for some criteria where 1 = WORST and 5 = BEST**

Table 2-9 Goal 6: Achieve a Financially Feasible Project

Goal 6:
Achieve a Financially Feasible Project

*Opportunities for private/public funding
*Opportunities for Federal and outside funding

Alternative	1a		1b		2		3a		3b		4a		4b		5		6		7		8	
Total Length of Alignment (Miles)	1.83		1.83		1.88		2.03		2.03		1.62		1.62		1.62		1.65		1.69		1.67	
Total Area within One Quarter Mile of Alignment	1.04		1.04		1.11		1.02		1.02		0.98		0.98		0.98		0.98		1		0.98	
6.a ROM Capital costs- total and per mile per alignment (millions) (2008 $)	$528	4	$441	5	$561	3	$707	1	$640	2	$571	3	$658	2	$643	2	$740	1	$693	2	$744	1
	$301	4	$254	5	$322	4	$424	2	$339	3	$367	3	$418	2	$414	2	$477	1	$385	3	$473	1
6.b Evaluation of availability and eligibility of capital funds at federal/state/local levels to construct, operate and maintain (Score 1 to 5)																						
Federal (CEI)	2		3		1		1		2		2		2		5		4		1		4	
State (Cost)	4		5		3		1		2		3		2		2		1		2		1	
Local (Cost & subway restriction)	4		5		3		1		2		3		2		1		1		2		1	

*** NOTE: Score 1-5 is use for some criteria where 1 = WORST and 5 = BEST**

Table 2-10 Goal 7: Provide a Safe and Secure Alternative Transportation System

Goal 7:
Provide a Safe and Secure Alternative Transportation System

*Secure entire alignment, stations, track and other facilities
*Develop direct and indirect safety measures that exceed safety precausions typical of the Metro system
*Develop a system that balances the need for accessibility and mobility with security
*Develop a system that uses accessibility and mobility as measures for safety and security

Alternative	1a		1b		2		3a		3b		4a		4b		5		6		7		8	
Total Length of Alignment (Miles)	1.83		1.83		1.88		2.03		2.03		1.62		1.62		1.62		1.65		1.69		1.67	
Total Area within One Quarter Mile of Alignment	1.04		1.04		1.11		1.02		1.02		0.98		0.98		0.98		0.98		1		0.98	
7.a Safety- determined to be able to provide measures typical of requirements per ADA, per typical CPUC requirements, fire life safety guidelines, and per Metro Design Guidelines for access to and from stations (amount grade separated) (Score 1 to 5)	22%	1	13%	1	39%	2	34%	2	21%	1	24%	1	34%	2	91%	5	103%	5	32%	2	103%	5
Total underground - new tunnel, existing 2nd Street tunnel and aerial	44%		33%		36%		46%		38%		49%		60%		94%		*103% (includes grade separating some of the Eastside Extension)		56%		103%	
7.b Number of emergency facilities located within 1/4 mile of the alignment, i.e., fire stations, police stations, hospitals.	4		4		4		4		4		4		4		4		4		4		4	
7.c Number of public events with 1/4 mile alignment	14		14		14		14		14		14		14		14		14		14		14	

*** NOTE: Score 1-5 is use for some criteria where 1 = WORST and 5 = BEST**

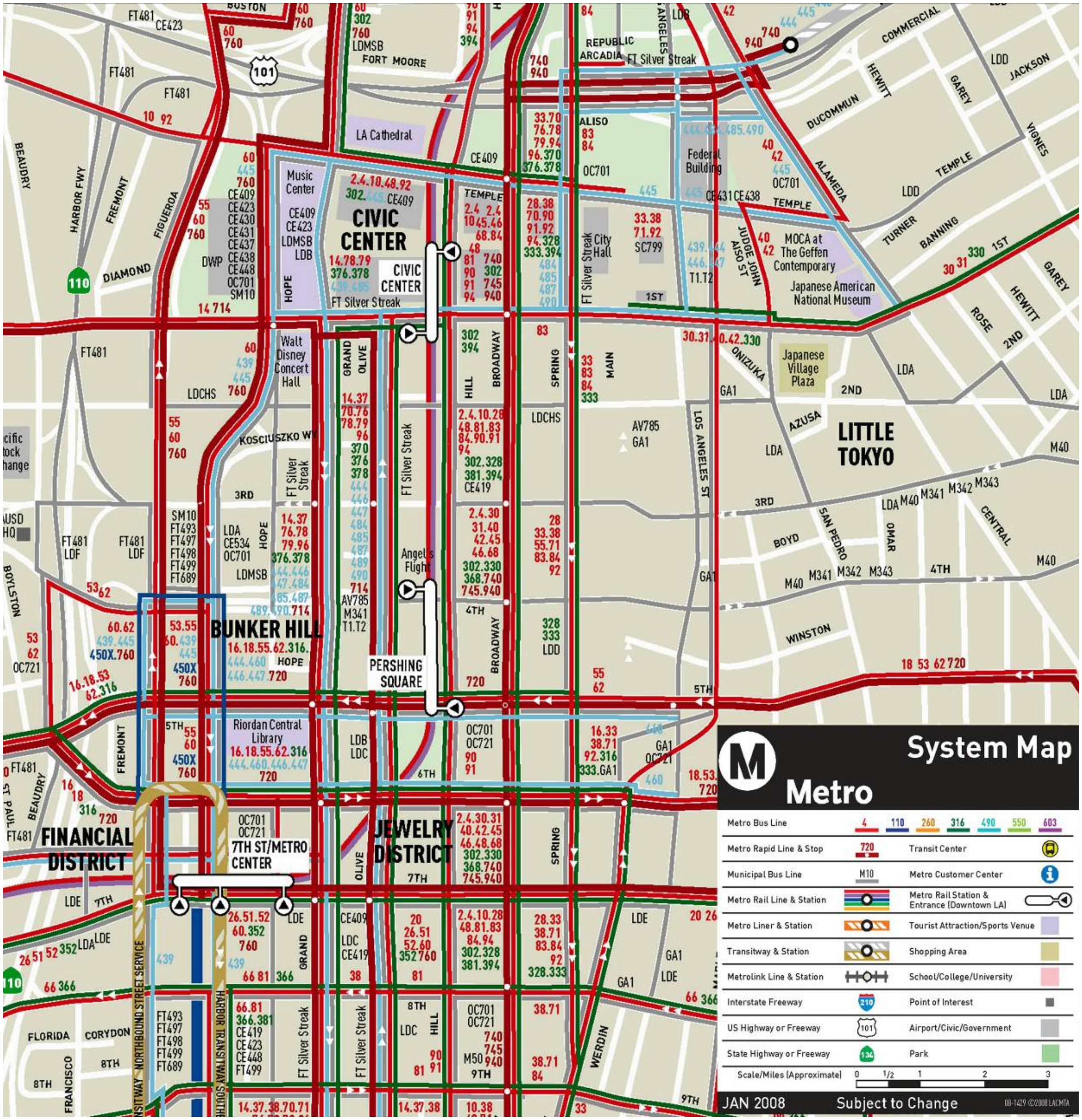


Figure 2-18 No Build Alternative

2.4.2 Transportation System Management

The TSM Alternative (Figure 2-19) imitates the proposed light rail link between 7th St./Metro Center Station and Union Station using two shuttle bus routes. Buses would run frequently, perhaps just a few minutes apart during peak hours, and the routes would be designed to move passengers between the two stations as quickly as possible. Intermediate stops would provide additional transit coverage of Bunker Hill, Little Tokyo, and the Civic Center. A variety of bus sizes could be used to tailor capacity to demand, ranging from 30-ft. DASH style buses to 60-ft. articulated buses.

In addition to frequent headways, the TSM Alternative could employ a Transit Priority System (TPS) similar to the ones currently used on Metro Rapid Lines within the City. Due to the constant pick up and discharge of passengers, buses usually fall out of synchronization with signal progression, lengthening the time spent at red lights. Installation of a TPS system or re-coordination of the signals along the TSM would counter this effect.

In a TPS, transponders mounted to the undersides of the buses would trigger detector loops embedded in the pavement in advance of each signalized intersection along the route. Upon detecting the bus, the City's central Automated Traffic Surveillance and Control (ATSAC) system would trigger the signal controller to grant additional time on the green light to the oncoming bus (usually 10-15% of the total cycle time), up to once per cycle. The existing Metro Rapid Lines have shown that the TPS keeps buses moving quickly, reduces trip times, and increases passenger throughput. Use of existing or creation of new bus-only lanes where right-of-way is available could also improve travel speeds.

There are two proposed alignments for the TSM Alternative, described below.

Grand/Temple/Los Angeles Alignment: This alignment is similar to the existing LADOT DASH Line B service. Buses travel from Chinatown to 7th St./Metro Center Station using Los Angeles St., Temple St., and Grand Ave. The route could be easily modified to serve the Little Tokyo/Arts District Station by using Alameda St. instead of Los Angeles St. between Temple St. and Union Station. Service currently operates every 8 minutes, but the frequency could be increased to make the line more convenient to Regional Connector passengers. This alignment provides good coverage of the Bunker Hill and Civic Center areas, but bypasses most of Little Tokyo.

Figueroa/Flower/2nd/3rd/Alameda Alignment: This alignment would take advantage of the existing northbound bus-only lane on Figueroa St. and the light usage of 2nd and 3rd Streets by other bus services. TPS would be easier to implement here because buses would only travel in one direction along most streets, eliminating signal priority conflicts between two competing buses. The alignment passes by both the Little Tokyo/Arts District Station and Union Station, so easy connections would be available to both East Los Angeles- and Pasadena-bound passengers. This route provides good coverage of Little Tokyo and the southern edge of the Civic Center, but passengers would be required to undertake a two-block uphill climb to reach Bunker Hill.

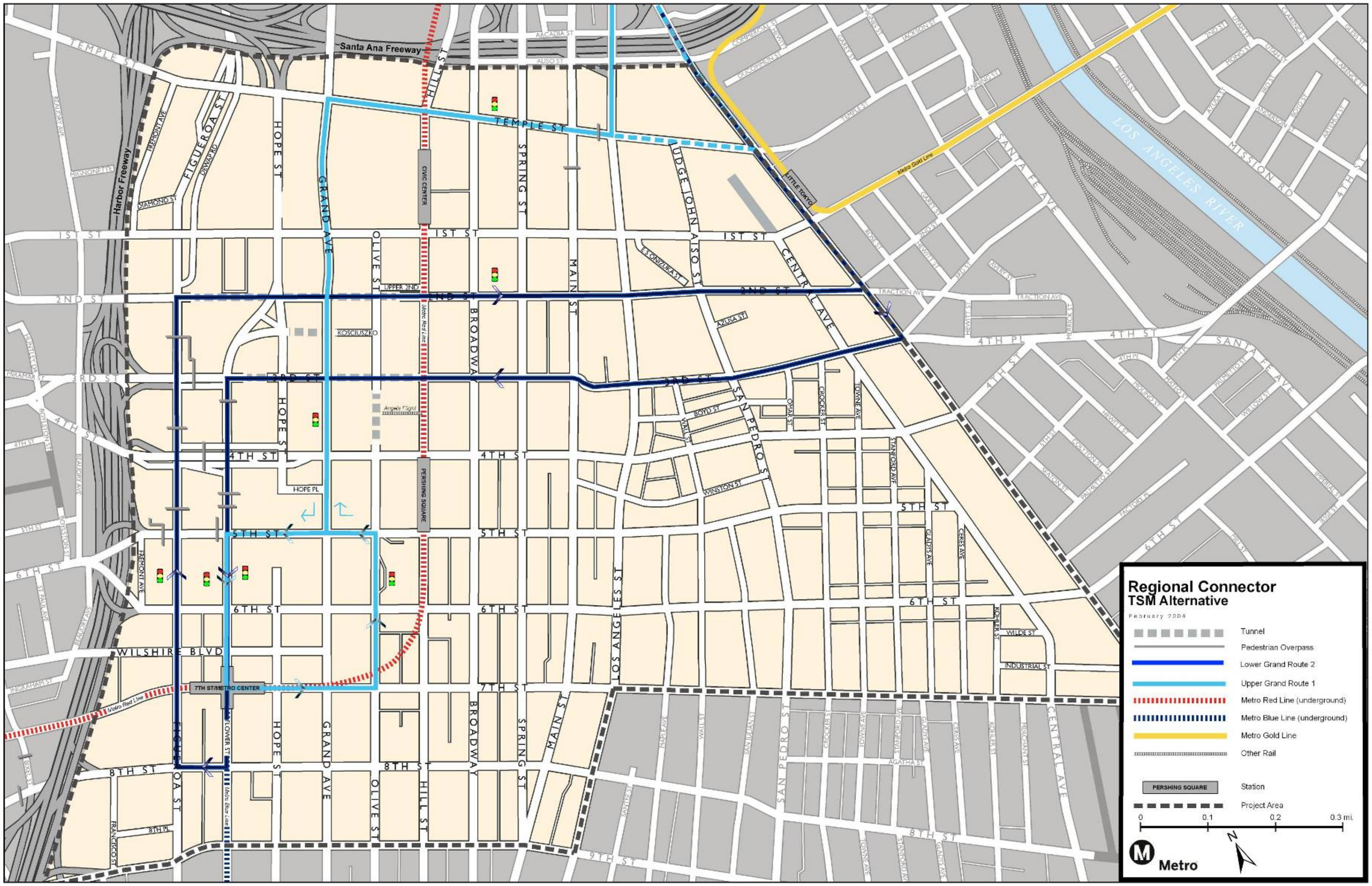


Figure 2-19 TSM Alternative

Bus speeds along the two TSM Alternative alignments were approximated using eight time runs (two per route, per direction) conducted during the afternoon peak period on Monday, May 5, 2008. Table 2-11 through Table 2-16 show the distance between arbitrarily-selected time points along each route, the time it took to traverse each segment, and the corresponding speed. The time runs were performed without pulling over to simulate picking up and discharging passengers, so an estimated dwell time of thirty seconds was used to account for the time penalty of stopping. Both of the TSM bus routes have two terminal stops and six intermediate stops, so the total dwell time estimate added to each run was three minutes.

Overall, the calculations predicted average bus speeds of 9-12mph, a range similar to the observed speeds of Metro's local bus service. Thus, a typical trip on the Upper Grand TSM route during the weekday afternoon peak period would take approximately 11-13 minutes and a trip on the 2nd St. route would take 11-15 minutes.

The time runs were conducted using a small car, which was capable of much better handling, braking, and acceleration performance than a typical bus. Data limitations arose as a result of not having an actual transit bus available to conduct the time runs. The car attained much shorter trip times than the TSM bus service likely would for a number of reasons. While the driver avoided maneuvers that would be difficult for a bus to perform, it also would have been unsafe and disruptive to traffic flow for a passenger car to drive slowly enough to imitate the speed of a bus. Similarly, pulling over and stopping at each of the proposed TSM bus stops would have interrupted existing bus service and violated the "no stopping anytime" restriction signs posted at the bus zones.

Another potential source of delay in bus service is the tendency for buses to fall out of the aforementioned synchronization with street signal progression; buses would then have additional wait time at red lights. The 30-second dwell time was used to account not only for the time that the bus would actually be stopped, but also the slower speed and additional red light wait time that would be incurred.

Another data limitation arose at one intersection along the Upper Grand TSM route where only buses are allowed to turn left (7th St. and Olive St.). In order to proceed along the route without violating the left turn restriction, the driver had to estimate the wait time needed to make the left turn, then detour around the block to continue north on Olive St. It is unlikely, however, that this deviation from the TSM route significantly affected the recorded trip time.

Table 2-11 Upper Grand Route Southbound (via Los Angeles)

Timepoint	Distance (miles)[2]	Time Run 1 (mm:ss) 4:08 PM	Time Run 2 (mm:ss) 4:31 PM	Avg. Time (mm:ss)	Avg. Speed (mph)
Alameda St & Los Angeles St.	0.00	00:00	00:00	00:00	
Temple St. & Los Angeles St.	0.30	01:10	01:10	01:10	15.4
Temple St. & Broadway	0.22	00:20	00:27	00:23	33.7
Grand Ave. & 1st St.	0.46	02:38	02:42	02:40	10.4
Grand Ave. & 3rd St.	0.23	00:30	00:37	00:34	24.7
Grand Ave. & 5th St.	0.25	01:34	02:02	01:48	8.3
7th St. & Flower St.	0.40	03:43	02:03	02:53	8.3
Total (without stops):	1.86	09:55	09:01	09:28	11.8
Total Dwell Time (Avg. Dwell x # Stops):		03:00	03:00	03:00	
Trip Time with Stops:		12:55	12:01	12:28	9.0

Table 2-12 Upper Grand Route Northbound (via Los Angeles)

Timepoint	Distance (miles)[2]	Time Run 1 (mm:ss) 4:18 PM	Time Run 2 (mm:ss) 4:41 PM	Avg. Time (mm:ss)	Avg. Speed (mph)
7th St. & Flower St.	0.00	00:00	00:00	00:00	
Grand Ave. & 5th St.	0.56	02:29	03:12	02:51	11.8
Grand Ave. & 3rd St.	0.25	00:41	01:00	00:51	17.8
Grand Ave. & 1st St.	0.23	00:38	00:49	00:44	19.0
Temple St. & Broadway	0.46	01:34	01:40	01:37	17.1
Temple St. & Los Angeles St.	0.22	01:16	01:15	01:15	10.5
Alameda St & Los Angeles St.	0.30	01:15	01:15	01:15	14.4
Total (without stops):	2.02	07:53	09:11	08:32	14.2
Total Dwell Time (Avg. Dwell x # Stops):		03:00	03:00	03:00	
Trip Time with Stops:		10:53	12:11	11:32	10.5

Table 2-13 Upper Grand Route Southbound (via Alameda)[3]

Timepoint	Distance (miles)[2]	Time Run 1 (mm:ss) 4:08 PM	Time Run 2 (mm:ss) 4:31 PM	Avg. Time (mm:ss)	Avg. Speed (mph)
Alameda St & Los Angeles St.	0.00	00:00	00:00	00:00	
Alameda St. & Temple St.	0.34	01:10	01:00	01:05	18.8
Temple St. & Los Angeles St.	0.22	01:03	01:05	01:04	12.4
Temple St. & Broadway	0.22	00:20	00:27	00:23	33.7
Grand Ave. & 1st St.	0.46	02:38	02:42	02:40	10.4
Grand Ave. & 3rd St.	0.23	00:30	00:37	00:34	24.7
Grand Ave. & 5th St.	0.25	01:34	02:02	01:48	8.3
7th St. & Flower St.	0.40	03:43	02:03	02:53	8.3
Total (without stops):	**2.12**	**10:58**	**09:56**	**10:27**	**12.2**
Total Dwell Time (Avg. Dwell x # Stops):		03:00	03:00	03:00	
Trip Time with Stops:		**13:58**	**12:56**	**13:27**	**9.5**

Table 2-14 Upper Grand Route Northbound (via Alameda)[3]

Timepoint	Distance (miles)[2]	Time Run 1 (mm:ss) 4:18 PM	Time Run 2 (mm:ss) 4:41 PM	Avg. Time (mm:ss)	Avg. Speed (mph)
7th St. & Flower St.	0.00	00:00	00:00	00:00	
Grand Ave. & 5th St.	0.56	02:29	03:12	02:51	11.8
Grand Ave. & 3rd St.	0.25	00:41	01:00	00:51	17.8
Grand Ave. & 1st St.	0.23	00:38	00:49	00:44	19.0
Temple St. & Broadway	0.46	01:34	01:40	01:37	17.1
Temple St. & Los Angeles St.	0.22	01:16	01:15	01:15	10.5
Alameda St. & Temple St.	0.22	00:46	00:36	00:41	19.3
Alameda St & Los Angeles St.	0.34	01:16	02:43	02:00	10.2
Total (without stops):	**2.28**	**08:40**	**11:15**	**09:58**	**13.7**
Total Dwell Time (Avg. Dwell x # Stops):		03:00	03:00	03:00	
Trip Time with Stops:		**11:40**	**14:15**	**12:58**	**10.6**

Table 2-15 2nd St. Route Southbound

Timepoint	Distance (miles)[2]	Time Run 1 (mm:ss) 3:10 PM	Time Run 2 (mm:ss) 3:45 PM	Avg. Time (mm:ss)	Avg. Speed (mph)
Alameda St & Los Angeles St.	0.00	00:00	00:00	00:00	
Alameda St. & 1st St.	0.50	01:55	02:34	02:15	13.4
3rd St. btwn. Main St. & Los Angeles St.	0.74	01:51	02:08	02:00	22.3
3rd St. & Broadway	0.21	01:39	01:33	01:36	7.9
Flower St. & 3rd St.	0.39	00:58	00:59	00:59	24.0
Flower St. & 5th St.	0.25	00:31	00:28	00:29	30.5
Flower St. & 7th St.	0.25	00:47	00:48	00:47	18.9
Total (without stops):	**2.34**	**07:41**	**08:30**	**08:06**	**17.4**
Total Dwell Time (Avg. Dwell x # Stops):		03:00	03:00	03:00	
Trip Time with Stops:		**10:41**	**11:30**	**11:05**	**12.7**

Table 2-16 2nd St. Route Northbound

Timepoint	Distance (miles)[2]	Time Run 1 (mm:ss) 3:30 PM	Time Run 2 (mm:ss) 3:54 PM	Avg. Time (mm:ss)	Avg. Speed (mph)
Figueroa St. & 7th St.	0.00	00:00	00:00	00:00	
Figueroa St. & 5th St.	0.25	00:40	00:47	00:44	20.7
Figueroa St. & 3rd St.	0.25	01:11	01:10	01:11	12.8
2nd St. & Broadway	0.61	02:49	01:48	02:18	15.9
2nd St. @ Caltrans Building	0.20	02:02	01:31	01:46	6.8
Alameda St. & 1st St.	0.59	03:50	03:52	03:51	9.2
Alameda St & Los Angeles St.	0.50	02:28	02:41	02:35	11.7
Total (without stops):	**2.40**	**13:00**	**11:49**	**12:25**	**11.6**
Total Dwell Time (Avg. Dwell x # Stops):		03:00	03:00	03:00	
Trip Time with Stops:		**16:00**	**14:49**	**15:25**	**9.3**

[1] *Excluding terminal stops*
[2] *Source: Environmental Systems Research Institute (ESRI)*
[3] *Includes optional detour to Little Tokyo/Arts District Station; times estimated using runs via Los Angeles St.*

2.4.3 At-Grade Emphasis LRT Alternative (Options A and B)

The At-Grade Emphasis LRT Alternative, as shown in Figure 2-20, will provide a direct connection from the Metro Gold Line at Temple St. to the existing underground 7th St./Metro Center Station with at least three new station locations in between. The At-Grade Emphasis LRT Options A and B are identical, with the exception of the station locations on Flower St. It is assumed that street-running trains will operate by existing traffic signals and will not require crossing gates and bells.

Description

In this alternative, dual-track service from the Metro Gold Line at Temple Street is extended using a "Y" track configuration across Alameda St., utilizing existing traffic and parking lanes to travel. The tracks would extend to the west across Alameda St. and run along the south side of Temple St. An existing Mechanically Stabilized Earth (MSE) ramp connects tracks from the bridge over US-101 to the tracks on surface just north of Temple St. In order to accommodate the turning radius for the trains, the ramp will need to be adjusted to provide a steeper grade.

As trains continue west on Temple St. in a dual-track configuration, the track will return to the center of Temple St. As the track arrives at Los Angeles St., the alignment splits into two single-track alignments. One track would continue west to Main St. while the other track would continue south on Los Angeles St. The track alignments would run on the eastern side of both streets and a split station would be planned for each track alignment just north of 1st St. The track alignments then would continue south across 1st St. At 2nd St., the track on Los Angeles St. heads west where it then reconnects with the track on Main St. Both track alignments would return to a dual-track configuration.

At 2nd St., adjacent to Broadway Ave. and Spring St., another split station is possible if property was acquired and easements provided on adjacent properties. This station is currently optional and will be further analyzed for ridership and cost implications in the next phase of the project. With or without a station, the street would be transit-dedicated with the two travel lanes and two parking lanes reduced to a single travel lane primarily for access to parking lots or loading zones. This type of configuration would extend from Los Angeles St. to Hill St.

As the track alignment continues west past Hill St., it would be on the southern side of the street and enter into the existing 2nd St. tunnel. This alignment would then reduce the 2nd St. tunnel from four travel lanes to one or two travel lanes, pending further detailed engineering. About halfway through the 2nd St. tunnel, the alignments then would veer to the south, through the existing tunnel wall. This would place the alignment in close proximity to Grand Ave., near the second station.

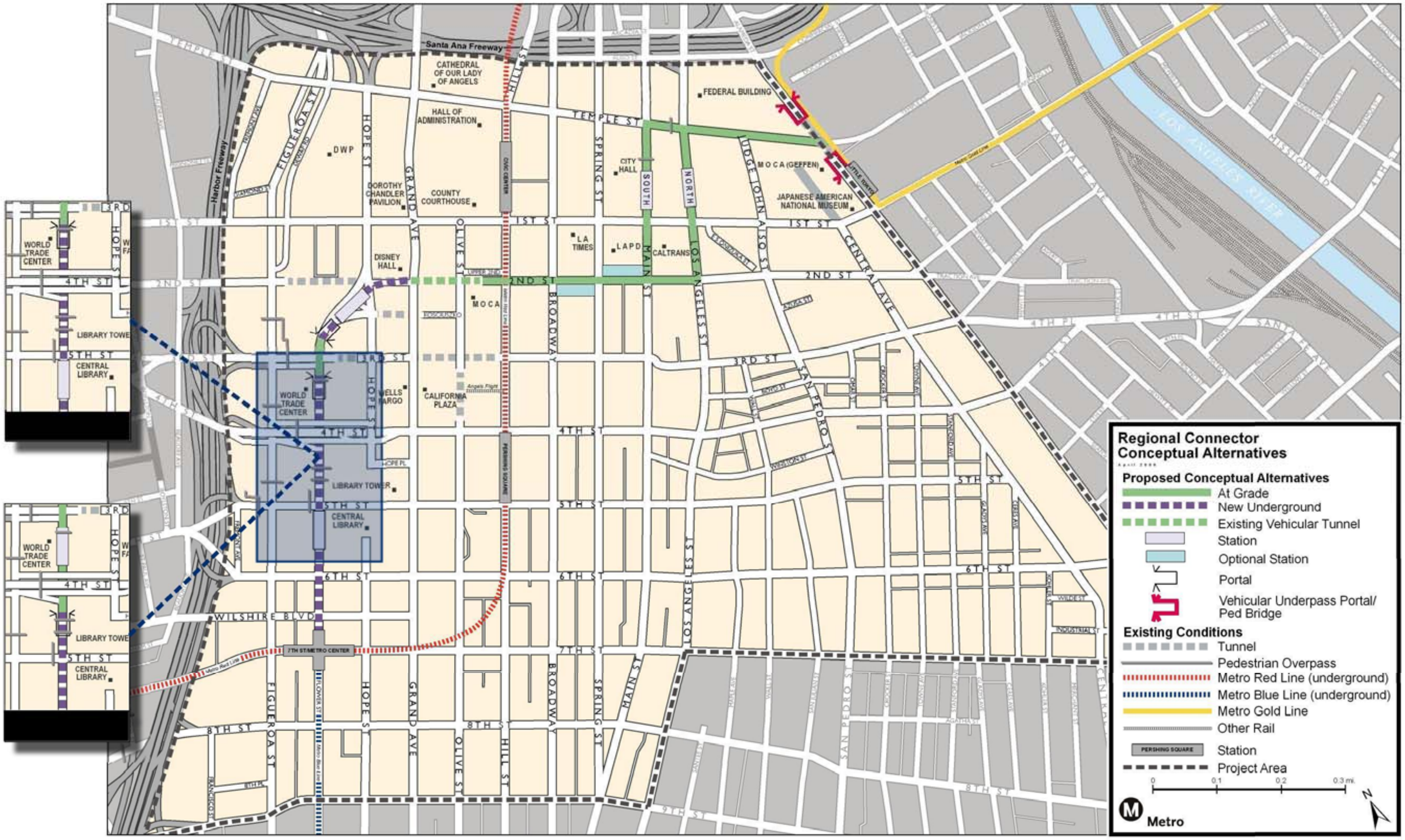


Figure 2-20 At-Grade Emphasis LRT Options A & B

Using the natural grade change of the hillside, the alignment would then resurface from a portal, off-street, just north of 3rd St. It would cross 3rd St. at-grade and continue south on Flower St. A third station is contemplated on or under Flower St., either at-grade south of 3rd St. or underground south of 5th St. In either case, south of 3rd St. and north of 5th St., the track alignment then enters into a portal in order to be fully underground before reaching 5th St. The underground track alignment then directly connects to the 7th St./Metro Center Station under Flower St.

Construction

Construction of this alternative assumes using the center of the street for staging and construction of the at-grade areas. Utilization of the 2nd Street tunnel for construction will also be necessary. Cut and cover construction techniques will be used for the underground segment from 7th St. and Flower St. to 3rd St. and Flower St. as well as at the Grand Avenue Station. Locations adjacent to the alignment may be used for some storage, vehicle equipment, offices and materials. Those locations will be identified when further engineering is conducted during the later phases of this project and as part of the EIR/EIS process.

Conclusion

The At-Grade Emphasis LRT Alternative accomplishes many of the goals and objectives of this project. Both options connect major activity centers within the PSA while introducing an element of pedestrian integration through the at-grade configuration. The couplet arrangement along Main St. and Los Angeles St. provides for creative ways to integrate the system through urban design with the surrounding Civic Center and municipal activities as well as the growing Little Tokyo community. An at-grade system allows pedestrians to view and understand the direction of a train. The alternative also provides a unique opportunity to incorporate an integrated pedestrian transit mall along 2nd St.

Figures 2-21 through 2-47 provide examples of alignments, station locations, and urban design elements. For display purposes, characteristics of the at-grade station on Flower St. in Option B are shown. All other renderings pertain to both Options A and B.

2.4.4 Underground Emphasis LRT Alternative

The Underground Emphasis LRT Alternative, as shown in Figure 2-48, uses the same type of "Y" dual-track configuration as the At-Grade Emphasis LRT Alternative.

Description

From the Little Tokyo/Arts District Station, the tracks lead at-grade southwest across 1st and Alameda Streets. Here, the property within the area bounded by Central Ave., 1st St., Alameda St., and 2nd St. would be acquired to construct a portal and create twin tunnels.

The twin tunnels would extend west under 2nd St. to a new station in the vicinity of 2nd and Los Angeles Streets. The alignment continues west underground with a second new station in the vicinity of Grand Ave. near 2nd St. The alignment then veers south to a final underground station in the vicinity of Flower St. and 5th St. The tunnels then continue south to connect to the existing 7th St./Metro Center Station.

Figure 2-21 At-Grade Emphasis LRT Options A & B – Alameda St. underpass looking north from 1st St.

Figure 2-22 At-Grade Emphasis LRT Options A & B – Alameda St. underpass looking north from Alameda and 1st Streets intersection

Figure 2-23 At-Grade Emphasis LRT Options A & B – Alameda St. Underpass Looking North on Alameda and Temple Streets Intersection

Figure 2-24 At-Grade Emphasis LRT Options A & B – Alameda St. Underpass at Temple and Alameda Streets Intersection

Figure 2-25 At-Grade Emphasis LRT Options A & B – Alameda and Temple Streets Intersection

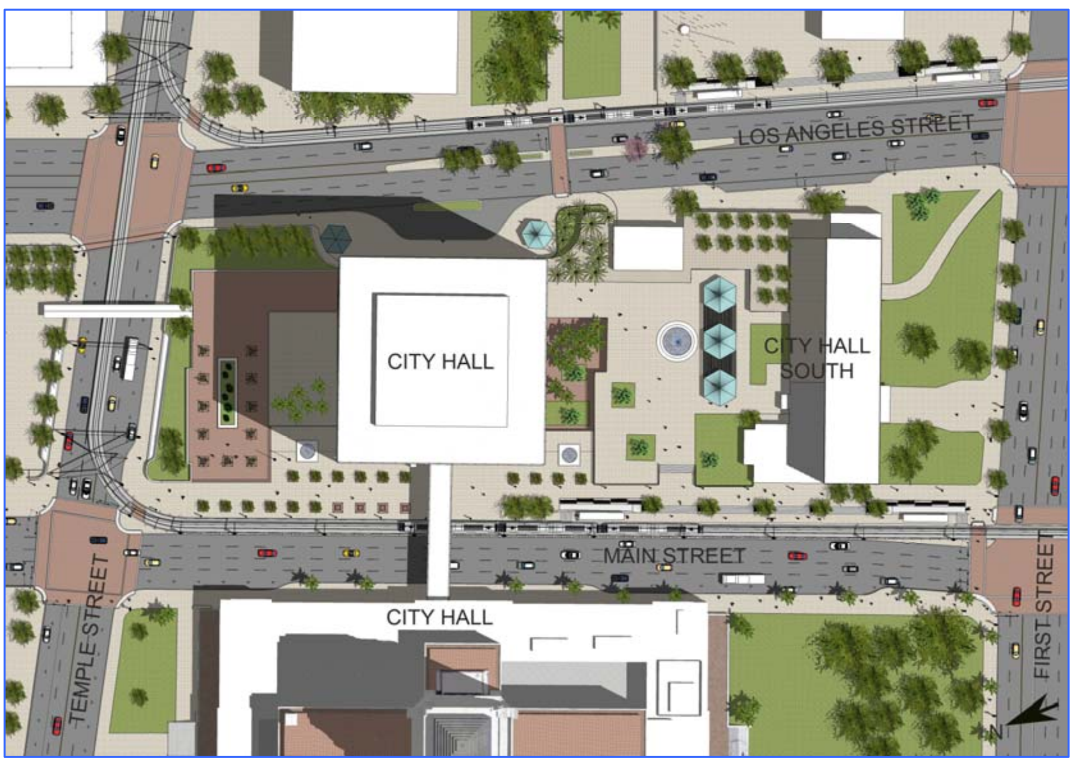


Figure 2-26 At-Grade Emphasis LRT Options A & B – Split station at City Hall along Los Angeles and Main Streets

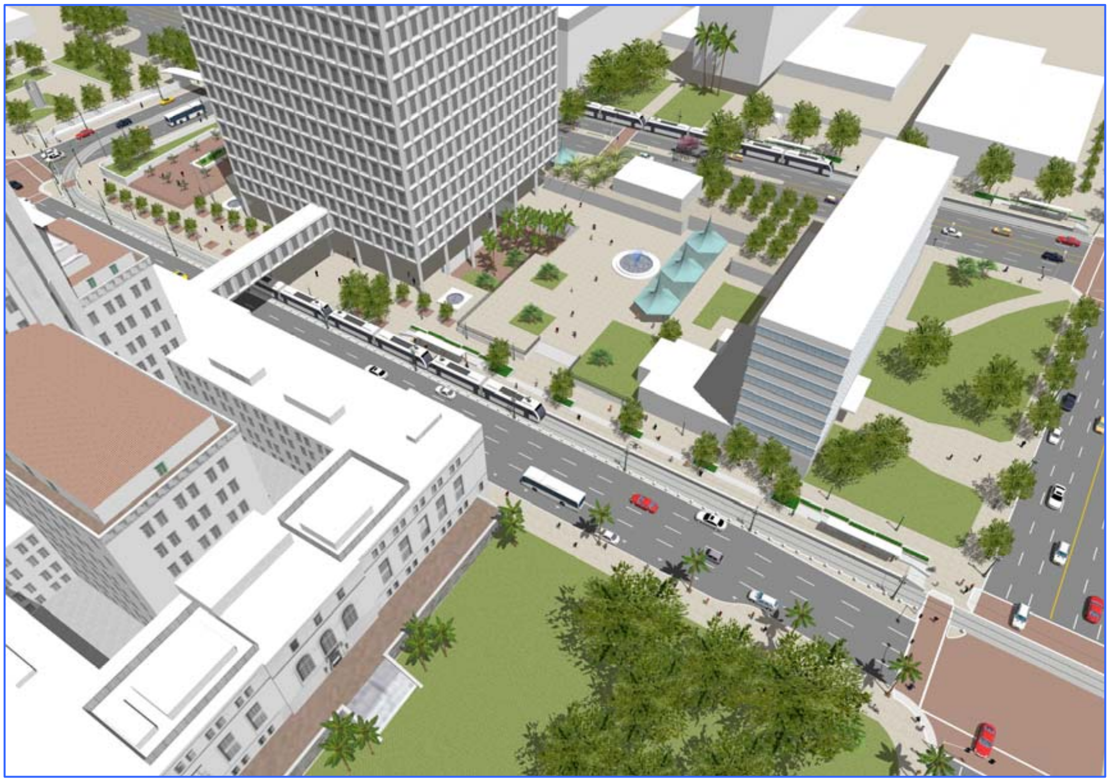


Figure 2-27 At-Grade Emphasis LRT Options A & B – Split station at City Hall

Figure 2-28 At-Grade Emphasis LRT Options A & B – Main St. Station Looking North from 1st St.

Figure 2-29 At-Grade Emphasis LRT Options A & B – Los Angeles St. Station

Figure 2-30 At-Grade Emphasis LRT Options A & B – Los Angeles St. looking north from 1st St.

Figure 2-31 At-Grade Emphasis LRT Option A & B – Main St. looking north from 2nd St.

Figure 2-32 At-Grade Emphasis LRT Options A & B – Main St. looking south between Main and Temple St.

Figure 2-33 At-Grade Emphasis LRT Option A & B – Temple St. between Los Angeles and Main Streets

Figure 2-34 At-Grade Emphasis LRT Option A & B – 2nd St. looking west from Broadway St.

Figure 2-35 At-Grade Emphasis LRT Option A & B – 2nd St. Looking East from Broadway St.

Figure 2-36 At-Grade Emphasis LRT Options A & B – 2nd St. Looking East from Broadway St.

Figure 2-37 At-Grade Emphasis LRT Options A & B – 2nd St. Looking West between Main and Spring Streets


Figure 2-38 At-Grade Emphasis LRT Option A & B – 2nd and Spring St. Intersection

Figure 2-39 At-Grade Emphasis LRT Option A & B – 2nd St. at Main St.

Figure 2-40 At-Grade Emphasis LRT Option A & B – 2nd St. looking East at Main St. Intersection

Figure 2-41 At-Grade Emphasis LRT Option B – Flower and 3rd St. Intersection Looking Northeast from Flower St.

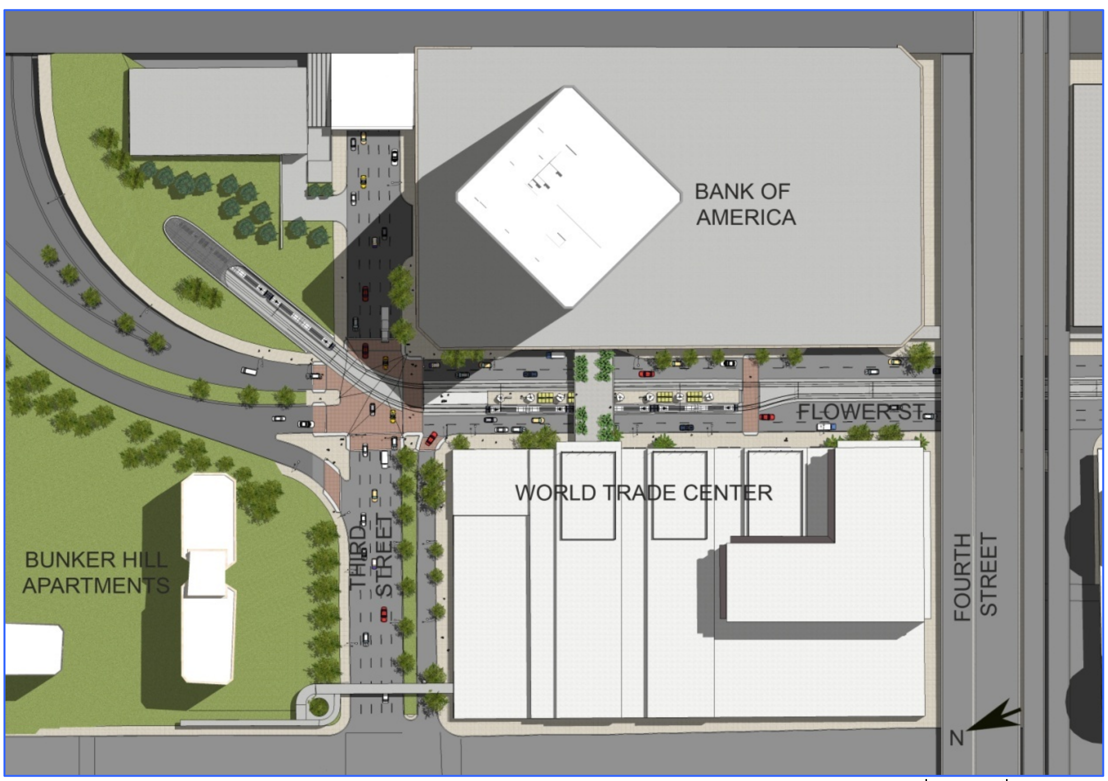


Figure 2-42 At-Grade Emphasis LRT Option B – Flower St. between 3rd and 4th Streets

Figure 2-43 At-Grade Emphasis LRT Option B – Flower St. Looking Southwest from 3rd St.

Figure 2-44 At-Grade Emphasis LRT Option B – Flower and 3rd St. Intersection Looking South from 3rd St.

Figure 2-45 At-Grade Emphasis LRT Option B – Flower St. Looking North from 4th St.

Figure 2-46 At-Grade Emphasis LRT Option B – Flower St. and Station Looking South

Figure 2-47 At-Grade Emphasis LRT Option B – Flower St. and Station Looking South from 3rd St.

Construction

Tunnel boring machines (TBM) would be required to create the twin tunnels. Cut and cover construction techniques will likely be utilized for the new underground stations and staging area for the launching of TBMs.

As additional details are developed on this alternative, the specific locations of and need for ancillary facilities will be identified.

Conclusion

The Underground Emphasis LRT Alternative also accomplishes many of the project objectives. Many of the comments received in Early Scoping supported an underground configuration due to the dense development in the PSA and reducing adverse impacts to traffic congestion and personal safety.

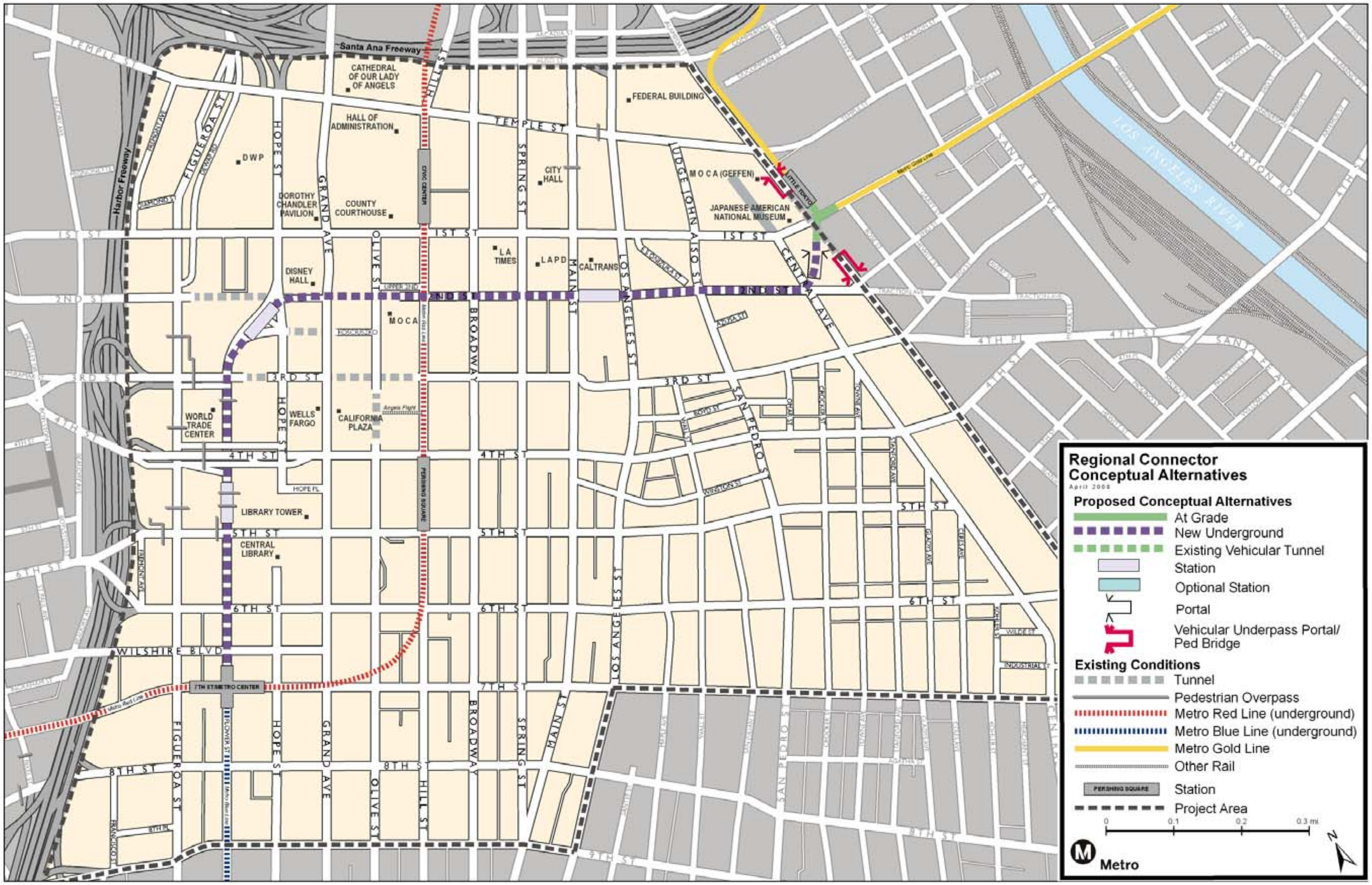


Figure 2-48 Underground Emphasis LRT Alternative

In consideration of the built-out environment of downtown, this analysis was conducted to identify available and appropriate station and portal locations which would benefit the most users and best-integrate with the surrounding street-level environment.

Due to the high traffic and pedestrian volume on Alameda St., a rail underpass at the Little Tokyo/Arts District Station would keep vehicular, pedestrian, and rail movements separate, smoothing the flow of each through the area. This location, on the north eastern edge of Little Tokyo, would serve as a gateway into the growing community and could create an opportunity to create a vibrant and engaging center of street-level activity.

Figures 2-49 through 2-63 show examples of alignments, station locations, and urban design elements.

2.4.5 Station Locations

The At-Grade Emphasis LRT Alternative and Underground Emphasis LRT Alternative have a set of station locations which serve various parts of the PSA. Station locations were chosen through the investigation of past studies, the current downtown dynamics and travel characteristics, and track alignments.

2.4.5.1 Underground Station on Flower St.

The underground station on Flower St. would be between 5th and 6th Streets in the heart of the Financial District. The station would serve the extremely high density of workers in the surrounding businesses, including the Bonaventure Hotel, 444 Flower, Arco Plaza, and the Central Library. As seen in Figure 2-64, the station has a center platform. Station portals would be located on the eastern and western side corner of Flower St. at 5th St. These locations allow users to come up to street level and instantly assess their surroundings.

The area is an important activity center in the PSA, surrounded by notable business towers as well as tourist attractions. Previously, the idea of possibly creating a joint use station with adjacent businesses had been analyzed, specifically at the Bonaventure Hotel and the underground Arco Plaza (now City National Plaza). Further analysis must be conducted in order to evaluate the possibilities. Opportunities to create pedestrian linkages and bike centers also exist, which will reenergize these underutilized urban spaces.

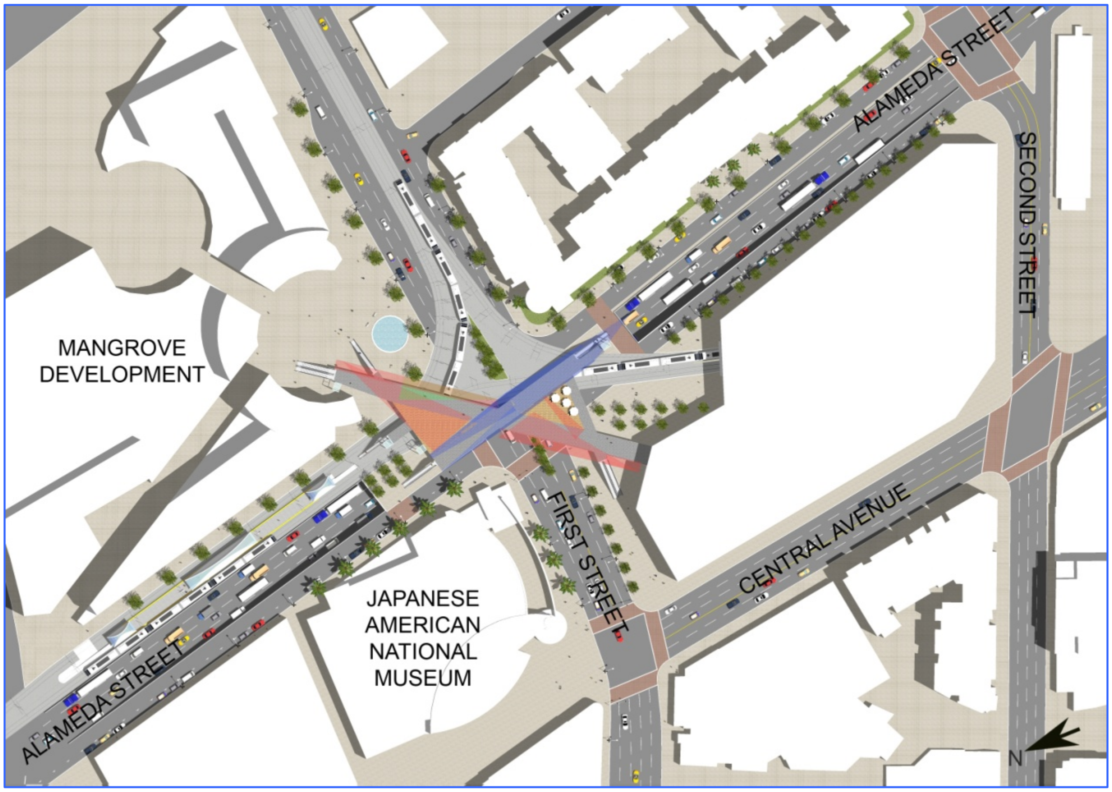


Figure 2-49 Underground Emphasis LRT Alternative – Intersection of Alameda and 1st Streets

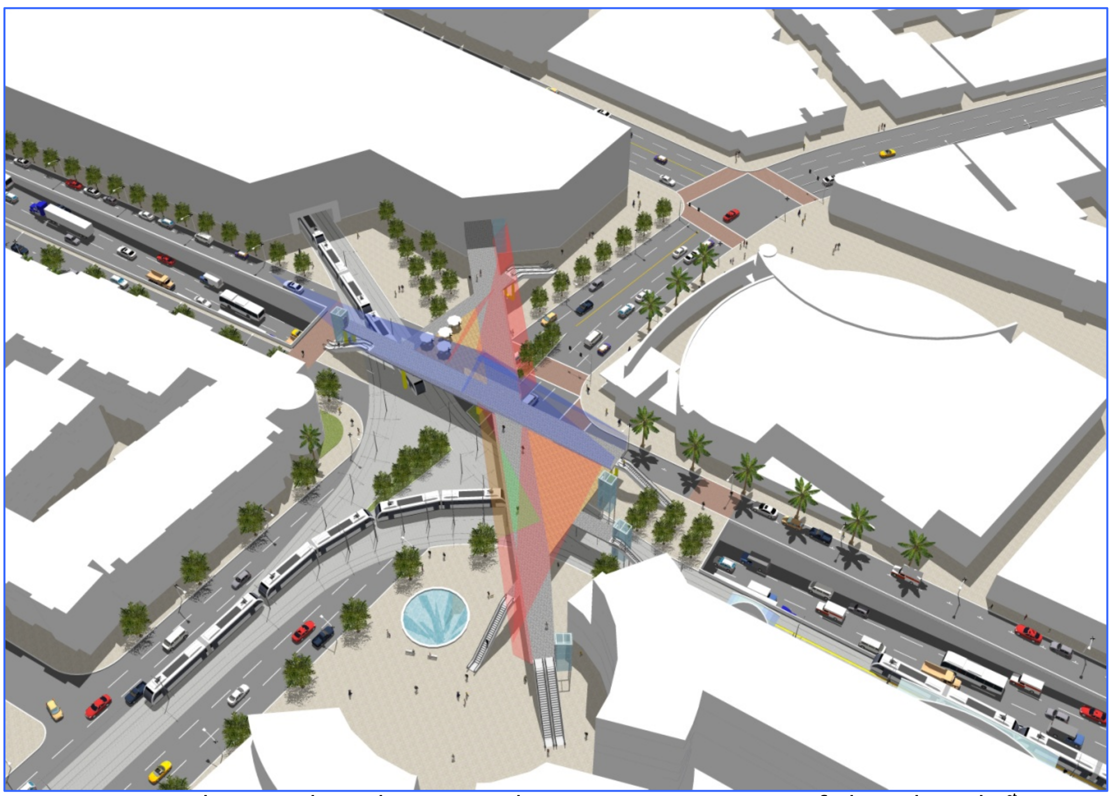


Figure 2-50 Underground Emphasis LRT Alternative – Intersection of Alameda and 1st Streets Looking Southwest

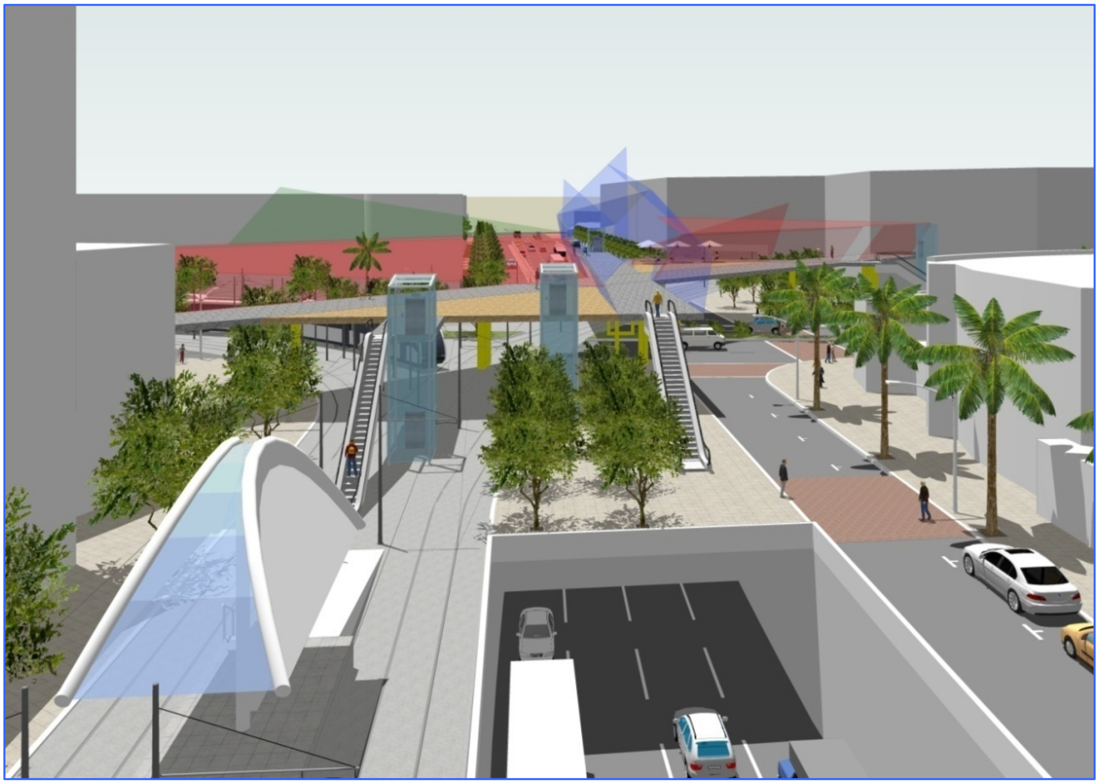


Figure 2-51 Underground Emphasis LRT Alternative – Alameda St. Underpass Looking South

Figure 2-52 Underground Emphasis LRT Alternative – Alameda St. Underpass Looking South on Alameda St.

Figure 2-53 Underground Emphasis LRT Alternative – Alameda St. and Pedestrian Bridge Looking South

Figure 2-54 Underground Emphasis LRT Alternative – Alameda St. looking south from Temple St.

Figure 2-55 Underground Emphasis LRT Alternative – 2nd and Los Angeles St. Intersection Looking Southwest on 2nd St.

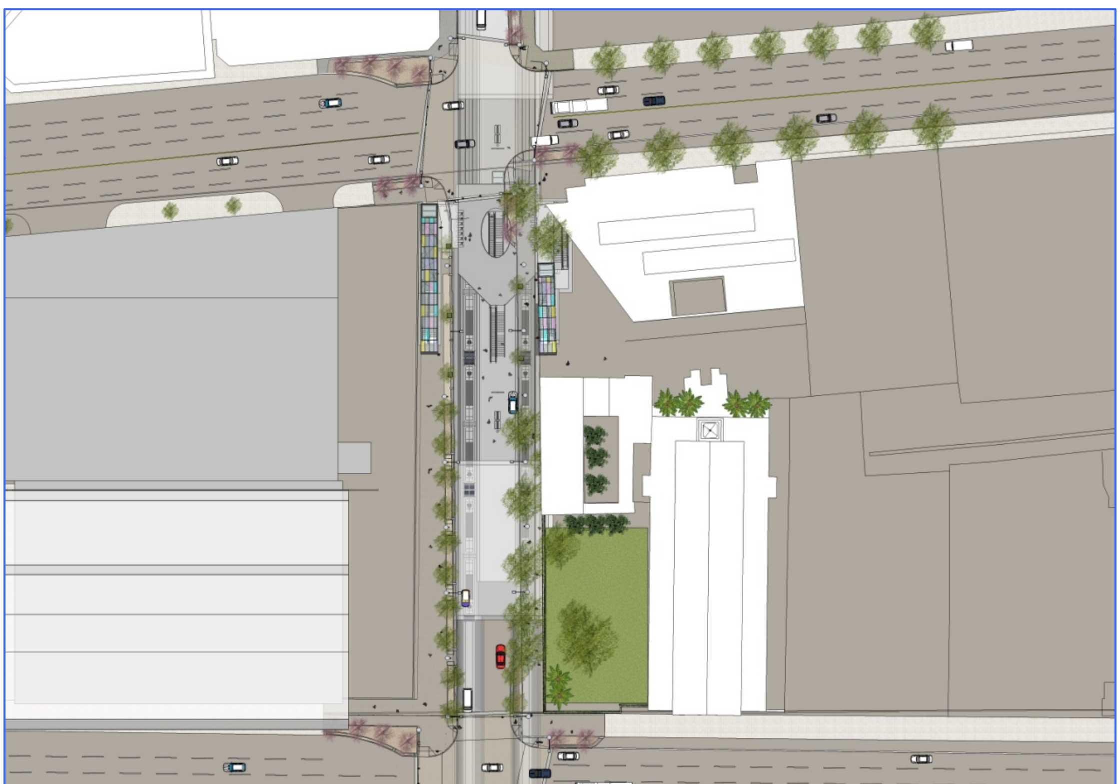


Figure 2-56 Underground Emphasis LRT Alternative – 2nd St. between Main and Los Angeles Streets

Figure 2-57 Underground Emphasis LRT Alternative – 2nd St. and Los Angeles St Intersection

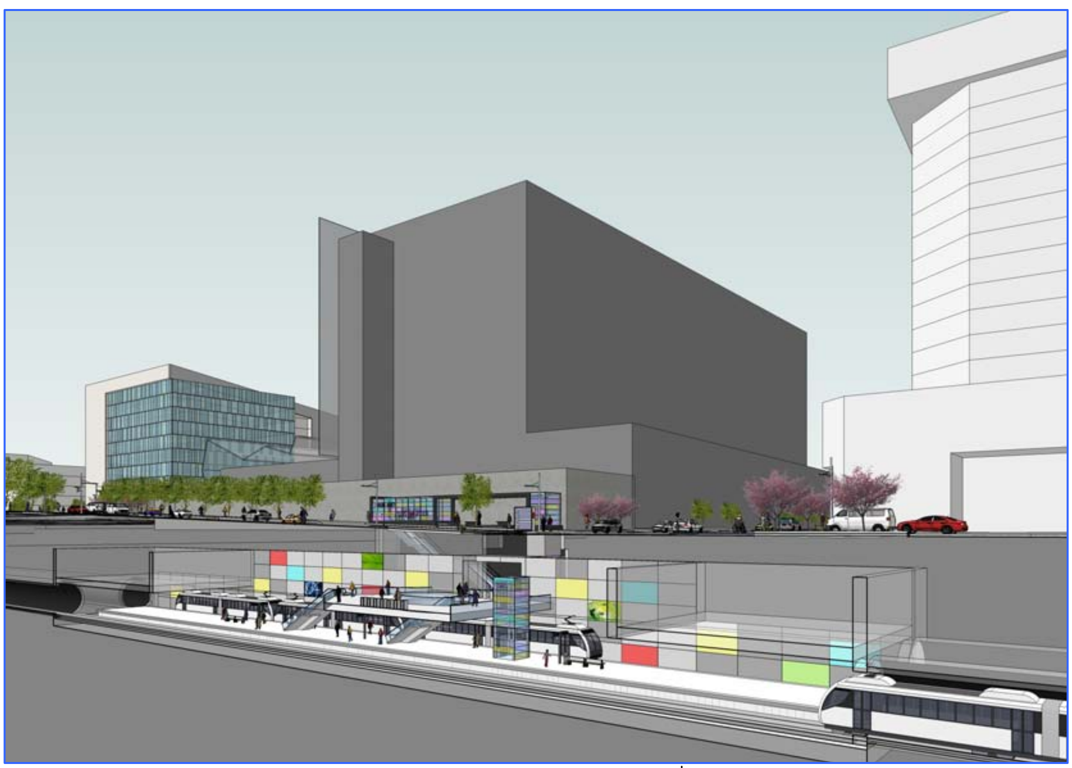


Figure 2-58 Underground Emphasis LRT Alternative – 2nd St. Underground Alignment and Station

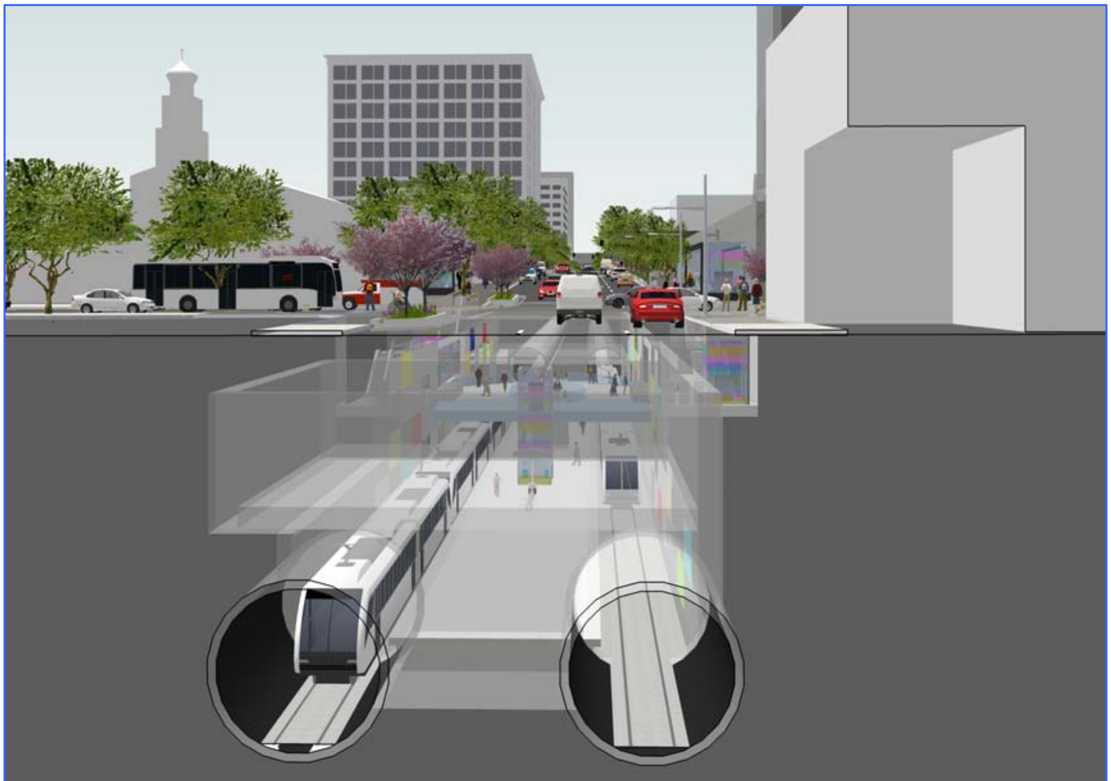


Figure 2-59 Underground Emphasis LRT Alternative – 2nd St. Underground Looking East from Los Angeles St.

Figure 2-60 Underground Emphasis LRT Alternative – 2nd St. Underground Station Looking West from Los Angeles St.

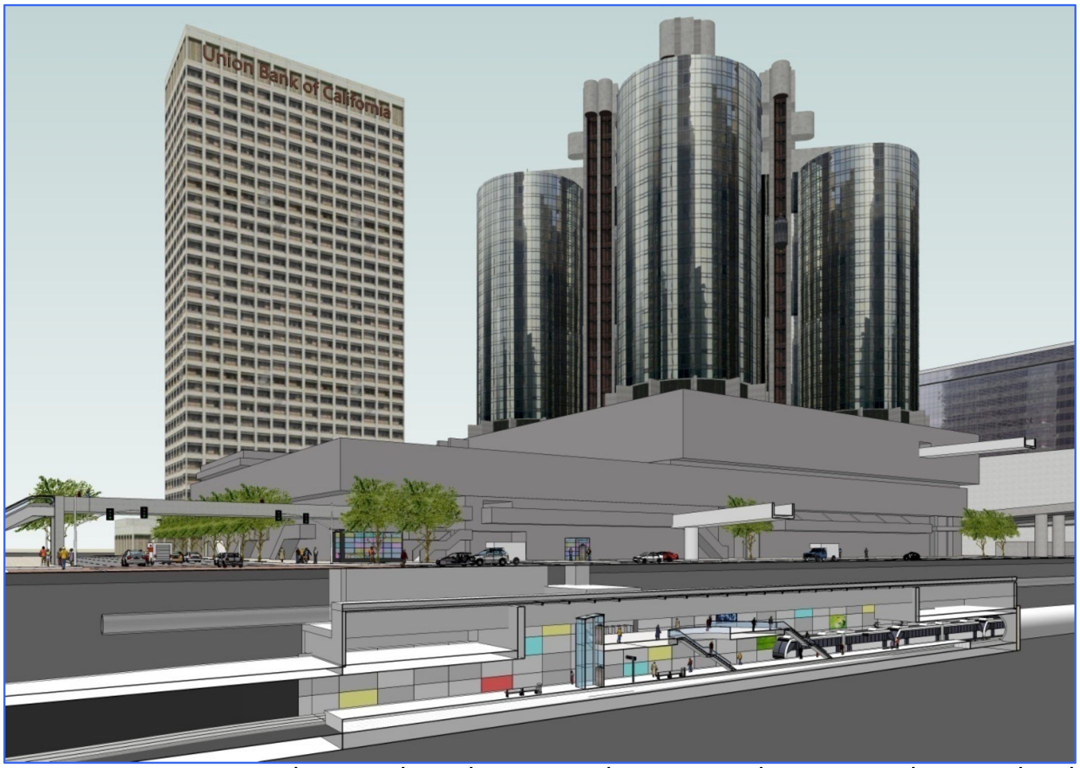


Figure 2-61 Underground Emphasis LRT Alternative – Flower St. Underground and Station

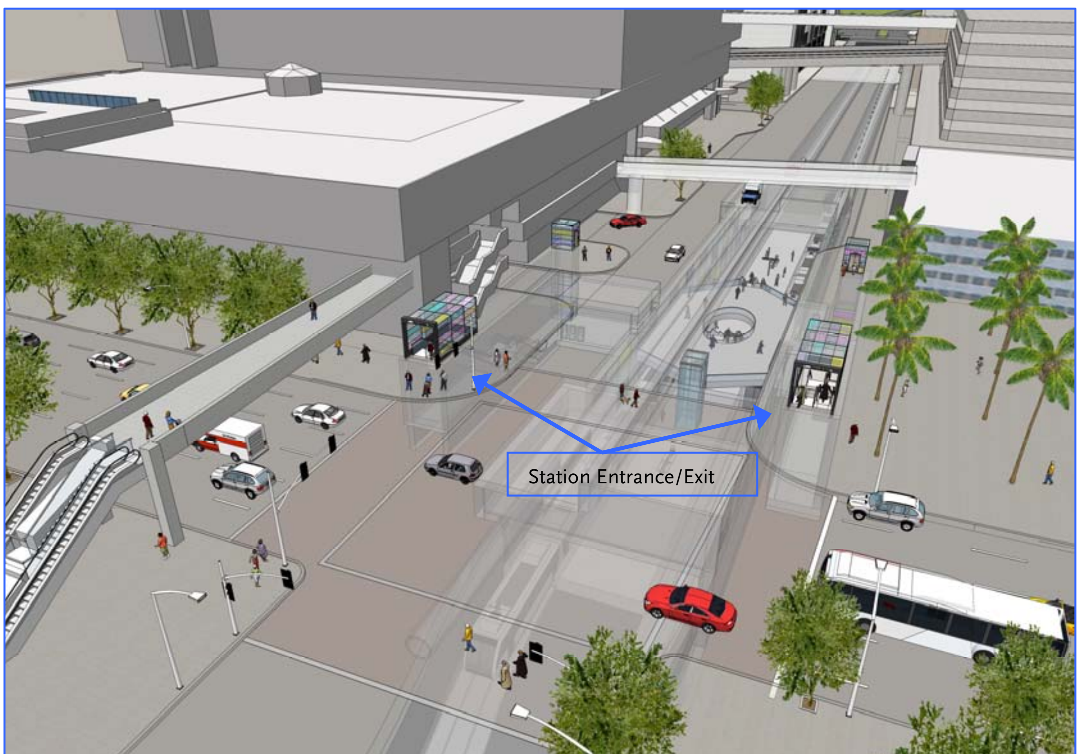


Figure 2-62 Underground Emphasis LRT Alternative – Intersection of Flower and 5th Streets Looking Northwest

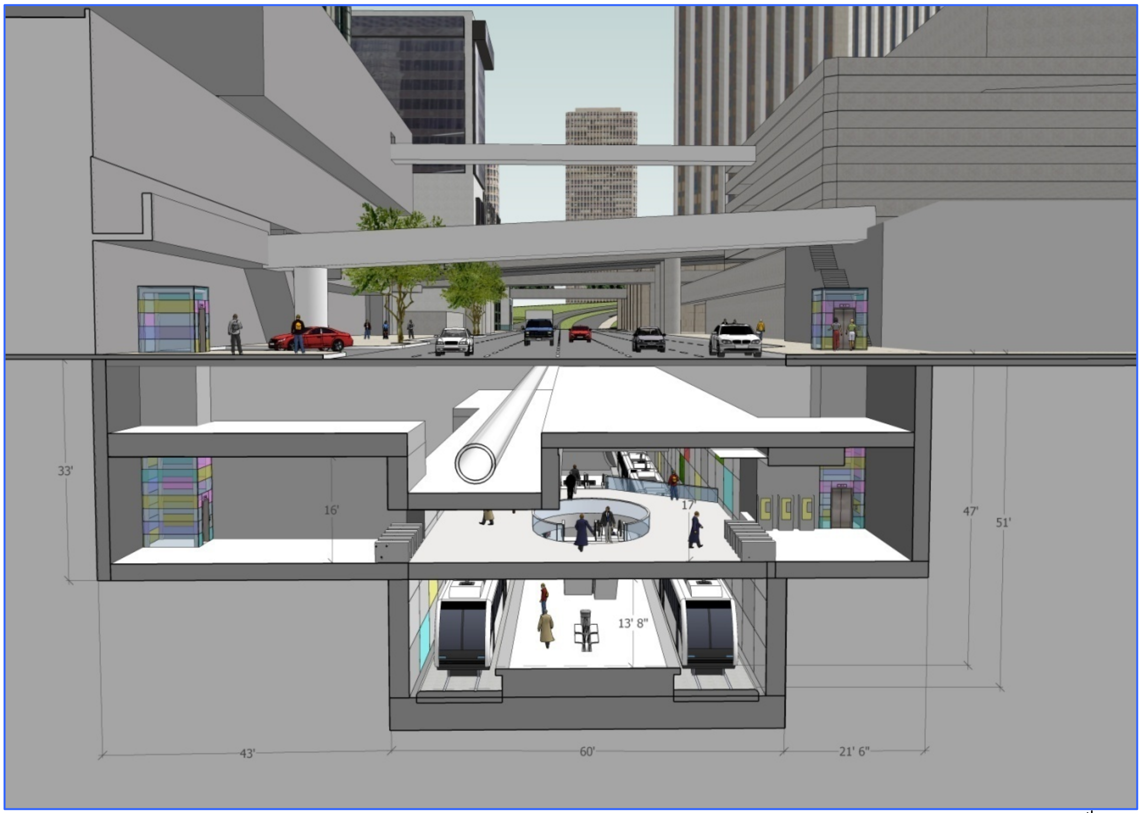


Figure 2-63 Underground Emphasis LRT Alternative – Flower St. Looking North from 5th St.

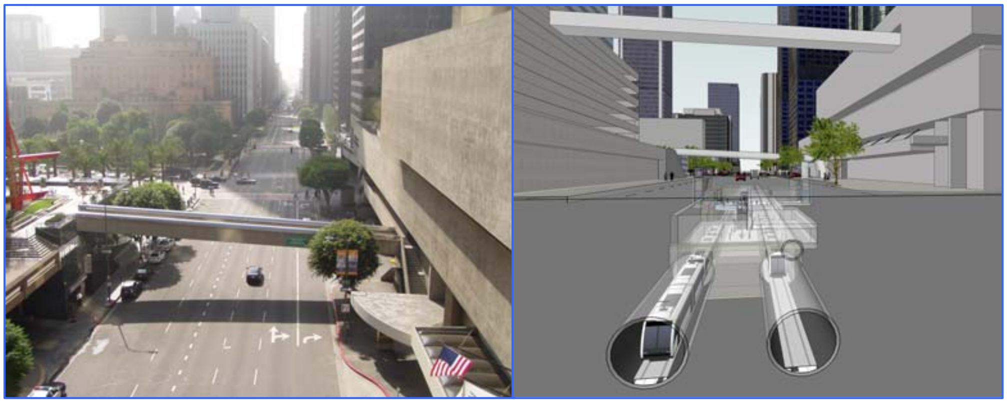


Figure 2-64 Underground Station on Flower St.

2.4.5.2 At-Grade Station on Flower St.

The at-grade station on Flower St. would be located between 3rd and 4th Streets. The station would have a center platform for northbound and southbound trains on either side as well as two lanes of traffic for vehicular movements, as seen in Figure 2-65. The station utilizes stairs on either end, allowing for users and pedestrians to enter/exit onto crosswalks, one located across the 3rd St. intersection and the other located mid-block on Flower St. between 3rd and 4th Streets.

The station would be on the northern end of Flower St. in front of the World Trade Center and BP Plaza. Traditionally an underutilized space, this station provides an opportunity to re-introduce a vibrant urban experience through the use of street treatments, landscaping, and street furniture. Because the station location is close to an important on-ramp to US-110, the use of these elements can soften the overall environment and make it more pedestrian and transit-friendly.

The World Trade Center is a multiuse facility which, apart from being home to a number of import/export companies and law offices, teams with teaching institutions to provide instruction and classroom locations for students. A station in this location would support these activities in addition to improving access to the Financial District.

Figure 2-65 At-Grade Station on Flower St.

2.4.5.3 Grand Avenue Station

The Grand Avenue Station would be located under the 2nd St. vehicular bridge. Because the station tunnel would be diagonally-angled, access to both upper and lower Grand Ave. is possible. This station is part of the Grand Avenue Project, a much larger vision by the City to create a vibrant new regional center with mixed commercial, residential, and entertainment uses. The Grand Avenue Project is projected to be a first-class destination point not only for city residents but for tourists alike. The station would be incorporated into other underground facilities and provide direct access to the street. Comments received during Early Scoping indicated high interest in having a station in this location.

2.4.5.4 Split Station (City Hall)

The At-Grade Emphasis LRT Alternative has a split station with platforms on both Main St. and Los Angeles St, as shown in Figure 2-66. The Main St. platform is located on the eastern side of the street and is used by southbound trains. The Los Angeles St. platform is also located on the eastern side of the street and is used by northbound trains. The width of both streets allows for four lanes to remain for vehicular traffic.

The split platform design allows for transit users and pedestrians alike to have a free flowing through passage in the outdoor plaza area, while providing visual directions for train movements. The station is situated on the eastern portion of the Civic Center and is walking distance from federal and municipal buildings as well as new developments which have high levels of activity, such as the LAPD Headquarters currently under construction and the Caltrans building. The Little Tokyo community is also within 2 blocks of the station, which makes this a good location for a variety of users.

Figure 2-66 Split Station (City Hall)

Located next to historically-significant City Hall, the station design incorporates elements which would maintain the feel of the existing environment. Urban design treatments can be used to enhance the station identity and give the user a unique transit experience.

2.4.5.5 Underground Station on 2nd St.

The underground station on 2nd St. is located between Main St. and Los Angeles St. The station is a center platform configuration and sits directly beneath the newly constructed LAPD Headquarters building. Portals are located on either side of 2nd St. at Los Angeles St. as seen in Figure 2-67. Although the street environment in this location is very dense and built-out, the portals fit well in terms of visibility and location. The portal on the southern side is adjacent to the St. Vibiana Arts complex and Little Tokyo Library; on the north it is next to the Caltrans building.

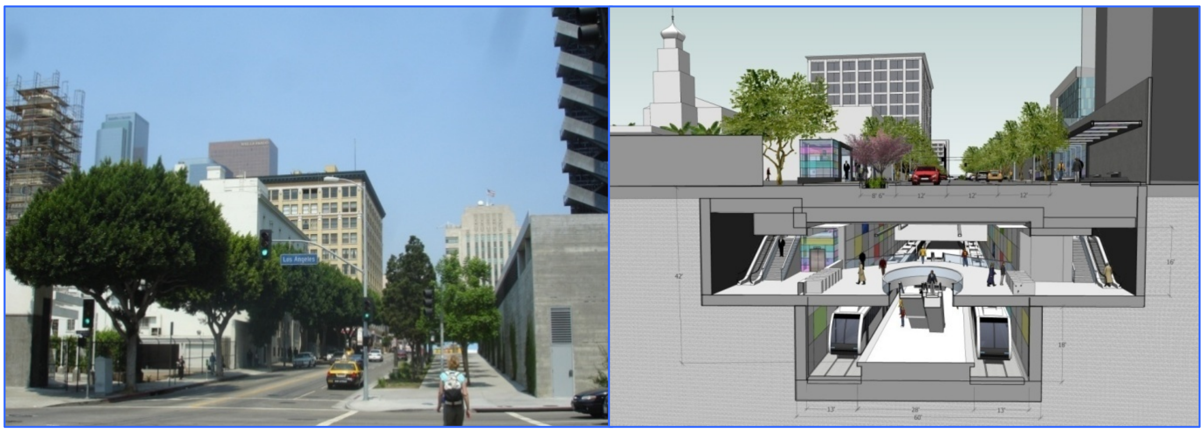


Figure 2-67 Underground Station on 2nd St.

The station supports the eclectic street environment of residents and downtown workers. Currently, there are various residential developments which are planned or under construction in this vicinity. The St. Vibiana Arts complex is a planned residential development which will have over 300 units. Across the street is the Block 8 development which will play a significant role in shaping the Little Tokyo community while at the same time creating the missing 'link' along the 2nd St. corridor. These residential complexes, along with many redeveloped buildings, are breathing life back into this district which is now home to a variety of sidewalk restaurants, bars, and art galleries.

2.4.5.6 Optional Station on 2nd St.

The At-Grade Emphasis LRT Alternative has an optional split station on 2nd St. between Main St. and Broadway St. One station would be located directly in front of the new LAPD Headquarters with an elevated platform which would create a secured, green open space on the parcel. A second station would be located on the south side of 2nd St. between Spring St. and Broadway St. All pedestrian movements at all intersections would remain the same; however, east-west vehicular traffic would not be allowed due to the space needed for train movements. Currently, the parcel adjacent to the station between Spring St. and Broadway St. serves as a surface parking lot. Plans for a residential complex have been identified. Other surrounding buildings include the Los Angeles Times headquarters and the future home of the Federal Courthouse. The station area is shown in Figure 2-68.

This split station serves many purposes. Still centrally located to the Civic Center and within walking distance of Little Tokyo, the station is closer to the western end of 2nd St. and Broadway St. During Early Scoping, some comments indicated interest to incorporate a station on Broadway St., a main corridor in the PSA. Currently, the City has a plan called 'Bring Back Broadway' to rehabilitate businesses and create a major activity center. The location of the split station would support the needs of people traveling to Broadway St. while supporting future plans such as the possible addition of a trolley line. Coordination with the 'Bring Back Broadway' committee will be needed in order to remain up-to-date on project developments in the future.

Figure 2-68 Optional Station on 2nd St.

Conclusion

The alternatives recommended for further study will provide a direct connection from the Metro Gold Line at Alameda St. to the existing underground 7th St./Metro Center Station with at least three new stations in between. As the project continues to be refined from an environmental and engineering perspective, alignments, station locations and configurations may need to be adjusted. In addition, supporting ancillary facilities such as traction power substations, ventilation shafts, and station emergency exits will be detailed in the next phase of the study.

Section 3 Transportation Issues and Analysis

3.1 Introduction

This section summarizes the existing transportation system in downtown that would be affected by the proposed Regional Connector. Impacts to the transportation system for each alternative under consideration (At-Grade Emphasis LRT, Underground Emphasis LRT, TSM, and No Build) will be provided in the following sections.

3.2 Transit Analysis

The build alternatives consist of LRT links. Other transit technologies such as monorail, personal rail transit, "people mover," commuter rail, heavy rail, and trolley/streetcars were eliminated from consideration because they require a transfer, are incompatible with the current transportation system, or are not cost-effective.

In addition, year 2030 transit ridership forecasts for the build alternatives are presented. Only transit lines that parallel the proposed operating plans for the Regional Connector project (between Pasadena and Long Beach, and between East Los Angeles and Culver City) are presented in this section. A more detailed listing of all lines passing through the downtown area, all of which could potentially provide transfers to the Regional Connector, can be found in the Section 1.5.

3.2.1 Existing Service

Downtown Los Angeles has the highest concentration of transit service in the County. Ten transit operators manage three existing rail transit lines, two rail lines currently under construction and scheduled for operation by 2010, and 112 bus routes through the PSA. The transit operators are:

- Antelope Valley Transit Authority (AVTA)
- Gardena Municipal Bus Lines
- City of Santa Clarita
- City of Santa Monica (Big Blue Bus)
- Foothill Transit
- LADOT
- Metro
- Montebello Bus Lines
- Orange County Transportation Authority (OCTA)
- Torrance Transit

Figure 3-1 Project Study Area

Services vary considerably in speed, frequency and capacity. The types of service provided include traditional line-haul bus service, peak-hour freeway express buses, downtown circulator shuttles, LRT, and HRT. Although Metro and LADOT carry the majority of the passengers, other operators provide peak-hour, peak direction commuter bus service as well. In addition to public transit services, several high-rise office tenants also offer shuttle bus service to Union Station for their employees.

Almost all streets in the downtown area are served by buses during the peak hours, often with five minute or shorter headways (frequency). Bus service runs in a grid pattern with the predominant flow of passengers traveling in an east-west direction. There are heavily utilized bus lines that run in the north-south direction as well. The most heavily-served streets are 1st St., the 5th St./6th St. couplet, Hill St., Broadway, the Main St./Spring St. couplet, and the Grand Ave./Olive St. couplet.

Almost all of the bus lines in the PSA could double as rail feeder lines and provide transfers to the Metro Rail system along the Regional Connector, as the Regional Connector stations would be positioned within two or three blocks of most bus lines serving the downtown area.

Tables 3-1 through 3-4 summarize the bus lines that currently parallel Metro Rail lines that would feed into the Regional Connector. Each table shows the bus routes with their destinations, hours of operation, and peak hour frequencies.

Table 3-1 Bus Routes Paralleling the Future Gold Line Eastside Extension Service

Operator	Line	Mode	Weekday Hours of Operation	Peak Hour Frequency	Route Description
Metro	18	Local Bus	24 Hours	3 mins	Wilshire Center - Montebello via 6th St. and Whittier Blvd.
Metro	30/31/ 330	Local/Limited Stop Bus	24 Hours	4 mins	Pico-Rimpau - Monterey Park via Pico Blvd. and E 1st St.
Metro	62	Local Bus	5AM-11PM	15 mins	Hawaiian Gardens via Telegraph Rd.
Metro	66/366	Local/Limited Stop Bus	4AM-1AM	2 mins	Wilshire Center - Montebello via 8th St. and Olympic Blvd.
Metro	68/84	Local Bus	24 Hours	8 mins	West LA - Montebello via Washington Blvd. and Cesar Chavez Ave.
Metro	720	Rapid Bus	4AM-1AM	4 mins	Wilshire Blvd. - Whittier Blvd. Rapid
Metro	770	Rapid Bus	5AM-9PM	8 mins	Garvey Ave. – Cesar Chavez Ave. Rapid
LADOT	Dash Boyle Heights/East LA	Dash	7AM-7PM	20 mins	Herbert & Whittier via Wabash, Gage Ave. and Rowan
Montebello	40	Local Bus	5AM-10PM	8 mins	Montebello and Whittier via Beverly Blvd.
Montebello	341	Limited Stop Bus	7AM-9AM 4PM-6PM	30 mins	Montebello and Whittier via Beverly Blvd.
Montebello	342	Limited Stop Bus	7AM & 5PM	One Trip	Montebello and Whittier via Beverly Blvd.
Montebello	343	Limited Stop Bus	7AM-8AM 5PM-6PM	30 mins	Montebello and Whittier via Beverly Blvd.

Table 3-2 Bus Routes Paralleling the Existing Pasadena Gold Line Service

Operator	Line	Mode	Weekday Hours of Operation	Peak Hour Frequency	Route Description
Metro	78/79/ 378	Local/ Limited Stop Bus	5AM-1AM	10 mins	Arcadia via Huntington Dr. and Las Tunas Dr.
Metro	81/381	Local/ Limited Stop Bus	5AM-1AM	7 mins	Eagle Rock – Exposition Park via Figueroa St.
Metro	83	Local Bus	24 Hours	10 mins	Eagle Rock via York Blvd.
Metro	485	Freeway Express Bus	5AM-12AM	20 mins	Altadena via El Monte Busway, Oak Knoll Ave. and Lake Ave.

Table 3-3 Bus Routes Paralleling the Existing Blue Line Service					
Operator	Line	Mode	Weekday Hours of Operation	Peak Hour Frequency	Route Description
Metro	53	Local Bus	24 Hours	6 mins	Carson via Central Ave.
Metro	55/355	Local/Limited Stop Bus	24 Hours	5 mins	Imperial Blue/Green Lines via Compton Ave.
Metro	60	Local Bus	24 Hours	6 mins	Artesia Blue Line via Long Beach Blvd.
Metro	753	Rapid Bus	5AM-9PM	10 mins	Central Ave. Rapid
Metro	760	Rapid Bus	5AM-8PM	8 mins	Long Beach Blvd. Rapid Bus
Metro	445	Freeway Express Bus	5AM-7PM	30 mins	San Pedro via Harbor Transitway, 1st St. and Pacific Ave.
Metro	446/447	Freeway Express Bus	5AM-12AM	15 mins	San Pedro via Harbor Transitway, Avalon Bl. and Pacific Ave.

Table 3-4 Bus Routes Paralleling the Future Exposition Line Phase 1 Service					
Operator	Line	Mode	Weekday Hours of Operation	Peak Hour Frequency	Route Description
Metro	33/333	Local/Limited Stop Bus	24 Hours	2 mins	Santa Monica via Venice Blvd.
Metro	35/335	Local/Limited Stop Bus	4AM-12AM	10 mins	West LA via Washington Blvd.
Metro	37	Local Bus	4AM-11PM	10 mins	Beverly Hills via Beverly Blvd./West LA via Adams Blvd.
Metro	40	Local Bus	24 Hours	10 mins	Redondo Beach via Hawthorne Blvd.
Metro	42	Local Bus	5AM-12AM	12 mins	LAX via Martin Luther King Jr. Blvd.
Metro	439	Freeway Express Bus	5AM-9PM	40-60 mins	Aviation Green Line via Culver City
Metro	740	Rapid Bus	6AM-9PM	15 mins	Hawthorne Blvd. Rapid
LADOT	CE437	Freeway Express Bus	7AM-9AM 4PM-6PM	15-30 mins	Venice/Marina del Rey/Culver City
Big Blue Bus	10	Freeway Express Bus	6AM-9PM	15 mins	Santa Monica (Nonstop) via I-10

3.2.2 No Build Alternative

Transit service under the No Build Alternative is focused on the preservation of existing services and projects. By the projection year of 2030, the Metro Expo Line and the Metro Gold Line Eastside Extension Phase 1 will have opened, and some bus service will have been reorganized and expanded to provide connections with the new rail lines. The transit network within the PSA will otherwise be largely the same as it is now. The anticipated year 2030 No Build transit services are summarized here:

Rail Lines:

- Metro Gold Line from Union Station to Pasadena. This route is a 13.6-mile light rail transit line along the northeastern edge of the PSA.

- Metro Blue Line from Downtown Long Beach to 7th St./Metro Center Station. This 22-mile LRT line travelling south from the PSA is the first modern light rail system in Los Angeles.

- Metro Red and Purple Lines from North Hollywood and Wilshire/Western to Union Station through the 7th St./Metro Center Station. These routes comprise a 17.4-mile HRT system that connects 7th St./Metro Center Station to Union Station and other major destinations in downtown Los Angeles, Hollywood, and the San Fernando Valley. The two lines share tracks within the PSA. Because light rail trains cannot operate on heavy rail tracks, LRT passengers wishing to travel between 7th St./Metro Center Station and Union Station are required to transfer to the Metro Red and Purple Lines or buses such as Metro Local or LADOT DASH routes.

- Metro Gold Line Eastside Extension from Union Station to East Los Angeles. Lying to the east of Downtown Los Angeles, this six-mile long LRT line is expected to be complete and operational in 2009.

- Metro Expo Line from 7th St./Metro Center Station to Culver City. This 8.5-mile route is scheduled to open in 2010, directly connecting Downtown Los Angeles with the dynamic Westside.

The Metro Blue Line, which ends at 7th St./Metro Center Station, does not directly connect to the Metro Gold Line, as seen in Figure 3-2. Currently, passengers have to use the Metro Red and Purple Lines or buses to travel between 7th St./ Metro Center Station and the Metro Gold Line at Union Station.

Bus Lines:

Bus service in the PSA would predominantly remain the same through the year 2030 No Build condition with increased headways for some of the heavily travelled lines. Increases along the lines listed in Tables 3-1 through 3-4 would help transport more passengers into downtown along the rail corridors that would be joined by the Regional Connector.

Commuter Service:

Amtrak and Metrolink would continue to provide commuter rail services to Union Station from other cities in the region. Arriving passengers have the choice of transferring to the Metro Red and Purple Lines, LADOT DASH bus service, or other buses or shuttles to continue their trips to the Central Business District or other parts of the City.

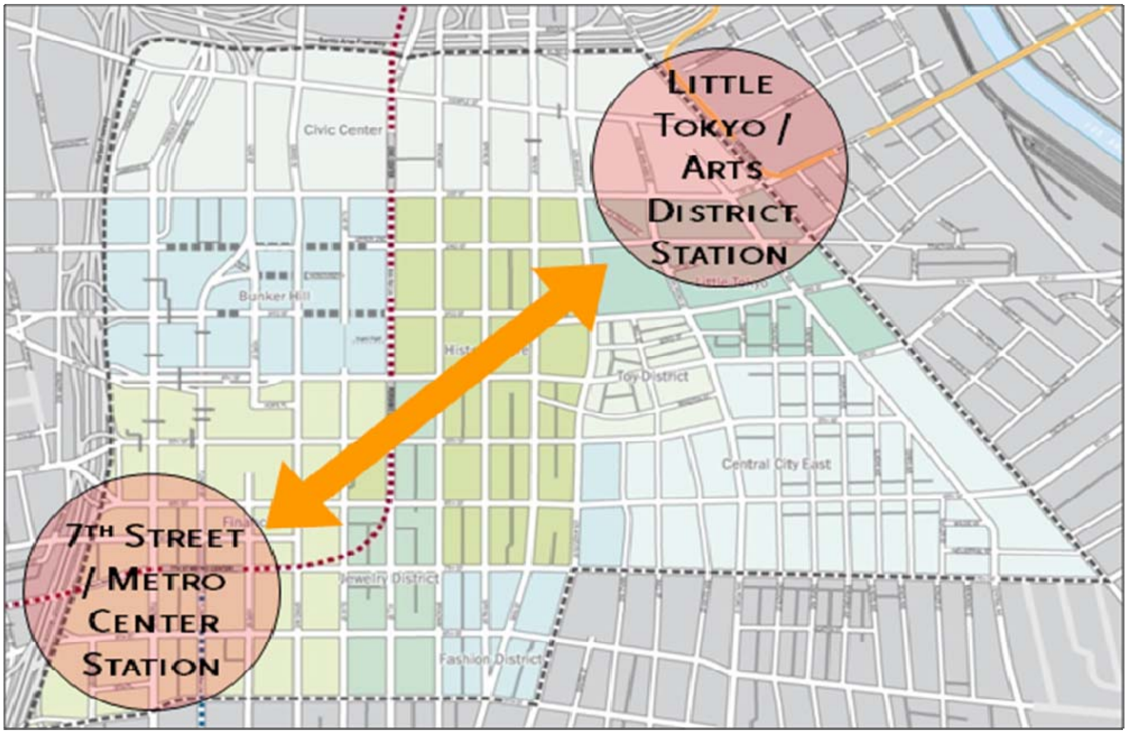


Figure 3-2 Gap in the Light Rail System

3.2.3 Transportation System Management (TSM) Alternative

This alternative consists of shuttle bus routes instead of a light rail link between the 7th St./Metro Center Station and Union Station. Two shuttle routes are designed to move passengers between the two stations:

<u>Grand/Temple/Los Angeles Alignment:</u> The alignment is assumed to follow the same route as part of the existing LADOT DASH Route B service, proceeding from Union Station to 7th St./Metro Center using Los Angeles St., Temple St., and Grand Ave. Shuttle buses will run less than eight minutes apart, providing coverage of the Bunker Hill and Civic Center areas.

<u>Figueroa/Flower/2nd/3rd/Alameda Alignment:</u> This route will utilize the existing northbound bus-only lanes on Figueroa St., 2nd St. and 3rd St., which are lightly used by other bus lines. The alignment passes by both the Little Tokyo/Arts District Station and Union Station, and provides good coverage of Little Tokyo and the southern edge of the Civic Center.

The shuttle routes would be operated by Metro, and could use vehicles ranging from 30-foot shuttle buses to 60-foot articulated buses. They would run every few minutes during peak periods, and peak hour bus-only lanes would be created where possible by restricting parking on streets that do not already have dedicated all-day bus lanes. Similar to the Metro Rapid Bus lines, a TPS will also be employed where possible to increase bus speed and efficiency.

3.2.4 At-Grade Emphasis LRT Alternative

The alignment of this alternative extends from the underground 7th St./Metro Center Station, heads north under Flower St., resurfaces to at grade north of 4th St. in the case of Option A (or just north of 5th St. in the case of Option B), enters Bunker Hill, and turns northeast through a new entrance to the existing 2nd St. tunnel. The alignment continues along 2nd St. and splits into an at-grade couplet configuration traveling north Main and Los Angeles Streets with one track on each roadway. Then it heads east on Temple St., realigns into a dual track configuration just north of the Little Tokyo/Arts District Station on Alameda St.

Due to the high volume of trains that will traverse the Regional Connector, an automobile underpass and pedestrian overpass would be constructed at the intersection of Temple and Alameda Streets to eliminate pedestrian-train and automobile-train conflicts.

This alignment includes both underground and at-grade configurations, with 46 percent of the route underground (38 percent if the underground tracks on Flower St. surface at 5th St. instead of 4th St.), serving the Civic Center, Grand Ave., and the Financial District. Conversion of 2nd St. to a pedestrian-friendly transit mall is assumed. This alternative will reduce the number of traffic lanes and on-street parking spaces. Under this plan, at-grade LRT construction activities will reduce the automobile capacity of 2nd St. As a result, traffic is likely to divert to adjacent parallel streets such as 1st St. and 3rd St., but the roadway capacity along these streets will remain unchanged, as with the No Build Alternative. Congestion along these streets will likely increase.

3.2.5 Underground Emphasis LRT Alternative

This alignment begins at the underground 7th St./Metro Center Station and heads north under Flower St., then turns northeast under the Grand Avenue Project development and heads east under the 2nd St. tunnel. It continues east under 2nd St. until it rises to street level on the lot northeast of 2nd St. and Central Ave. and crosses Alameda St. to connect to the Metro Gold Line tracks.

This alignment is 94 percent underground, with a single at-grade crossing at 1st and Alameda Streets. This grade crossing will feature an automobile underpass and pedestrian overpass so as to remove nearly all conflicts between pedestrians, automobiles, and trains at this intersection. The underground stations provide service to the Civic Center, Little Tokyo, Grand Ave., and Financial Districts. Due to the fact that this alignment is predominantly underground, permanent impacts on traffic operations, roadway capacity and mobility along 2nd St. will be minimized. Construction impacts would occur at station sites, portals, and above cut and cover tunnel sections, but would be temporary.

3.2.6 Ridership

For all of the alternatives under consideration, ridership is affected by travel time, fares, length of segments, and choice of alignment and configuration. One major benefit of a project like this is the increase in the overall transit ridership that the new service produces. The change in ridership is estimated for all relevant transit services in the area including buses and rail.

Ridership generated by each alternative, based on year 2030 forecasts, was then compared to that produced by the No Build and TSM Alternatives. Model runs were performed for the No Build, TSM, At-Grade Emphasis LRT, and Underground Emphasis LRT Alternatives.

Table 3-5 shows the projected year 2030 total transit trips for each alternative. The build alternatives would increase ridership on urban rail (Metro Rail) while reducing bus ridership and slightly reducing commuter rail (Metrolink) ridership, which can be explained as a shift from other transit services to rail when the Regional Connector is built. For example, a small share of the riders currently using Metrolink's Cal State LA, Montebello, Commerce, and Norwalk stations may switch to the Metro Gold Line Eastside Extension or the Metro Blue and Green Lines to take advantage of the improved trip times to downtown. The results suggest that fewer than 400 passengers would make this switch.

The Regional Connector would attract riders for crosstown trips that can be taken without transferring between transit lines. Since the number of new rail riders is greater than the reduction in bus riders, the Regional Connector is anticipated to attract more commuters to the transit system.

For urban rail trips, the net increases over the No Build Alternative range from about 12,200 daily trips for the At-Grade Emphasis LRT Alternative Option A and 13,500 for the At-Grade Emphasis LRT Alternative Option B to 16,000 for the Underground Emphasis LRT Alternative. When compared to the TSM Alternative, the added daily trips range from 13,000 for the At-Grade Emphasis LRT Alternative Option A, 14,300 for the At-Grade Emphasis LRT Alternative Option B, to 16,900 for the Underground Emphasis LRT Alternative. Commuter rail would experience only a slight decrease in ridership.

Overall, total transit trips under the build alternatives increase by 0.5 to 0.7 percent, or 7,600 to 10,200 new daily trips, when compared to the No Build and TSM Alternatives, respectively, due to the improved transit connectivity and frequency provided by the Regional Connector. The increase in boarding's on the light rail lines feeding into the Regional Connector will be 7 to 10 percent compared to No Build because more people will be attracted to the system by the faster service. The new reduced transfer light rail service will also eliminate 17,000 to 20,000 daily transfers to and from the Metro Red and Purple Lines.

Of the two build alternatives, the Underground Emphasis LRT Alternative tends to capture the greatest amount of new transit trips, in terms of both urban rail trips and total transit trips, while the At-Grade Emphasis LRT Alternative follows closely behind.

Table 3-5 Year 2030 Daily Transit Trips

	No Build	TSM	At-Grade LRT (Option A)	At-Grade LRT (Option B)	Underground LRT
Local Bus	839,375	839,166	837,009	836,702	836,181
Express Bus	30,787	30,512	30,723	30,716	30,698
Transitway Bus	102,396	101,866	101,655	101,597	101,563
Rapid Bus	211,266	214,022	210,295	210,185	209,886
BRT	7,463	7,463	7,428	7,413	7,458
Bus Subtotal	1,191,287	1,193,029	1,187,110	1,186,613	1,185,786
Urban Rail	248,194	247,377	260,391	261,660	264,242
Commuter Rail	76,337	76,362	75,934	75,934	75,989
Transit Subtotal	1,515,818	1,516,768	1,523,435	1,524,207	1,526,017

When comparing the TSM and No Build Alternatives, the TSM Alternative results in a nominal increase in bus ridership of about 1,700 additional daily trips, which appears to be the effect of increased frequency coupled with the shuttle bus connection between 7th St./Metro Center and Union Station.

Since a high concentration of bus service already exists in the downtown area linking the two stations, the proposed shuttle bus service is unlikely to function as an essential improvement. The difference in total transit ridership between the TSM and No Build Alternatives is only 950, which is not as dramatic as the increases associated with the LRT build alternatives. Accordingly, the proposed build alternative shows much better ridership performance than the No Build and TSM Alternatives, with the Underground Emphasis LRT Alternative expected to produce the highest amount of new ridership.

Urban Rail Boardings

Table 3-6 summarizes the year 2030 forecasted rail line daily boardings for each of the alternatives. Daily boardings represent the total number of boardings in the North-South Line and East-West Line connected by the Regional Connector, including the Metro Gold Line to Pasadena, the Metro Gold Line Eastside Extension, the Metro Blue Line and the Metro Expo Line. New boardings are presented for each alternative as increments over the No Build and TSM alternatives.

Although the TSM Alternative has a total daily ridership higher than the No Build Alternative, it has the fewest urban rail boarding's, resulting from the additional transfers needed when using the new shuttle buses to link 7th St./Metro Center Station and Union Station. The build alternatives will result in significant increases in rail boarding's along the North-South and East-West LRT lines, compared to both the No Build and TSM Alternatives, ranging from about 10,900 to 15,500 daily boarding's.

Table 3-6 Year 2030 Urban Rail Boardings on LRT Lines Joined by the Regional Connector

Alternative	Daily Boardings	Incremental New Urban Rail Boardings		Boardings at New Stations
		Over No Build	Over TSM	
No Build	154,805	N/A	962	N/A
TSM	153,843	N/A	N/A	N/A
At-Grade Emphasis LRT Option A	165,691	10,886	11,848	15,098
At-Grade Emphasis LRT Option B	167,615	12,810	13,772	15,057
Underground Emphasis LRT	169,288	14,483	15,445	12,457

As for total daily ridership on the entire transit system, the Underground Emphasis LRT Alternative is expected to produce the highest number of boardings each day, though it will yield fewer boardings at the new stations than the at-grade alternative.

3.3 Roadway Analysis

This section summarizes traffic volumes and operating conditions at key roadway segments and intersections within the PSA. Existing daily, AM peak and PM peak traffic volume data were obtained from LADOT. An analysis under existing conditions was performed for the key roadway segments using daily traffic volumes and the key intersections using AM and PM peak hour turning movement data.

The roadway segment analysis was performed using a Volume-to-Capacity (V/C) ratio of the average daily traffic (ADT). Existing volumes were obtained from LADOT and the capacity was based on the roadway's General Plan facility type classification.

For intersections, the AM and PM peak hour volumes were analyzed using the Intersection Capacity Utilization (ICU) methodology, which determines a V/C ratio based on the critical intersection approach movements and a corresponding Level of Service (LOS). The LOS is a qualitative measure used to describe traffic flow conditions, ranging from excellent flow (LOS A) to overloaded, stop-and-go conditions (LOS F). Level of service definitions and corresponding V/C ranges are presented in Table 3-7.

Tables 3-8 through 3-10 summarize the existing operating conditions for the key intersections, roadway segments, and freeways in the PSA. All of the key study intersections currently operate at LOS D or better during both the AM and PM peak hours. The only exception is the intersection of Alameda and 1st Streets, which currently operates at LOS F in the AM peak hour.

Table 3-7 Level of Service Definitions

Level of Service	Volume/Capacity Ratio	Definition
A	0.000 - 0.600	FREE FLOW. No vehicle waits longer than one red light and no approach phase is fully used.
B	0.601 - 0.700	REASONABLY FREE FLOW. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 - 0.800	STABLE FLOW. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 - 0.900	APPROACHING UNSTABLE FLOW (acceptable for urban settings). Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 - 1.000	UNSTABLE FLOW (practical capacity). Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	>1.000	FORCED OR BREAKDOWN FLOW. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Source: Transportation Research Board, Highway Capacity Manual, 2000

Table 3-8 Existing (2007) Intersection Level of Service

	AM Peak Hour		PM Peak Hour	
Intersection	V/C Ratio	LOS	V/C Ratio	LOS
Hill St. / 1st St.	0.62	B	0.73	C
Broadway / 1st St.	0.63	B	0.56	A
Spring St. / 1st St.	0.54	A	0.45	A
Main St. / 1st St.	0.44	A	0.55	A
Los Angeles St. / 1st St.	0.53	A	0.58	A
Judge John Aiso St. / 1st St.	0.60	A	0.69	B
Alameda St. / 1st St.	1.03	F	0.88	D
Broadway / 2nd St.	0.84	D	0.46	A
Spring St. / 2nd St.	0.48	A	0.40	A
Main St. / 2nd St.	0.30	A	0.62	B
Los Angeles St. / 2nd St.	0.46	A	0.59	B
San Pedro St. / 2nd St.	0.40	A	0.52	A
Central Ave. / 2nd St.	0.39	A	0.54	A
Alameda St. /2nd St.	0.67	B	0.67	B
Broadway / 3rd St.	0.72	C	0.60	A
Spring St. / 3rd St.	0.59	A	0.55	A

Table 3-8 Existing (2007) Intersection Level of Service				
	AM Peak Hour		PM Peak Hour	
Intersection	V/C Ratio	LOS	V/C Ratio	LOS
Main St. / 3rd St.	0.53	A	0.73	C
Los Angeles St. / 3rd St.	0.66	B	0.57	A
San Pedro St. / 3rd St.	0.63	B	0.44	A
Central Ave. / 3rd St.	0.58	A	0.41	A
Alameda St. / 3rd St.	0.78	C	0.57	A
Figueroa St. / 3rd St.	0.65	B	0.84	D
Hope St. / Temple St.	0.75	C	0.82	D
Grand Ave. / Temple St.	0.65	B	0.68	B
Broadway / Temple St.	N/A	N/A	0.76	C
Spring St. / Temple St.	0.58	A	0.42	A
Main St. / Temple St.	0.39	A	0.69	B
Los Angeles St. / Temple St.	0.55	A	0.63	B
Judge John Aiso St. / Temple St.	0.36	A	0.50	A
Alameda St. / Temple St.	0.64	B	0.65	B

Most of the key roadway segments currently operate at LOS D or better except for three locations which operate at LOS E. Two of these locations are on 2nd St. and the third location is on Alameda St.

All of the freeways serving downtown operate at LOS F during peak hours in at least one direction. As evidenced by the previous tables, traffic congestion on the local freeways is worse than on streets in the PSA. This is largely because freeways congregate both downtown-bound traffic and traffic passing through to other areas. On I-10 east of downtown, and on SR-60 and US-101, traffic operates at a speed acceptable for urban settings in the reverse peak direction during peak hours (i.e., away from downtown in the mornings and toward downtown in the evenings). However, I-10 west of downtown and I-110/SR-110 operate at LOS F in both directions during both commute peaks.

Table 3-9 Existing (2007) Roadway Segment Average Daily Traffic (ADT) Analysis							
Primary Street	Cross Street	Facility Type	Number of lanes	Capacity	ADT	V/C Ratio	LOS
Flower St.	3rd St.	Secondary	4	28,000	11,177	0.399	A
	5th St.	Secondary	6	45,000	19,920	0.443	A
	6th St.	Secondary	4	30,000	17,386	0.580	A
	Wilshire Blvd.	Secondary	4	30,000	19,434	0.648	B
	7th St.	Secondary	4	30,000	18,908	0.630	B
2nd St.	Alameda St.	Secondary	3	21,000	8,176	0.389	A
	Central Ave.	Secondary	2	14,000	10,452	0.747	C
	Los Angeles St.	Secondary	3	21,000	16,244	0.774	C
	Main St.	Secondary	3	21,000	19,630	0.935	E
	San Pedro St.	Secondary	2	14,000	13,371	0.955	E
	Spring St.	Secondary	4	28,000	14,394	0.514	A
Los Angeles St.	1st St.	Secondary	4	28,000	18,559	0.663	B
	2nd St.	Secondary	4	28,000	17,156	0.613	B
	Temple St.	Secondary	5	35,000	22,036	0.630	B
Main St.	1st St. 1-Way	Major Class II	3	25,500	12,079	0.474	A
	2nd St. 1-Way	Major Class II	3	25,500	13,711	0.538	A
	Temple St.	Major Class II	4	34,000	25,626	0.754	C
Temple St.	Judge John Aiso St.	Major Class II	4	32,000	17,114	0.535	A
	Los Angeles St.	Major Class II	4	32,000	16,809	0.525	A
	Main St.	Major Class II	4	32,000	17,032	0.532	A
1st St.	Alameda St.	Secondary	4	28,000	21,538	0.769	C
	Central Ave.	Secondary	4	28,000	23,081	0.824	D
	Los Angeles St.	Secondary	6	42,000	22,099	0.526	A
	Main St.	Secondary	6	42,000	23,908	0.569	A
	Spring St.	Secondary	6	42,000	20,205	0.481	A
3rd St.	Flower St.	Secondary	4	30,000	19,133	0.638	B
	Spring St.	Secondary	3	22,500	17,564	0.781	C
	Los Angeles St.	Secondary	3	22,500	17,965	0.798	C
	Main St.	Secondary	3	22,500	16,151	0.718	C
Alameda St.	1st St.	Major Class II	4	32,000	30,514	0.954	E
	2nd St.	Major Class II	4	32,000	27,881	0.871	D

Table 3-10 Existing (2003) Peak Hour Freeway Traffic and Level of Service

Freeway	Cross Street	Capacity (VPH)	North/East AM (VPH and LOS)		North/East PM (VPH and LOS)		South/West AM (VPH and LOS)		South/West PM (VPH and LOS)	
I-5	Stadium Way	10,000	9,206	D	12,600	F	13,600	F	10,353	F
I-10	Budlong Ave.	12,500	17,000	F	18,250	F	18,250	F	18,250	F
I-10	East LA City Limits	12,000	6,618	C	12,120	F	11,100	D	8,879	C
SR-60	Indiana St.	12,000	4,989	B	15,120	F	16,320	F	6,317	B
US-101	Vignes St.	10,000 N/B	13,600	F	6,561	C				
US-101	Vignes St.	8,000 S/B					5,228	C	10,880	F
SR-110	US-101	8,000	8,121	F	11,771	F	10,913	F	10,913	F

Source: Metro 2004 Congestion Management Program for Los Angeles County

In order to estimate the impacts of the proposed alternatives on the downtown roadway system, future traffic volumes were projected for the year 2030. The travel demand model was used to identify the annual growth rate at key intersections and roadway segments between the model base year and the 2030 forecast year. At most of the key locations, the model's annual growth rate was found to be around one percent or less. Consequently, a conservative annual growth rate of one percent was used to forecast the existing (2007) traffic volumes over 23 years to the year 2030 horizon. However, at several locations where the model growth rate substantially exceeded one percent, the greater rates from the model were utilized. This occurred along Flower St., where an annual growth rate of 1.4 percent was used, and in the southbound direction on Alameda St., where an annual growth rate of 1.75 percent was used.

Based on the future daily and peak hour traffic volumes that were developed, the future LOS at each key intersection and roadway segment location was calculated for the No Build, TSM and build alternatives. In general, the difference in future traffic volumes between the No Build and TSM Alternatives is minimal; for this AA, it is assumed that they will be the same. For each build alternative, the traffic impacts were compared to the No Build and TSM Alternatives. Vehicular circulation through the downtown area will be affected by the proposed project, but the level of impact will depend on the alternative alignment being evaluated, as noted in the following sections.

At-Grade Emphasis LRT Alternative

For the at-grade segments of the At-Grade Emphasis LRT Alternative, the two LRT tracks will typically occupy a 26-foot wide surface right-of-way bordered by mountable curbs. It is expected that this width will increase to 39 feet at center platform station locations. Vehicular and pedestrian crossings would be limited to traffic signal-controlled intersections, with the signal phasing modified to provide adequate green time for the LRT vehicles to safely cross. For safety reasons, no uncontrolled mid-block vehicular crossings of the tracks would be permitted. Access to existing parking structures, parking lots, loading docks and commercial frontage will be affected by the at-grade LRT facilities. Left-turn parking access and egress is presently allowed at many downtown sites. However, the at-grade LRT facilities will eliminate uncontrolled mid-block left-turns, and thus modify existing approach and departure traffic patterns.

The proposed At-Grade Emphasis LRT alignment travels at-grade along 2nd St. and it is assumed that this street would be dedicated as a transit-only roadway between the tunnel and Los Angeles St. This segment of 2nd St. would be closed to through traffic and provide only emergency vehicle access and local access to adjacent properties. As a result of this proposed change in street circulation, through traffic currently using 2nd St. would be diverted to parallel roadways such as 1st and 3rd Streets. East of Los Angeles St., 2nd St. would maintain its current physical features and operating characteristics.

The one-way transit couplet near City Hall along Main and Los Angeles Streets between 2nd and Temple Streets would consist of a single LRT track along each roadway. Both Main and Los Angeles Streets are wide enough to accommodate a single track and maintain acceptable vehicular operations. The curb-to-curb width of Temple St., between Main and Alameda Streets, is 62 to 71 feet, leaving one lane of traffic in each direction with potentially mountable curbs for use by emergency vehicles. Traffic operations along this segment of Temple St. will be affected by the lane reduction.

To minimize conflicts between rail, vehicular, and pedestrian traffic, and to minimize delays at the intersection of Temple and Alameda Streets, a vehicular underpass and a pedestrian overpass are proposed along Alameda St. to route the through traffic beneath the rail tracks and Temple St. Temple St. and the rail tracks would remain at-grade and the existing at-grade segment of Alameda St. would be lowered to pass under Temple St. Through traffic traveling north and south on Alameda St. would operate unimpeded without being stopped or delayed at the intersection. Through traffic traveling east and west on Temple St. would continue to operate at-grade with a signal to control the movements between the vehicular and rail modes of transportation. In addition, a one-lane southbound at-grade frontage road would be provided along Alameda St. to maintain access to the businesses and properties on the west side of the street.

Underground Emphasis LRT Alternative

The Underground Emphasis LRT Alternative alignment does not affect surface traffic except at the intersection of Alameda and 1st Streets, where the LRT alignment operates in an at-grade configuration. Consequently, vehicular circulation patterns along downtown streets adjacent to most of the alignment will continue to operate at current traffic flow patterns.

The future roadway LOS for this alternative will be the same as the No Build and TSM Alternatives except at the intersection of Alameda and 1st Streets. There, a vehicular underpass and pedestrian overpass are proposed to separate the heavy traffic volumes along Alameda St. from rail traffic to minimize delays. The proposed underpass would result in uninterrupted flow along Alameda St. in the north and south directions between 2nd and Temple Streets. Through traffic traveling east and west on 1st St. would continue to operate at-grade with a signal to control the movements between the vehicular and rail modes of transportation.

In addition, at-grade frontage roads would be provided along on both sides of Alameda St. south of the intersection, and on the southbound side of the street north of the intersection to maintain access to adjacent businesses and properties. A full northbound frontage road is infeasible because of the location of the rail tracks and the Metro Gold Line Eastside Extension's Little Tokyo/Arts District Station on the east (northbound) side of Alameda St.

The results of the future conditions LOS analysis at the key intersections and roadway segments for the No Build, TSM and build alternatives are presented in Tables 3-11, 3-12, and 3-13. During the AM peak hour, five intersections operate at LOS E or F for the No Build, TSM, and Underground Emphasis LRT Alternatives; this increases to seven intersections for the At-Grade Emphasis LRT Alternative.

Similarly, during the PM peak hour, five intersections operate at LOS E or F for the No Build and TSM Alternatives, versus only four for the Underground Emphasis LRT Alternative and 13 for the At-Grade Emphasis LRT Alternative. The roadway segment analysis provides similar results, with 12 segments operating at LOS E or F for the No Build, TSM and Underground Emphasis LRT Alternatives, and 14 for the At-Grade Emphasis LRT Alternative. It should be noted that the No Build, TSM and Underground Emphasis LRT Alternatives have six of the 12 locations operating at LOS F while the At-Grade Emphasis LRT Alternative has 11 of the 14 locations operating at LOS F.

Table 3-11 Future (2030) Intersection Level of Service
AM Peak Hour

Intersection	No Build		TSM		Couplet A		Couplet B		Underground	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Hill St. / 1st St.	0.76	C	0.76	C	0.76	C	0.76	C	0.76	C
Broadway / 1st St.	0.78	C	0.78	C	0.87	D	0.87	D	0.78	C
Spring St. / 1st St.	0.67	B	0.67	B	0.81	D	0.81	D	0.67	B
Main St. / 1st St.	0.54	A	0.54	A	0.69	B	0.69	B	0.54	A
Los Angeles St. / 1st St.	0.66	B	0.66	B	0.71	C	0.71	C	0.66	B
Judge John Aiso St. / 1st St.	0.74	C	0.74	C	0.80	C	0.80	C	0.74	C
Alameda St. / 1st St.	1.36	F	1.36	F	1.36	F	1.36	F	0.96	E
Broadway / 2nd St.	1.05	F	1.05	F	0.82	D	0.82	D	1.05	F
Spring St. / 2nd St.	0.59	A	0.59	A	0.54	A	0.54	A	0.59	A
Main St. / 2nd St.	0.36	A	0.36	A	0.53	A	0.53	A	0.36	A
Los Angeles St. / 2nd St.	0.57	A	0.57	A	0.71	C	0.71	C	0.57	A
San Pedro St. / 2nd St.	0.50	A	0.50	A	0.38	A	0.38	A	0.50	A
Central Ave. / 2nd St.	0.48	A	0.48	A	0.48	A	0.48	A	0.48	A
Alameda St. / 2nd St.	0.91	E	0.91	E	0.91	E	0.91	E	0.91	E
Broadway / 3rd St.	0.90	D	0.90	D	1.20	F	1.20	F	0.90	D
Spring St. / 3rd St.	0.73	C	0.73	C	0.83	D	0.83	D	0.73	C
Main St. / 3rd St.	0.66	B	0.66	B	0.81	D	0.81	D	0.66	B
Los Angeles St. / 3rd St.	0.82	D	0.82	D	0.90	D	0.90	D	0.82	D

Table 3-11 Future (2030) Intersection Level of Service AM Peak Hour										
Intersection	No Build		TSM		Couplet A		Couplet B		Underground	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
San Pedro St. / 3rd St.	0.78	C	0.78	C	0.84	D	0.84	D	0.78	C
Central Ave. / 3rd St.	0.72	C	0.72	C	0.72	C	0.72	C	0.72	C
Alameda St. / 3rd St.	1.04	F	1.04	F	1.04	F	1.04	F	1.04	F
Figueroa St. / 3rd St.	0.80	C	0.80	C	0.80	C	0.80	C	0.80	C
Hope St. / Temple St.	0.98	E	0.98	E	0.98	E	0.98	E	0.98	E
Grand Ave. / Temple St.	0.76	C	0.76	C	0.76	C	0.76	C	0.76	C
Broadway / Temple St.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spring St. / Temple St.	0.67	B	0.67	B	0.67	B	0.67	B	0.67	B
Main St. / Temple St.	0.44	A	0.44	A	0.50	A	0.50	A	0.44	A
Los Angeles St. / Temple St.	0.68	B	0.68	B	1.00	E	1.00	E	0.68	B
Judge John Aiso St. / Temple St.	0.44	A	0.44	A	0.86	D	0.86	D	0.44	A
Alameda St. / Temple St.	0.79	C	0.79	C	1.12	F	1.12	F	0.79	C
No. of LOS E Intersections	2		2		3		3		3	
No. of LOS F Intersections	3		3		4		4		2	

Table 3-12 Future (2030) Intersection Level of Service PM Peak Hour										
Intersection	No Build		TSM		Couplet A		Couplet B		Underground	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Hill St. / 1st St.	0.91	E	0.91	E	0.91	E	0.91	E	0.91	E
Broadway / 1st St.	0.70	B	0.70	B	0.78	C	0.78	C	0.70	B
Spring St. / 1st St.	0.56	A	0.56	A	0.62	B	0.62	B	0.56	A
Main St. / 1st St.	0.67	B	0.67	B	0.91	E	0.91	E	0.67	B
Los Angeles St. / 1st St.	0.71	C	0.71	C	0.88	D	0.88	D	0.71	C
Judge John Aiso St. / 1st St.	0.85	D	0.85	D	1.06	F	1.06	F	0.85	D
Alameda St. / 1st St.	1.10	F	1.10	F	1.10	F	1.10	F	0.87	D
Broadway / 2nd St.	0.57	A	0.57	A	0.54	A	0.54	A	0.57	A
Spring St. / 2nd St.	0.49	A	0.49	A	0.44	A	0.44	A	0.49	A
Main St. / 2nd St.	0.77	C	0.77	C	0.85	D	0.85	D	0.77	C
Los Angeles St. / 2nd St.	0.73	C	0.73	C	0.82	D	0.82	D	0.73	C
San Pedro St. / 2nd St.	0.75	C	0.75	C	0.59	A	0.59	A	0.75	C
Central Ave. / 2nd St.	0.67	B	0.67	B	0.67	B	0.67	B	0.67	B
Alameda St. / 2nd St.	0.89	D	0.89	D	0.89	D	0.89	D	0.89	D
Broadway / 3rd St.	0.74	C	0.74	C	0.92	E	0.92	E	0.74	C
Spring St. / 3rd St.	0.67	B	0.67	B	0.82	D	0.82	D	0.67	B
Main St. / 3rd St.	0.90	D	0.90	D	1.04	F	1.04	F	0.90	D

Table 3-12 Future (2030) Intersection Level of Service PM Peak Hour										
Intersection	No Build		TSM		Couplet A		Couplet B		Underground	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Los Angeles St. / 3rd St.	0.70	B	0.70	B	0.74	C	0.74	C	0.70	B
San Pedro St. / 3rd St.	0.54	A	0.54	A	0.62	B	0.62	B	0.54	A
Central Ave. / 3rd St.	0.51	A	0.51	A	0.51	A	0.51	A	0.51	A
Alameda St. / 3rd St.	0.70	B	0.70	B	0.70	B	0.70	B	0.70	B
Figueroa St. / 3rd St.	1.22	F	1.22	F	1.22	F	1.22	F	1.22	F
Hope St. / Temple St.	0.96	E	0.96	E	0.96	E	0.96	E	0.96	E
Grand Ave. / Temple St.	0.87	D	0.87	D	0.87	D	0.87	D	0.87	D
Broadway / Temple St.	0.92	E	0.92	E	0.92	E	0.92	E	0.92	E
Spring St. / Temple St.	0.51	A	0.51	A	0.51	A	0.51	A	0.51	A
Main St. / Temple St.	0.85	D	0.85	D	1.00	E	1.00	E	0.85	D
Los Angeles St. / Temple St.	0.77	C	0.77	C	1.34	F	1.34	F	0.77	C
Judge John Aiso St. / Temple St.	0.61	B	0.61	B	0.93	E	0.93	E	0.61	B
Alameda St. / Temple St.	0.80	C	0.80	C	1.04	F	1.04	F	0.80	C
No. of LOS E Intersections	3		3		7		7		3	
No. of LOS F Intersections	2		2		6		6		1	

Table 3-13 Future (2030) Roadway Segment Average Daily Traffic (ADT) Analysis No Build, TSM and Underground Emphasis LRT Alternative							
Primary Street	Cross Street	Facility Type	Number of lanes	Capacity	ADT	V/C Ratio	LOS
Flower St.	3rd St.	Secondary	4	28,000	15,389	0.550	A
	5th St.	Secondary	6	45,000	27,426	0.609	B
	6th St.	Secondary	4	30,000	23,938	0.798	C
	Wilshire Blvd.	Secondary	4	30,000	26,757	0.892	D
	7th St.	Secondary	4	30,000	26,033	0.868	D
2nd St.	Alameda St.	Secondary	3	21,000	10,279	0.489	A
	Central Ave.	Secondary	2	14,000	13,140	0.939	E
	Los Angeles St.	Secondary	3	21,000	20,421	0.972	E
	Main St.	Secondary	3	21,000	24,679	1.175	F
	San Pedro St.	Secondary	2	14,000	16,810	1.201	F
	Spring St.	Secondary	4	28,000	18,095	0.646	B
Los Angeles St.	1st St.	Secondary	4	28,000	23,331	0.833	D
	2nd St.	Secondary	4	28,000	21,568	0.770	C
	Temple St.	Secondary	5	35,000	27,703	0.792	C
Main St.	1st St. 1-Way	Major Class II	3	25,500	15,185	0.595	A
	2nd St. 1-Way	Major Class II	3	25,500	17,237	0.676	B
	Temple St.	Major Class II	4	34,000	32,216	0.948	E
Temple St.	Judge John Aiso St.	Major Class II	4	32,000	21,516	0.672	B
	Los Angeles St.	Major Class II	4	32,000	21,132	0.660	B
	Main St.	Major Class II	4	32,000	21,412	0.669	B

Table 3-13 Future (2030) Roadway Segment Average Daily Traffic (ADT) Analysis No Build, TSM and Underground Emphasis LRT Alternative							
Primary Street	Cross Street	Facility Type	Number of lanes	Capacity	ADT	V/C Ratio	LOS
1st St.	Alameda St.	Secondary	4	28,000	27,077	0.967	E
	Central Ave.	Secondary	4	28,000	29,016	1.036	F
	Los Angeles St.	Secondary	6	42,000	27,783	0.661	B
	Main St.	Secondary	6	42,000	30,056	0.716	C
	Spring St.	Secondary	6	42,000	25,401	0.605	B
3rd St.	Flower St.	Secondary	4	30,000	24,053	0.802	D
	Spring St.	Secondary	3	22,500	22,080	0.981	E
	Los Angeles St.	Secondary	3	22,500	22,585	1.004	F
	Main St.	Secondary	3	22,500	20,304	0.902	E
Alameda St.	1st St.	Major Class II	4	32,000	42,364	1.324	F
	2nd St.	Major Class II	4	32,000	38,338	1.198	F

Roadway Segments with LOS E = 6
Roadway Segments with LOS F = 6
Total of LOS E & F =12

Table 3-14 Future (2030) Roadway Segment Average Daily Traffic (ADT) Analysis At-Grade Emphasis LRT Alternative							
Primary Street	Cross Street	Facility Type	Number of lanes	Capacity	ADT	V/C Ratio	LOS
Flower St.	3rd St.	Secondary	3	21,000	15,389	0.733	C
	5th St.	Secondary	6	45,000	27,426	0.609	B
	6th St.	Secondary	4	30,000	23,938	0.798	C
	Wilshire Blvd.	Secondary	4	30,000	26,757	0.892	D
	7th St.	Secondary	4	30,000	26,033	0.868	D
2nd St.	Alameda St.	Secondary	3	21,000	10,279	0.489	A
	Central Ave.	Secondary	2	14,000	13,140	0.939	E
	Los Angeles St.	Secondary	1	7,000	4,084	0.583	A
	Main St.	Secondary	1	7,000	4,936	0.705	C
	San Pedro St.	Secondary	2	14,000	16,810	1.201	F
	Spring St.	Secondary	1	7,000	3,619	0.517	A
Los Angeles St.	1st St.	Secondary	3	21,000	23,331	1.111	F
	2nd St.	Secondary	4	28,000	21,568	0.770	C
	Temple St.	Secondary	4	28,000	27,703	0.989	D
Main St.	1st St. 1-Way	Major Class II	3	25,500	15,185	0.595	A
	2nd St. 1-Way	Major Class II	3	25,500	17,237	0.676	B
	Temple St.	Major Class II	3	25,500	32,216	1.263	F
Temple St.	Judge John Aiso St.	Major Class II	2	16,000	21,516	1.345	F
	Los Angeles St.	Major Class II	2	16,000	21,132	1.321	F
	Main St.	Major Class II	3	24,000	21,412	0.892	D
1st St.	Alameda St.	Secondary	4	28,000	27,077	0.967	E
	Central Ave.	Secondary	4	28,000	29,016	1.036	F
	Los Angeles St.	Secondary	6	42,000	35,952	0.856	D
	Main St.	Secondary	6	42,000	39,928	0.951	E
	Spring St.	Secondary	6	42,000	32,639	0.777	C

Table 3-14 Future (2030) Roadway Segment Average Daily Traffic (ADT) Analysis At-Grade Emphasis LRT Alternative							
Primary Street	Cross Street	Facility Type	Number of lanes	Capacity	ADT	V/C Ratio	LOS
3rd St.	Flower St.	Secondary	4	30,000	24,053	0.802	D
	Spring St.	Secondary	3	22,500	29,318	1.303	F
	Los Angeles St.	Secondary	3	22,500	30,754	1.367	F
	Main St.	Secondary	3	22,500	30,176	1.341	F
Alameda St.	1st St.	Major Class II	4	32,000	42,364	1.324	F
	2nd St.	Major Class II	4	32,000	38,338	1.198	F

Roadway Segments with LOS E = 3
Roadway Segments with LOS F = 11
Total of LOS E & F =14

3.3.1 Parking Evaluation

A preliminary parking analysis was performed to assess the number of on-street parking spaces that may be removed for the build alternatives. This section presents the effects that each alternative may have on the curb parking supply. In order to estimate parking losses, a field survey was performed to inventory the number of available on-street parking spaces. The street segments with an at-grade transit alignment were surveyed to collect the number of spaces and parking restriction information.

No Build, TSM, and Underground Emphasis LRT Alternatives

Neither the No Build nor the TSM Alternative would displace any existing parking spaces. The build alternatives will each have different parking impacts. With the proposed alignment almost completely underground, the Underground Emphasis LRT Alternative does not result in any loss of on-street parking spaces along 2nd or Flower Streets. However, the proposed underpass at 1st and Alameda Streets will result in the loss of existing parking spaces along the east side of Alameda St. near the intersection. Approximately 20 on-street spaces would be displaced. Construction of the Underground Emphasis LRT Alternative would temporarily displace parking spaces along the alignment, but they would be restored once work is completed.

At-Grade Emphasis LRT Alternative

The construction of at-grade tracks along 2nd St. and the need for adequate street widths to provide local access lanes will require the elimination of existing on-street parking and loading spaces to accommodate the At-Grade Emphasis LRT Alternative. This loss of parking may result in spill over to adjacent streets if parking on these streets is readily available. As shown in Table 3-15, the total number of parking spaces lost under the At-Grade Emphasis LRT Alternative will total 88, with 35 of the spaces located on 2nd St. between Hill and Los Angeles Streets. All of the lost parking spaces would be in the Civic Center area, and no parking would be displaced in Little Tokyo. In addition, nine spaces may also be lost along the south side of Temple St. west of Alameda St. due to the proposed underpass.

Table 3-15 Number of Existing Parking Spaces on 2nd Street																	
Street	Side	Hill to Broadway			Broadway to Spring			Spring to Main			Main to Los Angeles			TOTAL		
		Park	Load	Drive-Way	Park	Load	Drive-way	Park	Load	Drive-way	Park	Load	Drive-way	Park	Load	Drive-way
2nd St	North	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
	South	9	1	0	7	0	1	4	4	1	10	0	9	30	5	11
TOTAL		9	1	0	7	0	2	4	4	1	10	0	9	30	5	12

Consequently, it will be necessary to implement mitigation measures, such as off-street parking facilities to replace the lost curb spaces. After the selection of a preferred alternative, Metro would have to work closely with the affected entities to develop plans to minimize the parking losses.

3.4 Summary of Transportation Analysis

In an effort to better inform decisions made on such a significant investment, this section provides a summary of major transportation issues such as ridership, traffic impacts and parking losses related to each alternative based on a comparative evaluation.

No Build Alternative

Implementation of the No Build Alternative will result in the lowest total daily transit ridership of 1.5 million passengers and the second fewest urban rail daily combined boardings of approximately 155,000 for the Metro Blue Line, Pasadena Gold Line, Gold Line Extension, and Expo Line.

For the No Build Alternative, two key intersections operate at LOS E and three operate at LOS F during the AM peak hour. The remaining intersections operate at LOS D or better. The number of intersections operating at LOS E and F is three and two, respectively, during the PM peak hour. In addition, 12 roadway segments operate at LOS E or LOS F.

This alternative will not displace any existing on-street parking or loading spaces or reduce the number of traffic lanes.

TSM Alternative

This alternative has the fewest daily urban rail boardings, about 154,000, for the Metro Blue Line, Pasadena Gold Line, Gold Line Extension, and Expo Line combined, since it consists of shuttle bus service. Although the TSM Alternative results in fewer rail boardings, it will produce approximately 1.5 million total transit trips each day, 950 more daily trips than the No Build Alternative. Thus, the TSM Alternative is expected to slightly improve overall transit service.

Like the No Build Alternative, the TSM Alternative has two key intersections operating at LOS E and three operating at LOS F during the AM peak hour. The remaining intersections operate at LOS D or better. The number of intersections operating at LOS E and F changes to three and two, respectively, during the PM peak hour. In addition, 12 roadway segments will operate at LOS E or LOS F.

Like the No Build Alternative, the TSM Alternative would not require the displacement of any existing on-street parking or loading spaces, or a reduction in traffic lanes.

At-Grade Emphasis LRT Alternative Option A

The At-Grade Emphasis Alternative with Option A ranks lowest with regard to ridership of the build LRT alternatives, with about 1.5 million total daily transit trips. However, it still creates 7,600 more daily trips than the No Build Alternative and 6,700 daily trips over the TSM Alternative. It also results in the fewest daily urban rail boardings of nearly 166,000 compared to Option B and the Underground Emphasis LRT Alternative, but far more than the No Build and TSM Alternatives.

The at-grade operation along 2nd St. will result in the reduction of roadway capacity and the diversion of through traffic to adjacent roadways such as 1st St. to the north and 3rd St. to the south. However, local access will be maintained to serve the adjacent businesses and office buildings. This shift in traffic flow patterns will cause seven key intersections to operate at LOS E or LOS F in the AM peak hour, and 13 during the PM peak hour. A total of 14 roadway segments will operate at LOS E or F, with the majority operating at LOS F.

The operation of at-grade LRT service along 2nd St. will necessitate the removal of 35 on-street parking and loading spaces. In addition, approximately 9 spaces may also be lost along the south side of Temple St. just west of Alameda St.

At-Grade Emphasis LRT Alternative Option B

The At-Grade Emphasis Alternative with Option B ranks second in ridership and urban rail boardings, with 1.5 million total trips and nearly 170,000 boardings each day. A comparison to the No Build and TSM Alternatives reveals that it will produce about 8,400 and 7,500 additional daily transit trips, respectively.

Option B is practically identical to Option A, except it has a longer at-grade section along Flower St. and an at-grade center platform station at the World Trade Center. As noted previously, at-grade operation along 2nd St. will result in the reduction of roadway capacity and the diversion of through traffic to adjacent roadways such as 1st St. to the north and 3rd St. to the south. However, local access will be maintained to serve the adjacent businesses and office buildings. Consequently, seven key intersections will operate at LOS E or LOS F in the AM peak hour, 13 during the PM peak hour. A total of 14 roadway segments will operate at LOS E or F with the majority of these locations operating at LOS F.

The at-grade LRT service along 2nd St. will displace a total of 35 on-street parking and loading spaces. In addition, approximately 9 spaces may be lost along the south side of Temple St. just west of Alameda St.

Underground Emphasis LRT Alternative

The ridership evaluation shows the Underground Emphasis LRT Alternative to be the best performer, producing a total of 1.5 million daily transit trips. This alternative would result in almost 10,200 more daily transit trips than the No Build Alternative, and 9,300 more than the TSM Alternative. It would also yield the most daily urban rail boardings at 170,000.

Due to its mostly underground configuration, this alternative will not compromise existing roadway capacity. Similar to the No Build and TSM Alternatives, five key intersections will operate at LOS E or LOS F during the AM peak period, four during the PM peak hour. The proposed Alameda St. underpass at 1st St. will help improve the operation of the intersection. Like the No Build and TSM Alternatives, a total of 12 roadway segments operate at LOS E or LOS F. Minor diversions of several turn movements at the intersection of Alameda and 1st Streets will occur due to the proposed underpass and associated frontage road configurations.

The proposed underpass along Alameda St. is expected to displace about 20 parking spaces in the northbound direction south of 1st St.

3.5 Conclusions

Each of the alternatives was evaluated in terms of ridership, potential traffic impacts and parking losses. As explored above, the build LRT alternatives will result in significant increases in total transit ridership and urban rail boardings, with the Underground Emphasis LRT Alternative achieving the highest ridership performance.

From a roadway and intersection evaluation perspective, the Underground Emphasis LRT Alternative runs mostly underground, so there will be minimal disruption to traffic operations and flow patterns. The existing downtown roadway capacity will be maintained, and access to businesses and office buildings will not be compromised. In most cases, existing turn movements will be permitted, except at the proposed Alameda St. underpass and frontage roads, where several turn movements will be prohibited and traffic will need to use alternate routes. Overall, the operating conditions at the key intersections and roadway segments will mirror those of the No Build and TSM Alternatives.

On the other hand, the At-Grade Emphasis LRT Alternative will reduce roadway capacity along several segments due to the addition of grade crossings and street-running tracks. The proposed dedication of 2nd St. as a transit roadway will alter traffic flow patterns in the vicinity of the alignment. Local access will be maintained, but through traffic will be diverted to adjacent parallel streets, such as 1st and 3rd Streets. Crossing the rail tracks will be prohibited except at controlled signalized intersections. A vehicular underpass and pedestrian overpass are proposed near the junction with the Metro Gold Line Eastside

Extension tracks at 1st and Alameda Streets to minimize vehicular, pedestrian, and rail conflicts as wells as reduce potential delays along Alameda St. Operating conditions at the key intersections and roadway segments will be worse than the No Build and TSM Alternatives.

With respect to on-street parking and loading spaces, the At-Grade Emphasis LRT Alternative will displace 35 spaces along 2nd St. An additional 9 spaces may be removed along the south side of Temple Street in the block west of Alameda St. to accommodate the underpass. In comparison, the Underground Emphasis LRT Alternative is expected to displace about 20 parking spaces along the east side of Alameda St. south of 1st St. to accommodate the proposed underpass and frontage roads.

Section 4 Affected Environment and Environmental Issues

4.1 Introduction

The alternatives evaluated for the Regional Connector AA would have direct and indirect effects on the physical environment. This section of the AA describes the existing resource environment and analyzes the potential environmental impacts associated with implementation of the promising build alternatives: the At-Grade Emphasis LRT and the Underground Emphasis LRT. At the conclusion of this document – Section 4.20 – is a summary and comparison of the build alternatives with the No Build Alternative and the TSM Alternative.

The specific environmental impact resource areas analyzed in this section include: land use and economic development, displacement and relocation of existing uses, community and neighborhood, visual and aesthetics, air quality, noise and vibration, ecosystems/biological resources, geotechnical (including subsurface and hazardous materials), water resources, energy, historic, archaeological and Paleontological resources, parklands and other community facilities, economic and fiscal, safety and security, construction impacts, growth inducing, environmental justice, and major utilities.

The following analysis discusses the potential environmental impacts from the construction and operation of the alternatives. Construction impacts would be temporary, while operational impacts would be on-going. As appropriate, the potential site-specific impacts are described based on available information and the current planning effort. As subsequent efforts become more detailed, revised and/or further assessments of the potential environmental effects will be prepared, evaluated and described in a future (EIR/EIS) for the project.

4.2 Land Use and Economic Development

This section examines the existing land uses and associated policies within the Regional Connector PSA, and evaluates their compatibility with the build alternatives. The section also identifies areas for potential growth in response to the new transit service, as well as other impacts that the project might have on development within downtown Los Angeles. Refer to Section 4.3, Displacement and Relocation of Existing Uses, and Section 4.4, Community and Neighborhood Impacts, for additional discussion related to land use and economic development.

4.2.1 Affected Environment

4.2.1.1 Regulatory Framework

The following are the land use plans, community plans, and redevelopment plans and projects affecting the PSA, as well as brief assessments of their compatibility with the two build alternatives.

General Plan Framework: The Los Angeles General Plan Framework, adopted in December 1996, is the citywide portion of the City's General Plan, which is intended to guide the City's long-range growth and development. The General Plan Framework anticipates fast-paced population growth and outlines methods for directing growth toward selected high-density areas where infrastructure is readily available, rather than allow all areas of the City to grow in an uncontrolled fashion. The study identifies downtown as one of the key growth areas, and calls for enhancements to the County's rail system, including extensions and additional feeder bus service.

Central City Community Plan: The Land Use Element of the General Plan splits the City into 35 community plan areas, each with detailed programs targeted at local growth and neighborhood improvements. The entire Regional Connector PSA lies within the Central City Community Plan district. This plan calls for creating dense residential neighborhoods with a variety of housing types, improving the functionality of the area's commercial districts, encouraging the development of additional rail transit, retaining the scale and appearance of existing areas, and encouraging job-rich land uses. As shown in Figure 4-1, the Central City Community Plan area is bounded by Cesar Chavez Ave. on the north, the Santa Monica Freeway (I-10) on the south, the Harbor Freeway (SR-110) on the west, and Alameda St. on the east. In response to the recent increase in housing units downtown, the plan seeks to develop neighborhood-supporting businesses and enhance the safety and cleanliness of the area. The plan heavily promotes transit supportive land uses, such as high-density residential developments, regional entertainment and cultural centers, space for small start-up businesses, retail plazas, nighttime entertainment venues, hotels, and dense industrial and wholesale districts. Of particular importance to the Regional Connector, the plan notes that most of the traffic in the area is generated by pass-through travel between areas outside of downtown. As such, the plan expressly recommends providing better connections through downtown from the SR-110 corridor, including a light rail extension from 7th St./Metro Center Station to Union Station via Flower St., Bunker Hill, and Little Tokyo.

Transportation Element: The Transportation Element of the General Plan lists objectives and programs aimed at improving accessibility and long-term mobility within the City of Los Angeles. In the document, the City encourages the development of high capacity transit service along several corridors, including a "Downtown Connector" from either the San Pedro or Washington Stations to Union Station.

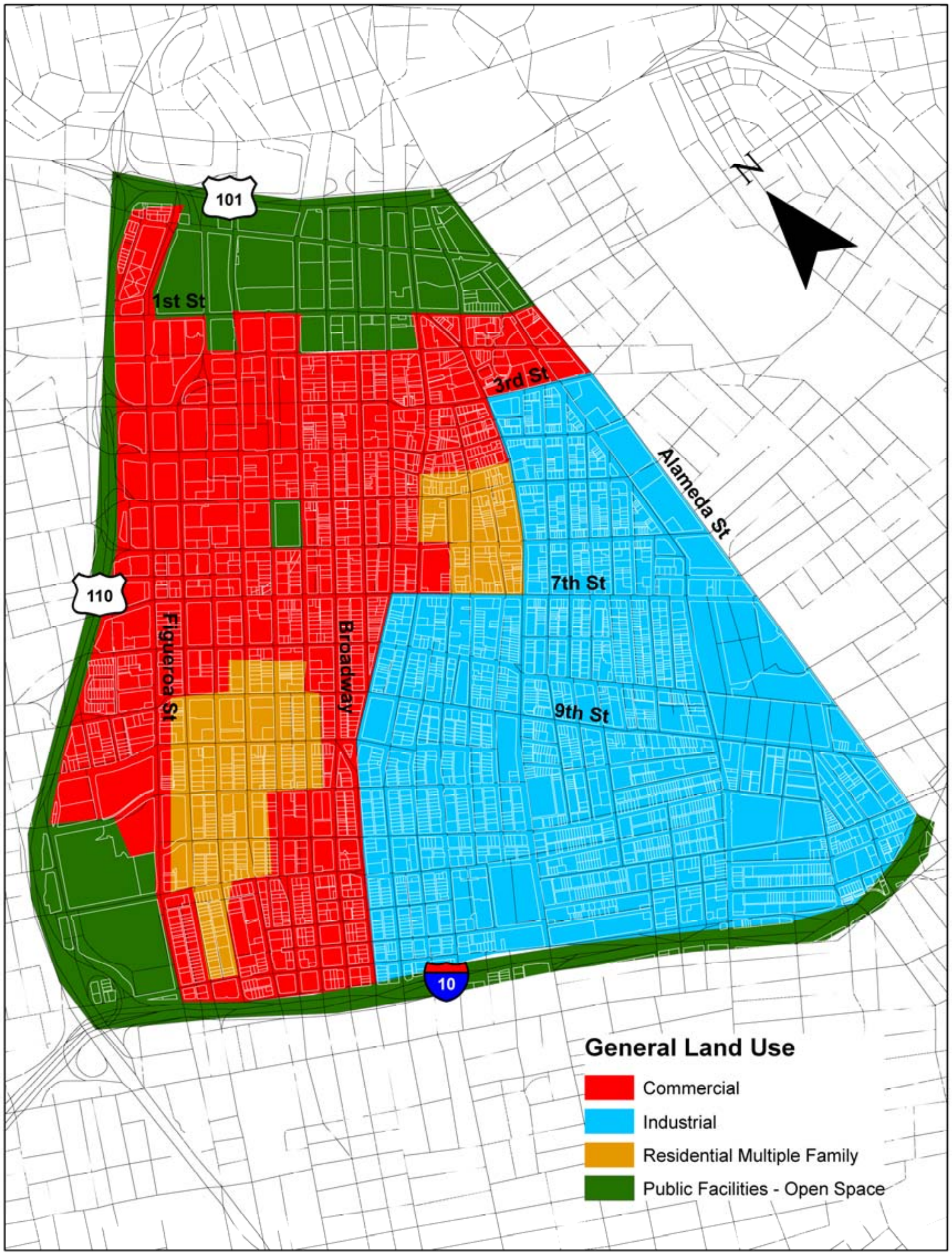


Figure 4-1 General Land Use

Civic Center Shared Facilities and Enhancement Plan: In 1997, the Civic Center Shared Facilities and Enhancement Plan established goals for creating a cohesive concentration of public office buildings linked by visually enhanced streets. The plan outlines a public services and business district which pedestrians could traverse in ten minutes or less. Central to the plan are linkages to other parts of downtown, including Union Station, the Historic Core, and the Music Center.

Feasibility Study for the Resurrection of the Red Car Trolley Services in the Los Angeles Downtown Area: The Community Redevelopment Agency of the City of Los Angeles (CRA) published the Feasibility Study for the Resurrection of the Red Car Trolley Services in the Los Angeles Downtown Area in July 2006, which examines their proposal to introduce a historic streetcar line running in a northeast-southwest direction from Chinatown to the Fashion District. The study discusses the usefulness of additional rail transit coverage within downtown, and emphasizes the importance of connectivity with other Metro Rail lines.

Business Improvement Districts (BIDs): The PSA also contains portions of six BIDs: Fashion BID, Downtown Industrial BID, Toytown BID, Historic Downtown BID, Downtown Center BID, and Little Tokyo BID. These organizations are funded by property assessments, and they seek to improve commerce in their areas through the provision of services such as security patrols, street and sidewalk cleaning, and promotional advertising. Stimulating business growth increases the number of jobs and shopping opportunities, which translates to higher volumes of trips to the district. As such, BIDs are generally supportive of better transit connections, since high quality transit service makes it easier for potential customers to travel to the area.

4.2.1.2 Existing Conditions

The PSA contains the financial core of downtown Los Angeles, and is one of the most job-dense areas in the City. In addition to being a major employment center, the PSA encompasses several retail, entertainment, and residential districts. Income levels of the residents vary greatly, from new luxury condominium developments in the western half of the PSA to single room occupancy hotels and homeless shelters in the eastern portion.

The land use patterns in the PSA consist of mostly commercial office buildings in the southwestern portion, public office buildings in the northern portion, and commercial manufacturing buildings in the southeast. There are pockets of residential uses, including adaptive reuse of older non-residential buildings, scattered through the PSA. The highest floor-area ratio, about 5.0, can be found in the Bunker Hill Redevelopment Area, the area roughly bounded by 1st St., Hill St., 7th St., and SR-110.

Just east of Bunker Hill lies an older office district (Historic Downtown) dating from the early part of the 20th century. Nearly all of the buildings contain ground floor retail establishments, making for a busy streetscape. The buildings in this area are substantially shorter than those on Bunker Hill, due to the city's 12-story height limit at the time of their construction.

In the easternmost part of the PSA lies one of the oldest industrial areas in the region. The buildings are short, usually only one to three stories, and vacant lots are more prevalent than in other parts of the PSA. Many of the empty lots are used as storage yards or surface parking lots. Though zoned for industrial manufacturing, some of the buildings have been converted into loft condominiums and rental housing units.

The PSA is already served by two rail lines and numerous bus lines run by ten operators. Transit riders in the PSA can reach most areas of the county on a single vehicle during peak hours.

As part of the redevelopment plans in the PSA, CRA has undertaken the following projects in the PSA, all of which would yield new transit-supportive land uses:

- 2nd St. Connection – This recently completed project connects two previously un-joined segments of Upper 2nd St. between Grand Ave. and Olive St. The connection was financed mostly by Metro and Surface Transportation Program-Local funds.

- Bunker Hill Design for Development – This proposal would amend the 1971 Design for Development (DFD) and increase the maximum floor area ratio in the Bunker Hill Redevelopment Area from 5.0 to 6.0. This would allow 20 percent more square footage that the current DFD. The proposal is currently in the Environmental Impact Report (EIR) phase.

- Grand Avenue Project – This large-scale redevelopment project is scheduled to break ground in Summer 2008 and will be complete by 2016. The project consists of a full-scale redesign of Grand Ave. as well as the addition of a 16-acre park in the Civic Center and 3.9 million square feet of retail, hotel, and office space.

- Parcel Y-1 Development –The existing Angels' Knoll Park would be developed into a third California Plaza office tower, potentially with retail and residential space. The project is currently in the DFD and EIR phase.

- Los Angeles Sports and Entertainment District/L.A. Live! – This project seeks to create a major sports and entertainment destination just south of the financial district, surrounding the existing Convention Center and Staples Center. Additional auditoriums and theaters, as well as retail and office space will be added by 2009. Condominium and rental apartment buildings are presently under construction. This redevelopment project is located one block south of the PSA.

- Colburn School Phase II – The new expansion to the performing arts school was completed in Fall 2007, and consists of a new dormitory, rehearsal hall, 12-story tower, library, teaching space, and performance lab. This project is located on the southeast corner of 2nd St. and Grand Ave.

- Park Fifth – An EIR is currently being prepared for a new high-rise residential building on 5th St. between Hill and Olive Streets. This project will contain market-rate condominium units, a five-star hotel, and ground floor commercial space.

- 8th & Grand Ave. – This is a condominium project with ground floor restaurants and retail located on 8th St. between Grand Ave. and Olive St. This project was approved by the CRA Board and the City Council in 2006.

- Mangrove Site – CRA issued a request for proposals which closed in late 2007 for the parcel adjoining the future Metro Gold Line Little Tokyo/Arts District Station at 1st and Alameda St. CRA hopes to pursue a mixed-use project on the site with market rate and affordable residential units, commercial space, and public parking. The site is located across Alameda St. from the PSA.

- Block 8 Mixed Use – This parcel in Little Tokyo is located between 2nd, 3rd, San Pedro, and Los Angeles Streets. The proposed development will include affordable rental units, market-rate condominium and rental units, commercial space, and open space. The site plan includes a mid-block walkway between San Pedro and Los Angeles Streets.

- Metropolis Project – Located on the southwest corner of 8th and Francisco Streets, this recently-approved development will add 2.8 million square feet of new condominium, office, hotel, and retail space.

- Little Tokyo Central Avenue Art Park – This project involves redeveloping the closed section of Central Ave. between Temple and 1st Streets into a landscaped community park and underground parking facility linking the existing Museum of Contemporary Art to the Japanese American National Museum.

- The Medallion – This project seeks to replace a surface parking lot with market-rate apartments and commercial space on a site located between Main, Los Angeles, 3rd, and 4th Streets. Construction on Phase 1 of the project has begun, and Phase 2 relies on the demolition of the existing Downtown Women's Center (see the following project).

- Downtown Women's Center Relocation/Expansion – This project will remove the existing Downtown Women's Center on San Pedro St. between 4th and 5th Streets in order to make way for the Medallion project. The city will renovate its Renaissance Building as the new Women's Center, and will provide an additional 75 permanent housing units and eight day rest beds for homeless women. CRA is currently reviewing development plans for the relocation/expansion project.

- Residential Hotels Rehabilitation Program – Under this plan, CRA will acquire approximately 30 single-room occupancy hotels, lease them to non-profit housing operators, and preserve the units as low-income housing. CRA cites public ownership as a means of cleaning up crime-ridden slum hotel areas within the PSA.

4.2.2 Evaluation Methodology

The following analysis addresses the compatibility of each build alternative with the existing land use patterns along the alignment, as well as the compatibility with existing land use plans and potential future development projects and trends. The analysis also reviews the transit coverage provided with each alignment and associated economic costs. The existing land use information is based on land use maps and field surveys.

4.2.3 Environmental Issues

Because the build alternatives – At-Grade Emphasis LRT and Underground Emphasis LRT- follow similar routes through downtown, the land use patterns in the areas they pass through do not vary significantly.

The Underground Emphasis LRT Alternative would have fewer negative impacts on the existing land use patterns than the at-grade alternative, since the Underground Emphasis LRT Alternative would not involve reducing the number of lanes available to automobile traffic on any streets or pose conflicts with the autos, as would the At-Grade Emphasis LRT Alternative. Further, reduction of traffic lanes on some streets associated with the At-Grade Emphasis LRT Alternative could create additional congestion (i.e., fewer lanes of travel) and costs associated with traffic management, which in turn could negatively affect downtown developments. However, the costs associated with construction of at-grade light rail would be less significant than costs associated with construction of the underground alignment.

Additionally, the underground alignment would have lower noise levels than an at-grade alternative during the operation phase. The Underground Emphasis LRT Alternative, as such, would be more compatible with existing and potential future residential development, the pace of which has sharply increased in the area over the last several years. However, an at-grade alignment and at-grade stations would still be consistent with the overall existing urban character of the area. Additionally, the at-grade stations on the At-Grade Emphasis LRT Alternative are more visible to potential riders and would impose fewer impediments to pedestrians quickly moving between the sidewalk and the boarding platform than underground stations.

As presented in Section 4.2.1.1, there are various land use plans, community plans, and redevelopment plans and projects affecting the PSA. The plans and projects are all generally supportive of improved transit linkages and mobility. Both of the build alternatives would be compatible with these goals and policies.

Because the station locations of both the at-grade and underground alternatives are proximate to each other, all of the alignments would provide nearly equivalent levels of transit coverage within the downtown area. Between the build alternatives, the station locations vary by only a block, at most. The At-Grade Emphasis LRT Alternative would incur a longer trip time than the Underground Emphasis LRT Alternative, but the connectivity and the potential for single-vehicle service from Pasadena, Long Beach, East Los Angeles, and Culver City would be the same. It is important to note that downtown Los Angeles is already heavily served by transit, and the Regional Connector's primary purpose is to improve the connection between the light rail lines in the area and reduce the need for transfers, not necessarily to provide access to areas previously un-served by the transit system. In any event, the density of transit service would be increased in the areas around the stations, and this would bring added development, jobs, and mobility.

4.3 Displacement and Relocation of Existing Uses

This section addresses the land ownership and leasing agreements that may change due to the project. Existing conditions and implications for displacement and relocation of existing uses within the PSA will be addressed in this section. Although the build alternatives under consideration are intended to maximize the use of publicly owned rights-of-way, certain features of these alternatives have the potential to impact persons and businesses on private property within the PSA.

4.3.1 Affected Environment

4.3.1.1 Regulatory Framework

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act), mandates that certain relocation services and payments be made available to eligible residents, businesses, and nonprofit organizations displaced as a direct result of projects undertaken by a federal agency or with federal financial assistance. The Uniform Act provides for uniform and equitable treatment of persons displaced from their homes and businesses and establishes uniform and equitable land acquisition policies.

Owners of private property have federal constitutional guarantees that their property will not be taken or damaged for public use unless they first receive just compensation. Just compensation is measured by the "fair market value" of the property taken, where "fair market value" is considered to be the:

> "highest price on the date of valuation that would be agreed to by a seller, being willing to sell, but under no particular or urgent necessity for so doing, nor obliged to sell; and a buyer, being ready, willing and able to buy but under no particular necessity for so doing, each dealing with the other with the full knowledge of all the uses and purposed for which the property is reasonably adaptable and available." (Code of Civil Procedure Section 1263.320a)

The provisions of the California Relocation Act (California Act), applies in the absence of federal funds and/or involvement if a public entity undertakes a project and consequently must provide relocation assistance and benefits. The California Act, which is consistent with the intent and guidelines of the Uniform Act seeks to, (1) ensure the consistent and fair treatment of owners of real property, (2) encourage and expedite acquisition by agreement to avoid litigation and relieve congestion in the courts, and (3) promote confidence in the public land acquisitions. As stated above under federal regulations, owners of private property have similar State constitutional guarantees regarding property takes, damages, and just compensation.

4.3.1.2 Existing Conditions

Section 4.2 describes the existing land uses within the PSA. In addition, Section 4.4, Community and Neighborhood Impacts, describes the neighborhoods within the PSA.

4.3.2 Evaluation Methodology

Table 4-1 shows typical sources and causes of land acquisition and displacement that could potentially occur with the PSA. When an acquisition occurs, it typically results in either a full or partial take of a parcel. A partial taking would occur if the project did not require the acquisition of the entire parcel, but just enough of the parcel to accommodate the proposed project. This would occur if, for example, a portion of a commercial parking lot fronting the alignment is required, but not the adjacent commercial building located away from the alignment. Partial takings may result from the widening of a street or intersections due to inadequate right-of-way widths, limited cross-sections, and vertical circulation needs adjacent to subway stations. The widening of intersections are often required for the addition of left-turn lanes that have been relocated due to the installation of at-grade station platforms within the street median, adjacent to the transit tracks. Street widening may be necessary when the existing horizontal alignment contains insufficient right-of-way. Vertical circulation is needed near underground stations as additional land is needed to bring passengers to the surface.

Table 4-1 Sources and Causes of Displacement

Source	Type of Acquisition	Cause/Process
Horizontal alignment	Full/Partial	Not enough right-of-way for alignment
Vertical circulation above subway station	Partial	Additional area needed adjacent to subway station to bring passengers to surface
Street widening	Partial	Aerial structures requiring columns
Illegal encroachment	Full	Unauthorized use of private property
Access to a businesses (driveway or road)	Full	Damages resulting from reduced or restricted access
Storage Yards	Full	Additional area required to perform maintenance
Widening of intersections	Partial	Additional area to maintain traffic volumes, turn lanes, or platforms
Tunneling easement	Easement	Subway travels off public right-of-way

Source: Terry A. Hayes & Associates, 2008

A full taking would occur under two circumstances: (1) when the majority of the property is required for the horizontal alignment because of insufficient public right-of-way or the need to construct storage or maintenance facilities, and (2) when the damage caused to the property (e.g., driveway access to a property is eliminated or reduced due to the construction of transit that travels down the side of a street, as opposed to the median) is so great that the owner is deprived of all beneficial use. Damages to a property would typically result from restricted access or demolition of improvements.

Metro would need to obtain easements instead of acquiring or displacing the uses on those parcels under which the underground segments would travel.

The analysis below assesses the potential need for acquisition along each alignment.

4.3.3 Environmental Issues

The project would typically use existing rights-of-way when developing the proposed alternatives. However, where the proposed alignments transition from underground to at-grade, as well as at stations, there is the potential to displace properties. Although the Underground Alternative avoids most surface conflicts, property acquisition may be needed for portals and station entrances. Acquisitions for station entrances could occur at underground stations for each alternative. Other potential displacement includes the following:

At-Grade Emphasis LRT Alternative

- Potential right-of-way acquisitions may be necessary at Flower and 3rd Streets. (Option A) or Flower and 5th Streets (Option B) for the tracks to transition from underground to at-grade. Additionally, there are potential right-of-way acquisitions on 2nd St. According to preliminary station and alignment design the stations will need an area approximately five feet deep along the street frontage for the length of the station for construction.

- Potential for parking displacement exists along 2nd, Main, Los Angeles and Temple Streets associated with the At-Grade Emphasis LRT Alternative.

Underground Emphasis LRT Alternative

- Potential acquisition of the entire block bounded by Central Ave., Alameda St., 1st St., and 2nd St. may be necessary for the portal to transition from underground to at-grade to connect to Metro's Gold Line Extension. There are no residences in this block, but it is across the street from the Japanese American National Museum and from residences on Alameda St. Although no displacement is anticipated on the east side of Alameda St. (Arts District), removal of commercial businesses could indirectly impact the residents in the area.

- Parking displacement along areas adjacent to the portal at Little Tokyo may potentially impact businesses and residents of Little Tokyo and the Arts Districts, as well as visitors to the museums, shops, and restaurants located in Little Tokyo.

- As identified in the Initial Screening Report, given the need for acquisitions for underground station entrances, the Underground Emphasis LRT Alternative would require a greater amount of property acquisition than the At-Grade Emphasis LRT Alternative.

- Any potential acquisition or displacement as a result of the project would occur in compliance with the Uniform Act and/or California Act, as applicable.

4.4 Community and Neighborhood Impacts

This section discusses the effects of the build alternatives on the neighborhoods within the PSA. Particular attention is paid to demographic characteristics, community division, and mobility.

4.4.1 Affected Environment

As mentioned earlier, the PSA is an extremely built out area with unique neighborhood characteristics among all the districts. Although the PSA is composed of the central core of downtown, the area of influence includes surrounding communities and the region as a whole, which will benefit from the Regional Connector. Also, the recent resurgence and development, such as the Arts District and the LA Live Development, greatly influence and affect the patterns of development and the characteristics that are introduced into these neighborhoods.

In the same way, the Regional Connector will introduce new elements, not only of physical design, but of mobility and travel characteristics and patterns that may affect the way people interact in these spaces. The proceeding sections provide a detailed description of the districts which make up the Regional Connector PSA as well as the current travel and housing characteristics in each.

4.4.1.1 Existing Conditions

Community and Neighborhoods

The following neighborhoods comprise the PSA:

Bunker Hill

The Bunker Hill District is located generally between 1st St. on the north, Hill St. on the east, 3rd St. on the south, and Figueroa St. on the west. Major downtown destinations located within Bunker Hill include the Walt Disney Concert Hall, Museum of Contemporary Art (MOCA), several high-rise office towers, senior and market rate housing, hotels, and commercial/retail centers. Bunker Hill has over 3,200 residential units, mainly in mid- and high-rise buildings. Large development projects planned for this area include Civic Park and the Grand Avenue Development Project, which will transform this area into a regional arts, entertainment, and residential destination. The Grand Avenue Development is a $3 billion project that includes 3.6 million square feet of development with 449,000 square feet of retail. It is currently planned for 2,600 housing units, almost doubling the existing number of units in the area.

Civic Center

Bordering Bunker Hill to the northeast is Civic Center, which serves as a hub for city, county, state, and federal government offices and services, with the second largest concentration of civic buildings in the country. The Cathedral of Our Lady of the Angels, completed in 2002, the Ahmanson Theater, Mark Taper Forum, and the Dorothy Chandler Pavilion are other major destinations in this district. Civic Center is undergoing active redevelopment as the new headquarters for the state Department of Transportation

(Caltrans) District 7 has recently been completed, development of the new Los Angeles Police Department Headquarters is underway, and construction of a U.S. Federal Courthouse is soon to begin.

Little Tokyo

East of Civic Center is Little Tokyo, which is the center of the largest Japanese-American community in the continental United States. The Japanese American National Museum and Geffen Museum of Contemporary Art are located here, along with a lively shopping district. There is active residential development underway within Little Tokyo, with recently completed and current projects adding more than 2,000 residential units. Significant developments in the early planning stages include a 4.5-acre site adjacent to the Gold Line's future Little Tokyo Arts District Station. Early concepts from developers identified high-density combination of office and housing with a strong connection to the Metro Gold Line.

Toy District

The Toy District is a 12-block shopping area with over 500 retail businesses located south of Little Tokyo and north of Central City East. Development here is primarily comprised of mixed-use projects. The proposed Medallion project will provide 192 residential lofts and over 200,000 square feet of retail space.

Financial Core

The Financial Core District is located south of Bunker Hill and is dominated by high-rise office buildings. The Central Library is located here, and has been recently restored and expanded. Other landmarks in this district include the Millennium Biltmore Hotel and Pershing Square. The proposed 2.7 million square foot Metropolis mixed-use development is located in the southwestern end of the Financial District. Phase I of this project, scheduled to begin construction in 2008, will provide 360 residential units. Park Fifth is another major planned 76-story high-rise development across from Pershing Square and will include over 700 condominiums and a 200 room hotel.

Historic Core

To the east of the Financial Core is the Historic Core District, containing a large concentration of historic and architecturally significant buildings, including the Bradbury Building. The Grand Central Market and the Broadway Historic Theater District are destinations in this district. Development here is focused on conversion of old neglected buildings into lofts and apartments.

Jewelry District

The largest Jewelry District in the U.S. and second largest in the world is located southwest of the Historic Core, comprised of 5,000 businesses with billions of dollars in revenue. Development in this area includes the proposed construction of 875 condominium units at 8th and Grand Streets.

Central City East

Central City East is located south of the Toy District and consists primarily of commercial uses, including wholesale buildings and warehouses. The Flower Market, produce, fish and food processing industries, and import/export businesses employ nearly 20,000 people in this area. Housing in this district consists mainly of the 6,500 single room occupancy hotel units. This area also has social services, including alcohol treatment, mental health services, and job training.

4.4.1.2 Transit-Relevant Demographic Characteristics

The PSA makes up 1.6 square miles, or 0.03 percent of the 4,752 square miles of Los Angeles County. As shown in Table 4-2, in 2005, the total population of the PSA was 17,795, which comprised 0.18 percent of the total Los Angeles County population of over ten million. Despite its small size, the PSA sustained 3.62 percent of the County's employment, or 168,328 jobs, in 2005. The average population density within the PSA was 11,685 people per square mile, significantly higher than the 2,107 people per square mile population density found in Los Angeles County in 2005. Employment density in the PSA was 110,529 employees per square mile, which was also significantly higher than the county's overall employment density of 977 employees per square mile.

Table 4-2 Population and Employment in the Project Study Area

Demographics	PSA	L.A. County	Percent of County
Population	17,795	10,010,315	0.18
Population Density	11,685	2107	NA
Total Employment	168,328	4,644,010	3.62
Employment Density	110,529	977	NA

Source: Southern California Association of Governments (SCAG), 2005

Residences in the area have been categorized as single-family homes, multi-family homes, or group quarter residences, which include military barracks, dormitories, and institutional housing. Data for the number of low, medium, and high-income households in the PSA were available for single-family and multi-family residences only, of which there were 9,673 households in 2005 with a median household income of approximately $45,000. Group quarters added an additional 5,466 residences. As shown in Table 4-3, based on these 2005 data, the PSA is primarily composed of low-income households, with a moderate medium-income household population. As mentioned above, recent development of the PSA continue to bring about demographic changes that may not be reflected in data from 2005.

Table 4-3 Income Status within the Project Study Area		
Demographics	PSA	Percent of PSA
Total Residences	15,136	N/A
Total Households	9,673	100
Low Income Households	7,244	75
Medium Income Households	2,009	21
High Income Households	417	4

Source: SCAG, 2005

In 2005, only 5.5 percent of the young people in Los Angeles County lived within the PSA. Comparatively, 29.4 percent of the population of Los Angeles County in 2005 was age 18 and under. As downtown resurgence attracts those seeking an urban lifestyle, a rise in the number of young people living downtown will likely occur.

As shown in Table 4-4, the PSA also demonstrates a higher percentage of elderly residents (19.7 percent) when compared to Los Angeles County (9.7 percent). The young and the elderly have a higher propensity for using public transportation since these groups are less likely to have drivers' licenses or access to private automobiles. The Regional Connector is expected to improve transit connectivity and accessibility for members of these groups living outside the PSA who would wish to commute into it.

Table 4-4 Population Age				
AGE	PSA	Percent	L.A. County	Percent
18 and under	976	5.5	2,798,604	29.4
65 and over	3,497	19.7	926,670	9.7

Many of the households in the PSA, approximately 69 percent, have no car and rely on public transit for commuting needs. Additionally, there is a high volume of transit ridership in the PSA, including 23 percent of employed residents age 16 and over, as well as a large number of commuters from outside the PSA who utilize transit to get to employment and other opportunities within the project study area. When comparing vehicle accessibility and public ridership patterns in the PSA, the trends suggest that even households in the PSA with one or more cars have a higher propensity to use public transportation than similar households elsewhere in Los Angeles County.

Table 4-5 presents demographic information for the PSA as compared to the County as a whole.

Table 4-5 Transit Dependent Demographic Information	PSA	LA County	PSA % of LA County
Population	17,795	10,010,315	0.18
Under 18 years	976	2,798,604	0.03
Over 65 years	3,497	926,670	0.38
Households	9673	3,298,210	0.29
No vehicle households	8,586	671,214	1.28
Use public transportation	1,025	254,091	0.40
Low income households	7,244	1,481,896	0.49
Total employment	168,328	4,644,010	3.62

Source: SCAG, 2005 data and 2030 projections

4.4.2 Evaluation Methodology

The following analysis considers the potential impacts of the project on demographic characteristics, community division, and mobility within the PSA to assess whether the Project would disrupt, divide, or isolate existing communities or land uses.

4.4.3 Environment Issues

Depending on which alternative is selected, the neighborhoods within the PSA will incur varying levels of potential environmental impacts, particularly along the streets under consideration for rail alignments. Because both alternatives follow similar routes, their impact on transit ridership, employment, residential population, and mobility would be nearly identical.

As discussed in detail in Section 4.16, Construction Impacts, temporary impacts are primarily associated with the construction of the at-grade alignment and underground and at-grade stations, which would last for approximately three to four years. These temporary impacts include significant noise and vibration during business hours, dust, and traffic congestion due to closed streets and the movement of construction vehicles. However, some of these impacts may be less intrusive downtown as they might be in other parts of the City, since there is already a high level of activity and traffic noise throughout the PSA. Also, the temporary environmental impacts would be similar for both the at-grade and the underground alignments, since both would require heavy construction activity.

The impacts of the operation of the project will vary based on whether the at-grade or underground alignment is chosen. The At-Grade Emphasis LRT Alternative involves placing tracks in either the center lanes of the street or the curb lanes, as well as erecting 25-foot tall catenary poles above the street level and placing traction power substations every mile alongside the tracks. High-platform stations with canopies would be located in the roadway medians or curb lanes, and would stretch across the majority of the city block. As such, there would be a visual change to the neighborhoods through which the tracks pass, as well as potential mobility impacts for pedestrians who may lose the ability to use existing crosswalks. Given the placement of tracks along 2nd, Main, and Los Angeles Streets outlined for the At-Grade Emphasis LRT Alternative, it is conceivable that pedestrian mobility from the Civic Center to Little Tokyo and the Historic Core could be reduced. Also, removing traffic lanes from these streets may also add to auto congestion and bus trip times. Current operating hours for the Metro Rail system are 4 a.m. to 1 a.m. daily, and it is expected that trains will generate noise (bells, horns, public address announcements, and rail squealing) along the project right-of-way during these hours.

The Underground Emphasis LRT Alternative on the other hand, is entirely underground except for a short portion of the tracks, just southwest of the Metros Gold Line's Little Tokyo station at 1st and Alameda Streets. As such, there will be no prominent surface impacts, aside from station portals along the sidewalks or in plazas adjacent to the street. The operational noises discussed above may still emanate from the ventilation shafts embedded in the roadway or sidewalk as well as the portal at 1st and Alameda Streets, but the levels would be minor compared to an at-grade alignment. Overall, the Underground Emphasis LRT Alternative would cause little change in community division and pedestrian mobility within the neighborhood.

4.5 Visual and Aesthetic Impacts

Transportation infrastructure has the potential to enhance pedestrian activity, create pedestrian-friendly environments, enliven streetscape through architecture, signage, lighting, and landscaping and help in the support for revitalizing areas in need of rejuvenation. However, transportation infrastructure also has the potential to negatively alter the visual landscape when a proposed project is out of scale with its immediate surroundings, and results in development of unwanted infrastructure such as overhead wires or structures that may detract from the visual setting or block views of existing scenic vistas, historical structures, or other visual resources.

4.5.1 Affected Environment

4.5.1.1 Regulatory Framework

As discussed in Section 4.2.1.1, the PSA is within the Central City Community Plan of the General Plan's Land Use Element. The Central Community Plan includes an Urban Design chapter that contains objectives and policies support the development and re-enforcement of a pedestrian-friendly environment and streetscape.

4.5.1.2 Existing Conditions

The alternative alignments are located in a highly urbanized setting surrounded by a variety of land uses. The primary visual features in the area are historical buildings, contemporary buildings with notable architecture, and street trees. The street characteristics of the PSA, although concentrated in the dense downtown setting, differ from district to district, from the modern high rise architecture of the financial district to the Art Deco City Hall and the period characteristics of the historic core.

The following section summarizes the characteristics of both alignments and their potential impacts on surrounding environments.

4.5.1.3 Potential Impacts

The development of the At-Grade Emphasis LRT Alternative or the Underground Emphasis LRT Alternative has the potential to affect the immediate surroundings by adding new features to the visual landscape, including the introduction of catenary poles and wires, at-grade track, station platforms, and/or off-street portals leading to underground stations. Roadway modifications to accommodate at-grade track would also change the existing visual landscape.

Aboveground stations and portals to underground stations would also introduce a new source of nighttime lighting.

At-Grade Emphasis LRT Alternative

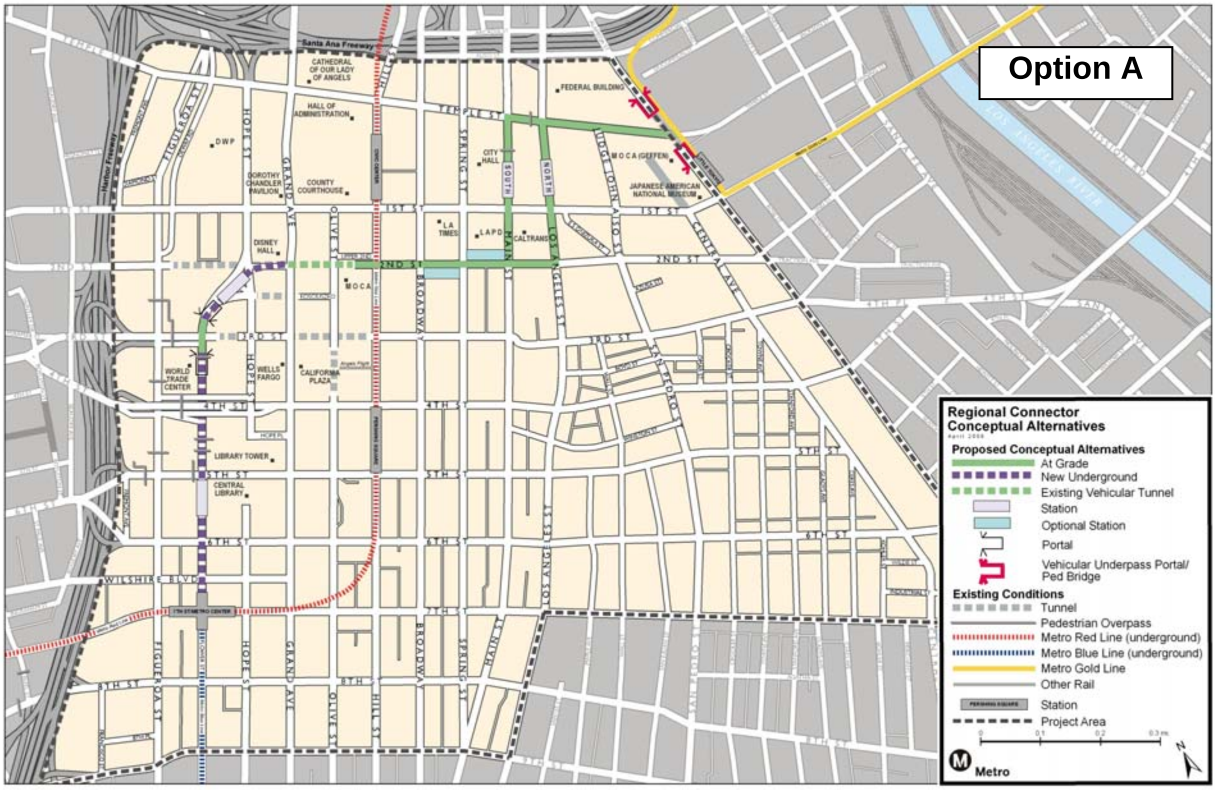
The At-Grade Emphasis LRT Alternative would run mostly at the same elevation as the surrounding road network and would include tracks located in a dedicated right-of-way or an arterial street median, with catenary wires located above the tracks. Catenary poles would be approximately 25-feet tall above the street level, and traction power substations would be located every mile along the tracks. With the At-Grade Emphasis LRT Alternative Option A, approximately 64 percent of the alignment would operate at-grade and the remaining 34 percent would be underground. With Option B, approximately 79 percent of the alignment would operate at-grade, with the remaining 21 percent located underground.

The At-Grade Emphasis LRT Alternative is located within one-quarter mile of two National Historic Landmarks, five National Register Districts, 75 individual National Register properties/resources, 98 California Register designations, and 37 local landmarks. The total number of potentially impacted notable architectural resources is 217. Of these resources, the greatest potential visual impacts would be on the resources located adjacent to an alignment and in the vicinity of the stations.

The Initial Screening Report describes Option A as being located within one-quarter mile of 13 buildings with notable architecture, and Option B as being located within one-quarter mile of 11 buildings with notable architecture. Of these sites, 11 are located directly adjacent to both of the At-Grade Emphasis LRT Alternative alignment options. The 11 sites are listed below and the relationship to the alignment is briefly described. Any differences between Option A and Option B are noted. For additional information on historical resources, see Section 4.12, Historic, Archeological, and Paleontological Resources.

- Edward R. Roybal Federal Building - located northeast corner of the Temple St. and Los Angeles St. intersection. The alignment would be at-grade to the south of the site along Temple St.

- Fletcher Bowron Square – Los Angeles Mall - located in the 300 block of Main St. between Temple St. and Aiso St. The alignment would be at-grade to the south of the site along Temple St.



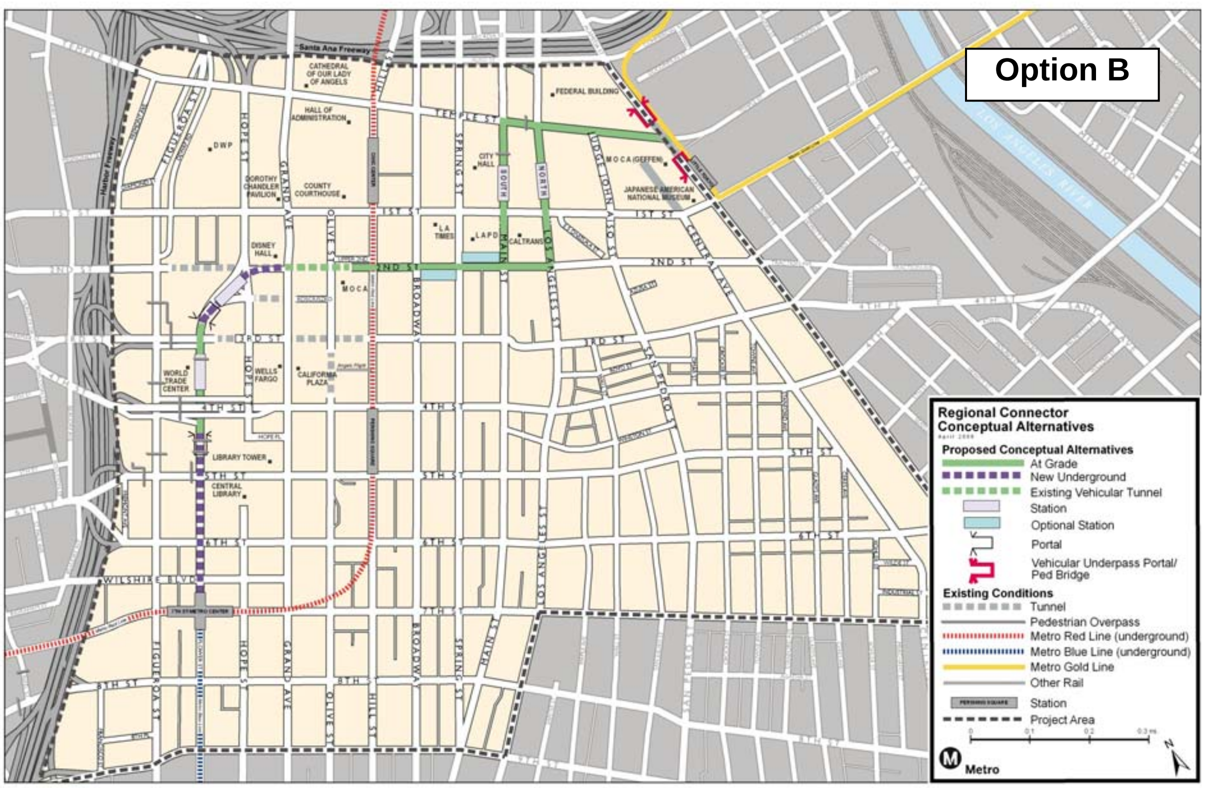


Figure 4-2 At-Grade Emphasis LRT Alternative

- Caltrans Building - located at the north side of 2nd St. between Main St. and Los Angeles St. The alignment would be at grade to the east, west, and south of the site.

- Los Angeles Civic Center - generally located north of 1st St. and south of Aiso St. or Temple St. between Figueroa St. and Alameda St. The alignment would run at-grade through the Civic Center on Main St., Los Angeles St., and Temple St. east of Main St.

- Los Angeles City Hall – located at northwest corner of 1st St. and Main St., within the Los Angeles Civic Center. The alignment would run at-grade to the east of City Hall on Main St.

- Higgins Building – located at the southwest corner of the 2nd St. and Main St. intersection. The alignment would be at-grade to the north of the site along 2nd St. The optional eastbound Spring St. Station platform would be on the north side of 2nd St., opposite the site.

- (Former) Saint Vibiana's Cathedral – located on Main St. south of 2nd St. The alignment would be at-grade to the north of the site along 2nd St. The optional eastbound Spring St. station platform would be on the north side of 2nd St. to the west of the site.

- Disney Concert Hall – located on 2nd St. between Grand Ave. and Hope St. The alignment would be below-grade to the south of the site, and would transition to at-grade at Grand Ave. to the east. A station would be located to the southwest.

- Westin Bonaventure Hotel – located on Flower St. between 4th St. and 5th St. The alignment would run below-grade (Option A) or would transition from at-grade to below-grade (Option B) to the east of the site on Flower St. A below-ground station would be located to the south (Option A) or an aboveground station would be located to the north (Option B) along Flower St.

- Los Angeles Central Library Building and Grounds – located on 5th St. to the east of Flower St. The alignment would run below-grade to the west of the site on Flower St. A station would be located to the west of the library site (Option A).

- California Club Building – located on Flower St. north of 6th St. The alignment runs below-grade to the west of the site on Flower St. A station is located to the north along Flower St. (Option A only).

- Additionally, there are numerous outdoor public works of art, such as sculptures, murals, and fountains, associated with development located along the alignments such as the Civic Center, Central Library, Fletcher Brown Square, and museums. Some of the art works are visible from the adjacent streets and sidewalks.

With the At-Grade Emphasis LRT Alternative, roadway modifications would be necessary to accommodate the at-grade track, including the reduction of lane widths, altering of existing lane configurations, and removal or displacement of left-turn pocket lanes. As Option B has a greater percentage of at-grade service versus underground service, it would require a greater number of roadway modifications.

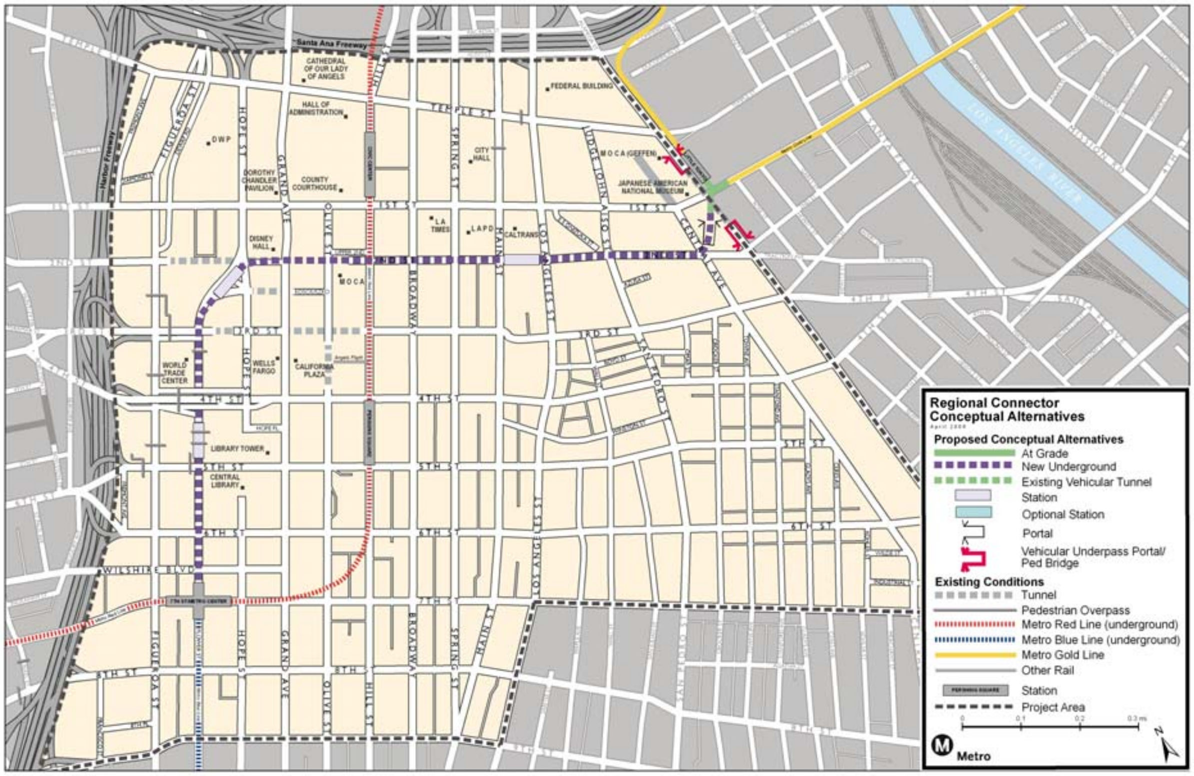


Figure 4-3 Underground Emphasis LRT Alternative

Underground Emphasis LRT Alternative

The Underground Emphasis LRT Alternative is primarily underground (approximately 91 percent) with a small portion operating at-grade (9 percent). Therefore, along most of the alignment, trains and track would not be visible. Furthermore, given the limited portion of track located at-grade, roadway modifications would be minimal. The Underground Emphasis LRT Alternative has three underground stations, all of which would have at-grade portals.

The Underground Emphasis LRT Alternative would be within one-quarter mile of two National Historic Landmarks, four National Register Districts, 78 individual National Register properties/resources, 88 California Register designations, and 31 local landmarks. The total number of notable architectural resources is 203.

The Underground Emphasis LRT Alternative would be located within one-quarter mile of nine buildings with notable architecture. Ten sites with notable architecture are located adjacent to the alignment. The sites are listed below and the relationship to the alignment is briefly described. Unless noted, the alignment is below-ground. For additional information on historical resources, see Section 4.12, Historic, Archeological, and Paleontological Resources.

Japanese American National Museum – located at the northwest corner of 1st and Alameda Streets. The alignment transitions from below-ground to above-ground south of the site and connects to the proposed Little Tokyo/Arts District Station to the east (transfer station to the Gold Line) and proposed maintenance and operations facility. The proposed station would require existing Alameda St. to be constructed below-grade under the Alameda St. and 1st St. intersection where an LRT junction and pedestrian bridges are proposed to be built.

- Little Tokyo Historic District – generally located north of 2nd St. between San Pedro St. and South Central Ave. The alignment would run to the south of the District.
- The Geffen Contemporary at MOCA - located on Alameda St. north of the Japanese American Museum on 1st St. The alignment would end at the proposed Little Tokyo/Arts District Station and maintenance and operations facility on Alameda Ave., to the east of the site. The station and alignment would be at-grade.
- Caltrans Building - located at the north side of 2nd St. between Main and Los Angeles Streets. At least one portal would be located adjacent to the Caltrans building along 2nd St.
- Higgins Building – located at the southwest corner of the 2nd St. and Main St. intersection. The alignment would be to the north of the site along 2nd St. A station would be located to the west of the site.
- (Former) Saint Vibiana's Cathedral – located on Main St. south of 2nd St. The alignment and station would be located to the north of the site along 2nd St. One possible portal location would be on the Saint Vibiana site.
- Disney Concert Hall – located on 2nd St. between Grand Ave. and Hope St. The alignment would be south of the site on 2nd St. A station would be located to the southwest.
- Westin Bonaventure Hotel – located on Flower St. between 4th and 5th Streets. The alignment and a station would be located to the east of the site. An at-grade portal may be located on or near the Westin Bonaventure Hotel site.
- Los Angeles Central Library Building and Grounds – located on 5th St. to the east of Flower St. The alignment would be to the west of the site on Flower St. A station would be located to the north of the library site.

- California Club Building – located on Flower St. north of 6th St. The alignment is to the west of the site on Flower St.

4.5.2 Evaluation Methodology

The evaluation of potential aesthetic impacts involves determining if changes would occur to the aesthetic character of the area surrounding the alignments. This entails reviewing the above-ground infrastructure associated with each alternative and analyzing if it would affect the overall character of the area and result in the obstruction of views or removal of any visual resources along the alignment, and to what degree. Obstruction of important views or introduction of elements inconsistent with the existing visual character would result in visual impacts.

To determine the notable architectural resources within one-quarter mile of each alignment, information was gathered from the City of Los Angeles, Department of City Planning's Historic-Cultural Monument Report for the Central City Community Plan Area, Metro's Angels Walk L.A. Program (a walking trail that links Los Angeles' landmarks with transit), the Los Angeles Convention Center's list of landmarks to visit while in Los Angeles, and a field survey conducted on February 1, 2008.

4.5.3 Environmental Issues

Both alignments would involve some changes to the existing visual landscape; however, the degree to which this would occur varies between the alternatives. Notably, the at-grade alignment has a greater potential for visual impacts as it involves substantially more above-ground infrastructure than the underground alternative. However, given that the existing setting is highly urbanized, the introduction of new infrastructure and roadway modifications associated with any of the alternative would not be out of character with the existing setting. Therefore, substantial degradation of the existing visual quality or impairment of the quality of the pedestrian environment is anticipated. Further, none of the alternatives would result in removal of notable architectural resources. However, potential impacts related to visual resources could involve impeding line of sight of notable architectural resources and removal of street trees. These potential impacts are discussed further below as related to the specific alternatives.

At-Grade Emphasis LRT Alternative

The At-Grade Emphasis LRT Alternative has the potential to impact views through the introduction of new aboveground infrastructure such as train track, catenary wires and poles, and station platforms. Station portals and associated signage would be required for underground stations along the alignment. Catenary poles for the proposed project may in some cases replace existing utility poles. However, given catenary wires and support requirements, the wires and poles could increase visual clutter, particularly at curves and corners. Thus, the catenary wires and poles may obstruct views of notable architectural resources, as well as modifying the visual character of the area.

The At-Grade Emphasis LRT Alternative would also require substantial roadway modifications to accommodate the track and related infrastructure associated with the at-grade segments of the alignment. While roadway modifications and construction would result in visual disruption during the construction period, this new infrastructure would be consistent in character with the existing urban setting.

Views of the individual architectural resources listed in Section 4.5.1 may be interrupted by station platforms, portals to underground stations, and catenary wires and poles. However, the wires, portals, and platforms would not fully impede views. Views may be completely blocked when a train is stopped at a platform when located between an on-looker and the notable structure, but this would occur on a temporary basis. Once a train had departed a station, limited views of the structure would be available. The new infrastructure would be consistent with the overall urban streetscape along the alignments. While it would partially block some views of notable architecture when the infrastructure is between the viewer and the visual resource, views would only be fully impeded temporarily at select locations near station platforms.

Views of public art work from streets and sidewalks on opposite sides of the street could potentially be obscured by at-grade infrastructure associated with the alternative. It is anticipated that public art work would still be accessible for viewing from the sidewalks immediately adjacent to the art work and from within the public sites. However, potential visual obstruction of notable public artwork would require further evaluation.

The At-Grade Emphasis LRT Alternative calls for the construction of an automobile underpass and a pedestrian overpass at the intersection of Temple and Alameda Streets. The pedestrian overpass in particular would impose some visual impacts for onlookers in all directions, though these effects would be limited due to the visual impacts of the existing Metro Gold Line Eastside Extension overpass located immediately northeast of the intersection. Also, pedestrians using the overpass would have a new vantage point for viewing the Little Tokyo and Civic Center areas.

The At-Grade Emphasis LRT Alternative could result in the loss of existing street trees. Mitigation or adoption of project design features to preserve or replace street trees as feasible may be required to ensure that this is not a significant visual impact.

At-grade stations could incorporate urban design elements consistent with surrounding structures and become destination points integrated into the surrounding urban streetscape. The stations would thereby contribute to a pedestrian-friendly environment.

Given the amount of existing lighting sources within the PSA, new lighting associated with the proposed alternatives is not anticipated to result in a noticeable change in the overall lighting levels.

Of the two At-Grade Emphasis LRT Alternative options, a larger percentage of the Option B is located above-ground (79 percent) than Option A (64 percent), and therefore Option B has a greater potential for visual impacts.

Underground Emphasis LRT Alternative

Although the Underground Emphasis LRT Alternative is almost entirely underground, it would have portals and signage directing transit riders to underground stations that would be visible above-ground, and thereby cause some alteration of the existing streetscape. Portals to underground stations would typically be located either on the sidewalk or pedestrian plaza, where passengers enter the station via escalators, elevators, or stairs away from at-grade views. Compared with at-grade stations, portals leading to underground stations would be less visually intrusive and may actually improve the streetscape through the use of lighting, landscaping, plazas, kiosks, public art, and other elements. Further, while portals would alter the existing views, they would be consistent with the urban character of the surroundings and would not be of sufficient size and height to fully block views of the surrounding architecture. Therefore, potential effects on notable architecture are anticipated to be minimal. However, specific portal locations near buildings with notable architecture (i.e., former Saint Vibiana's Cathedral and Caltrans buildings) would need to be further evaluated. In addition, evaluation would also be required to determine if any of the portals would obscure views of notable public art work from streets or sidewalks.

The Underground Emphasis LRT Alternative also calls for an automobile underpass and pedestrian overpass at the intersection of 1st and Alameda Streets. Pedestrians using the overpass would have a new, elevated structure from which to view the Little Tokyo area, but the line of sight between the 1st St. bridge and the historic Little Tokyo retail strip on East 1st St. would be obstructed.

Construction of an underground alignment could have a potentially greater visual impact than at-grade construction due to the longevity of construction and work necessary to create underground tunnels. However, visual disturbance resulting from construction activities would be temporary.

Therefore, while temporary construction impacts may be more visually disruptive under the Underground Emphasis LRT Alternative, the operational impacts would be substantially less with the Underground Emphasis LRT Alternative versus the At-Grade Emphasis LRT Alternative. The Underground Emphasis LRT Alternative entails substantially less aboveground infrastructure, thereby resulting in fewer alterations to the existing visual setting.

4.6 Air Quality Impacts

In response to concerns about air pollution, Federal, State, and local authorities have adopted various rules and regulations requiring evaluation of air quality impacts of projects and appropriate mitigation for air pollutant emissions. The following discussion focuses on ambient air quality standards, the existing setting of the PSA, and potential impacts.

4.6.1 Affected Environment

4.6.1.1 Regulatory Framework

Federal Clean Air Act: Air quality in the United States is governed by the Federal Clean Air Act (CAA) and is administered by the U.S. Environmental Protection Agency (EPA). Under the authority granted by the CAA, EPA has established national ambient air quality standards (NAAQS) for the following criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and sulfur dioxide (SO_2). Table 4-6 presents the NAAQS that are currently in effect for criteria air pollutants. O_3 is a secondary pollutant, meaning that it is formed from reactions of "precursor" compounds under certain conditions. The primary precursor compounds that can lead to the formation of O_3 include volatile organic compounds (VOC) and oxides of nitrogen (NO_x).

Table 4-6 South Coast Air Basin Attainment Status /a/

Pollutant	National Standards	California Standards
Ozone (O3)	Non-attainment – Severe 17	Non-attainment
Carbon monoxide (CO)	Attainment – Maintenance /b/	Non-attainment – Transitional /c/
Nitrogen dioxide (NO2)	Attainment – Maintenance	Attainment
Sulfur dioxide (SO2)	Attainment	Attainment
Respirable particulate matter (PM10)	Non-attainment – Serious	Non-attainment
Fine particulate matter (PM2.5)	Non-attainment	Non-attainment
Lead (Pb)	Attainment	Attainment

/a/ Status as of June 15, 2007.
/b/ The EPA redesignated the SCAB as attainment for the CO NAAQS in 2007 (72 FR 26718).
/c/ The Los Angeles County portion of the SCAB was redesignated by CARB as attainment for the CO CAAQS, awaiting final State administrative process to officially change designation.
Source: CDM 2007

The CAA also specifies future dates for achieving compliance with the NAAQS and mandates that states submit and implement a State Implementation Plan (SIP) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The City of Los Angles is included in the South Coast Air Basin (SCAB), which is designated as a federal non-attainment area for O3, PM10, and PM2.5.

California Clean Air Act: In addition to being subject to the requirements of the Federal CAA, air quality in California is also governed by the more stringent regulations under the California CAA. The California CAA is administered statewide by the California Air Resources Board (CARB). CARB oversees the functions of local air pollution control districts and air quality management districts, who in turn administer air quality activities at the regional, or air district, level. The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the State to achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest practical date. The CAAQS are at least as stringent, and often more stringent than the NAAQS. The currently applicable CAAQS are presented with the NAAQS in Table 4-6 for each pollutant.

CARB has been granted jurisdiction over several air pollutant emission sources that operate in the State. Specifically, CARB has the authority to develop emission standards for on-road motor vehicles, as well as for stationary sources and some off-road mobile sources. In turn, CARB has granted authority to the regional air pollution control and air quality management districts to develop stationary source emission standards, issue air quality permits, and enforce permit conditions.

Assembly Bill 32: The California Global Warming Solutions Act of 2006, also known as Assembly Bill (AB) 32, requires CARB to adopt regulations to require the reporting and verification of statewide greenhouse gas (GHG) emissions and to monitor and enforce compliance with the program. In general, the bill requires CARB to reduce statewide GHG emissions to the equivalent of those in 1990 by 2020. CARB was required to adopt regulations for mandatory GHG emissions reporting by January 1, 2008 and to adopt a plan indicating how emission reductions will be achieved by January 1, 2009. Major rulemakings for reducing GHGs must be developed by January 1, 2011, while the rules and market mechanisms adopted by CARB do not take effect until January 1, 2012. Since CARB is still in the rulemaking process for AB 32, information about project compliance at the state-level is currently not available.

An individual project, even a very large one, does not generate enough greenhouse gas emissions on its own to significantly influence global climate change; therefore, the issue of global climate change is, by definition, a cumulative environmental impact.

Air Quality Management Plan: At the local level, the South Coast Air Quality Management District (SCAQMD) has jurisdiction over a 10,743 square mile area consisting of Orange County, the non-desert portions of Los Angeles, Riverside, and San Bernardino counties, and the Riverside County portions of the Salton Sea Air Basin and Mojave Desert Air Basin. SCAB is a sub region of the SCAQMD's jurisdiction, which covers an area of 6,745 square miles and includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. While air quality in this area has improved, the Basin requires continued diligence to meet air quality standards.

The SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the CAAQS and NAAQS. These plans require, among other emissions-reducing activities, control technology for existing sources; control programs for area sources and indirect sources; a permitting system designed to ensure no net increase in emissions from any new or modified permitted sources of emissions; transportation control measures; sufficient control strategies to achieve a five percent or more annual reduction in emissions (or 15 percent or more in a three-year period) for reactive organic compounds (ROC), NOx, CO, and PM10; and demonstration of compliance with CARB's established reporting periods for compliance with air quality goals1. On June 1, 2007, the SCAQMD adopted a comprehensive update, the 2007 AQMP for the Basin. The 2007 AQMP

[1] Reactive organic compounds (ROC) and volatile organic compounds (VOC) are designations made by CARB and USEPA, respectively, for organic compounds that react with NOx in the presence of sunlight to form O_3. Slight variations exist between the two designations; for example, the CARB definition of ROC includes ethane while the USEPA definition of VOC does not.

outlines the air pollution control measures needed to meet the federal PM2.5 standard by 2015 and the federal eight-hour ozone standard by 2024.

The SCAQMD also adopts rules to implement portions of the AQMP. Several of these rules may apply to construction or operation of the project. For example, Rule 403 requires the implementation of best available fugitive dust control measures during active operations capable of generating fugitive dust emissions from on-site earth-moving activities, construction/demolition activities, and construction equipment travel on paved and unpaved roads. In addition, Regulation XI from the SCAQMD contains source-specific standards for different operations that may be completed under the jurisdiction of the SCAQMD. Rule 1166 contains requirements related to VOC emissions from decontamination of soil. The rule sets requirements to control the emission of VOC from excavating, grading, handling, and treating VOC-contaminated soil.

4.6.1.2 Existing Conditions

Table 4-7 below provides air quality data for 2006 (the most recent available air quality data available from the SCAQMD), for the Central Los Angeles monitoring location (Station Number 087), the closest monitoring station to the proposed project site.

Table 4-7 South Coast Air Quality Management District - Air Quality Data
Central Los Angeles Station (Station Number 087) – 2006

		Maximum Concentration (ppm)	Days of AAQS Exceeded	
			Federal	State
Ozone	1-hour	0.11	0	8
	8-hour	0.079	0	4
NO2	1-hour	0.11		
	24-hour	0.06		
	Annual Average	0.0288		
SO2	1-hour	0.03		
	24-hour	0.006		
	Annual Average	0.0019		
		Maximum Concentration (ug/m3)	Days of AAQS Exceeded	
			Federal	State
PM10	24-hour	59	0	3
	Annual Average	30.3		
PM2.5	24-hour	56.2	11	
	Annual Average	15.6		

In addition to the criteria pollutants traditionally considered, GHG emissions need to be evaluated. Different from criteria pollutants, GHG considerations are not based on maintaining or achieving an ambient air quality standard, but instead focus on achieving reductions, regardless of increases in population or operations. While there are currently no specific regulatory requirements for GHG beyond mandatory reporting requirements per the guidelines developed in response to AB 32, the SCAQMD is currently in the process of developing thresholds of significance that would require all projects to provide a minimum reduction over the existing conditions. As the project is further evaluated, it will be important to estimate existing levels of GHG emissions versus the change in GHG emissions resulting from implementation of the alternatives.

4.6.2 Evaluation Methodology

This air quality evaluation is qualitative, based on experience with emissions associated with construction activities and transit systems' operational air quality emissions. A more comprehensive quantitative air quality and greenhouse gas emissions assessment will be required once additional specific analysis is performed during the EIS/EIR phase.

The subsequent analysis will evaluate the alternatives regarding criteria pollutants in accordance with SCAQMD CEQA guidelines and GHG in accordance with draft guidance as available by SCAQMD. Emissions under the current year and existing conditions will be provided as a baseline point of comparison. Criteria pollutants, specifically NOx, CO, PM2.5, and PM10, will be evaluated using SCAQMD's localized significance thresholds (LST) methodology as detailed in the Final LST Methodology document, dated June 2003. It is assumed that dispersion modeling for operational emissions will not be required as part of this evaluation, with the potential exception of localized CO impacts resulting from changes in intersection configurations and congestion resulting from any of the alternatives. If deemed necessary due to potential future decreases in level of service, localized CO impacts may be evaluated using the Cal3HQC roadway CO dispersion model.

While CEQA guidance does not currently exist detailing a methodology for estimating construction or operational GHG emissions, GHG CEQA thresholds of significance are currently being considered and drafted for the SCAQMD. Assuming a finalized, official SCAQMD methodology may not be available during this evaluation, current CARB AB 32 reporting requirements, methodologies, and emission factors will be utilized to estimate GHG emissions for all years and scenarios. Where CARB methodologies or emission factors are not available for specific sources, available EPA factors will be reviewed for use in the analysis.

4.6.3 Environmental Issues

Based on at-grade versus tunnel construction, it is anticipated that construction emissions and impacts associated with the Underground Emphasis LRT Alternative would be greater than those associated with the At-Grade Emphasis LRT Alternative. Underground construction requires excavation and disposal or reuse of greater amounts of dirt than at-grade construction. The moving of this dirt generates fugitive dust emissions as well as engine emissions from the equipment needed to dig the hole, remove the dirt, and place it elsewhere. At-Grade construction does require moving dirt; however the quantity is significantly less.

Annual regional vehicle miles traveled (VMT) is expected to decrease under both the At-Grade Emphasis LRT and Underground Emphasis LRT Alternatives, and therefore, emissions related to vehicle exhaust (CO, CO2, and NOx) are expected to also decrease as compared to existing conditions and the No Build Alternative. As a result, none of the project alternatives are predicted to exceed operational conformity or CEQA operational thresholds.

Localized impacts, specifically localized CO concentrations at specific intersections, may occur for various alternatives due to changes in intersection configurations and levels of service (LOS). These localized impacts may result in CO hot spots. If the future traffic analysis indicates that specific intersections may suffer a decrease in the LOS, those intersections will be evaluated further for localized CO impacts in the EIS/EIR.

4.7 Noise and Vibration

This section addresses the potential impacts of the project on noise within the PSA. The analysis describes the regulatory setting and the existing setting as it relates to noise. The potential impacts that could result to surrounding land uses from noise from construction and operation of each of the components are also addressed.

4.7.1 Affected Environment

4.7.1.1 Regulatory Framework

A number of federal agencies maintain noise regulations and guidelines. These agencies include EPA, the U.S. Department of Housing and Urban Development (HUD), the Federal Highway Administration (FHWA), the Federal Aviation Administration (FAA), and the Federal Transit Administration (FTA), among others. The applicability of noise regulations depends on the nature of the agency. EPA regulations, for instance, generally apply to interstate rail, interstate commercial mobile vehicles, or to certification procedures for "low-noise emissions products." HUD noise regulations apply to HUD-assisted projects and actions, while FHWA noise regulations pertain to federally aided highway projects. Federal regulations are not applicable to the project because it does not involve interstate activities, is not assisted by HUD, and does not involve construction of highways.

The California Office of Noise Control has developed guidelines showing a range of noise standards for various land use categories. Cities within the state have incorporated these guidelines into their General Plan noise elements. These guidelines are meant to maintain acceptable noise levels in a community setting based on the type of land use. Noise compatibility by different types of land uses is a range from "Normally Acceptable" to "Clearly Unacceptable" levels. The guidelines are used by cities within the state to help determine the appropriate land uses that could be located within an existing or anticipated ambient noise level, and are primarily considered in general plans.

The project has the potential to affect noise levels within the City of Los Angeles. Noise within the City is regulated by noise ordinances, which are found in the Los Angeles Municipal Code (LAMC). These noise ordinances limit intrusive noise and establish sound measurements and criteria; minimum ambient noise levels for different land use zoning classifications; sound emission levels for specific uses (such as radio, television, vehicle repairs, and amplified equipment); hours of operation for certain activities (such as construction and trash collection); standards for determining noise deemed a disturbance of the peace; and legal remedies for violations. The noise ordinance for the City of Los Angeles can be found in Chapter XI of the LAMC. In addition, the General Plan Noise Element for the City of Los Angeles provides noise management goals, objectives, policies, and programs to achieve. The City has incorporated the California Office of Noise Control noise compatibility guidelines into their Noise Element.

4.7.1.2 Existing Conditions

Sound is defined as any pressure variation detected by the human ear. Noise is defined as any unwanted sound. The degree to which noise can affect the human environment range from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise; the amount of background noise present before the intruding noise; and the nature of work or human activity that is exposed to the noise source. The preferred unit for measuring sound is the decibel (dB). The dB expresses the logarithmic ratio of the amount of energy radiating from a source in the form of an acoustic wave. The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. Sound intensity is measured in decibels that are A-weighted (dBA) to correct for the relative frequency response of the human ear. The range of human hearing extends from approximately three to 140 dBA.

The following describes the existing (baseline) environmental noise setting information presented for the At-Grade Emphasis LRT and Underground Emphasis LRT Alternatives.

The existing noise and vibration environment of an area (without the project) is generally established by the type and intensity of the existing land use and related transportation system activity. The PSA, and specifically the area of potential effect located immediately adjacent to or above the alternative alignments, is best described as an intensely developed urban core. The structure type is predominately steel and concrete high-rise buildings, attached and detached parking structures, plus a limited number of masonry low-rise multi-story buildings. There is also a small number of street-level pedestrian plazas. The land uses are office/commercial, institutional, and government plus some hotels and mixed commercial/retail with upper floor residential apartments/condominiums.

The PSA transportation network is essentially a grid pattern of street-level roads plus a few elevated ramps and below surface traffic tunnels. Both the At-Grade Emphasis LRT Alternative and the Underground Emphasis LRT Alternative are located between one and two blocks from major freeways, the I-101 (below-grade) and I-110 (western edge). Because of the characteristics of the downtown fabric and the existing buildings located in between the alignments and the freeways, very little additional noise would be expected for either alternative. One key note is the underpass element which is introduced in the Underground Emphasis LRT and the option for the At-Grade Emphasis LRT. The underpass would direct through north-south traffic on Alameda St. (the only truck-heavy street in the PSA) underground, thus minimizing traffic noise impacts even more. The estimated average ambient noise level is a Day Night Average Noise Level (Ldn) of approximately mid/upper 60's to low 70's, dBA.

The two build alternatives and proximate land use categories are shown on Figure 4-1.

4.7.2 Evaluation Methodology

This noise and vibration evaluation is qualitative, based on substantial experience with ambient and transit systems' environmental noise plus a "windshield" survey of the alternative alignments conducted during April 2008. A more comprehensive quantitative noise and vibration impact assessment will be required once additional specific analysis is performed during the EIS/EIR phase. The subsequent analysis will follow the Federal Transit Administration (FTA) guidelines contained in Transit Noise and Vibration Impact Assessment (FTA-VA-90-1003-06), issued as a Final Report May 2006.

4.7.3 Environmental Issues

Noise and vibration associated with the two build alternatives would be generated by a LRT system with associated stations and ancillary structures (e.g., discharge vent for tunnel ventilation of underground alternative). The main noise sources of the LRT vehicle are the wheel/track interface, vehicle brakes, and the propulsion system of the trainset. For stations, the primary noise sources are mechanical HVAC plus station platform paging. An additional noise source for subway systems is the tunnel ventilation system. Additional noise sources for street-level operations are grade-crossing warning bells and track horns. In general, the noise from trainsets operating at street level (with concomitantly low relative speeds compared to subway operation) would be about the same as a medium truck or a bus operating at similar speeds. The noise emission from a trainset operating in a tunnel section could be slightly louder because of a higher allowable travel speed, but the noise escaping to street level and higher, including noise from tunnel vents, would be minimal and likely inaudible compared to the existing urban ambient noise. With the exception of grade-crossing bells, noise emission from either sub-grade or street level stations would likely blend into the existing ambient noise currently generated by traffic and the myriad of high-rise buildings in the PSA. Vibration generated by the operating trainsets is expected to be low for the slower speed street-level alternatives. Vibration and resulting ground-borne noise from subway operation might be of interest in the vicinity of the Disney Concert Hall but is likely to be insignificant.

Table 4-8 Land Use Categories and Metrics for Transit Noise Impact Criteria

Land Use	Noise Metric	Description of Land Use Category
1	Outdoor Leq(h)*	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use. Also included are recording studios and concert halls.
2	Outdoor dn(h)*	Residences and buildings where people normally sleep. This category includes homes, hospitals and hotels where a nighttime sensitivity to noise is assumed to be utmost importance.
3	Outdoor Leq(h)*	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters, and churches where it is important to avoid interferences with such activities as speech, meditation or study associated with cemeteries, monuments, museums, campgrounds and recreational facilities can also be considered to be in this category. Certain historical sites and parks are also included.

***Leq for the noisiest hour of transit-related activity during hours of noise sensitivity.**
Source: Transit Noise and Vibration Impact Assessment (FTA-VA-90-1003-06), Chapter 3, issued as a Final Report May 2006.

At-Grade Emphasis LRT Alternative

For purposes of noise and vibration impact analysis, the potential impacts associated with Options A and B are the same. As discussed above, LRT vehicles generate more potentially audible noise when running at street level. The normal trainset noise is similar in nature and sound level to the existing street traffic traversing the area. However, “wheel squeal”, train platform paging systems and any at-grade crossing bells would add noise of a different character to the existing ambient noise. When the hustle and bustle of daytime street traffic and activity subsides, the operation of a street-level LRT system could become more audible. The phenomenon of wheel squeal occurs when a steel-wheeled LRT vehicle traverses a tight-radius steel track curve and high-pitched vibration and noise emission occurs. Wheel squeal can be avoided or minimized during design by considering the radius of necessary curved track sections. This may be difficult in a densely developed urban environment. For a given track layout with tight curves, the squeal can usually be mitigated at extra expense and maintenance costs but can be a stubborn problem. Based on this, the At-Grade Emphasis LRT Alternative has a slightly higher potential for noise impacts than the Underground Emphasis LRT Alternative.

Underground Emphasis LRT Alternative

As discussed above, subway LRT noise is generally not of concern to noise-sensitive street-level land use because the noise from the train and below-grade stations/platforms is well contained within the tunnel structure and at-grade crossing bells would not be necessary. One exception is the 1st and Alameda St. intersection. This at-grade intersection may experience higher levels of noise and vibration due to the volume of trains passing through. In addition, the trains will be surfacing in a portal located in the ‘Office Depot’ parcel and this may affect surrounding businesses and/or residences due to vibration.

The potential noise emissions from tunnel ventilation structures is readily attenuated by application of established design principles and the common practice of locating the vent shafts such that their exits are in or adjacent to parking structures or building service areas. Because of potentially higher train speeds and closer proximity to the foundations of ground-born-noise-sensitive structures, the potential concern for these issues should be evaluated when more project details become available. In general, the Underground Emphasis LRT Alternative has a low potential for noise impacts and a slightly higher potential for vibration/ground-born noise impacts at critical receptors than the At-Grade Emphasis LRT Alternative.

4.8 Ecosystems/Biological Resources

The PSA traverses the highly developed downtown area. As such, biological resources are limited to landscaped areas where mature trees or other vegetation could support wildlife species that are adapted to the urban environment. This section discusses potential issues associated with biological resource impacts in the PSA.

4.8.1 Affected Environment

4.8.1.1 Regulatory Framework

Endangered Species Act: The Endangered Species Act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Section 7 of the Endangered Species Act requires federal agencies to aid in the conservation of listed species, and to ensure that the activities of federal agencies will not jeopardize the continued existence of listed species or adversely modify designated critical habitat. At the federal level, the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration are responsible for administration of the Endangered Species Act.

Migratory Bird Treaty Act: The Migratory Bird Treaty Act decrees that all migratory birds and their parts (including eggs, nests and feathers) are fully protected. Nearly all native North American bird species are protected by the act. Under the act, taking, killing, or possessing migratory birds is unlawful. Activities that would require such a permit would include destruction of migratory bird nesting habitat during the nesting season when eggs or young are likely to be present.

California Endangered Species Act: The California Department of Fish and Game is responsible for administration of the California Endangered Species Act. Unlike the federal Endangered Species Act, there are no state agency consultation procedures under the California Endangered Species Act. For projects that affect both a state and federal listed species, compliance with the federal Endangered Species Act will satisfy the California Endangered Species Act if the California Department of Fish and Game determines that the federal incidental take authorization is "consistent" with the California Endangered Species Act. Projects that result in a take of a state only listed species require a take permit under the California Endangered Species Act.

California Fish and Game Code Sections 3500 - 3705, Migratory Bird Protection: Sections 3500 through 3705 of the California Fish and Game Code regulate the taking of migratory birds and their nests. These codes prohibit the taking of nesting birds, their nests, eggs, or any portion thereof during the nesting season. Typically, the breeding/nesting season is from March 1 through August 30. Depending on each year's seasonal factors, the breeding season can start earlier and/or end later.

Los Angeles County General Plan: The Los Angeles County General Plan identifies Significant Ecological Areas containing biological resources and sets forth the goal of conserving these areas. While development within a Significant Ecological Area (SEA) is not prohibited, the general plan does require development to be limited and controlled in order to avoid impacting valuable biological resources.

City of Los Angeles Native Tree Protection Ordinance: The City of Los Angeles enacted an oak tree protection ordinance in 1982 to protect oak trees in the City. Although the ordinance slowed the oak tree decline, the oak population, as well as other native tree species, continued to decline. In an effort to further slow the decline of native tree habitat, the City passed an amended Native Tree Protection Ordinance (Ordinance No. 177,404), which became law on April 23, 2006. The Native Tree Protection Ordinance protects all native oak tree species (Quercus spp), California Sycamore (Platanus racemosa), California Bay (Umbellularia californica), and California Black Walnut (Juglans californica); applies to protected trees four inches or greater in diameter at 4.5 feet above ground (multiple trunk trees are calculated by cumulative diameter); applies to protected trees on private lots; and requires that a protected tree report be submitted by a registered consulting arborist, landscape architect, or pest control advisor who is also a certified arborist.

Protected tree removal requires a removal permit by the Board of Public Works. Any act that may cause the failure or death of a protected tree requires inspection by the City's Urban Forestry Division. Although the law does not require a permit for the pruning of protected trees, the City recommends consultation with a certified arborist to ensure that the pruning of protected trees is performed carefully.

4.8.1.2 Existing Conditions

Due to its densely developed and urbanized nature, the PSA provides little opportunity for wildlife species or other biological resources to exist. There are no Habitat Conservation Plans for this area, and no SEAs located within one-quarter mile of either side of the At-Grade Emphasis LRT or Underground Emphasis LRT Alternatives. There are no wildlife corridors within this area to support movement of wildlife species. There are no wetlands, oak woodlands, or coastal sage scrub habitat within the PSA. Due to the lack of habitat, sensitive species are not known to occur here. The Los Angeles River, which is contained within a concrete channel through the downtown area, is located more than one-quarter mile away from the build alternatives.

In general, biological resources within the PSA are limited to a few green spaces consisting of landscaped vegetation where highly-adaptive urban wildlife species may exist. Native plant species are mainly limited to those few that are maintained in these small green spaces. A small number of large mature trees located within the PSA may provide potential roosting and nesting sites for birds, including raptors.

4.8.2 Evaluation Methodology

To evaluate potential impacts related to the project construction and operation, the possible plant species that could occur in the PSA were reviewed, and their respective value as protected species or habitat that supports a protected species was evaluated.

4.8.3 Environmental Issues

Because of the general lack of biological resources in the PSA, as described above under Section 4.8.1.2, there are few environmental issues to consider in this regard. However, trees that may provide potential roosting and nesting sites for birds may exist within one-quarter mile of the two build alternatives. If construction of the project would require removal of these trees during nesting season, focused surveys for nesting birds would be required. Compliance with the City of Los Angeles Native Tree Ordinance would also be required. For these reasons, the Underground Emphasis LRT Alternative could be preferable to the At-Grade Emphasis LRT Alternative if it would avoid disturbance or destruction of protected trees and nesting birds. In addition, design elements would be incorporated that could add more trees and vegetation than currently exist in either alternative.

4.9 Geotechnical: Subsurface and Hazardous Materials

This section discusses potential issues associated with geology and subsurface conditions and hazardous materials within the PSA.

4.9.1 Affected Environment

4.9.1.1 Geology and Subsurface Conditions Geologic Features and Soils

The PSA is located in the northern portion of the Los Angeles Basin. This basin is a major elongated northwest-trending structural depression that has been filled with sediments up to 13,000 feet thick since middle Miocene time. On a regional scale, the PSA lies within the northernmost portion of the Peninsular Ranges geomorphic provinces near its boundary with the Transverse Ranges geomorphic provinces. The Peninsular Ranges province is characterized by elongate northwest-trending mountain ridges separated by sub-parallel, sediment-filled valleys. This province is bounded by the San Jacinto fault zone on the east, the Pacific Ocean coastline on the west, and the Transverse Ranges geomorphic province on the north. In contrast, the adjacent Transverse Ranges are characterized by east-west trending geologic structures and mountain ranges that include the Santa Ynez, San Gabriel, San Bernardino, and Santa Monica Mountains, and associated valleys. The Transverse Ranges province is a composite structural block bounded by the Big Pine fault on the north, the San Andreas fault zone on the east, the Pacific Ocean on the west, and the Malibu Coast, Santa Monica, Hollywood, Raymond, Sierra Madre, and Cucamonga faults on the south. The regional geology in the site vicinity is shown on Figure 4-4, Regional Geology.

On a local geologic setting, the proposed alignments would traverse the southeastern end of the Elysian Park Hills and the ancient floodplain of the Los Angeles River. The Elysian Hills comprise the low-lying hills west of the Los Angeles River and southeast of the eastern end of the Santa Monica Mountains. The Hollywood fault separates the northern end of the Elysian Hills from the Santa Monica Mountains. The Elysian Hills are comprised largely of Miocene age sedimentary rocks with Pliocene age rocks flanking the southeastern edge of the hills. Previous geologic mapping identified several major geologic structures within the Elysian Hills, including the Elysian Park anticline and northwest trending faults. The proposed project located on the southwestern flank of the northwest trending Elysian Park anticline. The southerly limb of the anticlinorium contains apparent secondary folds of relatively shorter wavelength and lesser continuity of fold axes. In the vicinity of the project alignment, bedding within the Fernando and Puente formations strike approximately east-west to slightly north of east and dips moderately to steeply to the south.

The geomorphology along the proposed alignments ranges from gently sloping alluvial floodplain surfaces to hill-side slopes of moderate relief and grade. The steepest slopes along the alignment surface are between 3rd St. (at Flower St.) and Olive St. (at 2nd St.). Review of the historical U.S. Geological Survey topographic map of the Hollywood Quadrangle shows a relatively narrow alluvial valley follows Flower St. from 6th St. up-gradient to 3rd St., then diverges to the northwest toward Glendale Blvd. (west of the 110- Harbor Freeway). This alluvial valley appears to be a tributary drainage course to an ancestral course of the Los Angeles River (i.e., prior to channelization of the modern Los Angeles River). The Los Angeles River floodplain covers the broad, gently sloping, alluvial terrain east of the Bunker Hill area. Artificial fill of variable thickness underlies the alignment in the near surface. The fill consists of mixtures of sand, silt, clay, with variable amounts of construction debris. Deep areas of fill to depths of approximately 25 feet below ground surface are locally present at abandoned tunnels (5th St.) and storm drain excavations that have been backfilled.

The numerous faults in Southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey (CGS - previously the California Division of Mines and Geology) for the Alquist-Priolo Earthquake Fault Zoning Program. By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,000 years). A potentially active fault is a fault that has demonstrated surface displacement of Quaternary age deposits (last 1.6 million years). Inactive faults have not moved in the last 1.6 million years.

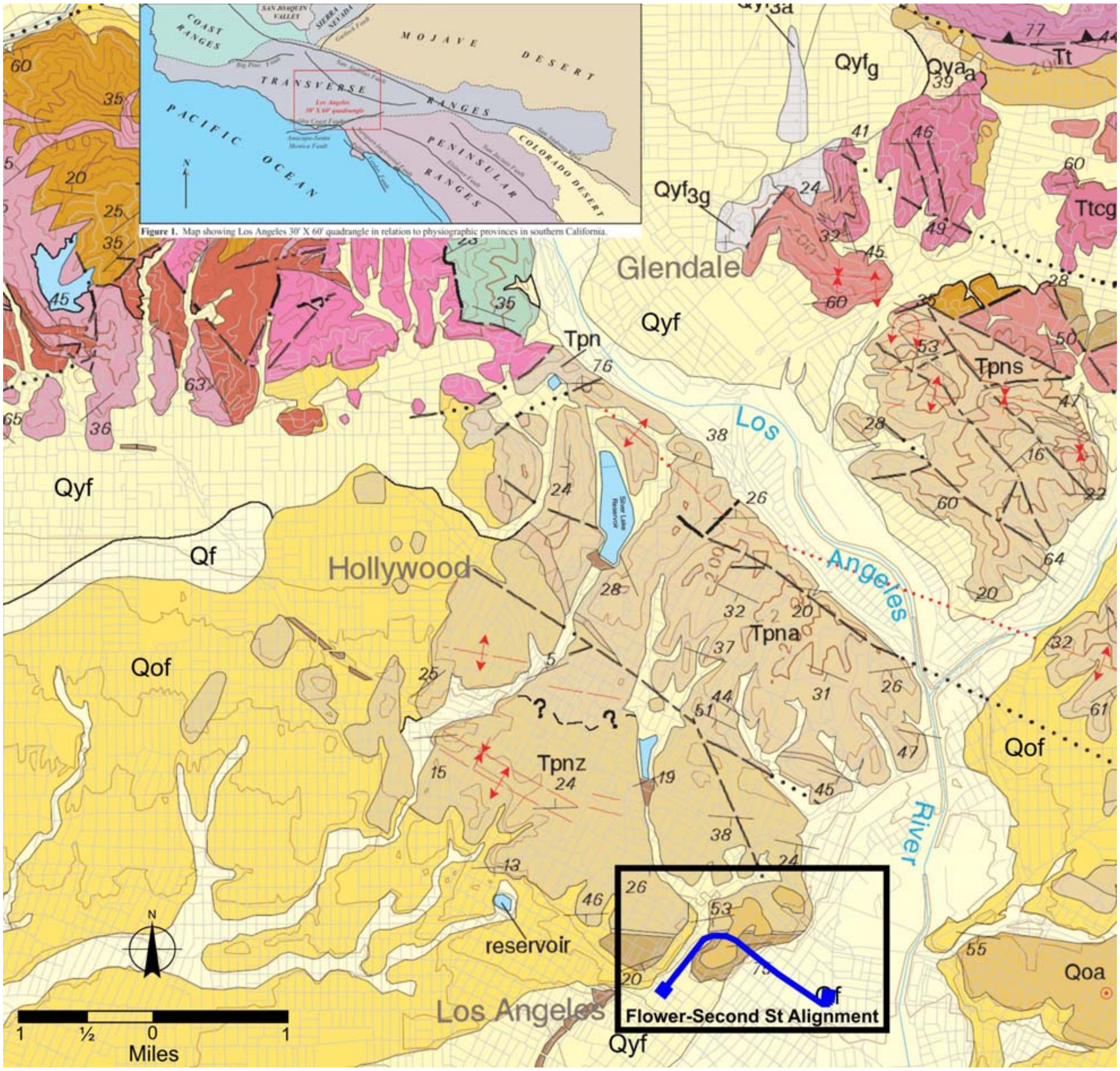


Figure 4-4 Regional Geology

Active and potentially active faults that are located within ten miles of the alignment are discussed below with respect to their known recency of displacement and location relative to the proposed alignments along Flower St. to 2nd St. Based on review of the available data, no known Holocene Active or Latest Pleistocene Active faults trend through the PSA. The PSA is not located within a currently established Alquist-Priolo earthquake fault zone for surface fault rupture. The faults in the vicinity of the site are shown in Figure 4-5, Regional Faults and Seismicity.

Active Faults

The Holocene active fault with surface expression closest to the PSA is the Hollywood fault, located approximately 3.9 miles to the northwest. Active blind thrust faults in vicinity of the site are discussed separately below. Holocene Active faults within ten miles of the planned alignment include the Raymond fault, the Newport-Inglewood fault zone, Verdugo fault and the Santa Monica fault. These faults, respectively, are located the following approximate distances from the proposed alignment; 5.9 miles southeast, 7.8 miles west-northwest, 8.4 miles north-northeast, and 9.6 miles west. The active Hollywood fault trends east-west along the base of the Santa Monica Mountains from the West Beverly Hills Lineament in the West Hollywood-Beverly Hills area to the Los Feliz area of Los Angeles. The fault is a groundwater barrier within Holocene sediments. Studies by several investigators have indicated that the fault is active based on geomorphic evidence, stratigraphic correlation between exploratory borings, and fault trenching studies. Although the Hollywood fault is considered active by the State Geologist, an Alquist-Priolo Earthquake Fault Zone has not yet been established for the Hollywood fault due to the poorly defined location along its length. The City of Los Angeles considers the Hollywood fault active for planning purposes and the CGS includes the fault in its database of seismic sources.

Potentially Active Faults

The inferred trace of the MacArthur Park fault is located approximately 0.5 miles southeast of the proposed alignment. The fault has not been definitively proven to exist. It is inferred west of downtown Los Angeles and has been located based on south-facing scarps, truncated drainages, and other geomorphic features. The Eagle Rock fault, a latest Pleistocene active fault is located approximately eight miles to the northeast.

Blind Thrust Fault Zones

Several buried thrust faults, commonly referred to as blind thrusts, underlie the Los Angeles Basin at depth. These faults are not exposed at the ground surface and are typically identified at depths greater than three kilometers. These faults do not present a potential surface fault rupture hazard, however, they are considered active and potential sources for future earthquakes. The nearest thrust is the Elysian Park Thrust. The Elysian Park Thrust, previously defined as the Elysian Park Fold and Thrust Belt, was postulated to extend northwesterly from the Santa Ana Mountains to the Santa Monica Mountains, extending westerly and paralleling the Santa Monica-Hollywood and Malibu Coast faults. The Elysian Park Thrust is now believed to be smaller in size, only underlying the central Los Angeles Basin. The Elysian Park Thrust underlies the PSA at depth (approximately six to nine miles below ground surface). Like other blind thrust faults in the Los Angeles area, the Elysian Park Thrust is not exposed at the surface and does not present a potential surface rupture hazard; however, the Elysian Park Thrust should be considered an active feature capable of generating future earthquakes with associated significant ground shaking and possible deformation of the near surface materials.

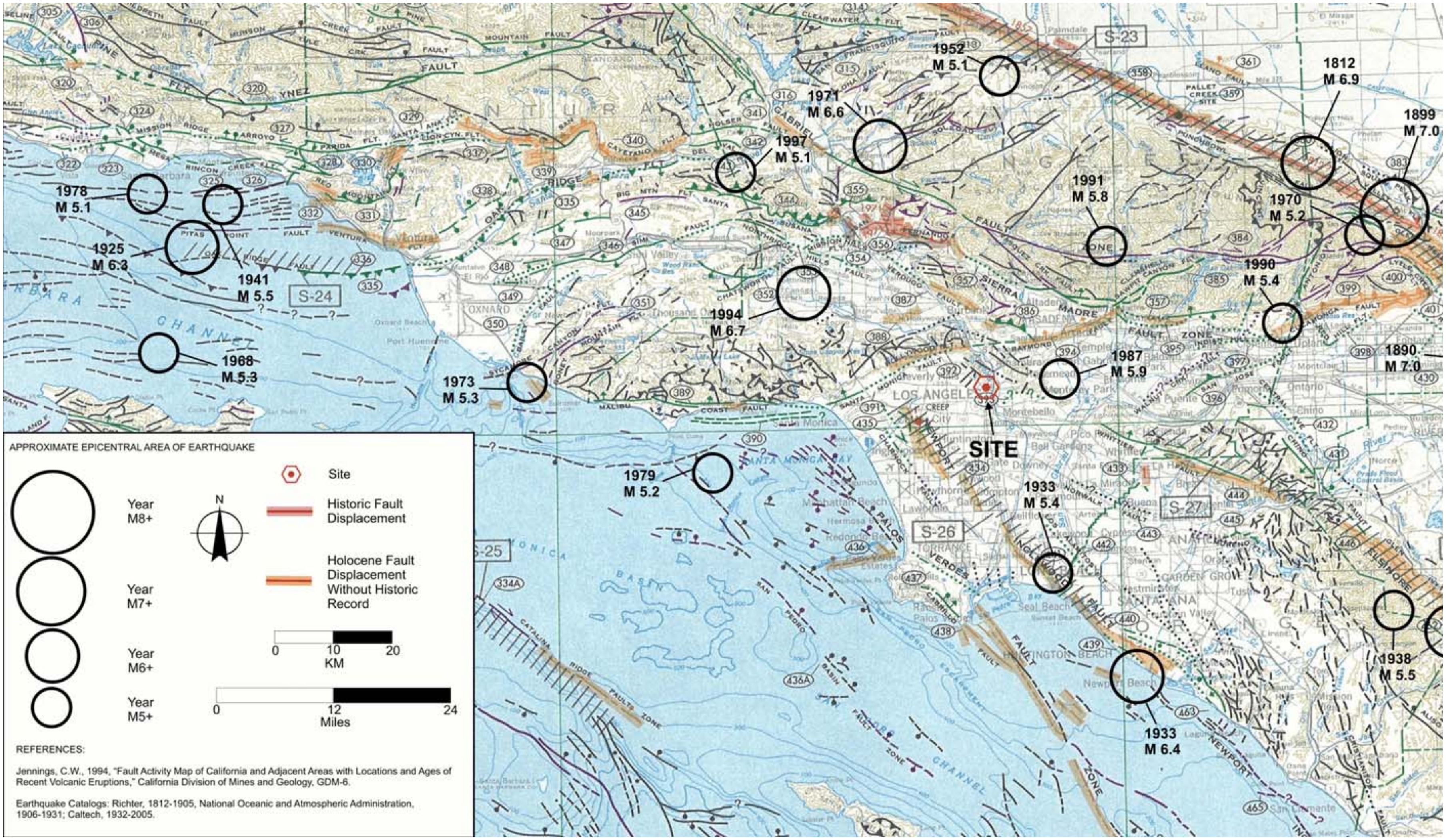


Figure 4-5 Regional Faults and Seismicity

In addition, the Elysian Park fault is a blind thrust fault located northeast of and at a shallower depth than the Elysian Park Thrust. The up-dip edge of the blind thrust fault tip is located about 0.6 miles north of downtown Los Angeles. The estimated, average recurrence-interval for events of the Elysian Park fault ranges from 500 to 1,300 years, with an estimated moment magnitude of up to 6.7. Evidence to define the activity of the Elysian Park fault is lacking; however, given the history of seismic events on blind thrust faults in the greater Los Angeles area (i.e., Whittier Narrows and Northridge earthquakes) and proximity to the PSA of this newly defined fault, the Elysian Park fault is considered active for planning and design of the project.

Coyote Pass Escarpment

The Coyote Pass Escarpment is a gentle south-facing, east-west trending topographic lineament that forms the southern flank of the Repetto Hills, from the Los Angeles River channel eastward to the Monterey Park area. The escarpment is an area of young, near-surface monoclinal folding, believed to be a result of fault rupture on the Elysian Park Thrust and/or the shallower Elysian Park fault. Although the trend of the escarpment beneath the floodplain west of the Los Angeles River has not been well defined, it has been inferred that the escarpment may align in the subsurface with the MacArthur Park escarpment, located west of the Harbor Freeway. The results of recent investigations of the Coyote Pass Escarpment indicate that the Elysian Park fault is active. Future fault rupture at depth along the Elysian Park fault and/or the Elysian Park Thrust could result in near-surface folding of the alluvial sediments and underlying bedrock in the area of the escarpment. Thus, no ground rupture is anticipated along the Coyote Pass Escarpment, but there is a potential for ground deformation (active folding) of the bedrock and the overlying alluvial sediments along the mapped location of the escarpment.

Landslides

Landslides occur in the City of Los Angeles and slope failures were instrumental in Los Angeles being one of the first municipalities in the nation to adopt hillside-grading ordinances. Rapid uplift of the mountainous areas of Los Angeles from past and ongoing tectonic movements gives rise to a geologic setting conducive to mass wasting. The variable nature of sediments and rocks exposed throughout Los Angeles, and the slope conditions created by uncontrolled grading, have led to frequent landslides of a variety of types. The hillside areas of Los Angeles, especially the central and eastern Santa Monica Mountains, have geologic and topographic conditions that are conducive to the development of surficial and gross landslides. The City of Los Angeles Department of Building and Safety regulates construction and development in hillside areas of Los Angeles. As part of the City of Los Angeles Building Code, and review process, the City has established a Hillside Ordinance, which specifies that a geologic report is required for proposed construction within hillside areas. The northwest portion of the PSA (area east of the 101/110 interchange) is within the Hillside Ordinance area.

Liquefaction

Liquefaction-induced ground failure has historically been a major cause of earthquake damage in Southern California. Significant damage to roads, utilities, pipelines, and buildings that occurred during the 1971 San Fernando and 1994 Northridge earthquakes was caused by liquefaction-induced ground displacement. Localities most susceptible to liquefaction-induced ground displacement are underlain by loose, water-saturated granular sediment within 50 feet of the ground surface. Liquefaction susceptibility generally decreases as the percentage of clay size particles in the soil increases and / or the coarse sand and gravel content increases.

In areas within the PSA, sediments susceptible to liquefaction comprise the young (Holocene to late Holocene age) alluvial fan deposits and young (Holocene) alluvial floodplain sediments. The older alluvial deposits are generally medium dense to dense and are considered by the CGS (1998, 2001) to have a low liquefaction susceptibility. The CGS has prepared seismic hazard maps for the Los Angeles Basin. The maps delineate liquefaction zones which have been defined by the CGS as areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacement such that mitigation (as defined in the Public Resources Code) would be required. The CGS uses criteria developed by the Seismic Hazard Mapping Act Advisory Committee in delineating liquefaction zones on the seismic hazard maps. In areas of limited or no geotechnical data, susceptibility zones are evaluated using a combination of geologic considerations.

The CGS has rated the liquefaction susceptibility for the Holocene age sediments in the PSA as high if saturated within 40 feet of the ground surface and, if not saturated, the susceptibility is rated as low. In contrast, the liquefaction susceptibility of older alluvial sediments (terrace deposits) is rated as low or not likely irrespective of ground-water levels. In this framework, the CGS has identified the Holocene sediments along Flower St. between Wilshire Blvd. and 2nd St. to be within a potential liquefaction zone. Likewise, the CGS has identified the Holocene sediments along 2nd St. between Hill St. and San Pedro St. to be within a potential liquefaction zone. The young (Holocene) age deposits along the alignment, where present, are on the order of five to 35 feet thick. Preliminary alignment profiles show the tunnel crown elevations appear to be below the young alluvial deposits that are rated as highly susceptible to liquefaction. For station locations with shallow groundwater and younger alluvial deposits, station walls may have to be designed for greater than usual lateral earth pressures to account for liquefaction potential. Settlement beneath the planned stations due to liquefaction is considered remote due to the depth of the Fernando formation beneath the Holocene alluvium at preliminary station depths.

4.9.1.2 Hazardous Materials

The PSA is located in a highly developed area with a long history of commercial and industrial land use. As such, there is potential for the presence of hazardous materials in soil and groundwater within one-quarter mile of the build alternatives. Contaminated soil and groundwater could be found at former and current gas stations, dry cleaners, or manufacturing facilities, and may include, but are not limited to, petroleum hydrocarbons, volatile and semi-volatile organic compounds, and metals.

Naturally-occurring hazardous materials may also exist within the PSA from known oil and gas fields and geologic formations. These may include petroleum hydrocarbons, methane, and hydrogen sulfide, as well as other hazardous materials associated with historic or current production operations.

Soil contamination can result from spills at industrial facilities or leaks from underground storage tanks. Initially, soil contamination would be primarily located at the point of release, which typically would not be within existing streets. However, depending on the amount of the release, the type of contamination, the soil type, and location of groundwater, contaminants can move vertically and laterally and become located within right-of-ways where the project would be constructed.

A regulatory database search was conducted to identify potential or existing conditions, including soil and/or groundwater contamination that would present environmental health and safety concerns within one-quarter mile of the two build alternatives. Table 4-9 below provides the regulatory databases included in the search.

Results of the search indicate there are approximately 500 regulatory database listings in the PSA. Many sites are listed on more than one regulatory database. The listings include all past and present generators, transporters, treaters, storers, and disposers of hazardous waste. In addition, properties where contamination has been remediated and is no longer present in soil and/or groundwater are listed.

The PSA would potentially cross the Union Station Oil Field (along 2nd St. east of Central Ave.). In addition, there are seven oil wells located between 1st and 2nd Streets on the west side of Garey St. and west of Vignes St. Six of these wells were abandoned in June 2005 and the seventh well was abandoned prior to 2005. The Union Station Oil Field has been delineated as a Methane Zone by the City of Los Angeles Department of Public Works, Bureau of Engineering. Due to the proximity to the oil field, the potential for methane gas exists along the proposed alignments. The proposed alignments would cross this buffer zone north of 3rd St. and west of Grand Ave.

4.9.2 Evaluation Methodology

Geologic-related issues include subsurface geology and soils, seismicity, landslides, and liquefaction. All available data was reviewed in identifying potential geologic impacts within the PSA. As detailed above, a regulatory database search was conducted to identify potential or existing conditions, including soil and/or groundwater contamination that would present environmental health and safety concerns within one-quarter mile of the build alternatives.

Table 4-9 Regulatory Database Search Results

Database		# of sites identified1
Federal Records		
NPL	National Priority List	0
Proposed NPL	Proposed National Priority List Sites	0
Delisted NPL	National Priority List Deletions	0
NPL LIENS	Federal Superfund Liens	0
CERCLIS	The Comprehensive Environmental Response, Compensation and Liability Information System	1
CERC-NFRAP	Archived sites removed from the CERCLIS inventory	1
LIENS 2	CERCLA Lien Information	0
CORRACTS	Corrective Action Report	0
RCRA-LQG	RCRA- Large Quantity Generator	2
RCRA-SQG	RCRA- Small Quantity Generator	65
RCRA-NonGen	RCRA-Sites which do not presently generate hazardous waste	9
RCRA-TSDF	RCRA - Transporters, Storage and Disposal	0
RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generator	0
ERNS	Emergency Response Notification System	3
FTTS	FIFRA/TSCA Tracking System	2
HIST-FTTS	Historical FIFRA/TSCA Tracking System	2
US ENG CONTROLS	Engineering Controls Sites List	0
US INST CONTROL	Sites with Institutional Controls	0
HMIRS	Hazardous Materials Information Reporting System	0
DOT OPS	Incident and Accident Data	0
US CDL	Clandestine Drug Labs	0
US BROWNFIELDS	A Listing of Brownfields Sites	0
DOD	Department of Defense Sites	0
FINDS	Facility Index System	16
FUDS	Formerly Used Defense Sites	0
LUCIS	Land Use Control Information System	0
CONSENT	Superfund (CERCLA) Consent Decrees	0
ROD	Records Of Decision	0
UMTRA	Uranium Mill Tailings Sites	0
ODI	Open Dump Inventory	0
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	0
MINES	Mines Master Index File	0
TRIS	Toxic Chemical Release Inventory System	0
TSCA	Toxic Substances Control Act	0
SSTS	Section 7 Tracking Systems	0
ICIS	Integrated Compliance Information System	0
PADS	PCB Activity Database System	0
MLTS	Material Licensing Tracking System	0
RADINFO	Radiation Information Database	0
RAATS	RCRA Administrative Action Tracking System	0

Table 4-9 Regulatory Database Search Results

Database		# of sites identified1
State and Local Records		
AIRS	Toxics and Criteria Pollutant Emissions Data	16
HIST-Cal-Sites	Replaced with Envirostor	1
CA BOND EXP. PLAN	Bond Expenditure Plan	0
CA WDS	California Water Resources Control Board- Waste Discharge System	6
CA FID UST	Active and Inactive Underground Storage Tank Locations	79
CHMIRS	California Hazardous Material Incident Report System	2
Cortese	No longer updated	35
DRYCLEANERS	Registered Drycleaner Related Facilities	3
ENVIROSTOR	DTSC Site Mitigation and Brownfields Reuse Database	20
LUST	Leaking Underground Storage Tank Incident Reports	34
HAZNET	DTSC Hazardous Waste Manifest Records	66
RESPONSE	DTSC Involved in Remediation	1
SCH	School Property Evaluation Program	0
SWRCY	Recycling Facility Sites	1
Toxic Pits	Toxic Pits Cleanup Act Sites	0
SWF/LF	Solid Waste Information System	0
SLIC	Spills, Leaks, Investigation and Cleanup Sites	7
SWEEPS UST	Statewide Environmental Evaluation and Planning System	84
UST	Underground Storage Tank Database	39
HIST UST	Historical Underground Storage Tank Database	30
AST	Aboveground Storage Tank Database	1
WMUDS/SWAT	Waste Management Unit Database	0
L.A. CO SML	Los Angeles County Site Mitigation Log	1
L.A. CO HMS	Los Angeles County Industrial Waste and Underground Storage	4
AOCONCERN	San Gabriel Valley Areas of Concern	0
LIENS	Environmental Liens Listing	0
Notify 65	Proposition 65 Records	0
DEED	Deed Restriction Listing	0
VCP	Voluntary Cleanup Program Properties	0
WIP	Well Investigation Program Case List	0
CDL	Clandestine Drug Labs	0
HAULERS	Registered Waste Tire Haulers Listing	0
Tribal Records		
INDIAN RESERV	Indian Reservations	0
INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	0
INDIAN LUST	Leaking Underground Storage Tanks on Indian Land	0
INDIAN UST	Underground Storage Tanks on Indian Land	0
EDR Proprietary Records		
Manufactured Gas Plants		5

4.9.3 Environmental Issues

4.9.3.1 Geology and Subsurface Conditions

As part of standard practice and the predesign process, a geotechnical study would be prepared to identify geotechnical conditions and design features (such as foundation requirements and the maximum credible design earthquake) that would have to be included as part of the project design. The seismicity of Southern California is dominated by movements on the intersecting northwest-southeast trending San Andreas fault system and the east-west trending faults of the Transverse Ranges fault system. The Los Angeles Basin is located south of the intersection of these two systems. Both of the build alternatives would be potentially impacted by the fault systems. Both the At-Grade Emphasis LRT Alternative and Underground Emphasis LRT Alternative would be designed and constructed in accordance with all applicable earthquake standards to ensure the greatest protection from earthquakes. With respect to landslides, if the most western portion of the At-Grade Emphasis LRT Alternative is within the Hillside Ordinance area, then design and construction would be in accordance to all applicable standards and ordinances. Where liquefaction concerns are present, final engineering specifications would determine the proper footings and/or foundations along the alignment, as well as at the station locations.

Neither the construction nor the operation of the project would be expected to cause, accelerate, or exacerbate geologic hazards that would result in substantial damage to structures or infrastructure, or that would expose people to increased risk of hazards. Construction and operation would not cause or accelerate instability from erosion, expansion or settlement or offsite sediment runoff.

4.9.3.2 Hazardous Materials

A large number of sites where hazardous materials may be present are located within one-quarter mile of the two build alternatives, indicating that localized areas of contaminated soils and groundwater could be encountered during the construction of the project.

The At-Grade Emphasis LRT Alternative may offer an advantage over the Underground Emphasis LRT Alternative in avoidance of soil contamination from sources such as underground storage tanks. In addition, naturally-occurring hazardous materials such as petroleum hydrocarbons, methane (portions of the PSA are within a methane zone), and hydrogen sulfide would be less of a concern with the At-Grade Emphasis LRT Alternative. However, hazardous materials in surface soils and potentially shallow groundwater would be a potential concern with construction of any of the promising alternatives.

4.10 Water Resources

This section provides an overview of water resources within the PSA, regulatory requirements, and the potential environmental issues associated with each alternative. Water resources include surface water hydrology, flood hazards, tsunamis, inundation, seiches, and groundwater.

4.10.1 Affected Environment

4.10.1.1 Regulatory Framework

Clean Water Act: The EPA regulates water quality under the Clean Water Act (CWA) also known as the Federal Water Pollution Control Act. Enacted by the EPA in 1972, the CWA is designed to restore and maintain the chemical, physical, and biological integrity of waters of the United States. The CWA provides the legal framework for several water quality regulations including National Pollution Discharge Elimination System (NPDES) Permits, effluent limitations, water quality standards, pretreatment standards, antidegradation policy, non-point source discharge regulation, and wetlands protection. EPA has delegated the responsibility of portions of the CWA to state and regional agencies, including the State of California; therefore the primary regulations resulting from the CWA are discussed in the state and local regulation descriptions that follow.

National Flood Insurance Act: The U.S. Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act of 1968. NFIP is based on the minimal requirements for flood plain management and is designed to minimize flood damage within Special Flood Hazard Areas. Flood Insurance Rate Maps are developed by FEMA to determine if a particular parcel lies in a designated Special Flood Hazard Zone.

Porter-Cologne Water Quality Control Act: The Porter-Cologne Water Quality Control Act (embodied in the California Water Code [CWC]) established the principal California legal and regulatory framework for water quality control. The CWC authorizes the State Water Resources Control Board (SWRCB) and Regional Boards to implement the provisions of the federal CWA. The alternative alignments are located in Region 4, also known as the Los Angeles Regional and governed by the Los Angeles Regional Water Quality Control Board (LARWQCB).

NPDES Permit Program: The NPDES program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. In California the permits are issued by the SWRCB or Regional Boards. The applicable permits include:

- NPDES General Permit for Storm Water Discharges Associated with Construction Activities issued by the SWRCB. The General Permit includes measure to eliminate or reduce pollutant discharges through a Stormwater Pollution Prevention Plan (SWPPP), which describes the implementation and maintenance of Best Management Practices (BMPs) to control stormwater and other runoff during and after construction.

- NPDES Los Angeles County Municipal Storm Water Discharge Permit issued by the LARWQCB. Under the MS4 Permit, the County and City are required to implement development planning guidance and control measures that control and mitigate stormwater quality and quantity impacts to receiving waters as a result of new development and redevelopment. The MS4 Permit requires permittees to implement a Standard Urban Stormwater Management Plan (SUSMP) that designates BMPs that must be used in specified categories of development and redevelopment projects to infiltrate, filter, or treat stormwater runoff, control peak flow discharges, and reduce the post-project discharge of pollutants from stormwater conveyance systems.

Basin Plan: As required by the CWC, the Regional Board adopts and periodically updates a plan entitled "Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties" (Basin Plan). The Basin Plan designates beneficial uses for bodies of water, sets numerical (quantitative) and narrative (qualitative) water quality objectives applicable to inland surface waters and enclosed bays and estuaries, and includes implementation provisions, programs, and policies to protect all waters in the Los Angeles region.

California Toxics Rule: The EPA has established water quality criteria for certain toxic substances via the California Toxics Rule (CTR). The CTR established acute (i.e. short term) and chronic (i.e. long term) standards for bodies of water such as inland surface waters and enclosed bays and estuaries that are designated by the LARWCB as having beneficial uses protective of aquatic life or human health, such as the Los Angeles River.

California Impaired Water Bodies: Under Section 303(d) of the CWA, the SWRCB identifies impaired bodies of water that do not meet water quality standards and together with the Regional Boards prioritizes and schedules them for development of Total Maximum Daily Loads (TMDLs).

California Nonpoint Source Pollution Control Program: The State Board and the California Coastal Commission (CCC) developed the Nonpoint Source Pollution Control Program in California, which contains management measures for categories of land use/development. Under the Nonpoint Source Program Strategy and Implementation Plan 1998-2013, a three-tier system of BMPs is used as a means of implementing nonpoint source water quality management measures and strategies.

State Antidegradation Policy: In accordance with the federal Antidegradation Policy discussed above, the State Board adopted Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality Waters in California (more commonly referred to as the State Antidegradation Policy) which restricts the degradation of surface waters of the state and protects bodies of water where the existing water quality is higher than necessary for the protection of present and anticipated designated beneficial uses. The State Antidegradation Policy is implemented by the Regional Board.

Flood Control: Drainage and flood control structures and improvements in the City of Los Angeles are subject to review and approval by the City of Los Angeles Bureau of Engineering. The City utilizes a 50-year design storm for flood control design purposes, which is a predicted storm event estimated using the City's methodology and assumption, which are considered to be conservative.

4.10.1.2 Existing Conditions

The two build alternatives are in the general vicinity of each other when viewed from a water resources perspective. For purposes of this section, the environmental setting is discussed for the general vicinity and not for the individual alternatives, except where differences in the alternatives may result in potential environmental issues.

Surface Water Hydrology

Hydrologic conditions in the area, natural and man-made, cause runoff within the watershed to drain to a receiving water body. For purposes of the municipal NPDES Stormwater Permit, the LARWQCB has defined Watershed Management Areas (WMA). The alternatives are located in the Los Angeles River WMA.

The alternative alignments are located in the downtown portion of the City of Los Angeles. This area is characterized as highly urban with no or limited pervious surfaces. Surface runoff is characterized as either dry weather or wet weather flows. Water quality of the runoff is determined by the quality of water of the water discharged and by the materials runoff collects on its way to a waterbody. The Los Angeles River watershed and many of its tributaries are on the CWA Section 303(d) list of impaired uses for not meeting water quality standards.

Flood Hazards

The City of Los Angeles, in coordination with Los Angeles County, state, and federal agencies has an extensive system for providing protection against flood hazards. The system drains wet and dry weather runoff from impervious surface areas, such as streets, and routes flows into underground pipes and drains discharging to various inland streams and channels. According to FEMA, there are no 500- or 100-year flood zones within the general vicinity of the alternatives.

Tsunami, Inundation, Seiche

Tsunamis are large ocean waves generated by major displacement of the ocean, such as earthquakes, volcanic eruptions, and submarine landslides. Low lying coastal areas of the City of Los Angeles are potentially at risk from tsunamis. A seiche is a standing wave in an enclosed or partially enclosed body of water, including water storage facilities. Seiches have multiple causes, including earthquakes and wind. Inundation is flooding related to a tsunami, seiche or other event. The alternatives are located more than 15 miles from the ocean and are not within a tsunami inundation area as determined in the City of Los Angeles Safety Element. Two small lakes, Hollenbeck Lake and Echo Park Lake, are the closest enclosed bodies of water and are located more than one mile from the vicinity of the alignments. The Los Angeles River is located at a distance greater than 2,000 feet to the east of the PSA.

Multiple flood control facilities are located upgradient of the PSA in the San Fernando Valley portion of the Los Angeles River watershed. According to the City of Los Angeles Safety Element Exhibit G, failure of upgradient flood control basins could potentially cause inundation in the vicinity of the alignments. Both build alternatives are at the edge of an inundation area where the alignments cross (as an underpass) Alameda St. under Temple St. (At-Grade) and under 1st St. (Underground).

Groundwater

The Coastal Plain of Los Angeles Basin underlies the PSA. This groundwater basin is divided into four subbasins, with the Central Subbasin directly underlying the PSA. The Central Subbasin has a surface area of approximately 277 square miles with an estimated storage capacity of 13,800,000 acre-feet. Potable water production occurs throughout the majority of the basin via approximately 497 wells. Most groundwater production occurs in deep aquifers of the San Pedro Formation. No production wells are located in the vicinity of the PSA. In addition, aquifer recharge, which flows mainly in the permeable sediments at the ground surface, is not an issue for the PSA as the closest recharge area is located in the northern portion of the subbasin where the Los Angeles River enters the subbasin at the Los Angeles Narrows.

Groundwater levels vary across the subbasin. According to the EDR report, depth to groundwater in the project vicinity is approximately 37 feet and groundwater flows in a southeast direction. Exploratory borings drilled for many building sites adjacent to Flower St. between 7th and 2nd Streets encountered seepage at relatively shallow depths ranging from approximately 15 to 35 feet below ground surface. Groundwater, probably perched, has been reported in borings at depths between approximately 18 to 27 feet below ground surface adjacent to Flower St. in the area between 2nd and 5th Streets. In the portion of the proposed alignment along 2nd St., groundwater seepage water has been reported in borings at depths between approximately 14 to 36 feet below ground surface in the area between Hill St. and Alameda St. The seepage water encountered in the borings appears to be groundwater that is perched on the underlying Fernando formation bedrock. It should be noted that shallow groundwater levels are influenced by seasonal rainfall and infiltration in addition to possible nearby groundwater extraction.

Water quality in the main production zones is generally good with localized areas of poor water quality. Constituents of concern present in localized areas are total dissolved solids, volatile organic compounds (tetrachloroethylene and trichloroethylene), perchlorate, nitrate, iron and manganese, and chromium. According to the EDR report, there are localized areas that have experienced groundwater contamination in the vicinity of the PSA.

4.10.2 Evaluation Methodology

To determine potential environmental issues associated with water resources in relation to the alternatives, regulatory requirements and laws were reviewed at the federal, state, and local level.

4.10.3 Environmental Issues

Potential environmental issues related to water resources are discussed for the PSA and where applicable for specific alternatives.

Surface Water Hydrology

As stated above, the general vicinity of the PSA is highly impervious with limited or no pervious areas. The alternatives are not expected to increase imperviousness or increase runoff volumes within the Los Angeles River WMA. The alternatives are not expected to alter existing flow patterns.

Construction and operation of the alternatives are not expected to significantly impact surface water quality. Construction of any of the alternatives will require filing a Notice of Intent, preparation of a SWPPP, and compliance with the NPDES General Construction Permit and SUSMP requirements. BMPs will be identified to provide for temporary stormwater management during construction preventing the construction process from exposing people or property to water related hazards and keeping pollutants from being discharged to receiving water. Any dewatering discharges to the storm drain system and/or sewer system associated with tunneling will be required to meet minimum discharge requirements to not adversely impact surface waters. Construction and operation of the alternatives is not expected to adversely impact any designated beneficial uses of the Los Angeles River.

Flood Hazards

The alternative alignments are not located in a 100- or 500-year flood zone as determined by FEMA. Construction and operation of the alignments would not alter any existing flood zones.

Tsunami, Inundation, Seiche

The build alternatives are not located within a tsunami inundation zone as the alternatives are not in vicinity of the coast as discussed above.

The alternatives are partially located within the outlying edges of the inundation zone established for the unlikely failure of an upgradient flood control facility. The area between the intersection of 1st and Alameda Streets and Temple and Alameda Streets is at the edge of the inundation zone. Mitigation during engineering would include appropriate design features to alleviate any hazards associated with the inundation zone.

Inundation from a seiche is not a potential hazard, as the nearest enclosed or partially enclosed bodies of water are greater than one mile from the alternative alignments and the size of the waterbodies is limited.

Groundwater

The exact depths to groundwater in the PSA are not currently known. If groundwater is encountered, any dewatering activities are not anticipated to adversely affect groundwater flow, recharge, or production. Dewatering activities would not affect management of the subbasin. As discussed above, no groundwater production occurs in the PSA. Recharge in the area is restricted due to the lack of pervious surfaces.

If any groundwater is encountered all groundwater will be discharged, and treated if necessary, prior to disposal, in accordance with all applicable regulations. Dewatered groundwater requires treatment prior to discharge to comply with an NPDES permit issued by the LARWQCB or pretreatment requirements for discharge to the sewer system.

Localized groundwater contamination occurs on a limited basis in multiple areas in the downtown vicinity. Local contamination sources in the vicinity of the alignments include underground storage tanks and former manufactured gas sites. Contaminants may include gasoline, diesel fuel, and waste oil among other pollutants. Therefore, there is the potential that if groundwater is encountered and dewatering is required water could be contaminated and may need to be treated prior to discharge. During construction any tunneling could potentially serve as a preferential pathway for contaminated groundwater if it is encountered, thereby spreading groundwater contamination at higher rates than would normally occur. This can be mitigated during the engineering process with specifications for impermeable concrete-based grouting materials to fill the gap between the tunnel and surrounding earth. The permeability of the grouting materials would be lower than the surrounding soil types reducing the possibility that the tunnel would serve as a preferential pathway for contamination migration.

At-Grade Emphasis LRT Alternative

This alternative is at-grade for the majority of the proposed alignments and would have a low probability of encountering groundwater during construction. The portions of the alignments for the At-Grade Emphasis LRT Alternative that are below-grade traverse the same proposed alignment as the Underground Emphasis LRT Alternative. Engineering and design specifications would mitigate any previously discussed potential issues associated with groundwater dewatering.

Underground Emphasis LRT Alternative

The Underground Emphasis LRT Alternative is below-grade for the entire alignment except for a limited portion at-grade at the connection point with the Metro Gold Line. Construction of the Underground Emphasis LRT Alternative would result in a higher probability of encountering groundwater during construction. Engineering and design specifications would mitigate any previously discussed potential issues associated with groundwater dewatering.

4.11 Energy

The transportation sector is responsible for approximately half of the energy consumed in the State of California[2]. Transportation energy consumption estimates consider:

- Annual vehicle miles traveled (VMT) for automobiles, trucks, buses and heavy rail vehicles and
- Variation of fuel consumption rates by vehicle type.

Fuel consumption has grown approximately 50 percent over the last 20 years, and is projected to continue to increase over the next 20 years. The proposed alternatives are anticipated to reduce energy consumption by providing an alternative to dependence on personal automobiles, thereby reducing VMT.

4.11.1 Affected Environment

Each alternative would require the installation of an overhead catenary system (OCS), suspended above the track-way to supply electricity to the trains. Traction power substations would be situated approximately every mile along the corridor to transmit and distribute electricity. Signaling and communication systems would also be required. Energy consumption would also be associated with operation of stations, stations and transit service maintenance, and construction activities to provide the required infrastructure.

Within the PSA, the Los Angeles Department of Water and Power (LADWP) provides electricity services. Electrical services are readily available to the PSA, with existing lines located along each of the proposed alignments.

4.11.2 Evaluation Methodology

To determine potential environmental issues associated with energy, a general review of energy requirements associated with operation and construction of the new alignments was conducted. The energy needs were considered in conjunction with the potential benefits associated with a diversion of automobile traffic to transit.

4.11.3 Environmental Issues

While construction and operation of all proposed alignments would have electrical energy expenditures associated with construction and operation, a new transit alignment is anticipated to decrease vehicle miles traveled and thereby decrease the consumption of fossil fuels.

Depending on the number of rail cars and frequency of operations, propulsion of each alternative would have similar energy consumption needs. The at-grade open air platforms associated with the At-Grade Emphasis LRT Alternative would have less energy needs than the underground stations, which would have escalators, elevators, and heating

[2] The California Energy Commission, Consumer Energy Center website. Accessed on June 23, 2008. http://www.consumerenergycenter.org/transportation/index.html.

and cooling systems. The Underground Emphasis LRT Alternative would require more energy resources during construction when compared to the At-Grade Emphasis LRT Alternative associated with the use of earthmoving equipment for excavating tunnels. Also, the extensive amount of haul trucks and haul truck travel of excavated earthwork would require additional energy consumption.

To maximize potential benefits associated with a reduction in vehicle miles traveled for each alternative, coordination between other Metro commuter rail lines, LRT, and bus transit is needed in order to optimize efficiency and convenience to minimize energy consumption.

A further consideration is projected ridership for each alternative. The greatest potential benefit associated with a reduction in VMT would be associated with any alternative that achieves a higher ridership level, thereby achieving the greatest reduction in the use of personal automobiles.

4.12 Historic, Archaeological & Paleontological Resources

This section addresses archaeological and built environment resources located in the PSA that qualify as "historic properties" as defined in Section 106 of the National Historic Preservation Act of 1966 (as amended) and "historical resources" as identified in CEQA. The definitions for both historic properties and historical resources include archaeological as well as built resources. In addition, the section discusses paleontological resources located in the PSA.

4.12.1 Affected Environment

4.12.1.1 Regulatory Framework

Historical Resources

- **National Historic Preservation Act**: The National Historic Preservation Act (NHPA) of 1966 (16 United States Code, USC 470-470), as amended, created the Advisory Council on Historic Preservation (Advisory Council) to advise the President and Congress on historic preservation. This Act also expanded the National Register of Historic Places (National Register) to include sites not only of national, but of state and local significance. The NHPA is a national policy to protect, rehabilitate, restore, and reuse districts, sites, buildings, structures, and objects significant in American architecture, history, archaeology, and culture, and it mandates (under Section 106) that federal agencies take into account the effect of an undertaking on properties that are listed in, or determined eligible for inclusion in the National Register of Historic Places.

- **Section 106**: Section 106 of the NHPA requires that Federal agencies take into account the effects an action is expected to have on historic properties. It requires that the Advisory Council be afforded a reasonable opportunity to comment on such actions, when they are expected to result in effects on historic properties.

- **National Register of Historic Places**: The National Register is the nation's official list of districts, sites, buildings, structures, and objects worthy of preservation. Currently, the National Register includes approximately 80,000 listings, including icons of American architecture, engineering, culture, and history. Overseen by the National Park Service (NPS), under the Department of the Interior, the National Register was authorized under the NHPA, as amended. National Register guidelines for the evaluation of significance were developed to be flexible and to recognize accomplishments of all who have made significant contributions to the history and heritage of the nation. Its criteria are designed to guide state and local governments, federal agencies, and others in evaluating potential entries in the National Register.

- **National Historic Landmarks**: National Historic Landmarks (NHL) are cultural properties designated by the Secretary of the Interior as having national significance. They are acknowledged as being among the most significant historic places, and these buildings, sites, districts, structures, and objects possess exceptional value or quality in illustrating or interpreting the heritage of the United States in history, architecture, archaeology, engineering, and culture. NHL designation is an official recognition by the federal government of the significance of historic properties. By definition, the properties designated as National Historic Landmarks are the most significant places in American history.

- **United States Department of Transportation Act of 1966 – Section 4(f)**: Historic properties are also governed under Section 4 (f) of the United States Department of Transportation Act of 1966 (recodified as amended at 49 USC Section 303), which regulates the "use" of land from historic properties. In 49 USC 303 Section 771.135, Section 4(f) asserts:

  (a) (i) The Administration may not approve the use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:

  (i) There is no feasible and prudent alternative to the use of land from the property; and

  (ii) The action includes all possible planning to minimize harm to the property resulting from such use.

- **California Code of Regulations**: As defined by state law in Title 14 *California Code of Regulations* Section 4850, the term "historical resource" means "any object, building, structure, site, area, place, record, or manuscript, which is historically or archaeologically significant, or which is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural history of California. Historical resources include archaeological sites as well as the built environment.

- **California Register of Historical Resources**: Under PRC §5024.1, the California Register was established to serve as an authoritative guide to the state's significant historical and archaeological resources. In order for a property to be considered eligible for listing in the California Register, resources must retain "substantial" integrity to identified periods of significance, and it must be found by the State Historical Resources Commission to be significant under at least one of the below-listed criteria.
  - Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
  - Is associated with the lives of persons important in our past.
  - Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual or possesses high artistic values.
  - Has yielded, or may be likely to yield, information important in prehistory or history.

There are two principal categories of local designation for historically significant properties in the City of Los Angeles. Properties may be designated as Historic-Cultural Monuments and/or may be contributors to designated local historic districts, known as Historic Preservation Overlay Zones (HPOZs). The HPOZ designation applies to specific bounded areas of historic or cultural significance and generally includes both properties which contribute to the significance of the district and non-contributing properties. Non-contributing properties are those which do not contribute to the significance of the HPOZ because they have undergone alterations, were built outside the period of significance, or do not share the unifying characteristics of the district.

Historic-Cultural Monuments: In the City of Los Angeles, the Historic-Cultural Monument (HCM) designation is equivalent to local landmarks in other communities and is reserved for individually significant properties. Listing as an HCM is subject to review and recommended approval by the Cultural Heritage Commission, review by an additional committee of City Council, and final approval by the City Council.

Historic Preservation Overlay Zones: The Historic Preservation Overlay Zone Ordinance was adopted by the City of Los Angeles in 1979, and revised in 1997. As defined in the Cultural Heritage Master Plan (adopted by City Council in 2000), the HPOZ designation is "a planning tool which recognizes the special qualities of areas of historic, cultural, or architectural significance. An HPOZ does not change the underlying zoning, rather it lays an added level of protection over a zone through local board oversight." There are currently 22 designated HPOZs in Los Angeles, incorporating more than 5,000 separate properties. Many more are currently proposed in various stages of development. Because HPOZs have "special character or special historical, cultural, architectural, archeological, community or aesthetic value," they are presumed to be historically or culturally significant and are therefore listed in the California Register.

Paleontological Resources

Federal protection for scientifically significant paleontological resources applies to projects if any construction or other related project impacts occur on federally owned or managed lands, involve the crossing of state lines, or are federally funded. The following federal protections may apply to paleontological resources within the proposed PSA:

- **American Antiquities Act of 1906**: The American Antiquities Act of 1906 (6 USC 431 433) establishes a penalty for disturbing or excavating any historic or prehistoric ruin or monument or object of antiquity on federal lands as a maximum fine of $500 or 90 days in jail.

- **National Historic Preservation Act of 1966**: The National Historic Preservation Act of 1966 (Pub. L. 89 665; 80 Stat. 915, 16 U.S.C. 470 et seq.) provides for the survey, recovery, and preservation of significant paleontological data when such data may be destroyed or lost due to a federal, federally licensed, or federally funded project.

- **Federal Land Management and Policy Act of 1976**: The Federal Land Management and Policy Act of 1976 (43 U.S.C. 1712[c], 1732[b]); sec. 2, and 30 U.S.C. 611; Subpart 3631.0 et seq.) defines significant fossils as: unique, rare or particularly well-preserved; an unusual assemblage of common fossils; being of high scientific interest; or providing important new data concerning [1] evolutionary trends, [2] development of biological communities, [3] interaction between or among organisms, [4] unusual or spectacular circumstances in the history of life, or [5] anatomical structure.

- **Public Resources Code (Chapter 1.7), §5097.5 and §30244:** These statutes prohibit the removal of any paleontological site or feature on public lands without permission of the jurisdictional agency, define the removal of paleontological sites or features as a misdemeanor, and require reasonable mitigation of adverse impacts to paleontological resources from developments on public (state) lands.

City of Los Angeles General Plan: The Conservation Element of the City of Los Angeles General Plan (adopted September 2001) specifically addresses paleontological resources in Section 3 of Chapter 2. The Plan's paleontological objective is to "protect the city's archaeological and paleontological resources for historical, cultural, research and/or educational purposes." The Plan's policy is to "continue to identify and protect significant archaeological and paleontological sites and/or resources known to exist or that are identified during land development, demolition or property modification activities."

4.12.1.2 Existing Conditions

Historical Resources

Historically, the PSA falls within the Gabrieliño/Tongva (also known as the Tongva) tribal boundaries. The Tongva established large, permanent villages in the fertile lowlands along rivers and streams, and in sheltered areas along the coast, stretching from the foothills of the San Gabriel Mountains to the Pacific Ocean. The fundamental economy of the Tongva was one of subsistence gathering and hunting. The ethnographic and historic literature indicates that the Native American village of Yangna is located in the general vicinity of the PSA. It is assumed to be on the west bank of the Los Angeles River, just south of the Pueblo of Los Angeles.

Settlement of the Los Angeles region continued in the early American Period (1848–Present). On April 4, 1850, only two years after the Mexican-American War and five months prior to California achieving statehood, the City of Los Angeles was formally incorporated. Los Angeles maintained its role as a regional business center in the early American Period and the transition of many former rancho lands to agriculture, as well as the development of citriculture in the late 1800s, further strengthened this status. These factors combined with the expansion of port facilities and railroads throughout the region contributed to the impact of the real estate boom of the 1880s on the City of Los Angeles. Los Angeles continued to grow in the twentieth century in part due to the discovery of oil in the area and its strategic location as a wartime port. The County's mild climate and successful economy continued to draw new residents in the late 1900s, with much of the County transformed from ranches and farms into residential subdivisions surrounding commercial and industrial centers. Hollywood's development into the entertainment capitol of the world and southern California's booming aerospace industry were key factors in the County's growth in the twentieth century.

The PSA is located entirely within the downtown area of the City of Los Angeles. The development of downtown Los Angeles occurred sequentially from north to south. In the *Los Angeles Architectural Guide*, there are three principal downtown commercial building periods: 1900-1917, early 1920s through 1931, and from the late 1960s through the present. The first two major periods of activity were characterized principally by classical *Beaux Arts* style, based on great buildings of Western Europe and most of those efforts were focused on Broadway and Spring St. The 1920s and 1930s brought development patterns west on 7th St. and included the geometrical-based Art Deco and sweeping Streamline Moderne styles. Finally, high rises constructed from the early 1960s until the present have been a variety of Contemporary styles, encompassing approaches from glass curtain wall Corporate Modern to Post Modern styles.

The first Sanborn Fire Insurance Company maps prepared for Los Angeles in 1888 portrayed north-south streets in the below-listed west-to-east order: Pearl St. (now Figueroa St.), Flower St., Hope St., Bunker Hill Ave. (not applicable to current street name), Grand Ave., Olive Ave., Hill St., Fort St. (now Broadway), Spring St., Main St. and Los Angeles St.

For the purposes of discussion, the PSA was divided into four segments, arranged from south to north, and then east, and are described below.

Flower St., between 4th and 7th Streets

In 1888, the streets in the southern portion of the PSA were located on the outskirts of town. Figueroa St. was one of a handful of great boulevards of Los Angeles that was expanded in the 1920s. An early alignment of Figueroa St. was part of the famed U.S. Route 66, and is currently a component of the Pasadena Freeway (Interstate 110). The notable Figueroa St. tunnels near Chinatown were built in 1931 and were once a part of Figueroa St. as well. Figueroa St. is said to be one of the longest avenues in the United

States, with a length of more than 30 miles, stretching between Eagle Rock to the Los Angeles Harbor. The 2nd St. tunnel, which extends from Figueroa St. on the west side to Hill St. in the east, was completed in 1925.

Among the ambitious 1920s building projects in downtown that announced Los Angeles as a major city, the Los Angeles Central Library (630 West 5th St., Bertram Goodhue with Carleton Winslow) was completed in 1926. The "light of learning" architectural theme was a remarkable architectural collaboration and remains one of the largest library systems in the nation.

The Harbor Freeway (Interstate 110) on the western side of downtown was completed in 1952, and coined "downtown's new Main St." Construction of that freeway, along with repeal of the limiting building height ordinance, created a significant new concentration of high- and mid-rise buildings concentrated on Figueroa and 7th Streets.

Flower St., between 4th St., and 2nd St. East to Hill St.

By the end of the second World War, as suburbs became increasingly desirable as residential and commercial hubs, downtown Los Angeles lost some of its *caché* as a business and retail destination. The CRA was established in 1948, in part to cure economic "blight" by funding and overseeing redevelopment. Like the rest of downtown, Bunker Hill, which had been one of the more exclusive residential neighborhoods at the turn of the twentieth century, fell into disrepair and out of fashion by the 1960s. Although the action was controversial, Victorian era buildings on Bunker Hill were cleared in the 1960s by CRA, the streets were reconfigured and high-rises have been constructed over time in their places.

2nd and Temple Streets between Hill and San Pedro Streets

As Los Angeles developed from an agrarian settlement to a more diverse economy, single-family homes were typically built without regard to their surroundings in the area now identified as downtown. By the early 1900s, those residences stood side-by-side with commercial blocks, and residential use eventually diminished. Broadway evolved as a main retail thoroughfare, served by Pacific Electric (PE) interurban rail lines. Many of the PE's routes terminated at 4th St. and Broadway. Public use of the PE peaked in 1924 and its configuration made the intersection and corridor valuable commercial property, concentrated in one confined area. Broadway was developed with commercial uses, specifically retail and theater buildings between the 1910s and the 1940s and was the center of retail commerce in the growing City of Los Angeles. After the end of World War II, the decentralization of the community, coupled with demise of the interurban railroad, caused major stores and small shops to relocate to 7th St., later disbursing to outlying suburbs. As of the millennium, Broadway continues to be a busy retail center, although patronage changed since the early nineteenth century from American-born to Latino. The customer base of the area is primarily Mexican-American and South American. The Broadway Theater & Commercial District comprised of office, retail and theater buildings, was listed in the National Register in 1979 and includes portions of the PSA.

Adopted in 1947, the plan for the Civic Center included buildings of contemporary design flanked by multi-acre parking lots. The Civic Center replaced business blocks of the late nineteenth century and has encroached westward upon Bunker Hill. The resulting Civic Center has an east-west axis and is roughly bounded on the north by Aiso St., on the south by 2nd St., on the west by Grand Ave., and on the east by Alameda St.

2nd and Temple Streets between San Pedro and Alameda Streets

The City's oldest areas, just east of Main St. exhibit the imperfect platting that dates before 1848. The 33 degree "skewed" grid orientation of downtown Los Angeles characterizes the north-south streets east of Hoover Ave. and west of Indian St. When Los Angeles converted from a Mexican pueblo to an American town, public authority rather than private enterprise became the influence behind development. As enumerated in *California: A Land of Contrast*, "few vestiges of the original community remain; the much-altered plaza is a tiny park with adjacent Olvera St. 'restored' as a tourist attraction." The original Chinatown was replaced in the 1938 by the Union Passenger Terminal (now Union Station), relocated and reconstructed in a stylized Chinese theme. The construction of Union Station also alleviated the need for multiple passenger railroad stations in downtown Los Angeles. The first Japanese-American resident came to Los Angeles in 1886 and started a restaurant on East 1st St. By the end of the nineteenth century, the area known as Little Tokyo was home to more than 2,000 Japanese-Americans, and a thriving community had been established. Many of those residents moved to the area to lay track for the Pacific Electric interurban streetcar system. During World War II, Executive Order 9066 gave the Army authority to relocate more than 110,000 Japanese Americans on the west coast to internment camps in isolated and barren areas. This action eradicated Japanese settlements until after the end of the war and caused interned families to start their lives over once they were released. Little Tokyo Historic District was listed in the National Register of Historic Places, and became a National Historic Landmark district in 1995.

In summary, the development of downtown Los Angeles, which began with the City's founding in the 18th century, continues to evolve in diverse ways over time. Early downtown Los Angeles was primarily residential and commercial in nature. In the 20th century, uses in the "core" grew to be retail with a large amount of office use in upper floors of large buildings. In the latter part of the 1900s, aside from the few skyscrapers built, office, retail and entertainment uses dwindled and the popularity of downtown waned. As economic forces became more obviously cyclical (including recession and strong influence of interest rates), commercial development in downtown was replaced in large part by public investment. Since the last decades of the 20th century, tax incentives, with changes in federal legislation, state regulations and local ordinances have made reuse of long-vacant office buildings and their conversion to apartments and condominium use possible. The result of those factors has been a rebirth in downtown of a significant residential population, spurred by renewed interest in urban lifestyles and "loft-style" living.

Known Historical Resources within One-Quarter Mile of the Project

A search of the California Historical Resources Information System (CHRIS) was conducted for the PSA. In addition, a literature and archival records search for previously recorded historical resources and investigations within a one-quarter mile radius was performed. Tables 4-10 and 4-11 indicate the existence of at least two National Historic Landmarks, four National Register Districts, at least 76 to 78 separate National Register properties, 89 to 99 California Register properties, and 34 to 37 locally designated properties previously identified within the preferred project alternatives.

As indicated in Table 4-10, 21 known archaeological resources of unknown historical significance are located within one quarter-mile of the PSA proposed build alternatives. Twenty-one archaeological resources have been previously recorded within one-quarter mile of the At-Grade Emphasis LRT Alternative. Eleven of these sites are also within one-quarter mile of Underground Emphasis LRT Alternative (Table 4-10). A majority of the archaeological sites were identified by archaeological monitoring of construction activities related to recent construction projects. Most of these sites that have been encountered during ground disturbances contain historic period building or structure foundations or construction materials, and/or historic refuse deposits. One isolated prehistoric burial was encountered at considerable depth during trenching. The burial was found eleven feet below the ground surface, consisting of nine feet of overburden and 2 feet of natural stratigraphy. No archaeological properties listed in the National Register, Archaeological Determinations of Eligibility, or Historic Property Data File are located within one-quarter mile of the PSA.

A Native American cemetery (CA-LAN-1575/H) was encountered during construction-related ground disturbances on Alameda St. next to Union Station in the immediate vicinity of the Pueblo of Los Angeles. In addition, a single Native American burial was recorded near the intersection of Temple and Hill Streets during construction-related ground disturbances.

A review of historic literature indicates that the City's original water system, built in 1781 during the Spanish Period, crosses the PSA. The original water system consisted of the main ditch, the Zanja Madre, and several branch ditches that flowed south and southwest into the city and beyond. A circa 1880 map of the Zanja system indicates that the Zanja Madre, and Zanja Numbers three, four, five, and nine cross the northeastern portion of the PSA. In addition, the Woolen Mill Ditch and the West Branch Zanja Number 8R, cross the two build alternative alignments in the southwestern portion of the PSA.

The results of the records search and literature review indicate that the build alternatives are located in areas that are highly sensitive for buried archaeological resources from both prehistoric and historic time periods.

While specific conclusions regarding project-related effects to these historic properties and identification of all previously unevaluated properties cannot be made at this level of project development, it must be noted that future project development should be coordinated with a consulting, qualified architectural historian and qualified archaeologist, in order to identify all previously unevaluated properties and evaluate project effects.

Detailed plans of the project will be necessary to conduct the next environmental review steps (e.g., identification and analysis of impacts). Table 4-12 through Table 4-14 present preliminary identification of archaeological resources in the PSA.

Paleontological Resources

The PSA is situated in the southwestern block of the Los Angeles basin. The Los Angeles basin is one of many basins comprising the Neogene continental borderland of southern California. It extends from the Santa Ana Mountains in the north to the San Joaquin Hills to the south, and includes the southern foothills of the San Gabriel Mountains, the Puente Hills, and the Palos Verdes Hills. The Los Angeles basin is a structural depression that has been the site of discontinuous deposition since the Late Cretaceous and of continuous subsidence and primarily marine deposition since the middle Miocene. This and other sedimentary basins formed during Miocene and Pliocene as a result of an early San Andreas-type phase of transform motion along the western margin of North America. According to geologic mapping and museum collections records, the PSA is immediately underlain by the following geologic units, from oldest to youngest: (1) Miocene Puente Formation, (2) Pliocene Fernando Formation, and (3) Quaternary alluvium. These geologic units, and their paleontological resource potential, are discussed in more detail below.

Puente Formation

The Puente Formation is middle to late Miocene (14 to 5 million years ago [Ma]) in age. The Puente Formation is known to produce significant paleontological resources including fossilized remains of sharks, fish, marine and terrestrial mammals, as well as some of the most complete collections of marine algae and terrestrial flora. It has been assigned a high paleontological resource sensitivity for its proven potential to yield scientifically significant fossil resources.

Table 4-10 Known Historic Properties/Historical Resources within One-Quarter Mile of the At-Grade Emphasis LRT Alternative				
	TOTALS	National Register of Historic Places	California Register of Historic Places	City of Los Angeles Historic-Cultural Monuments
Known historic properties and/or historical resources within one-quarter mile of proposed alignments	**2** National Historic Landmarks **4** National Register Districts **76** separate National Register **99** California Register **37** local landmarks **highly sensitive** archaeological resources3	National Historic Landmarks 1. Little Tokyo Historic District, north side of 200-300 E 1st St. 2. Bradbury Building, 300-310 S Broadway National Register Districts 1. Southern California Gas Company Complex, 800-830 S Flower St. 2. Los Angeles Plaza-Los Angeles State Historic Park, Spring, Alameda, Macy and Sunset 3. Little Tokyo Historic District, north side of 200-300 E 1st St. 4. Spring Street Financial District, 354-704 S Spring St. Separate 1. Figer 8 Bar, 746 S Figueroa 2. Louis Brownstein Building, 751 S Figueroa 3. So. Calif Gas Co Building, 830 S Flower St. 4. So. Calif. Gas Co Building, 820 S Flower St. 5. So. Calif. Gas Co Building, 810 S Flower St. 6. So Calif. Gas Co Building, 800 S Flower St. 7. 816 S Grand Ave. Bldg. 8. Engine Co No 28, 644 S Figueroa 9. Fine Arts Building, 807-811 W 7th St. 10. Roosevelt Building, 727 W 7th St. 11. Barker Brothers Building, 800-818 W 7th St. 12. Los Angeles Central Library, 630 W 5th St.	1. 218 Main St. Bldg 2. 275 W 1st St. Building 3. 5th St. Retaining Wall betw...(near L.A. Central Library) 4. 811 Wilshire Bl. Bldg 5. Pantages/Warner Brothers Theatre, 401 W 7th St. 6. 816 S Grand Ave. Bldg 7. Angel's Flight Railway, 300 block S Hill St. 8. AP Giannini - Bank of America, 505 W 7th St./649 S Olive 9. Associated Realty Building, 510 W 6th St. 10. AT & T Telecommunications Facility, 420 S Grand 11. Baker Detweiler Bldg, 412 W 6th St. 12. Barker Brothers Building, 800-898 W 7th St./709-711 S Flower St. 13. Bible Institute, 550 S Hope 14. Biltmore Bldg, 515 S Olive 15. Biltmore Hotel, 503-539 S Olive St./ 512 W 5th St./ 514-530 S Grand Ave. 16. Boston Dry Goods Store, 237 S Broadway 17. Boston Stores - J.W. Robinson Co., 600-632 W 7th St. 18. Brack Shops, 527 W 7th St. 19. Bradbury Building, 300 S Broadway 20. Brock Jewelers - Clifton's, 513-515 W 7th St. 21. California Club Building, 532-538 S Flower St. 22. Commercial Exchange Bldg., 416 W 8th St. 23. Coulter Dry Goods Co, 500 W 7th St.	1. Nuestra Senora de Los Angeles-Plaza Church, 100-110 Cesar Chavez Av/535 N Main St. 2. First Cemetery of Los Angeles, 521 N Main St. 3. Los Angeles Plaza Park, Cesar Chavez Av 4. Los Angeles City Hall, 200 N Spring St. 5. Bradbury Building, 300-310 S Broadway 6. St. Vibiana's Cathedral, 110 E 2nd St. 7. California Club Building, 532-538 S Flower St. 8. Los Angeles Central Library Building and Grounds, 630 W 5th St. 9. Biltmore Hotel, 503-539 S Olive St./ 512 W 5th St./ 514-530 S Grand Ave. 10. Philharmonic Auditorium (site of), 421-433 W 5th St. 11. Saint Paul's Cathedral (site of) (901-915 Wilshire Bvd.) 12. Los Angeles Athletic Club Building, 425-437 W 7th St. 13. Fine Arts Building (Global Marine House), 807-815 W 7th St. 14. Subway Terminal Building, 416-424 S Olive St. 15. James Oviatt Building, 615-617 S Olive St. 16. Original Pantry, 811 W 9th St. 17. Mayflower Hotel 531-535 S Grand Ave. 18. Embassy Auditorium and Hotel, 501 W 9th St./ 839-861 S Grand Ave. 19. One Bunker Hill Building, 455 S Grand Ave. 20. AP Giannini - Bank of America, 505 W

[3] Archaeological resources have not necessarily been evaluated for National or California register significance.

Table 4-10 Known Historic Properties/Historical Resources within One-Quarter Mile of the At-Grade Emphasis LRT Alternative

TOTALS	National Register of Historic Places	California Register of Historic Places	City of Los Angeles Historic-Cultural Monuments
	13. Jonathan Club Building, 545 S Figueroa St. 14. General Petroleum Building, 612 S Flower 15. Superior Oil Co Building/Bank of California, 550 S Flower St. 16. Biltmore Bldg, 515 S Olive 17. Oviatt Building, 617 S Olive 18. Subway Terminal Building, 417 S Hill St. 19. AP Giannini - Bank of America, 649 S Olive 20. Ville de Paris Store, 712 S Olive 21. So. Calif. Telegraph Co, 716 S Olive 22. AT & T Telecommunications Facility, 420 S Grand 23. Mayflower Hotel, 533 S Grand 24. Pacific Mutual Garage & Annex, 540 S Grand 25. Edwards Widney Bldg., 609 S Grand 26. New York Cloak & Suit House/Brockman Bldg/Brooks Bros., 708 S Grand Ave./, 520 W 7th St. 27. 816 S Grand Ave. Bldg. 28. Embassy Auditorium, 843 S Grand 29. Embassy Hotel Auditorium, 851 S Grand 30. Woodward/Bristol Hotel, 423 W 4th St. 31. Title Guarantee Bldg, 401 W 5th St. 32. Wells Fargo Bank, 415 W 5th St. 33. Philharmonic Auditorium, 427 W 5th St. 34. Edison Bldg, 601 W 5th St. 35. Los Angeles Central Library, 630 W 5th St. 36. "5th St. Retaining Wall betw..." (near Central Library) 37. Baker Detweiler Bldg, 412 W 6th St. 38. Warner Theatre, 460 W 6th St. 39. Associated Realty Building, 510 W 6th St. 40. Pacific Mutual Bldg, 523 W 6th St.	24. Edison Bldg, 601 W 5th St. 25. Edwards-Wildey Bldg.- National Oil Bldg, 600-609 S Grand Ave., 600 W 6th St. 26. Edwards-Wildey Bldg Addition, 612 W 6th St. 27. Embassy Auditorium and Hotel, 501 W 9th St./ 839-861 S Grand Ave. 28. Embassy Auditorium, 843 S Grand Ave. 29. Embassy Hotel Auditorium, 851 S Grand Ave. 30. Engine Co No 28, 644 S Figueroa 31. Figer 8 Bar, 746 S Figueroa 32. Fine Arts Building (Global Marine House), 807-815 W 7th St. 33. Fire Department HQ, 219 S Hill St.. 34. First Baptist Church of San Pedro (Facade & Stained Glass Window), 555 W 7th St. 35. First Cemetery of Los Angeles, 521 N Main St. 36. Fort Moore Pioneer Memorial, 400 block N Broadway 37. Garnier Block, 419 N Main St. 38. General Petroleum Building, 612 S Flower St. 39. Grand Central Market, 315 S Broadway 40. Higgins Building, 108 W 2nd St. 41. Home Telephone, 246 S Hill St. 42. Homer Laughlin Bldg. , 317 S Broadway 43. Irvine Block-Byrne Bldg, 249 S Broadway/301 W 3rd St. 44. Italian Hall, 650 N Main St.. 45. James Oviatt Building, 615-617 S Olive St. 46. Jonathan Club Building, 545 S Figueroa St. 47. Joyeria Esmerelda Jewelry, 332 S Hill St.	7th St. 21. Roosevelt Building, 727 W 7th St. 22. Barker Brothers Building, 800-898 W 7th St./709-711 S Flower St. 23. Boston Stores - J.W. Robinson's, 600-632 W 7th St. 24. Brock Jewelers - Clifton's, 513-515 W 7th St. 25. Title Insurance & Trust Company Building and Annex, 433 S Spring St. 26. Pacific Mutual Building, 523 W 5th St. 27. First Baptist Church of San Pedro (Facade & Stained Glass Window), 555 W 7th St. 28. Spanish - American War Memorial (Pershing Square), 5th, 6th Olive & Hill 29. Angel's Flight, 300 block of S Hill St. 30. Irvine-Byrne Building, 249-259 S Broadway/ 301 W 3rd St. 31. Superior Oil Company Building, 550 S Flower St. 32. South Park Loft Building, 816 S Grand Ave. 33. State Theater Building, 300-314 W 7th St. 34. Edwards-Widney Building, 609 S Grand Ave. 35. General Petroleum Building, 612 S Flower St. 36. Southern California Gas Company complex, 800-830 S Flower St. 37. Higgins Building, 108 W 2nd St.

Table 4-10 Known Historic Properties/Historical Resources within One-Quarter Mile of the At-Grade Emphasis LRT Alternative

TOTALS	National Register of Historic Places	California Register of Historic Places	City of Los Angeles Historic-Cultural Monuments
	41. Edwards-Wildey/National Oil Bldg, 600 W 6th St. 42. Edwards-Wildey Bldg Addition, 612 W 6th St. 43. Kerckhoff Annex, address unknown 44. 811 Wilshire Bl Bldg Pantages/Warner Brothers Theatre, 401 W 7th St. 45. Los Angeles Athletic Club, 431 W 7th St. 46. Coulter Dry Goods Co, 500 W 7th St. 47. Brock & Co. Jewelry Store/Clifton's Cafeteria, 513 W 7th St. 48. Brack Shops, 527 W 7th St. Quinby Bldg., 529 W 7th St. 49. San Pedro 1st. Baptist Church, 543 W 7th St. 50. Boston Stores/J.W. Robinson Co., 600 W 7th St. 51. Union Oil Bldg, 617 W 7th St. 52. Commercial Exchange Bldg., 416 W 8th St. 53. Lindy Hotel, 419 W 8th St. 54. Bible Institute, 550 S Hope St. 55. Los Angeles 3rd Church of Christ, 734 S. Hope St. 56. Angel's Flight Railway, 300 block of Hill St. 57. Los Angeles City Hall, 200 N Spring St. 58. US Courthouse and Post Office, 312 N Spring St. 59. Garnier Block, 419 N Main St. 60. Plaza Park, 500 N Main St. 61. Nuestra Senora de la Reina de Los Angeles, 535 N Main St. 62. Italian Hall, 650 N Main St. 63. Temple Mishkon Tephillo, 206 Main St. 64. 218 Main St. Bldg. 65. Plaza Substation, 10 Olvera St.	48. Kerckhoff Annex, address unknown 49. King Edward Hotel, 121 E 1st St. 50. LA Soap Co. 617 E 1st St. 51. Lindy Hotel, 419 W 8th St. 52. Los Angeles 3rd Church of Christ., 734 S Hope St. 53. Los Angeles Athletic Club Building, 425-437 W 7th St. 54. Los Angeles Central Library Building and Grounds, 630 W 5th St. 55. Los Angeles City Hall, 200 N Spring St. 56. Los Angeles Plaza Park, Cesar Chavez Av. 57. Los Angeles Times Building, 202 W 1st St. Los Angeles Union Passenger Terminal, 800 N. Alameda 58. Louis Brownstein Building, 751 S. Figueroa 59. Mayflower Hotel 531-535 S Grand Ave. 60. Million Dollar Theater, 301 S Broadway 61. Temple Mishkon Tephillo, 206 Main St. 62. New York Cloak & Suit House-Brockman Bldg-Brooks Bros., 708 S Grand Ave./520 W 7th St. 63. Newark Brothers-Uyeda Building, 312 E 1st St. 64. Nuestra Senora de Los Angeles-Plaza Church, 100-110 Cesar Chavez Av/535 N Main St. 65. One Bunker Hill Building, 455 S Grand Ave. 66. Original Pantry, 811 W 9th St. 67. Oviatt Building, 617 S Olive 68. Pacific Mutual Bldg, 523 W 5th St. 69. Pacific Mutual Garage & Annex, 540 S Grand Ave. 70. Philharmonic Auditorium (site of), 421-	

Table 4-10 Known Historic Properties/Historical Resources within One-Quarter Mile of the At-Grade Emphasis LRT Alternative

TOTALS	National Register of Historic Places	California Register of Historic Places	City of Los Angeles Historic-Cultural Monuments
	66. Los Angeles Times Building, 202 W 1st St. 67. 275 W 1st St. Building 68. King Edward Hotel, 121 E 1st St. 69. Newark Brothers/Uyeda Building, 312 E 1st St. 70. Progressive Theatre, 320 E 1st St.. 71. LA Soap Co. 617 E 1st St. 72. St. Vibiana's Cathedral, 110 E 2nd St. 73. Pío Pico House, 424-430 N. Main St. 74. Terminal Annex, 900 Alameda 75. Los Angeles Union Passenger Terminal, 800 N. Alameda 76. US Post Office- Los Angeles Terminal Annex, 900 Alameda St.	433 W 5th St. 71. Pío Pico House, 424 N Main St. 72. Plaza Park, 500 N Main St. 73. Plaza Substation, 10 Olvera St. 74. Progressive Theatre, 320 E 1st St. 75. Quinby Bldg., 529 W 7th St. 76. Roosevelt Building, 727 W 7th St. 77. So. Calif Gas Co Bldg, 800 S Flower St. 78. So. Calif Gas Co Bldg, 810 S Flower St. 79. So. Calif Gas Co Bldg, 820 S Flower St. 80. So. Calif Gas Co Bldg, 830 S Flower St. 81. So. Calif Gas Co complex, 800-830 S Flower St. 82. S Calif Telegraph Co, 716 S Olive 83. Saint Paul's Cathedral (site of), address unknown (possibly 901-915 Wilshire Blvd.) 84. San Pedro 1st Baptist. Church, 543 W 7th St. 85. South Park Loft Building, 816 S Grand Ave. 86. Spanish - American War Memorial (Pershing Square), 5th, 6th Olive & Hill 87. St. Vibiana's Cathedral, 110 E 2nd St. 88. State Theater Building, 300-314 W 7th St. 89. Subway Terminal Building, 416-424 S Olive St./417 S Hill St. 90. Superior Oil Co Building-Bank of California, 550 S Flower St. 91. The Aldine/Myrick Hotel, 324 or 342 S Hill St. 92. The Whipple/ Markham Hotel, 326 S Hill St. 93. Title Guarantee Bldg, 401 W 5th St. 94. Union Oil Bldg, 617 W 7th St. 95. US Courthouse and Post Office, 312 N Spring St.	

Table 4-10 Known Historic Properties/Historical Resources within One-Quarter Mile of the At-Grade Emphasis LRT Alternative			
TOTALS	National Register of Historic Places	California Register of Historic Places	City of Los Angeles Historic-Cultural Monuments
		96. Ville de Paris Store, 712 S Olive St. 97. Warner Theatre, 460 W 6th St. 98. Wells Fargo Bank, 415 W 5th St. 99. Woodward/Bristol Hotel, 423 W 4th St. 100. US Post Office- Los Angeles Terminal Annex, 900 Alameda St.	

Source: SWCA Environmental Consultants, 2008

Table 4-11 Known Historic Properties/Resources Within One-Quarter Mile of Underground Emphasis LRT Alternative

	TOTALS	National Register of Historic Places	California Register of Historic Places	City of Los Angeles Historic-Cultural Monuments
Known historic properties and/or historical resources within one-quarter mile of proposed alignment	**2** National Historic Landmarks **4** National Register Districts **78** separate National Register **89** California Register **34** local landmarks **Highly sensitive** archaeological resources[4]	<u>National Historic Landmarks</u> 1. Little Tokyo Historic District, 200-300 E 1st St. 2. Bradbury Building, 300-310 S Broadway <u>National Register Districts</u> 1. Broadway Theater & Commercial District, 242-947 S Broadway 2. Spring Street Financial District, 354-704 S Spring St. 3. Southern California Gas Company Complex, 800-830 S Flower St. 4. Little Tokyo Historic District, 200-300 E 1st St. <u>Separate</u> 1. Figer 8 Bar, 746 S Figueroa Av. 2. Louis Brownstein Building, 751 S Figueroa Av. 3. So. Calif. Gas Co Building, 830 S Flower St. 4. So. Calif. Gas Co. Building, 820 S Flower St. 5. So. Calif. Gas Co. Building, 810 S Flower St. 6. So. Calif. Gas Co. Building, 800 S Flower St. 7. 816 S Grand Ave Bldg. 8. Engine Co No 28, 644 S Figueroa Av. 9. Fine Arts Building, 807-811 W 7th St. 10. Roosevelt Building, 727 W 7th St. 11. Barker Brothers Building, 800-818 W 7th St. 12. Los Angeles Central Library, 630 W 5th St. 13. Jonathan Club Building, 545 S Figueroa	1. 275 W 1st St. Building 2. 5th St. Retaining Wall (near L.A. Central Library) 3. 811 Wilshire Bl Bldg 4. Pantages/Warner Brothers Theatre, 401 W 7th St. 5. 816 S Grand Ave. Bldg. 6. AP Giannini - Bank of America, 505 W 7th St./649 S Olive St. 7. Angel's Flight Railway, 300 block S Hill St. 8. Associated Realty Building, 510 W 6th St. 9. AT & T Telecommunications Facility, 420 S Grand Ave. 10. Baker Detweiler Bldg, 412 W 6th St. 11. Barker Brothers Building, 800-898 W 7th St./709-711 S Flower St. 12. Bible Institute, 550 S Hope St. 13. Biltmore Bldg, 515 S Olive St. 14. Biltmore Hotel, 503-539 S Olive St./ 512 W 5th St/ 514-530 S Grand Ave. 15. Boston Dry Goods Store, 237 S Broadway 16. Boston Stores - J.W. Robinson Co., 600-632 W 7th St. 17. Brack Shops, 527 W 7th St. 18. Bradbury Building, 300 S Broadway 19. Brock Jewelers - Clifton's, 513-515 W 7th St. 20. California Club Building, 532-538 S Flower St. 21. Commercial Exchange Bldg., 416 W 8th St. 22. Coulter Dry Goods Co, 500 W 7th St. 23. Edison Bldg, 601 W 5th St. 24. Edwards Wildey Bldg.- National Oil	1. Bradbury Building, 300-310 S Broadway 2. St Vibiana's Cathedral, 110 E 2nd St. 3. Los Angeles City Hall, 200 N Spring St. 4. California Club Building, 532-538 S Flower St. 5. Los Angeles Central Library Building and Grounds, 630 W 5th St. 6. Biltmore Hotel, 503-539 S Olive St./ 512 W 5th St./ 514-530 S Grand Ave. 7. Philharmonic Auditorium (site of), 421-433 W 5th St. 8. Saint Paul's Cathedral (site of) 9. Los Angeles Athletic Club Building, 425-437 W 7th St. 10. Fine Arts Building (Global Marine House), 807-815 W 7th St. 11. Subway Terminal Building, 416-424 S Olive St. 12. James Oviatt Building, 615-617 S Olive St 13. Original Pantry, 811 W 9th St. 14. Mayflower Hotel 531-535 S Grand Ave. 15. Embassy Auditorium and Hotel, 501 W 9th St/ 839-861 S Grand Ave. 16. One Bunker Hill Building, 455 S Grand Ave. 17. AP Giannini - Bank of America, 505 W 7th St. 18. Roosevelt Building, 727 W 7th St. 19. Barker Brothers Building, 800-898 W 7th St/709-711 S Flower St. Boston Stores - J.W. Robinson's, 600-632 W 7th St.

[4] Archaeological resources have not necessarily been evaluated for National or California register significance.

Table 4-11 Known Historic Properties/Resources Within One-Quarter Mile of Underground Emphasis LRT Alternative

TOTALS	National Register of Historic Places	California Register of Historic Places	City of Los Angeles Historic-Cultural Monuments
	St. 14. General Petroleum Building, 612 S Flower 15. Superior Oil Co Building/Bank of California, 550 S Flower St. 16. Biltmore Bldg, 515 S Olive 17. Oviatt Building, 617 S Olive 18. Subway Terminal Building, 417 S Hill St. 19. AP Giannini - Bank of America, 649 S Olive 20. Ville de Paris Store, 712 S Olive 21. So. Calif. Telegraph Co, 716 S Olive 22. AT & T Telecommunications Facility, 420 S Grand 23. Mayflower Hotel, 533 S Grand 24. Pacific Mutual Garage & Annex, 540 S Grand 25. Edwards Widney Bldg., 609 S Grand 26. New York Cloak & Suit House/Brockman Bldg/Brooks Bros., 708 S Grand Ave./, 520 W 7th St. 27. 816 S Grand Ave Bldg 28. Embassy Auditorium, 843 S Grand 29. Embassy Hotel Auditorium, 851 S Grand 30. Woodward/Bristol Hotel, 423 W 4th St. 31. Title Guarantee Bldg, 401 W 5th St. 32. Wells Fargo Bank, 415 W 5th St. 33. Philharmonic Auditorium, 427 W 5th St. 34. Edison Bldg, 601 W 5th St. 35. Los Angeles Central Library, 630 W 5th St 36. "5th St. Retaining Wall betw…"(near L.A. Central Library) 37. Baker Detweiler Bldg, 412 W 6th St. 38. Warner Theatre, 460 W 6th St.	Bldg, 600-609 S Grand Ave., 600 W 6th St. 25. Edwards-Widney Bldg Addition, 612 W 6th St 26. Embassy Auditorium and Hotel, 501 W 9th St/ 839-861 S Grand Ave. 27. Embassy Auditorium, 843 S Grand Ave. 28. Embassy Hotel Auditorium, 851 S Grand Ave. 29. Engine Co No 28, 644 S Figueroa 30. Figer 8 Bar, 746 S Figueroa 31. Fine Arts Building (Global Marine House), 807-815 W 7th St. 32. Fire Department HQ, 219 S Hill St. 33. First Baptist Church of San Pedro (Facade & Stained Glass Window), 555 W 7th St. 34. General Petroleum Building, 612 S Flower St. 35. Grand Central Market, 315 S Broadway 36. Higgins Building, 108 W 2nd St. 37. Home Telephone, 246 S Hill St. 38. Homer Laughlin Bldg. , 317 S Broadway 39. Irvine Block-Byrne Bldg, 249 S Broadway/301 W 3rd St. 40. James Oviatt Building, 615-617 S Olive St. 41. Jonathan Club Building, 545 S Figueroa St. 42. Joyeria Esmerelda Jewelry, 332 S Hill St. 43. Kerckhoff Annex, address unknown 44. King Edward Hotel, 121 E 1st St. 45. LA Soap Co. 617 E 1st St. 46. Lindy Hotel, 419 W 8th St. 47. Los Angeles 3rd Church of Christ, 734 S. Hope 48. Los Angeles Athletic Club Building, 425-	Brock Jewelers - Clifton's, 513-515 W 7th St. Title Insurance & Trust Company Building and Annex, 433 S Spring St. Pacific Mutual Building, 523 W 5th St. First Baptist Church of San Pedro (Facade & Stained Glass Window), 555 W 7th St. Spanish - American War Memorial (Pershing Square), 5th, 6th Olive & Hill Angel's Flight, 300 block of S Hill St. Irvine-Byrne Building, 249-259 S Broadway/ 301 W. 3rd St. Superior Oil Company Building, 550 S Flower St. South Park Loft Building, 816 S Grand Ave. State Theater Building, 300-314 W 7th St. Edwards-Wildey Building, 609 S Grand Ave. General Petroleum Building, 612 S Flower St. Southern California Gas Company complex, 800-830 S Flower St. Higgins Building, 108 W 2nd St.

Table 4-11 Known Historic Properties/Resources Within One-Quarter Mile of Underground Emphasis LRT Alternative

TOTALS	National Register of Historic Places	California Register of Historic Places	City of Los Angeles Historic-Cultural Monuments
	39. Associated Realty Building, 510 W 6th St. 40. Pacific Mutual Bldg, 523 W 6th St. 41. Edwards-Wildey/ National Oil Bldg, 600 W 6th St. 42. Edwards-Wildey Bldg Addition, 612 W 6th St. 43. 811 Wilshire Bl Bldg Pantages 44. Warner Brothers Theatre, 401 W 7th St. 45. Los Angeles Athletic Club, 431 W 7th St. 46. Coulter Dry Goods Co, 500 W 7th St 47. Brock & Co. Jewelry Store/Clifton's Cafeteria, 513 W 7th St. 48. Brack Shops, 527 W 7th St. 49. Quinby Bldg., 529 W 7th St. 50. San Pedro 1st Baptist Church, 543 W 7th St. 51. Boston Store/JW Robinson Co., 600 W 7th St. 52. Union Oil Bldg, 617 W 7th St 53. Commercial Exchange Bldg., 416 W 8th St 54. Lindy Hotel, 419 W 8th St 55. Fire Department HQ, 219 S Hill 56. Home Telephone, 246 S Hill 57. The Aldine/Myrick Hotel, 324 or 342 S. Hill St. 58. The Whipple/ Markham Hotel, 326 S Hill 59. Angel's Flight Railway, 300 block of S Hill St. 60. Joyeria Esmerelda Jewelry, 332 S Hill St. 61. Bible Institute, 550 S. Hope St. 62. Los Angeles 3rd Church of Christ, 734 S. Hope St. 63. Boston Dry Goods Store, 237 S Broadway	437 W 7th St 49. Los Angeles Central Library Building and Grounds, 630 W 5th St. 50. Los Angeles City Hall, 200 N Spring St. 51. Los Angeles Times Building, 202 W 1st St. 52. Louis Brownstein Building, 751 S Figueroa 53. Mayflower Hotel 531-535 S Grand Ave. 54. Million Dollar Theater, 301 S Broadway 55. New York Cloak & Suit House-Brockman Bldg-Brooks Bros., 708 S Grand Ave./520 W 7th St. 56. Newark Brothers-Uyeda Building, 312 E 1st St. 57. One Bunker Hill Building, 455 S Grand Ave. 58. Original Pantry, 811 W 9th St 59. Oviatt Building, 617 S Olive 60. Pacific Mutual Bldg, 523 W 5th St 61. Pacific Mutual Garage & Annex, 540 S Grand 62. Philharmonic Auditorium (site of), 421-433 W 5th St 63. Produce Exchange Building, 333 S Central 64. Progressive Theatre, 320 E 1st St. 65. Quinby Bldg., 529 W 7th St 66. Roosevelt Building, 727 W 7th St 67. St Vibiana's Cathedral, 110 E 2nd St 68. Saint Paul's Cathedral (site of), address unknown 69. So. Calif. Gas Co. Bldg, 800 S Flower St 70. So. Calif. Gas Co. Bldg, 810 S Flower St 71. So. Calif. Gas Co. Bldg, 820 S Flower St 72. So. Calif. Gas Co. Bldg, 830 S Flower St 73. So. Calif. Gas Co. complex, 800-830 S	

Table 4-11 Known Historic Properties/Resources Within One-Quarter Mile of Underground Emphasis LRT Alternative			
TOTALS	National Register of Historic Places	California Register of Historic Places	City of Los Angeles Historic-Cultural Monuments
	64. Irvine Block-Byrne Bldg, 249 S Broadway 65. Bradbury Building, 300 S Broadway 66. Million Dollar Theater, 301 S Broadway 67. Bradbury Building, 300-310 S Broadway 68. Grand Central Market, 315 S Broadway 69. Homer Laughlin Building , 317 S Broadway 70. Los Angeles City Hall, 200 N Spring St. 71. US Courthouse and Post Office, 312 N Spring St. 72. Produce Exchange Building, 333 S Central 73. Los Angeles Times Building, 202 W 1st St. 74. 275 W 1st St. Building 75. King Edward Hotel, 121 E 1st St. 76. Newark Brothers/Uyeda Building, 312 E 1st St. 77. Progressive Theatre, 320 E 1st St. 78. LA Soap Co. 617 E 1st St. 79. St Vibiana's Cathedral, 110 E 2nd St.	Flower St. 74. San Pedro 1st Baptist Church, 543 W 7th St. 75. S Calif. Telegraph Co, 716 S Olive 76. South Park Loft Building, 816 S Grand Ave. 77. Spanish - American War Memorial (Pershing Square), 5th, 6th Olive & Hill 78. State Theater Building, 300-314 W 7th St. 79. Subway Terminal Building, 416-424 S Olive St/417 S Hill St 80. Superior Oil Co Building-Bank of California, 550 S Flower St. 81. The Aldine/Myrick Hotel, 324 or 342 S Hill Av. 82. The Whipple/ Markham Hotel, 326 S Hill Av. 83. Title Guarantee Bldg, 401 W 5th St 84. Title Insurance & Trust Company Bldg and Annex, 433 S Spring St 85. Union Oil Bldg, 617 W 7th St. 86. Ville de Paris Store, 712 S Olive St. 87. Warner Theatre, 460 W 6th St. 88. Wells Fargo Bank, 415 W 5th St. 89. Woodward/Bristol Hotel, 423 W 4th St.	

Source: SWCA Environmental Consultants, 2008

Fernando Formation

The Pliocene (5–1.8 Ma) age Fernando Formation is present in the eastern Puente Hills and much of the northeastern Los Angeles basin. In addition to numerous invertebrate fossils collected from the Fernando Formation, some marine vertebrate material has also been documented, including fossilized specimens of great white shark, dolphin, herring, hake, lanternfish, mackerel, swordfish, flounder, and whale. The presence of these fossils within this geologic unit, as well as it's proven potential to yield vertebrate remains in the vicinity of the PSA, has resulted in the designation of the Fernando Formation as having a high paleontological sensitivity.

Quaternary Alluvium

Quaternary alluvium of Holocene (10,000 years before present [BP] to Recent) age underlies much of the eastern portion of the PSA from approximately the intersection of 2nd and Hill Streets and eastward. Holocene-age deposits contain the remains of modern organisms and are generally too young to contain fossils. Fossil localities in older Quaternary alluvium deposits throughout southern California have yielded terrestrial vertebrates such as mammoths, mastodons, ground sloths, dire wolves, short-faced bears, saber-toothed cats, horses, camels, and bison. Fossilized invertebrates and plant remains have also been collected from this unit. Younger alluvium is determined to have a low potential for paleontological resources but is often underlain by older alluvium, which is determined to have a high potential for paleontological resources.

4.12.2 Evaluation Methodology

Information in this section is based primarily on the record searches and a reconnaissance-level field survey of the Area of Potential Effects[5] (APE) which included the area in the immediate vicinity of the PSA. Both historic and archaeological resources were considered during the survey. For the proposed alternatives, a paleontological collections records search was conducted by the Vertebrate Paleontology Section of the Natural History Museum of Los Angeles County (LACM). A detailed review of museum collections records was performed in order to identify any known vertebrate fossil localities within one mile of the proposed alternatives and to identify the geologic units within the PSA. In addition, published geologic maps were consulted.

[5] The study area, called Area Potential Effects (APE) in this report is a blanket one quarter-mile buffer from the proposed project alignments. The APE was not established in coordination with the California State Historic Preservation or in accordance with 36 *Code of Federal Regulations* (*CFR*) Part 800.16 (d). 36 *CFR* defines an APE as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking." Once project plans are developed to an appropriate level of detail, a project-specific APE will be developed for SHPO review and concurrence.

Table 4-12 Known Archaeological Resources within One-Quarter Mile of the PSA

Primary Number	Trinomial	Other Designation	Resource Description	Recorded by/Date	Alignment(s)
19-000007	CA-LAN-7H	—	Los Angeles Chinatown dump area, mid 19th century	Meighan 1951	At-Grade & Underground
19-000887	CA-LAN-887H	Las Placitas	1880s Zanja Madre and structural remains from Spanish occupation through early 1900s	Costello 1978	At-Grade
19-001112	CA-LAN-1112H		Structural remains adjacent to Old Plaza Church dating to early 1800s	NARC 1981	At-Grade
19-001575	CA-LAN-1575/H		1860s-1930s Chinatown, Native American features and cemetery	Foster 1989, Horne 2000, Warren 2005	At-Grade
19-002791	CA-LAN-2791H	Pico-Garnier Block, El Pueblo de Los Angeles	Historic archaeological deposits present within the basement of the Merced Theater and the Garnier Building and beneath Sanchez Alley	Foster 1999	At-Grade
19-002928	CA-LAN-2928H	Brunswig Drug Co.	Historic gas tank, portions of a brick structure, miscellaneous iron pipes, the Brunswig Warehouse reinforced concrete foundations, and a small trash deposit	Hale 2001	At-Grade
19-003097*	CA-LAN-3097H		Mid to late 19th century privies and structural foundations	Warren 2003	At-Grade & Underground
19-003129	CA-LAN-3129H		Four historic refuse concentrations that date to the late 19th and early 20th centuries, may have been associated with the Modjeska Building that once occupied the area	Turner 2003	At-Grade & Underground
19-003169	CA-LAN-3169H		Two segments of the AT&SF railroad, turn of the century to early 20th century	Harris 2003	At-Grade
19-003337	CA-LAN-3337H		Oyster shell lens and historic glass, brick and stoneware fragments	Humphries 2000	At-Grade & Underground
19-003338	CA-LAN-3338H		Dense charcoal lens with associated historic artifacts	Humphries 2000	At-Grade & Underground
19-003339	CA-LAN-3339H		Historic trash lens with oyster shell, animal bones, glass, bricks, and stoneware, age unknown	Humphries 2000	At-Grade & Underground
19-003352	CA-LAN-3352H		Historic features including a segment of the Zanja No. 6-1, an artifact scatter, and a concrete foundation, dating to c. 1900	Foster 2005	At-Grade & Underground
19-003353	CA-LAN-3353H		Trash deposit with glass and ceramics, turn of the 20th century	Foster 2005	At-Grade & Underground

Table 4-12 Known Archaeological Resources within One-Quarter Mile of the PSA					
Primary Number	Trinomial	Other Designation	Resource Description	Recorded by/Date	Alignment(s)
19-003549	CA-LAN-3549H	El Pueblo de Los Angeles Winery	Adobe structure remnants and cistern filled with bottles, turn of the 20th century	Cordner 2006	At-Grade
19-003588	CA-LAN-3588H		Brick foundations and a historical artifact deposit	Foster 2006	At-Grade & Underground
19-003660	CA-LAN-3660H		Fragmented household refuse and building material debris associated with the occupation of a number of no longer extant buildings that existed from the 1890s onward	Hogan, Tan and Smallwood 2007	At-Grade & Underground
19-100301			Isolated black glass bottle fragment, dating to the late 19th Century	Michalsky 1998	At-Grade & Underground
19-100515		Republic Street Isolate	Historic artifact concentration with bricks, animal bone, metal, glass, ceramics, dating to 19th century	Slawson 2005	At-Grade
19-120014		Merced Theater	Pit feature containing historic artifacts	Eisentraut 1996	At-Grade
19-120015			Prehistoric human remains, no artifacts	Wlodarski 1978	At-Grade

4.12.3 Environmental Issues

Historical Resources

Significant built and archaeological resources have the potential to be impacted by both build alternatives to approximately the same extent. The following discussion of potential project-related environmental impacts provides an example of some issues that may apply to the proposed alternatives.

4.12.3.1 Construction

For any rail segments that require tunneling or cut-and-cover construction, an equation will be established to determine what the expected "settlement trough" for the proposed project will be. That settlement trough will show the distance from the proposed area of direct ground disturbance that additional project-related land deformation can be expected to occur. The establishment of a settlement trough is an important component of the effects analysis, which will be among the many factors taken into consideration in evaluating the proposed project. Effects from tunneling near historic buildings can include cracks and other damage resulting from differential settlement, tunnel-induced displacement and construction as well as operational vibration. A particularly challenging aspect of tunneling activities is that full effects of differential settlement on fragile buildings and other features may not be realized for years after construction activities have been completed.

For most elements of the project's construction phase, significant effects to historic properties are anticipated. Typical construction effects for this type of project are temporary loss of access and effects of vibration caused by use of heavy equipment and multiple equipment types simultaneously, as well as uneven earth movement (differential settlement) and uncontrolled dust that can damage buildings or other features, such as curbs, sidewalks and retaining walls. Standard construction control methods are recommended to control traffic, reduce noise, vibration and dust resulting from construction activities that will be associated with the proposed project. Vibration may be caused by use of tunneling and grading equipment, jackhammers and other heavy equipment, and by vehicle movement. It is recommended that vibration be monitored in areas of historic properties to limit its effects to below the Federal Transit Administration threshold for damage to fragile historic buildings. In addition, detailed pre-construction surveys of interiors and exteriors of each historic property should be conducted by qualified historical architects or engineers with specialized training and demonstrated experience in historic building reuse.

Although project plans have not been completed to sufficient detail to analyze these effects, it is expected that no historic properties would be demolished, relocated or acquired for the proposed project.

4.12.3.2 Operation

Visual impacts may result if the project introduced elements that were inconsistent with the visual character of the PSA, or if a project component, such as a station, were to obstruct important views or connections between buildings and features in settings or an historic district. Placement of catenary poles used to support at-grade train cross spans and catenary wires present the possibility for effects on historic properties. It is recommended that all catenary poles be placed immediately next to street curbs (within the public right of way), and that existing utility poles be replaced where feasible. Placement of catenary poles has yet to be determined and should be reviewed by cultural resources specialists to reduce effects. No proposed project catenary poles should be located within the boundaries of historic properties or historic districts. As discussed in Section 4.3.1.5,, catenary poles for the proposed project should in some cases replace existing utility poles. This type of replacement may reduce visual clutter in the vicinity of historic resources near the proposed project. Because of support requirements of catenary wires, particularly at curves and corners, there is the potential for an overhead “spider web effect” to result, where numerous wires and stays result in increased visual clutter.

For this project, obstruction or impeded views (toward or from the resources), and their respective settings may result from the placement of catenary poles and wires. A project option may involve using cross span wires that would be anchored to the street facades of buildings to support catenary wires, particularly at street corners. This “eyelet” method was a common technique used to support wires for historic trolley systems. There is a possibility that such eyelets would be proposed to be affixed to historic buildings, which could have a potential significant impact on historic resources.

Both of the build alternatives call for a vehicular underpass and pedestrian overpass to be constructed on Alameda St., either at Temple St. (At-Grade Emphasis LRT Alternative) or 1st St. (Underground Emphasis LRT Alternative). The overpass/underpass structure will interrupt lines of sight along both streets at the intersection where constructed and may conflict with the historic appearance of the neighborhood, especially on 1st St.

Additional project-related effects on historical resources include potential impacts from excavation-induced ground settlement and other ground-movement-related building damage. Each of these could affect fragile historic properties, resulting in adverse effects. Additionally, effects of new station construction and the introduction of catenary wires and poles in historic districts or adjacent to historic properties could each result in changes in settings, and thus in adverse effects.

4.12.3.3 Paleontological Resources

According to geologic mapping and museum collection records, the build alternatives are underlain by the paleontologically sensitive Puente Formation, Fernando Formation, and Quaternary older alluvium. Museum collections records maintained by the Natural History Museum of Los Angeles County (LACM) were searched and four previously recorded vertebrate fossil localities were discovered either along the proposed alternative routes or within a one-mile radius (Table 4-13). In addition, the records search revealed that at least eleven vertebrate fossil localities have been previously documented in the general vicinity of the PSA and were discovered within the same geologic units that are present within the proposed alternative alignments (Table 4-14).

The potential for adverse impacts to paleontological resources would be greater during the construction of the Underground Emphasis LRT Alternative, as this alternative would require substantial excavations into paleontologically sensitive geologic units. Digging for the automobile underpass on Alameda St. at either Temple St. or 1st St. will have similar effects. However, both build alternatives traverse paleontologically sensitive units and have the potential to impact paleontological resources. Implementation of proper mitigation measures can, however, reduce the impacts to paleontological resources to a less than significant level.

Table 4-13 Paleontological Localities Located within a One-Mile Radius of the Build Alternatives

LACM Locality Number (s) and Approximate Location	Geologic Formation	Age	Taxa
LACM 6971; 6th and Flower Streets; LACM 4726; 4th and Hill Streets	Fernando Formation	Pliocene	Myliobatis (eagle ray), Carcharodon carcharias (white shark), Isurus oxyrinchus (bonito shark), Carcharhinus (requiem shark), Semicossyphus (sheepshead)
LACM 5961; 1st and Hill Streets	Puente Formation	Late Miocene	Cyclothone (bristlemouth fish)
LACM 3868; Wilshire Blvd. and Lucas Ave.	Fernando Formation	Pliocene	Carcharodon sulcidens (white shark)

Table 4-14 Paleontological Localities Located in the Vicinity of the Build Alternatives

LACM Locality Number (s) and Approximate Location	Geologic Formation	Age	Taxa
LACM 6198- 6203; Wilshire Blvd. from intersection of Alvarado St. west to past Vermont Ave.	Puente Formation	Late Miocene	Osteichthyes (bony fish), Cetacea (whale)
LACM 3250; east of Vermont Ave. near Madison Ave. and Middlebury St.	Quaternary alluvium	Pleistocene	Mammuthus (fossil mammoth)
LACM 5845; Western Ave. and Beverly Blvd.	Quaternary alluvium	Pleistocene	Mammutidae (fossil mastodon)

4.13 Parklands and Other Community Facilities

Public transit service increases the accessibility of parklands and community facilities within the area, thereby providing a benefit to the community. However, the establishment of a new transit system has the potential for adverse direct impacts resulting from the need for physical acquisition, displacement or relocation of parkland or a community facility. Adverse indirect impacts may involve changes to roadways and public right-of-ways that reduce pedestrian or vehicular access to facilities.

Other potential indirect or secondary impacts on parklands and community facilities such as impacts to pedestrian safety, air quality, and noise are discussed in Sections 4-15, 4-6 and 4-7, respectively.

4.13.1 Affected Environment

4.13.1.1 Regulatory Framework

Public parklands, significant cultural resources, and natural wildlife refuges are given protection under Section 4(f) of the U.S. Department of Transportation Act of 1966. Direct use (i.e. encroachment or acquisition) of Section 4(f) lands by federally funded transportation projects is prohibited unless it can be demonstrated that no prudent alternatives are available. If no prudent alternatives exist, the effects must be reduced through project design and mitigation measures. Indirect effects to Section4(f) lands may involve obstruction or alteration of access, introduction of significant noise or vibration sources, casting of shadows, or other substantive changes to the visual setting.

4.13.1.2 Existing Conditions

There are currently four emergency facilities (three fire stations and one police station) located within one-quarter mile of both alignment alternatives. Additional community facilities (museums, performing arts centers, religious facilities, and schools) within one-quarter mile of both alignments include:

- California Academy for Liberal Studies Early College High School (700 Wilshire Blvd., 4th Floor)
- Los Angeles Downtown Public Library (630 W. 5th St.)
- Los Angeles Downtown Public Library Park (630 W. 5th St.)
- Pershing Square (532 South Olive St.)
- MOCA Museum of Contemporary Art (MOCA) - Grand Ave.
- The Colburn School of Music and Performing Arts (200 S Grand Ave.)
- The Disney Concert Hall
- The Dorothy Chandler Pavilion

- City Hall Park (200 N Spring St.)
- Fletcher Bowron Square (300 block of N. Main St.)
- Union Center for the Arts (120 North San Pedro St.)
- Little Tokyo Library (203 S Los Angeles St.)
- Japanese American National Museum (369 East 1st St.)
- James Irvine Garden (244 S. San Pedro St.)
- Japanese American Cultural and Community Center (244 S. San Pedro St.)
- The Geffen Contemporary at MOCA (152 North Central Ave.)
- El Pueblo de Los Angeles State Historical Monument (500 block of N. Main St.)
- Higashi Honganji Buddhist Temple (505 East 3rd St.)
- Koyasan Buddhist Temple (342 East 1st St.)
- Union Church of Los Angeles (401 East 3rd St.)

Of these resources within one-quarter mile from the alignment, the greatest potential direct or indirect impacts would be to the resources located adjacent to an alignment and in the vicinity of the stations.

Parklands and community facilities adjacent to the At-Grade Emphasis LRT Alternative alignment are listed below. Any differences between Options A and B are noted.

- Los Angeles Central Library Building and Park – located on 5th St. to the east of Flower St. The alignment runs below-grade to the west of the site on Flower St. A station is located to the west of the library site (Option A).
- MOCA Museum of Contemporary Art (MOCA) – located near the southeast corner of 2nd St. and Grand Ave. The alignment runs at-grade along 2nd St. to the north.
- The Colburn School of Music and Performing Arts - located at the southeast corner of 2nd St. and Grand Ave. The alignment is below-grade to the north of the site, and transitions to at-grade at Main St. to the east.
- Disney Concert Hall – located on 2nd St. between Grand Ave. and Hope St. The alignment is below-grade to the south of the site, and transitions to at-grade at Grand Ave. to the east. A station is located to the southwest.
- City Hall Park – located on the City Hall grounds at the northwest corner of 1st and Main Streets. The northbound alignment runs at-grade along Main St. to the east.

There is a station at this location on Main St. The station would be a side platform located on the east side of the street, opposite the park.

- Fletcher Brown Square – Los Angeles Mall - located in the 300 block of Main St. between Temple and Aiso Streets. The alignment is at-grade to the south of the site along Temple St. A pedestrian overcrossing spans 2nd St., linking Fletcher Brown Square to the Civic Center.

- Little Tokyo Library – located at the southwest corner of 2nd and Los Angeles Streets. The alignment runs at-grade along 2nd St. and turns north onto Los Angeles St. There is an optional station located to the northwest of the site.

- The Geffen Contemporary at MOCA – located near the southwest corner of Temple and Alameda Streets. The alignment runs along Temple St. to the north and turns south on Alameda St. where in connects to the Gold Line. The Little Tokyo/Arts District Station is located on Alameda St. immediately to the east of the site.

Parklands and community facilities potentially impacted by the Underground Emphasis LRT Alternative alignment and station locations are listed below. Unless otherwise noted, the alignment and stations are below-grade:

- Los Angeles Central Library Building and Park – located on 5th St. to the east of Flower St. The alignment runs to the west of the site on Flower St. A station is located to the north of the library site.

- MOCA Museum of Contemporary Art (MOCA) – located near the southeast corner of 2nd St. and Grand Ave. The alignment runs at-grade along 2nd St. to the north.

- The Colburn School of Music and Performing Arts - located at the southeast corner of 2nd St. and Grand Ave. The alignment is to the north of the site.

- Disney Concert Hall – located on 2nd St. between Grand Ave. and Hope St. The alignment is to the south of the site. A station is located to the southwest.

- Little Tokyo Library – located at the southwest corner of 2nd and Los Angeles Streets. The alignment runs along 2nd St. to the north. A station is located adjacent to the site.

- Japanese American National Museum – located near the northwest corner of 1st and Alameda Streets. The alignment transitions from below-grade to at-grade to the south of the site and extends at-grade to the east along Alameda St., where it connects to the Little Tokyo/Arts District Station.

- The Geffen Contemporary at MOCA – located near the southwest corner of Temple and Alameda Streets, to the north of the Japanese American Nation Museum. The alignment terminates immediately to the south of the site at Little Tokyo/Arts District Station.

4.13.2 Evaluation Methodology

The evaluation of potential impacts on parklands and community facilities involves determining what facilities are located near the proposed alignments and if the alignments would directly impact any of the facilities through encroachment or acquisition, or indirectly impact the facilities by limiting access.

The information regarding parklands and community facilities was found through Navigate LA, a City of Los Angeles Bureau of Engineering web-based mapping application which identifies all types of community facilities within City boundaries.

4.13.3 Environmental Issues

Public transit serves to increase the accessibility to parklands and community facilities within the PSA. Potential direct impacts on parklands and other community facilities would arise from the need for physical acquisition, displacement or relocation of parkland or a community facility. Indirect impacts involve changes to pedestrian or vehicular access. Direct impacts would only occur at facilities located adjacent to the alignments and stations. Similarly, indirect impacts would be most likely to occur at facilities adjacent to or in closest proximity to the alignments.

Construction of either build alternative would primarily occur within existing streets and public rights-of-way, and/or underground which would limit the needs for direct acquisition of parkland or other community facilities. However, some direct acquisition would be required for at-grade alignments when street widths are narrow or where additional width is needed to accommodate turns and curves. Acquisition is also required for underground alignments at underground station locations to accommodate station access portals. As such, the At-Grade Emphasis LRT Alternative would require less property acquisition than the Underground Emphasis LRT Alternative. However, both the At-Grade Emphasis LRT Alternative, Option A and the Underground Emphasis LRT Alternative have potential property acquisition associated with providing portal locations in the vicinity of the Central Library. The Underground Emphasis LRT Alternative may also require acquisition for portals in the vicinity of the Little Tokyo Branch Library and the Japanese American National Museum. Further evaluation would be needed to determine potential direct impacts associated with property acquisitions.

Reduction in vehicle or pedestrian access to parkland and community facilities, or an unacceptable reduction in emergency services response time related to roadway modifications would be potential adverse impacts. While each alternative could reduce access during the construction period, the operation of the At-Grade Emphasis LRT Alternative would have greater potential impact on access than the Underground Emphasis LRT Alternative. Roadway modifications associated with the At-Grade Emphasis LRT Alternative may include reductions in the number of traffic lanes, removal or modification of existing left turn pockets, and impacts on existing driveways. Reductions in roadway capacity and changes in traffic configuration could reduce access to parkland or communities facilities in the immediate vicinity. Conflicts related to emergency service access could also result. Adequate review will need to be conducted in order to assure the maintenance of acceptable levels of ingress/egress and emergency response access for police and fire stations and adequate public access to parklands and community facilities.

Access to parklands and community facilities could be further impacted by loss of currently available street parking. The At-Grade Emphasis LRT Alternative would result in the loss of approximately 88 on-street parking spaces, as compared to approximately 20 spaces for the Underground Emphasis LRT Alternative. Further evaluation would be required to determine if this loss of parking would adversely affect the public's ability to access parklands and community facilities, and if so, if alternative parking could be provide elsewhere.

Reduction in pedestrian access to parklands and community facilities would also be a potentially adverse impact.

The Underground Emphasis LRT Alternative would have greater potential direct impacts on parklands and community facilities related to the need for direct acquisition for portals to underground stations. The At-Grade Emphasis LRT Alternative would have greater potential indirect impacts on parklands and communities facilities as a result of needed roadway modifications to accommodate the alignment, which could potentially reduce parking for and access to parklands and community facilities.

Both alternatives would reduce access to parklands and communities facilities during the construction phase. Given the intensity of construction associated with underground transit development, construction impacts related to the Underground Emphasis LRT Alternative may be greater than with the At-Grade Emphasis LRT Alternative.

4.14 Economic & Fiscal Impacts

The PSA is at the heart of the downtown Los Angeles resurgence. With more than 12,000 households and close to 200,000 employment opportunities projected for the year 2030, a more comprehensive transportation system is becoming an economic necessity. While there is the potential for the project to impact the current environment, it is important to consider the positive impacts construction would have on the local and regional economy including employment, construction spending, and indirect spending as well. This section will survey the economic and fiscal impacts of the Regional Connector on the regional economy, including the following:

- Tax revenue impacts
- Construction-Related Economic Impacts
- Construction-Related Employment
- Construction Spending on the Regional Economy

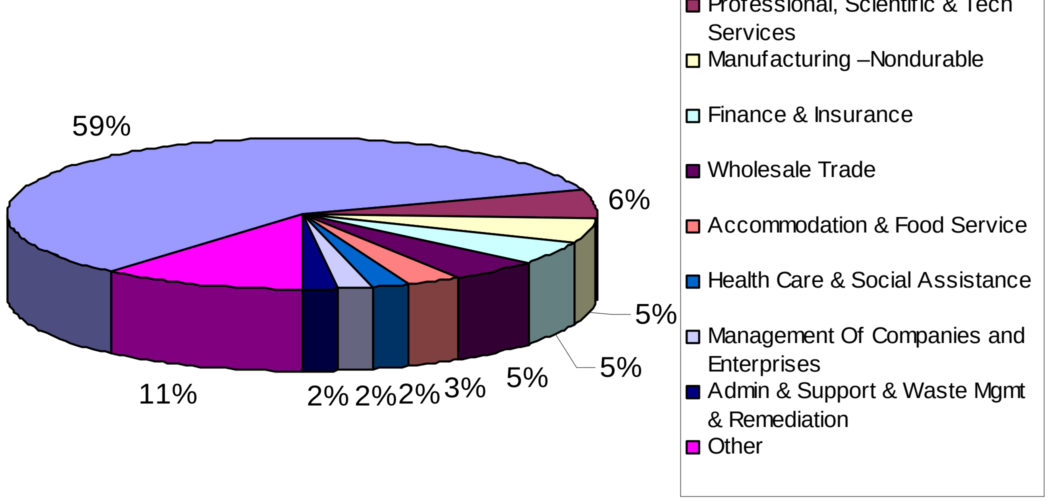
4.14.1 Affected Environment

4.14.1.1 Existing Conditions

The PSA, located within the Central City region, consists primarily of high-density commercial and industrial uses. Within this region, many of the traditional commercial areas are being transformed into medium to high density multi-family residential units and mixed use developments.

Figure 4-6

Business in the Area



A mixture of light and heavy industrial land uses exists along the eastern half of the Central City, east of Main St., and adjacent to the Alameda District. The remaining land uses within the downtown area are designated for public facilities and open space. Figure 4-6 gives a more detailed breakdown of the type of businesses in the PSA.

The PSA makes up approximately 0.03 percent of the 4,752 square miles of Los Angeles County. Although small in size, the PSA is a densely populated employment center comprised of mostly government jobs. The two build alternatives travel through the Civic Center and along Temple St., providing access to the majority of these employment opportunities. There were approximately 168,000 employees in the PSA in 2005, which is expected to increase to over 188,000 in 2030. Current projected employment within the PSA is between three and four percent of total Los Angeles County employment. Employment density in the PSA was 110,529 employees per square mile, which was significantly higher than the employment density of 977 for the County as a whole. The tax revenue base in the PSA is approximately $85.9 million[6].

In 2005 the total population of the PSA was 17,795 people, which was only 0.18 percent of the Los Angeles County population of over ten million. PSA population is expected to grow to 21,000 people in 2030.

[6] 2000 Census Data; Los Angeles County Assessor

There were 9,673 households in the PSA in 2005 with a median household income of approximately $45,000. Group quarters added an additional 5,466 residences. Total households are projected to increase 26.1 percent from about 9,700 in 2005 to 12,200 in 2030, which is higher than the 24.8 percent projected growth for Los Angeles County as a whole.

4.14.2 Evaluation Methodology

General assumptions are based upon available existing data from various sources, and verified by windshield survey. Information sources include the SCAG, American Public Transit Association, County Assessors Records, and Damar.

For the purposes of this evaluation, tax revenue losses were estimated using available information from the Los Angeles County Assessor's Office. The Assessor's Parcel Number, land value, improvement value, square footage, 2007 tax payments, and owner's information were identified for all affected parcels of land. Using this information, the per square foot land value and the corresponding 2007 land tax payment made on each square foot were estimated. These estimates were used together to determine loss in tax revenue due strictly to land acquisition.

Potential construction-related impacts were determined using conceptual site maps and station design plans. This information was used to identify potentially affected businesses in the area.

4.14.3 Environmental Issues

4.14.3.1 Tax Revenue Impacts

The two build alternatives effectively use the public right of way for track construction and station sites, minimizing the need for land acquisition. However, as discussed below, some acquisition is required for each alternative.

At-Grade Emphasis LRT Alternative

According to preliminary station and alignment design, the stations will need an area approximately five feet deep along the street frontage for the length of the station for construction. Total tax revenue loss due to land acquisition for these alternatives is estimated at $71,802.61 (see Table 4-15). This is approximately 0.084 percent of the $85,929,841.00 tax revenue base of the PSA. As such, tax revenue loss is not anticipated to be a significant impact for this alternative.

Underground Emphasis LRT Alternative

Since the station sites and design for the Underground Emphasis LRT Alternative have not been finalized, the land acquisition requirements for this alternative considered herein are limited to the proposed construction staging area near Alameda St. Total tax revenue loss due to land acquisition for this alternative is estimated at $163,130.29 (see Table 4-16). As this is approximately 0.190 percent of the $85,929,841.00 tax revenue base of the PSA, tax revenue loss is not anticipated to be a significant impact for this alternative.

Table 4-15 Estimated Loss of Tax Revenue Due to Land Acquisition
At-Grade Emphasis LRT Alternative

Assessor's Parcel #	Address	Property Type	Land Sq.Ft	Land Value	Sq. Ft.	Improvement Value	2007 Tax Payment	Ownership	TAX REVENUE LOSS
South of LA Times									
5149-008-032	201 S. Spring St. LA, CA 90012	Commercial/Industrial	25898	$1,927,273	195	$5,735.00	$35,709.70	LA Times Communications LLC	$1,847.55
5149-008-031	200 S. Broadway LA, CA 90012	Commercial/Industrial	5419	$401,513	5400	$5,735.00	$7,706.52	LA Times Communications LLC	$961.62
Behind LAPD									
5161-026-023	200 S Main St.	Other	7607	$435,929		$5,735.00	$6,398.84	Old Cathedral LLC	$1,135.59
5161-026-024	114 E 2nd	Other	6325	$326,946	17333	$200,756.00	9471.36	Old Cathedral LLC	$540.47
5161-026-033		Commercial/Industrial	5480	$203,163	5480	$1,123.00	3840.58	Old Cathedral LLC	$473.06
Landscaped Property to the Northeast of 3rd and Flower									
5151-014-033		Vacant Land		$3,959,546			$66,744.32	Fiveplants Associates and central plants inc	$66,744.32

Table 4-16 Estimated Loss in Tax Revenue Due to Land Acquisition
Underground Emphasis LRT Alternative

Assessor's Parcel #	Address	Property Type	Land Sq.Ft.	Land Value	ImprovementSq. Ft.	Improvement Value	2007 Tax Payment	Ownership	TAX REVENUE LOSS
Block Bounded By Central Ave., 1st St., Alameda, and 2nd St.									
5161-018-002	402 E. 1st St. LA,CA 90012	Commercial/Industrial	13673	$221,415	13320	$4,186	$3,369.60	Volk, Robert D TR	$3,369.60
5161-018-001	416 E. 1st St. LA, CA 90012	Commercial/Industrial	4792	$79,032	3921	$16,084	$1,489.34	Volk, Robert D TR	$1,489.34
5161-018-021		Vacant Land		$221,451	7256	$62,536	$4,477.40	Volk, Robert D TR	$4,477.40
5161-018-008	105 S. Alameda St. LA, CA 90012	Vacant Land	3829	$27,918			$453.06	Volk, Robert D TR	$453.06
5161-018-009		Commercial/Industrial	2496	$15,504	2115	$5,497	$311.98	Volk, Robert D TR	$311.98
5161-018-010		Commercial/Industrial	3223	$20,157	2735	$7,395	$404.92	Volk, Robert D TR	$404.92
5161-018-020		Commercial/Industrial		$2,106,233	26444	$2,496,078	$57,320.62	401 E 2nd St LLC	$57,320.62
5161-018-007	401 E. 2nd St. LA, CA 90012	Commercial/Industrial	17424	$740,114	17400	$17,971	$9,951.36	401 E 2nd St LLC	$9,951.36
5161-018-011	437 E. 2nd St. LA, CA 90012	Commercial/Industrial	33610	$1,427,786	33600	$35,749	$18,617.68	401 E 2nd St LLC	$18,617.68
Landscaped Property to the Northeast of 3rd and Flower									
5151-014-033		Vacant Land			$3,959,546.00		$66,744.32	Fiveplants Associates and central plants inc	$66,744.32

4.14.3.2 Construction-Related Economic Impacts

- Construction-related impacts are likely to occur throughout the PSA, and will increase in severity near the proposed station sites, as construction activity would be concentration at these locations. Further, closure of sidewalks would impede circulation in the area immediately surrounding construction areas and impact access to adjacent land uses. Although the alignment is located mainly within the public right-of-way, the nature of the proposed project and the land use characteristics of the PSA will inherently lead to adverse affects for businesses, inhabitants and industry within close proximity. The businesses that will be most directly affected by construction are at-grade store fronts that cater to pedestrian foot traffic.

- The following are some of the potential PSA construction impacts:

  - Traffic disruption
  - Increased noise, vibration and dust
  - Modified vehicular and pedestrian traffic patterns
  - Modified parking areas
  - Utility disruptions
  - Reduction in business access/visibility of signs and businesses
  - General disinterest in area businesses due to construction

At this time it is assumed that the project will be fully implemented by 2018. Depending on the phasing schedule, the PSA will be affected by construction at different intervals throughout the ten year period.

For this analysis, the PSA was divided into four distinct sections.

A. Civic Center:

Downtown Los Angeles is predominately occupied by government offices and government employees. The majority of these employment opportunities are concentrated within the Civic Center area. For the purposes of this analysis the Civic Center area is considered Temple St. between Main St. and Alameda St., and Los Angeles St. and Main St. between Temple St. and 2nd St. Within these boundaries, City Hall, City Hall East, the Caltrans Building, VA Hospital, Los Angeles Police Department Headquarters, Federal building, and Courthouse are located.

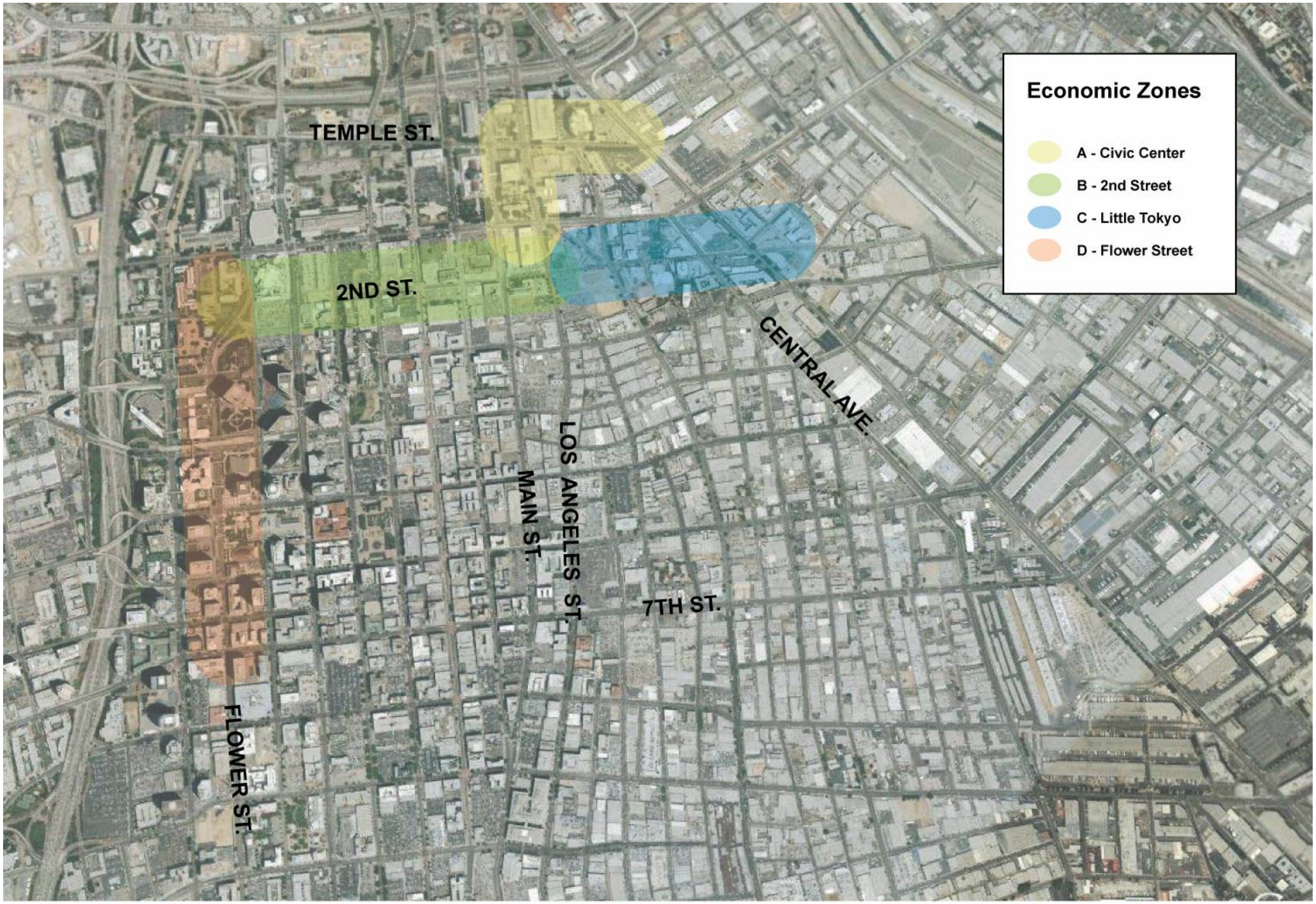


Figure 4-7 Economic Zone Map

B. 2nd St:

The land uses in the area 2nd St. between Los Angeles and Flower Streets is comprised of commercial space, including retail and office buildings, as well as minimal high-density residential. 2nd St. between Broadway and Figueroa Ave. goes through a tunnel that runs underneath Bunker Hill. The segment of 2nd St. through the tunnel is two lanes in each direction.

C. Little Tokyo:

2nd St. between Los Angeles and Alameda Streets runs through the heart of Little Tokyo. The street is lined with ethnic eateries, Japanese markets, and retail stores.

D. Flower St:

Flower St. between 3rd St. and Wilshire Blvd. runs through the heart of downtown. The street is lined with hotels, street level retail space, and medium to high density multi-family residential units.

The following sections will analyze the potential construction-related effects of the two build alternatives and identify the specific businesses impacted. Options A and B of the At-Grade Emphasis LRT Alternative use the same alignment in the majority of the PSA, therefore their analysis will be combined in regards to the Civic Center, 2nd St., and Little Tokyo economic zones. The differences between the two will be made clear in the discussion of the Flower St. economic zone.

At-Grade Emphasis LRT Alternative

A. Civic Center

In this segment of the PSA, Option A provides for at-grade track construction with a dual track configuration for the majority of the section, and single track configuration on Main St. and Los Angeles St. between 2nd and Temple Streets. The alternative also proposes two stations in the Civic Center area: 1) a southbound station on Los Angeles St. between Temple and 1st Streets, and 2) a northbound station on Main St.

The LRT track is located primarily within the public right-of-way, thereby limiting land acquisition and the need for pedestrian walkway closures during construction. Depending on final design, technology, and construction techniques employed, there will need to be phased street closure to complete the track construction. Traffic disruption will decrease access to the businesses in the area; however, the government entities located within the Civic Center do not depend on pedestrian or automobile traffic to generate revenue, decreasing the severity of the economic impacts. As traffic disruption will make it difficult for employees to access their offices, mitigating measures will be implemented to alleviate these impacts.

The proposed at-grade stations will require pedestrian walk-way closures, causing more severe construction impacts within the proximity of proposed station locations. The proposed station sites are on Main St. and Los Angeles St. between 1st and Temple Streets. There will also be pedestrian and roadway detours at the intersection of Temple St. and Alameda St. for the construction of the automobile underpass and pedestrian overpass. As mentioned above, the businesses in the area predominantly engage in government activity and do not rely on traffic to generate customers. Table 4-17 below gives a detailed breakdown of the businesses in the area that will be temporarily affected by the construction of the station sites.

Table 4-17 Businesses Potentially Affected During Period of LRT Track Construction	
Civic Center	
Geffen Contemporary	The main parking area for the museum is located on Temple St. Construction would cause decreased use of the parking lot and loss of parking revenue. It would also lead to parking difficulties for Geffen Contemporary patrons, which in-turn could reduce patronage. The main entrance for the museum is located on 1st St., which would receive less noise, dust and vibration effects from construction than the parking area.
LA Mall Entrance	The LA Mall located on the Corner of Temple St. and Los Angeles St. would be affected by track construction. The entrance located on Main St. is within the proximity of the proposed northbound station in this area. The construction impacts will decrease access to the mall adversely affecting the businesses located in the Mall.
New Otani Hotel	The New Otani Hotel located on Los Angeles St. between 1st and 2nd Streets would be affected by at-grade construction of the LRT track on Los Angeles St. and 2nd St. As the main rntrance to the hotel lobby as well as the parking structure are located on Los Angeles St., construction effects would be potentially significant. The decreased access to the hotel, noise and vibration, decreased visibility of signs, and a general disinterest in the area due to construction would have adverse effects on the hotel's business.
Starbucks	Starbucks Coffee located at the corner of 1st and Los Angeles Streets would be affected by at-grade construction of the LRT track on Los Angeles St. The decreased access to Starbucks, noise and vibration, decreased visibility of signs, and a general disinterest in the area due to construction could adversely affect Starbucks. However, the coffee shop can be accessed from 1st St., reducing the effects.
Azalea Restaurant	Azalea Restaurant located at the corner of 1st and Los Angeles Streets would be affected by construction. The decreased access to the restaurant, noise and vibration, decreased visibility of signs, and a general disinterest in the area due to construction will adversely affect the Azalea Restaurant.

B. 2nd St.

This segment of the alignment is a continuation of the at-grade track construction. The alternative does not currently call for stations on 2nd St. in this area. Once station locations have been finalized, further analysis will be required.

Within the boundaries of the PSA, a portion of 2nd St. runs through a tunnel underneath Bunker Hill. The tunnel will likely be shut down during track construction, causing traffic disturbances on 2nd St. and the overall PSA. However, running the tracks through the tunnel lessens direct impacts to businesses during construction.

Construction will directly impact the businesses that are located on 2nd St. between Los Angeles and Hill Streets. The new LAPD headquarters and the south side of the Los Angeles Times office buildings are located along 2nd St. Construction impacts will be more of an issue in this area only because the retail businesses along 2nd St., including Pitfire Pizza, China Bistro, and the Kawada Hotel, depend on traffic for revenue generation. Table 4-18 provides a list of businesses in the area that will potentially be affected by the at-grade track and station construction.

C. Little Tokyo

The At-Grade Emphasis LRT Alternative bypasses the Little Tokyo district, protecting the cultural center from the construction impacts of at-grade track and station construction.

D. Flower Street

The At-Grade Emphasis LRT Alternative uses a combination of at-grade and underground double track configuration to reach the 7th St./Metro Center Station and connect to the existing Metro Blue Line. In the rest of the PSA the Option A and Option B routes are identical, but in the Flower St. segment they have slight differences, as explained below.

Option A

The track would be located underground from the 2nd St. tunnel to Flower St., making a brief appearance above-ground before 3rd St. and then returning back underground after 3rd St. all the way to the 7th St./Metro Center Station. The alternative also calls for two underground stations, between Hope and Flower Streets and on Flower St. between 5th and 6th Streets.

Option B

The track would be located at-grade until it crosses 3rd St. before going back underground, with an at-grade station between 3rd and 4th Streets.

Unlike the at-grade track construction, the underground segment of the alternatives would result in fewer economic impacts. During construction, phased street closure will likely be implemented; however, depending on the tunneling technique used and location of exhaust vents there will be less traffic disruptions. Construction effects that would disrupt business activities, including noise, vibration, dust, decreased view of signage and overall disinterest in the area, will be limited strictly to station sites, which would employ cut and cover construction. This type of construction will cause sidewalk and street closures in the station locations, creating more severe impacts for businesses located within close proximity. See Table 4-19 for a detailed breakdown of the affected businesses.

Underground Emphasis LRT Alternative

The construction of the Underground Emphasis LRT Alternative will cause minimal adverse economic impacts in the PSA. Depending on the tunneling and construction techniques used to construct the tunnel, there may be a need for phased street closure, however the effects will not be as severe as at-grade track construction. Boring of the tunnel might also cause noise and vibration, but it will not be severe enough to impact business and inhabitants in the area.

Table 4-18 Businesses Potentially Affected During Period of LRT Track Construction

2nd Street	
Pitfire Pizza	Located at the corner of 2nd St. and Main St., Pitfire Pizza will be affected by construction of the track and possible at-grade station. According to the preliminary design and land acquisition studies, a portion of the pedestrian walkway will be impeded to construct the station, eliminating pedestrian access to the restaurant from 2nd St. for the duration of the track and station construction. The main entrance to the restaurant is located at the corner of 2nd St. and Main St. allowing access to the restaurant from 3rd St. and alleviating some of the access issues. The at-grade station will require a more intensive construction effort than the track, and potentially cause increased noise, vibration, particulate matter, decreased view of the signage, and a general disinterest in the area due to construction.
China Bistro	Located at the corner of 2nd St. and Main St., China Bistro will be affected by construction of the track and at-grade station. According to the preliminary design and land acquisition studies, a portion of the pedestrian walkway will be impeded to construct the station, eliminating pedestrian access to the restaurant from 2nd St. for the duration of the track and station construction. The at-grade station will require a more intensive construction effort than the track, potentially causing increased noise, vibration, particulate matter, decreased view of the signage, and a general disinterest in the area due to construction.
Edison Bar	Located at the corner of 2nd St. and Main St., Edison Bar will be affected by construction of the LRT track and at-grade station. According to the preliminary design and land acquisition studies, a portion of the pedestrian walkway will be impeded to construct the station, eliminating pedestrian access to the restaurant from 2nd St. for the duration of the track and station construction. The main entrance to the bar is located in an alley between 2nd St. and 3rd St., alleviating some of the access issues on 2nd St. The at-grade station will require a more intensive construction effort than the track, causing increased noise, vibration, particulate matter, decreased view of the signage, and a general disinterest in the area due to construction.
Ground Worx Coffee	Located on Main St. between 2nd St. and 3rd St., Ground Worx Coffee will be affected by construction of the LRT track and at-grade station on 2nd St. According to the preliminary design and land acquisition studies, a portion of the pedestrian walkway on 2nd St. will be impeded to construct the station, eliminating pedestrian access to the coffee shop from 2nd St. for the duration of the track and station construction. Access to the coffee shop will be limited to 3rd St. The at-grade station will require a more intensive construction effort than the track, causing increased noise, vibration, particulate matter, decreased view of the signage, and a general disinterest in the area due to construction.
Cigars	Located at the corner of 2nd St. and Spring St., Cigars will be affected by construction of the LRT track and at-grade station. According to the preliminary design and land acquisition studies, a portion of the pedestrian walkway will be impeded to construct the station eliminating pedestrian access to the shop from 2nd St. for the duration of the track and station construction. The at-grade station will require a more intensive construction effort than the track, causing increased noise, vibration, particulate matter, decreased view of the signage, and a general disinterest in the area due to construction.
Kawada Hotel	Located at the corner of 2nd St. and Broadway, the Kawada hotel will be affected by track construction on 2nd St. Decreased access, noise, vibration, and dust will decrease the overall attractiveness of the hotel, making increased vacancy rates a likelihood.

Table 4-18 Businesses Potentially Affected During Period of Track Construction

Flower Street	
World Trade Center Parking	The World Trade Center parking lot, located near the corner of 3rd St. and Flower Streets, will have decreased access due to construction and possible street closure. The parking lot does have alternate access on Figueroa St., alleviating some of the impact.
Bank of America Plaza Parking	The Bank of America Plaza parking lot located near the corner of 3rd St. and Flower St. will experience decreased access due to construction and possible street closure. The parking lot does have alternate access from Bunker Hill, alleviating some of the impact.
400 S. Flower Parking	The parking lot located at 400 S. Flower St. will experience decreased access due to construction and possible street closure.
City National Plaza Parking	The City National Plaza parking lot located near the corner of 4th St. and Flower St. will experience decreased access due to construction and possible street closure.
Westin Bonaventure	The entrance to the Westin Bonaventure is located on Flower St. at the corner of 4th St. and Flower St. The track construction would decrease access to the hotel from Flower St., and construction impacts could decrease overall appeal of the hotel entrance from Flower St. The Hotel does have an entrance from Figueroa St., alleviating the severity of this impact.
Miseki Restaurant	The entrance to Miseki Restaurant is located on Flower St. near the corner of 4th St. and Flower St. The track construction would decrease access to restaurant from Flower St., and construction impacts could decrease overall appeal of the restaurant. The restaurant does have access from the Westin Bonaventure Hotel, alleviating the severity of this impact.
Suede	The entrance to Suede Restaurant is located on Flower St. near the corner of 4th St. and Flower St. The track construction would decrease access to the restaurant from Flower St., and construction impacts could decrease overall appeal of the restaurant. The restaurant does have access from the Westin Bonaventure Hotel, alleviating the severity of this impact.
City National Plaza Parking	The City National Plaza parking lot located near the corner of 4th St. and Flower St. will experience decreased access due to construction and possible street closure.
Westin Parking Entrance	The Westin Hotel parking lot located at the corner of 5th St. and Flower St. will experience decreased access due to construction and possible street closure. The parking lot does have alternate access on Figueroa St., alleviating some of the impact.
Standard Hotel Parking Entrance	The Standard Hotel parking lot located near the corner of 6th St. and Flower St. will experience decreased access due to construction and possible street closure.
Standard Hotel Entrance	The Standard Hotel Entrance located on Flower St. will be affected by the construction impacts; however the main entrance to the hotel is on 6th St.
Floyd's Barbershop	Floyd's Barbershop located on the ground floor of the Standard Hotel has an entrance on Flower St., which will be affected by construction; however, the barber shop can also be accessed from the hotel.
Pegasus	The Pegasus Apartments will be affected by street closures and construction in the area. Traffic disruptions and construction impacts would cause difficulties for the tenants of this building and could impact leasing activities.
Daily Grill	The entrance to the Daily Grill is located at the corner of Flower St. and 7th St. Street closure in this area would make accessing the restaurant difficult from Flower St.; however, patrons will be able to access the restaurant from 7th St.
Roosevelt Lofts	Access to the Roosevelt Lofts will be difficult due to street closure on Flower St. but the development can be accessed from Hope St. Depending on the technique used to construct the tunnel for the underground segment of the track in this area, the tenants of the Roosevelt could be impacted by increased noise, vibration, and dust. This could impact vacancy rates in the high-density residential development.
City National Plaza Valet Entrance	Access to the City National Plaza valet entrance will be limited during construction due to possible street closure.
City National Plaza	The proposed underground station location for this alternative will be located at the City National Bank branch on the ground floor of the City National Plaza building.
800 W. 6th Parking	Access to the 800 W. 6th St. parking lot will be limited during construction due to possible street closure.
Cathay Bank	Access to the Bank will be limited during construction due to possible street closure.

Table 4-18 Businesses Potentially Affected During Period of Track Construction

Flower Street	
Vieta Café	Access to the cafe will be limited during construction due to possible street closure.
Maria's Italian Kitchen	Access to the restaurant will be limited during construction due to possible street closure.
ABC Printing	Access to ABC printing will be limited during construction due to possible street closure.
Mail Box Etc.	Access to Mail Box Etc. will be limited during construction due to possible street closure.
PCS Select	Access to PCS Select will be limited during construction due to possible street closure.
Big Mamma's Pizza	Access to Big Mamma's Pizza will be limited during construction due to possible street closure.
Coffee Bean	Access to the Coffee Bean will be limited during construction due to possible street closure.
Wockano	Access to the Wockano restaurant will be limited during construction due to possible street closure.
800 Wilshire Parking	Access to the parking lot will be limited during construction due to possible street closure.
Pacific Res. Credit Union	Access to the credit union will be limited during construction due to possible street closure.

The economic impacts caused by the Underground Emphasis LRT Alternative will be limited to the station sites. For this evaluation it is assumed that a cut-and-cover technique will be used to construct the stations. This technique will generate temporary inconveniences such as increased noise, vibration, dust and particulate matter, decreased view of signage, limited or no access to business within close proximity of the station area and a general disinterest in the area when constructing the stations. Like the At-Grade Emphasis LRT Alternative, the Underground Emphasis LRT Alternative calls for the construction of a pedestrian overpass and automobile underpass, but the location would be at 1st and Alameda Streets. Construction of the overpass and underpass would necessitate additional pedestrian and roadway detours nearby. Although severe, these effects will be limited in duration and limited to the station sites, decreasing the overall effects of construction of this alternative.

If street closure is necessary to complete tunnel construction, all of the businesses mentioned in the previous section, except those located within the Civic Center area, will be negatively affected by decreased access. Table 4-19 below gives a detailed breakdown of the businesses within close proximity of the station sites.

4.14.3.3 Construction-Related Employment

Investment in transportation, including direct investment in the form of capital construction costs and operations cost, provides economic benefits in several basic ways, including the creation of jobs and investment or spending by suppliers whose goods and services are used in the project.

Table 4-19 Businesses within Close Proximity to Proposed Station Sites

	2nd Street
New Otani Hotel	The New Otani Hotel would be affected by station construction at the corner of 2nd St. and Los Angeles St. Although the hotel is not in the direct station construction area, the main entrance to the hotel lobby as well as the parking structure is located on Los Angeles St. and the noise, dust, and vibration, in the area due to construction could potentially impact the hotel's business.
Starbucks	The Starbucks would be affected by station construction at the corner of 2nd St. and Los Angeles St. Although the coffee shop is not in the direct station construction area, the entrance of the Starbucks is located on Los Angeles St. and the noise, dust, and vibration, in the area due to construction will impact business.
Azalea Restaurant	The Azalea Restaurant would be affected by station construction at the corner of 2nd St. and Los Angeles St. Although the restaurant is not in the direct station construction area, the entrance is located on Los Angeles St. and the noise, dust, and vibration, in the area due to construction will impact business.
	Flower Street
Westin Bonaventure	The entrance to the Westin Bonaventure is located on Flower St. at the corner of 4th St. and Flower St. Station construction would decrease access to the hotel from Flower St., and construction impacts could decrease overall appeal of the hotel entrance from Flower St. The hotel does have an entrance from Figueroa St., alleviating the severity of this impact.
Miseki Restaurant	The entrance to Miseki Restaurant is located on Flower St. near the corner of 4th St. and Flower St. Station construction would decrease access to restaurant from Flower St., and construction impacts could decrease overall appeal of the restaurant. The restaurant does have access from the Westin Bonaventure Hotel, alleviating the severity of this impact.
Suede	The entrance to Suede restaurant is located on Flower St. near the corner of 4th St. and Flower St. Station construction would decrease access to the restaurant from Flower St., and construction impacts could decrease overall appeal of the restaurant. The restaurant does have access from the Westin Bonaventure Hotel, alleviating the severity of this impact.
Citi Parking Entrance	The entrance to the Citi parking lot located near the corner of 5th St. and Flower St. will have decreased access due to construction and possible street closure.
Starbucks	Starbucks, located on the ground floor of the CitiBank Center, will be affected by both the track construction on Flower St. as well as the proposed underground station between 4th St. and 5th St. Starbucks is located within the station construction area, and will be affected by noise, vibration, and dust.
Citibank	The Citibank branch located on the ground floor of the CitiBank Center will be affected by both the track construction on Flower St. as well as the proposed underground station between 4th St. and 5th St. The bank is located within the station construction area and will be affected by noise, vibration, and dust.
Uptown Drug Store	Uptown Drug Store, located on the ground floor of the CitiBank Center, will be affected by the proposed underground station between 4th St. and 5th St. Uptown Drug Store is located within the station construction area and will be affected by noise, vibration, and dust.
California Computer Center	The California Computer Center, located on the ground floor of the CitiBank Center will be affected by the track construction on Flower St. as well as the proposed underground station between 4th St. and 5th St. Although the Computer Center is not located within the station construction area, it is in close proximity and might be affected by noise, vibration, and dust.

To quantify these effects, the American Public Transportation Association commissioned the *Public Transportation and The Nation's Economy* report in the year 2000. Using the multipliers identified in this report and the construction cost estimates for the proposed alternatives, the effects of the project on the regional economy were estimated. Table 4-20 summarizes the results of this analysis.

Table 4-20 Economic Effects of the Regional Connector on the Regional Economy

Economic Affects	At-Grade (Option A)	At-Grade (Option B)	Underground
Capital Cost/Job Creation	22,190 jobs	20,086 jobs	20,194 jobs
Operations Cost/Job Creation	969 jobs	969 jobs	114 jobs
Capital Cost/Sales (x 1,000)	$2,120.04	$1,919.04	$1,929.35
Operations Cost/Sales (x 1,000)	$54.40	$54.40	$6.40

The At-Grade Emphasis LRT Alternative Option A creates the greatest number of new jobs and generates the largest amount of sales due to construction within the PSA, approximately 10.4 percent more than Option B and 9.8 percent more than the Underground Emphasis LRT Alternative. Considering job creation and increase in sales due to operations costs, the impact of the At-Grade Emphasis Alternative is 7.5 times larger than that of the Underground Emphasis LRT Alternative. The true impact of these alternatives can be seen by combining the effects of both the Capital Cost and Operations Cost. The At-Grade Emphasis LRT Alternative Option A creates 23,159 jobs and 2.17 billion dollars in sales, approximately ten percent more than Option B, and 14 percent more than the Underground Emphasis LRT Alternative.

4.14.3.4 Construction Spending on the Regional Economy

Direct investment in capital construction costs also leads to investment from businesses in the area looking to take advantage of the increase in employment activity, and purchase of supplies and equipment. This investment is considered indirect investment. Both direct investment and indirect investment streams provide businesses revenue and personal income, and income spent throughout the economy supports other jobs and related spending referred to as induced impacts. Table 4-21 displays the effects of the Regional Connector on these forms of indirect investment.

Using the SCAG regional multiplier for transportation construction and capital construction costs for the project, the indirect economic impacts of the project were identified. The results of this analysis are summarized in Table 4-21.

As previously described, the direct investment made in Option A generates the largest indirect and induced investment and income in the PSA. The total impact of Option A is $520.1 million in investment and $277.5 million in income, 10.4 percent greater than Option B and 9.9 percent greater than the Underground Emphasis LRT Alternative.

Table 4-21 Indirect Effects of Regional Connector Direct Investment (in thousands of dollars)			
Alternatives	At-Grade (Option A)	At-Grade (Option B)	Underground
Indirect Investment	$213.42	$193.19	$194.23
Indirect Jobs	1193.78	1080.60	1086.40
Income from Indirect Investment	$95.18	$86.16	$86.62
Induced Investment	$307.09	$277.97	$279.47
Induced Jobs	2513.22	2274.94	2287.17
Induced Income	$182.32	$165.04	$165.92

4.15 Safety and Security

The purpose of this section is to characterize existing and future safety and security issues for passengers, pedestrians, motorists, and the surrounding community. This section will identify any potentially significant safety and security impacts that could occur due to transit improvements related to the project. Of concern is the potential for pedestrian and vehicular conflicts. Another aspect of this study is security, particularly whether the proposed alignment alternatives and related transit center would compromise the security of transit patrons or surrounding communities making them more susceptible to criminal activity.

4.15.1 Affected Environment

In this study, two potential routes – the At-Grade Emphasis LRT Alternative and the Underground Emphasis LRT Alternative - are analyzed for safety and security impacts. The PSA encompasses approximately two square miles of downtown Los Angeles and includes the communities of Little Tokyo, the Arts District, the Historic Core, the Toy District, Bunker Hill, the Financial District, the Jewelry District, and Civic Center. It extends from the Metro Blue Line terminus at 7th St. and Wilshire Blvd. in downtown Los Angeles to the vicinity of the Metro Gold Line Eastside Extension station at 1st and Alameda Streets.

The At-Grade Emphasis LRT Alternative assumes street running operations, which allows the operators of light rail vehicles to operate under existing traffic signals. Typically, crossing gates and railroad warning bells and lights are not warranted for street-running operations due to the low operating speeds of light rail vehicles and vehicular traffic. This aspect of the project has not been determined. The current concept is to extend dual track service from the Metro Gold Line at Temple St. using a "Y" track configuration across Alameda St. Auto traffic would be routed into a new underpass underneath the tracks, and pedestrians would use a new overpass to traverse the intersection. The tracks would extend to the west across Alameda St. and run along the south side of Temple St.

As trains continue west on Temple St. in a dual track configuration, the trackway will return to the center of Temple St. As the trackway arrives at Los Angeles St., the alignment splits into two single track alignments. One trackway would continue west to Main St. while the other trackway continues south on Los Angeles St. The alignments would run on the eastern side of both streets and a split station would be planned for each alignment just north of 1st St. The alignment then would continue south across 1st St. At 2nd St., the alignment on Los Angeles St. heads west where it then reconnects with the alignment on Main St. Both alignments would return to a dual track configuration and be located on the northern side of 2nd St., heading west until Spring St. At Spring St., the train would move to the southern side of 2nd St. as it continues west.

As the alignment continues west past Hill St., the tracks would run along the southern side of 2nd St. and enter into the existing 2nd St. tunnel. This alignment would then reduce the 2nd St. tunnel from four travel lanes to about two travel lanes. About half-way through the 2nd St. tunnel, the alignments would veer to the south punching through the tunnel wall. This would place the alignment in close proximity to Grand Ave. and a potential second station would be located in this vicinity.

Using the natural grade of the hillside, the alignment would then resurface just north of 3rd St. It would cross 3rd St. at-grade and continue south on Flower St. A third station is contemplated either at-grade or underground south of 3rd St. to just south of 5th St. Station opportunities at 3rd St. are at-grade (Option B) while stations just south of 5th St. (Option A) will need to be underground. The alignment then directly connects to the 7th St./Metro Center Station under Flower St. The Option A configuration will be 46 percent underground and 54 percent at-grade. The Option B configuration will be 38 percent underground and 62 percent at-grade.

The Underground Emphasis LRT Alternative would run entirely underground under Flower St. and 2nd St. until just beyond Central Ave., emerging to the surface before crossing Alameda St. and 1st St. at-grade and connecting to the existing station. Auto traffic would use a new underpass below the tracks at 1st St. and Alameda St. and pedestrians would cross the intersection using a new overpass. The Underground Emphasis LRT Alternative would be 94 percent underground and six percent at-grade with three underground stations.

4.15.1.1 Existing Conditions

The PSA is located in Los Angeles' dense central business district. As such, it routinely experiences high volumes of pedestrian, automobile, and track traffic. Traffic volumes in downtown Los Angeles vary considerably from block to block, and tend to be highest on streets that provide direct access to one of the nearby freeways. The busiest streets in the area include 3rd, Spring, Alameda, and Figueroa Streets. Single direction traffic volumes along some blocks are in excess of 30,000 cars per day and 3,000 during the peak hour, as is the case on much of Figueroa St. One-way configuration on some streets provides some additional capacity and signal timing efficiency, but not enough to eliminate congestion during peak hours. Truck traffic frequently uses the streets in the eastern portion of the PSA to access the industrial and warehouse districts in that area. The trucks often have difficulty navigating the narrow streets in the area, especially when turning movements are necessary, thus creating additional traffic hazards.

Emergency vehicles frequently traverse the PSA, creating a need for streets to be clear and accessible for emergency vehicle movements. Emergency vehicle trips typically originate from one of the fire or police stations in the area. The PSA contains one fire station, at 1st and Figueroa Streets, and there is another near the PSA just southwest of 7th and San Pedro Streets. There are also two police stations in the PSA: one near 6th and Los Angeles Streets, and the central police headquarters at Parker Center, just north of 1st St. between Main and Los Angeles Streets. It should be noted that the Parker Center facility will be demolished and the police headquarters relocated to 1st and Main Streets once the new building is completed. Given the density of activities and floor space in the PSA, and the concentration of emergency facilities in the Civic Center and industrial district, Regional Connector stations and right-of-way will be designed to maintain emergency vehicle response times and not impede access to stations or the surrounding streets.

4.15.2 Evaluation Methodology

Safety relates to 1) protection of people from accidental occurrences that could injure or harm them and 2) protection of property from such accidents. For this study it includes safety of motorists and pedestrians in locations where they would cross the light rail vehicles rights-of-way, enter the stations, or encounter other transit facilities.

Security relates to 1) protection of people from intentional acts that could injure or harm them and 2) protection of property from such deliberate acts. Topics discussed include crime prevention, law enforcement, and protection against terrorism.

Pedestrian and motorist safety along the alternatives are evaluated on a qualitative level based on the experience of similar LRT systems with similar alignment types such as the Metro Blue Line, Portland MAX Line, and Hudson-Bergen Weehawken Line. For the purpose of this study it is considered that a significant safety or security impact would occur if:

- Operation of the project would result in motor vehicle accident rates that would be greater than current motor vehicle accident rates;
- Operation of the project would introduce a new hazard without adequate safety measures designed into the project to prevent accidents;
- Operation of the project would introduce a hazardous situation that would encourage people to take unsafe actions, such as providing a circuitous route for pedestrians, thereby encouraging them to jaywalk, or violate traffic signals and controls;
- The project would create a condition that facilitates criminal activity; or
- The project would create an opportunity for terrorism with a moderate to high likelihood that such an act would be perpetrated.

4.15.3 Environmental Issues

4.15.3.1 Pedestrian Safety

The introduction of a new LRT alignment will have various safety impacts. Pedestrian traffic is at a relatively high level in the PSA. For the most part, pedestrian density is most concentrated in the vicinity of the commercial and governmental facilities in the downtown segment.

At-Grade Emphasis LRT Alternative

For the at-grade alignment the following potential significant safety hazards are present:

- Passenger safety at station locations: The at-grade location of stations may introduce a new safety hazard for pedestrians if the stations do not adequately account for pedestrian traffic and movement. This hazard would be present irrespective of the frequency of occurrence. The occurrence of this hazard may be attributed to the inherent purpose of a station, where large numbers of people congregate and cross the trackway to access or depart. Pedestrian traffic stations could thus create a potential hazard of collision between pedestrians and light rail vehicles (LRVs). Anticipated passenger loads and pedestrian counts will be used to determine the most appropriate pedestrian treatments to control and channel pedestrian/passenger movements. Additionally, stations will be appropriately sized to accommodate the anticipated number of passengers.

- Pedestrian safety near the trackway: The addition of the LRV themselves would be the primary new safety hazard for pedestrian traffic. The speed of the vehicles would be similar to or slower than the adjacent automobile traffic. The LRV would be electrically powered and, therefore, would be quieter than most of the automobile traffic and may not be easily heard. This hazard includes crossings at intersections where pedestrians cross over the light rail tracks and intrusion on the right-of-way (trespassing). Channelization techniques would be used to direct pedestrians to designated pedestrians crossings and to minimize trespass. Pedestrian conflicts with trains would be minimized at the intersection of Temple St. and Alameda St. due to the construction of a new pedestrian overpass. LRVs are equipped with audible warning bells and horns which will be used, as appropriate, to alert pedestrians of the approach of a train.

- Pedestrian safety at designated grade crossings: Pedestrian safety at designated grade crossings is a key factor to be considered in the design of LRT alignments. A number of designated pedestrian grade crossings would result from the Regional Connector. A vast majority, if not all, of these pedestrian crossings would be located at motorist crossings of the tracks. A potential safety hazard would exist if pedestrians attempt to cross the tracks at locations other than designated pedestrian crossings because of the distance between designated grade crossings. In addition, potential riders who see a train approaching may cross streets and the tracks illegally in order to avoid missing the train in much the same way as these violations occur at existing bus stops and LRT stations. Also, departing passengers may be tempted to take shortcuts from station areas to access nearby destinations instead of crossing at the designated crossings. Pedestrian traffic control and channelization techniques would be used to control pedestrian movements at intersections and encourage the use of pedestrian crossings.

Underground Emphasis LRT Alternative

There is no significant pedestrian safety issue for the Underground Emphasis LRT Alternative. This alignment would be 94 percent underground with all underground stations and only six percent of the alignment at-grade. The only at-grade crossing, at 1st St. and Alameda St., will have a pedestrian overpass that eliminates pedestrian-train conflicts. However, station designs that do not adequately account for passenger loads may cause overcrowding. Awaiting passengers may be injured by an approaching train if they do not heed warnings to stand clear of the platform edge as the train enters the station.

4.15.3.2 Motorist Safety

At-Grade Emphasis LRT Alternative

In the downtown area, the LRV would operate within the existing streets at street level. The at-grade right-of-way will be semi-exclusive as auto traffic will be generally prohibited from entering the LRT right-of-way; in general, the rail traffic would be separated from automobile traffic by curbs or other raised delineators. The only place that automobile traffic would be permitted in the right-of-way would be at street crossings. The LRV would be required to observe all traffic laws just as a car or bus would, including stopping for red lights. The LRV would also be required to yield to emergency vehicles at intersections.

Because the LRV would share the same right-of-way with automobiles and because it would be possible for automobiles to stray into the semi-exclusive rail right-of-way in other locations (by going over the curb), accidents between the LRV and motor vehicles would be possible. However, studies have shown that LRV collisions with motor vehicles at non-intersection locations are extremely rare.

At intersections, the single most frequent cause for motor vehicle/light rail accidents is when motorists turn left in front of a light rail vehicle (with the light rail vehicle traveling in the same direction). In order to reduce this risk it is assumed that a left turn from the 2nd St. or from the side streets to 2nd St. would not be permitted when LRVs are approaching the intersection from either direction.

Other accidents between LRVs and motorists stem from motorists disobeying red light signals. The LRV operators would have audible warning devices available to alert unwary drivers to the risk of accidents. Additionally, active “Train Approaching” signs may be used to further alert drivers of the approach of a train. Although all such accidents may not be totally prevented, studies have found active “Train Approaching” signs to greatly reduce the likelihood of a collision. Traffic signal phasing (all-red phase and lagging left turns) has also proven to be effective in reducing LRV and motor vehicle collisions. Train and automobile traffic would be grade-separated at the intersection of Temple and

Alameda Streets, thus providing increased safety. Furthermore the low operating speeds of the LRV and motor vehicles reduces the possibility of serious injury or damage.

Underground Emphasis LRT Alternative

There would be fewer adverse motorist safety issues for the Underground Emphasis LRT Alternative, and they would be concentrated around one intersection: 1st and Alameda Streets. This is the only grade crossing on the alignment, which would have all of its stations and 94 percent of its tracks underground. In order to reduce conflicts between train movement, automobile traffic, and pedestrian crossings at 1st and Alameda Streets, a new overhead pedestrian bridge would be constructed and automobile traffic on Alameda St. would be routed into a new underpass.

4.15.3.3 Security

This evaluation was conducted by using available crime statistics for the City of Los Angeles and reviewing other transit systems in the United States that are similar to these alternatives.

A Threat and Vulnerability Analysis (TVA), recommended by the Federal Transit Administration, will be conducted for whichever alternative is selected. This process will give a more refined and detailed study/analysis of the security environment, identifying domestic and international security threats, potential vulnerabilities/shortcomings in the transit system, and then making recommendations to reduce these vulnerabilities to acceptable levels.

The process for determining vulnerabilities begins with the identification and grouping of transit agency assets based on the criticality to transit operations, their attractiveness as targets for security breaches or terrorist attack, and their vulnerability to the impacts of a successful breach or act of terrorism. Critical assets are defined as the specific assets most critical to the Metro's ability to provide transit services and to protect people. Threat types are then identified using existing crime statistics for the area as well as threat information received from local state and federal law enforcement sources. Each critical asset is then assessed for its vulnerability of each potential threat, coupled with the frequency probability of each threat actually occurring. Severity of consequences for each threat is then given a rating from catastrophic to negligible. This information is then put into a criticality matrix which organizes the resulting consequences into categories of high, serious, and low. The matrix helps to prioritize consequences and to focus available resources on the most serious threats requiring resolution while effectively managing the available resources.

The affected environment is the security on the rail system, both at the stations and in the light rail vehicles. Passengers, transit employees, vendors, contractors and the general public who come in contact with the system, as well as the transit property and equipment, would be susceptible to the same crimes as experienced in the surrounding neighborhood, by both build alternatives.

The Underground Emphasis LRT Alternative; however, does present a different set of conditions than the At-Grade Emphasis LRT Alternative.

- Activity in the underground station and tunnel would be out of the general public view, and less observable by routine neighborhood security/police patrols in the general area, as compared to being at grade level.
- Tunnels offer non-domiciled persons refuge from the elements.
- Staircases and passageways may create opportunities for criminal activity.
- Tunnels offer a greater consequence to train service should trespassers enter; clearance and concealment issues may arise.

Employing closed-circuit television cameras, intrusion detection systems and/or dedicated security patrols mitigates these potential vulnerabilities. Additionally, the presence of transit workers in underground stations further dissuades persons from committing offenses. Several underground systems in the United States have successfully employed security technology and patrol methods to mitigate crime conditions in below-grade systems, resulting in fewer offenses committed in the transit system than in the adjacent neighborhoods they traverse.

The Underground Emphasis LRT Alternative offers a few unique security advantages not present with grade level systems:

- One distinct advantage is service operations during civil unrest, demonstrations and other public events that may occur, and historically have occurred, in the specific area for this project. Major public events, whether they are legal or unauthorized, will have a much greater impact on grade level light rail operations than on the alternative below-grade. Protesters, demonstrators and other unauthorized gatherings occur on street level, and can easily impede service, many times intentionally, for the added media exposure to their cause. This condition is highly improbable for below-grade service, as experienced in many cities with tunnel operations. Additionally, civil unrest or legal demonstrations and parades pose little risk of damage to underground systems and equipment as compared to the light rail equipment and station facilities at grade level.

Another distinct security advantage the Underground Emphasis LRT Alternative has over the At-Grade Emphasis LRT Alternative is the ability of closing and maintaining control of the system. All activity is easily controlled when there are limited access points to a system.

4.16 Construction Impacts

This section describes the expected construction methods and existing construction conditions. The conditions described in this section would only occur during construction and would be temporary and short-term.

4.16.1 Affected Environment

4.16.1.1 Construction Methods

Construction of either of the two build alternatives would employ conventional construction techniques and equipment typically used in the Southern California region for LRT projects. Major project elements include construction of guideway and trackwork, underground stations and tunnels, at-grade station platforms, installation of specialty system work, such as traction power, communications, and signaling and an underground guideway. The equipment that would be used during construction would include rail-mounted equipment, graders, dozers, cranes, cement-mixers, flat-bed trucks, and dump trucks to haul dirt and spoil materials, and tunnel boring machines.

Construction of either of the two build alternatives would be accomplished in approximately three to four years. The various work activities to be performed over the estimated construction period would include the following facility and system items:

- Demolition of roadways along alignment
- Demolition of existing buildings (if necessary)
- Construction of retaining walls for approaches to portal structures and shallow trenches
- Construction of tunnels, portal structures, cut and cover tunnel sections, and underground stations
- Relocation, modification, or protection in place of utilities in conflict or impacted by excavations for street-level trackwork, tunnels, bridge, and station construction
- Construction of at-grade station platforms using typical construction methods
- Construction of underground duct banks for electrical power feeds and for signaling/communications systems
- Construction of surface drainage systems and sub-drainage
- Construction of traction power substations with electrical power feeds
- Construction of overhead catenary pole foundations or alternative power distribution support systems and street lighting
- Installation of traffic signals and train control improvements
- Installation of overhead catenary wires, support brackets, feeder cables, and other components or alternative power distribution systems

- Installation of trackwork, including preparation of track bed and slab, rail, fasteners, and infill concrete in street-level area, and with direct fixation fasteners on the aerial guideways
- Construction of station finishes, such as canopies, fare vending equipment, station furniture, ramps, landscaping, public art, and all other amenities necessary for a functional station
- Conduction of subsystem and system testing
- Conduction of simulated operation test runs and final commissioning of the system
- Removal of all equipment, landscaping and structures along the alignment
- Relocation of any structures or landscaping from the right-of-way as required by Metro

4.16.1.2 General Construction Scenario

Surface streets in the downtown Los Angeles area would be impacted for a period ranging from 12 to 36 months. Construction would begin simultaneously at several locations along the alignment to accommodate activities requiring lengthy constructions times, such as the tunnels and underground stations, and to complete the various segments simultaneously.

Many contractors specializing in various methods of construction would be working on the proposed project for the overall length of the construction period. The physical construction would involve the application of the most suitable method for each segment of the proposed project. A representative sequence of construction is shown in Table 4-22. Many of the project elements would be constructed simultaneously for an overall duration of three years.

4.16.1.3 Regulatory Framework

Construction of the project would follow all applicable local, state and federal laws for building and safety. The Metro Fire Life Safety Committee, composed of members from the City and County of Los Angeles Fire Departments and Metro specialists, would approve all construction methods. Working hours would be varied to meet special circumstances. Standard construction methods would be used for traffic, noise, vibration and dust control, consistent with all applicable laws, and as described in the following paragraphs. For several months before passenger service begins, pre-revenue operations would be conducted to familiarize train operators with the new alignments and emergency operating procedures.

4.16.1.4 Existing Conditions

The proposed project would be constructed in several segments and would involve concurrent construction at each end. Each segment of the proposed project has its own set of construction constraints. The following subsections address the existing setting and some of the existing construction constraints.

Table 4-22 Typical Sequence of Construction Activities		
Activity	Tasks	Average Time Required (months)*
Site Survey	Locate utilities, establish right-of-way and project control points and centerlines, and relocate survey monuments	4 to 6
Site Preparation	Relocate utilities and clear and grub right-of-way (demolition), widen streets, establish detours and haul routes, erect safety devices and mobilize special construction equipment, prepare construction equipment yards and stockpile materials	12 to 18
Heavy Construction	Construct tunnels, street guideways including trackbed, subway stations and portals, trenches, piles, and disposal of excess material. Refinish roadways and sidewalks.	24 to 30
Medium Construction	Lay track, construct surface stations, drainage, backfill and pave streets.	12 to 24
Light Construction	Finish work, install all systems elements (electrical, signals, and communication), street lighting where applicable, landscaping, signing and striping, close detours, clean-up and test system.	4 to 6
Pre-Revenue Service	Test communications, signaling, and ventilation systems, train operators and maintenance personnel	3 to 6

* Some of these activities would be completed simultaneously.
Source: TAHA, 2007

7th St./Metro Center Station Area (Southern Terminus)

The southern terminus of the proposed project would be located at the existing 7th St./Metro Center Station that is currently served by the Metro Blue, Red, and Purple Lines and, by project build-out, would also be serviced by the Metro Expo Line. The proposed project would be built on the first underground level, where the Metro Blue Line currently operates. The proposed project would be an extension of the tracks currently in use by the Metro Blue Line and the tracks under construction for the Metro Expo Line. For the proposed project, the tracks would utilize the same Metro Blue Line alignment underneath Flower St. The Metro Red and Metro Purple Lines operate on a level below and perpendicular to the Metro Blue Line alignment.

Flower St. to 3rd St.

Flower St. is a three- to four-lane, 80- to 100-foot-wide roadway running north-south in downtown Los Angeles. From 7th to 3rd Streets, Flower St. is one-way in the southern direction with a Bus-Only lane in the opposite direction from 4th St. to 3rd St. Flower St. is a fully urbanized street with little to no building setbacks. Fourth St. is grade-separated from Flower St. There are mainly commercial sites along Flower St., including the Bonaventure Hotel, the Central Library, Wells Fargo Plaza, and National Bank Plaza.

3rd St. to 2nd St. Tunnel

From Flower St., the proposed alignments would travel in or beneath the existing 2nd St. tunnel. The area around 3rd and 2nd Streets from Flower St. to Hill St. (where the 2nd St. tunnel daylights) is comprised mainly of residential towers, with cultural venues, such as the Disney Hall and the Music Center, in the vicinity. The 2nd St. tunnel is bi-directional, connecting Hill and Figueroa Streets.

2nd St. to Little Tokyo/Arts District Station

2nd St. from Hill to Alameda Streets is a two-way street with one traveling lane in each direction, approximately 60 to 65 feet wide. Parking is permitted on one or both sides of 2nd St., depending on the neighborhood. There are several commercial, residential, and civic properties along 2nd St. The Los Angeles Police Department (LAPD) headquarters currently under construction and the California Department of Transportation (Caltrans) building are located adjacent to 2nd St. 2nd St. is the main street crossing Little Tokyo village, which is a cluster of restaurants and retail shops that is a visitor destination. From Central Ave. to Alameda St., 2nd St. is characterized by a commercial center and parking lots.

Main St. and Los Angeles St. to Temple St.

Main St. from 2nd to Temple Streets is characterized mainly by civic buildings, including the LAPD headquarters currently under construction, the Caltrans building, City Hall and City Hall East, court buildings, and the Los Angeles Mall. Main St. is a one-way street in the northern direction, approximately 80 feet wide. Los Angeles St. is characterized by commercial properties. Los Angeles St. is a two-way street with two to three lanes in each direction, approximately 80 feet wide. Parking is allowed on either side of the street.

Temple St. to Little Tokyo/Arts District Station

Temple St. from Main to Alameda Streets is a two-way street with two traveling lanes in each direction, approximately 80 feet wide. Temple St. terminates at Alameda St and is characterized by parking lots, large skyscrapers on the northern side, civic buildings and museums (Japanese American National Museum, The Geffen Contemporary at the Museum of Contemporary Art [MOCA]).

4.16.2 Evaluation Methodology

The construction of the proposed project would employ conventional construction methods, techniques, and equipment and would conform to accepted industry specifications and standards. Major elements of the proposed project include the construction of guideways and trackwork, underground stations and tunnels, at-grade station platforms, and below-grade separations. The analyses in this section evaluates how construction of the proposed project would affect traffic, parking, equity and environmental justice considerations, land use/neighborhoods, land acquisition/ displacement and relocation, visual quality, air quality, noise and vibration, geology, soils, and seismicity, water resources, biological resources, energy resources, safety and security, community facilities, hazards, and cultural resources.

4.16.3 Environmental Issues

This section discusses the primary environmental issues related to construction for all the environmental topics to be covered in the EIR/EIS. Each topic will be covered in more detail within specific sections of the EIR/EIS.

At-Grade Emphasis LRT and Underground Emphasis LRT Alternatives

- Construction Staging: The location of storage of construction materials and equipment, and spoils staging associated with the construction of the proposed project, at-grade or underground, can in itself be a significant impact when space is limited. Downtown Los Angeles is a fully urbanized, mostly built out area that offers very few locations for construction staging and debris relocation for any significant period of time. Impacts associated with construction staging include impacts to traffic and existing transit circulation either by the location of the staging areas or by trucks and equipment accessing these areas, proximity to sensitive receptors, both in the daytime and nighttime, amount of storage materials and/or equipment, and length of use of staging area.

- Air Quality: Construction air quality impacts tend to be short-term and are associated mainly with fugitive dust. The alignment and construction staging areas could concentrate particulate matter during the construction period and have potential impacts.

- Transportation and Traffic: Traffic and transportation impacts could be short-term (haul routes, traffic detours, street closures) or permanent (parking displacement, transit re-routing). Construction vehicles could temporarily impede traffic mobility in areas of construction. Traffic detours and truck routes would be required during construction.

- Emergency Response Times/Fire and Police Services. Potential impacts to response times or access pathways for emergency vehicles could result from street closures, detours, or from the presence of construction trucks and other equipment in the downtown area.

Underground Emphasis LRT Alternative

- Vibration: The use of boring equipment or other equipment to shore-up the tunnel and associated structures could produce vibration impacts not associated with at-grade construction.

- Soil Stability and Subsidence: Tunneling technology has improved over time and new innovations are making this type of work safer. However, the proposed project would be tunneling under a heavily urbanized area with many historic and iconic buildings in downtown Los Angeles that tend to have basements outside their parcel boundaries (i.e. basements extending under adjacent sidewalks).

- Safety and Emergency Response. Although tunneling has improved over the years, potential impairment of emergency services remains a significant issue.

- Historic Resources. Construction could impact historic or iconic structures in downtown Los Angeles, such as the Central Library, the Bonaventure Hotel, and National Bank Plaza. Additionally, there is a possibility of encountering archaeological and paleontological resources, as well as human remains.

4.17 Growth-Inducing Impacts

The following sections describe current conditions and possible growth-inducing impacts that the Regional Connector may have, not only to the PSA, but the region as a whole.

4.17.1 Affected Environment

4.17.1.1 Regulatory Framework

Guidance for the preparation of growth-inducing impacts comes from both federal and State regulations. The regulations established by the Council on Environmental Quality (CEQ), regarding the implementation of the National Environmental Policy Act (NEPA), require the evaluation of all potential environmental consequences of all proposed federal activities and programs. This provision includes a requirement to examine the indirect consequences, or secondary impacts, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future (40 CFR 1508.8). Secondary impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

The California Environmental Quality Act (CEQA) also requires the analysis of a project's potential to induce growth. CEQA Guidelines Section 15126.2(d) require that environmental documents "discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." Growth-inducing impacts also include removing obstacles to growth and may potentially include changes in the amount and distribution of growth.

Regional Growth Management Plans: The primary regional growth management plans are developed by the Southern California Association of Governments (SCAG), including the 2008 SCAG Regional Comprehensive Plan and Guide (RCPG). The RCPG describes an action plan for the implementation of short-term strategies and strategic, long-term initiatives and guiding principles for sustaining a livable region. The RCPG focuses on specific areas of planning or resource management, including land use and housing, open space and habitat, water, energy, air quality, solid waste, transportation, security and emergency preparedness, and the economy. The Growth Management chapter of the RCPG addresses issues related to growth and land use in the SCAG region and describes guiding principles for development that support the overall goals of the RCPG.

Compass Growth Vision Principles for Sustaining a Livable Region: SCAG initiated a comprehensive growth visioning process called the Southern California Compass. The Compass process seeks to accommodate growth while maintaining mobility, livability, prosperity, and sustainability goals for residents in the SCAG region.

4.17.1.2 Existing Conditions

The PSA is located in the downtown area of the City of Los Angeles and includes several communities within the City of Los Angeles, including the Financial District, Bunker Hill, Civic Center, Little Tokyo, Fashion District, Toy District, Historic Core, Jewelry District, and Central City East. SCAG is the federally designated Metropolitan Planning Organization

(MPO) for six counties in Southern California (Los Angeles, Orange, Riverside, San Bernardino, Ventura, and Imperial). SCAG's mission is to develop long-range regional plans and strategies that provide for efficient movement of people, goods, and information; enhance economic growth and international trade; and improve the quality of life for the Southern California region. SCAG is divided into 14 subregions. The PSA is in the City of Los Angeles Council of Governments (CLACG) subregion, which in addition to the City of Los Angeles also includes the City of San Fernando and portions of the unincorporated areas of Los Angeles County.

Regional Population and Housing

As illustrated in Table 4-23, the SCAG region has an existing population of approximately 18.9 million people. For the 1990 to 2008 time period, Los Angeles County contributed the largest share of total growth for the region, at 37 percent, with the addition of 1,588,570 residents. However, in terms of the relative growth rate, Los Angeles County was the slowest growing county in the SCAG region, with an annual average growth rate of approximately one percent.

Table 4-24 demonstrates that Los Angeles County has the largest number of households (3,299,573 households) in the six-county SCAG region. The total households in Los Angeles County alone comprise 56 percent of the total SCAG region.

Table 4-23 Regional Population Growth, 1990 – 2008

County	1990 Total Population	2000 Total Population	2008 Population	1990-2008 Population Change	1990-2008 Annual Average % Change
Los Angeles	8,863,164	9,519,338	10,451,734	1,588,570	0.99%
Imperial	109,303	142,361	187,001	77,698	3.90%
Orange	2,410,556	2,846,289	3,212,949	802,393	1.85%
Riverside	1,170,413	1,545,387	2,118,178	947,765	4.50%
San Bernardino	1,418,380	1,709,434	2,097,756	679,376	2.66%
Ventura	669,016	753,197	841,985	172,969	1.44%
SCAG Region	14,640,832	16,516,006	18,909,603	4,268,771	1.62%

Source: Southern California Association of Governments, 2008 population growth estimates

Regional Employment

As demonstrated in Table 4-25, total employment in the SCAG region, including self-employment, is estimated to have increased by nearly 1.3 million jobs between 2000 and 2008.

4.17.1.3 Regional Growth Projections

As shown in Table 4-26, the SCAG region is expected to have a population of approximately 23 million people and approximately 10.5 million jobs by 2030. Along with the population and job growth, the region is expected to experience an increase from approximately 4.1 to 7.6 million households.

Table 4-24 Households in the SCAG Region, 2008	
County	Number of Households
Los Angeles	3,299,573
Imperial	52,323
Orange	1,015,906
Riverside	677,256
San Bernardino	612,859
Ventura	269,066
SCAG Region	5,926,983

Source: Southern California Association of Governments, 2008 Household estimates

Table 4-25 Regional Employment Growth, 2000-2008				
County	2000 Total Employment	2008 Employment	2000-2008 Employment Change	2000-2008 Annual Average % Change
Los Angeles	4,079,800	4,490,248	410,448	1.26%
Imperial	50,400	67,130	16,730	4.15%
Orange	1,396,500	1,699,475	302,975	2.71%
Riverside/San Bernardino	1,010,100	1,498,958	488,858	6.05%
Ventura	294,300	362,209	67,909	2.88%
SCAG Region	6,831,100	8,118,020	1,286,920	2.35%

Source: State of California, Employment Development Department, Labor Market Information Division, Industry Employment and Labor Force by Annual Average, March 2006 Benchmark, May 18, 2007; SCAG, 2008 Population Growth Estimates

Table 4-26 Regional Population, Households, and Employment, 2030			
County	Population	Households	Employment
Los Angeles	12,221,799	4,120,270	5,660,992
Imperial	269,874	83,735	111,072
Orange	3,552,742	1,098,474	1,921,806
Riverside	3,143,468	1,127,780	1,188,976
San Bernardino	2,713,149	897,739	1,178,890
Ventura	989,765	332,109	465,466
SCAG Region	22,890,797	7,660,107	10,527,202

Source: Southern California Association of Governments, 2004 RTP

4.17.1.4 PSA Growth Projections

Table 4-27 shows the population, housing, and employment projections that are estimated for the PSA, the City of Los Angeles, and the CLACG subregion. For population, between 2005 and 2030, the City of Los Angeles and the CLACG subregion are expected to have a slightly higher annual average population growth rates (0.4 percent) than the PSA (0.3 percent). However, for housing, during the same time period, the PSA is expected to have a higher average annual growth in the number of households (1.2 percent) compared to the City of Los Angeles and the CLACG subregions (both 1.0 percent).

Table 4-27 Population, Housing, and Employment Growth for the Project Study Area, City of Los Angeles and CLACG Subregion, 2005-2030

Element	2005	2030	2005-2030 Population Change	2005-2030 Annual Average % Change
Population				
PSA /a/	77,823	83,492	5,669	0.3%
City of Los Angeles	3,950,347	4,309,625	359,278	0.4%
CLACG subregion	4,032,474	4,413,425	380,951	0.4%
Housing				
PSA/a/	24,049	31,244	7,195	1.2%
City of Los Angeles	1,311,134	1,637,475	326,341	1.0%
CLACG subregion	1,330,724	1,663,002	332,278	1.0%
Employment				
PSA /a/	288,990	314,936	25,946	0.4%
City of Los Angeles	1,800,766	2,223,338	422,572	0.9%
CLACG subregion	1,833,577	2,265,209	431,632	0.9%

/a/ Project Study Area is comprised of the following Census block groups: 1976, 2060.20, 2060.30, 2060.40, 2060.50, 2062, 2063, 2071, 2073, 2074, 2075, 2077.10, 2079, 2080, 2083, 2092, 2093, 2100.10, 2260
Source: SCAG 2004 Regional Transportation Plan

Table 4-27 shows projected employment growth for the PSA, the City of Los Angeles, and CLAGC subregion. It is estimated that 25,946 new jobs would be created in the PSA from 2005 to 2030, with an annual average growth rate of 0.4 percent. This rate is lower than the average annual rate for the City of Los Angeles and the CLAGC subregion over the same time period (both 0.9 percent).

4.17.2 Evaluation Methodology

Federal Transit Administration (FTA) guidelines require that regional growth projections be created by the MPO, assuming future year conditions. As mentioned in Section 4.17.1.2, SCAG is the MPO for the PSA. In order to evaluate growth-inducing impacts, the SCAG 2004 Regional Transportation Plan will be used. The RTP examines current and future transportation plans, population and employment growth, and land use data for the SCAG region to develop projections through the year 2030. The 2004 SCAG RTP serves as the basis for this analysis of growth-inducing impacts.

4.17.3 Environmental Issues

Population and Housing Growth

Fundamentally, mass transit projects do not tend to induce growth directly, except at the station level where there is opportunity for transit-oriented development (TOD). The PSA serves as a hub for most Metro buses, Metro Rail, and for bus and rail services provided by other entities, such as the Foothill Transportation Authority, the Orange County Transportation Authority, and the Montebello Bus Line. Also, the downtown Los Angeles area has recently experienced a significant rise in high-density residential development and, consequently, an increase in the number of residents in the area. Therefore, due to the high amount of transit and the high density, both residential and commercial, downtown Los Angeles already functions as a TOD. Implementation of the Regional Connector would not directly induce growth in the downtown Los Angeles area. However, it would facilitate certain developments, such as the Bunker Hill Design for Development and the Grand Avenue Project, reach their goals of more transit-oriented development.

At a regional level, the increased connectivity between the San Gabriel Valley and the Westside or Long Beach areas would not potentially induce population or housing growth. Most of these areas are already fully urbanized so it is unlikely that the increased regional connectivity would induce housing construction.

Employment Growth

The PSA is already a center of employment for the Los Angeles region. The implementation of the Regional Connector would create employment opportunities in the downtown Los Angeles area, particularly in the construction phase. However, these construction jobs would be temporary. Similar to population and housing growth, the proposed project would not directly induce employment growth, but it could serve to facilitate the movement of employees anticipated by projects that are already planned, such as the Grand Avenue Project in Bunker Hill.

The proposed project would increase connectivity by reducing the need to make several transfers from one destination to another. While this alone could change some of the perceived employment opportunities for some individuals, it is unlikely that employment growth at any of the termini would occur.

4.18 Environmental Justice

This section describes the existing conditions related to environmental justice indicators within the PSA. A discussion of the Federal and State environmental justice regulations is provided along with a demographic profile of the PSA and proposed stations areas. Ultimately, the potential impacts on minority and low-income communities will be assessed to determine if there are potential impacts that would be disproportionately borne by minority or low-income communities.

4.18.1 Affected Environment

4.18.1.1 Regulatory Framework

On February 4, 1994, Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was signed into law. Executive Order 12898 requires federal agencies to achieve environmental justice by “identifying and addressing social and economic effects of their programs, policies, and activities on minority populations and low-income populations in the United States.”7 As Executive Order 12898 applies to the United States Environmental Protection Agency (EPA), environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or policies. Meaningful involvement means that (1) potentially affected community residents have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health; (2) the public's contribution can influence the regulatory agency's decision; (3) the concerns of all participants will be considered in the decision making process; and (4) the decision makers shall seek out and facilitate the involvement of those potentially affected.

In response to Executive Order 12898, the U.S. Department of Transportation (USDOT) issued an Order to Address Environmental Justice in Minority Populations and Low-Income Populations. This order, issued in April 1995, sets guidelines to ensure that all federally-funded transportation-related programs, policies, or activities that have the potential to adversely affect human health or the environment involve a planning and programming process that explicitly considers the effects on minority populations and low-income populations.

Following the lead of the environmental justice movement at the federal level, a series of laws beginning in 1999 have been enacted in California to implement environmental justice. The Governor's Office of Planning and Research (OPR) has been designated the "coordinating agency in state government for environmental justice programs." As part of its new environmental justice coordinator role, OPR must now incorporate environmental justice considerations into local government planning decisions. California law requires OPR to coordinate with federal agencies regarding environmental justice based on Executive Order 12898.

[7] Federal Highway Administration, http://fhwa.dot.gov, accessed February 1, 2008.

4.18.1.2 Existing Conditions - Socioeconomic Characteristics

Los Angeles County

As of the 2000 U.S. Census, 9,519,338 persons lived in Los Angeles County. Approximately 69 percent of the Los Angeles County population is characterized as minority. The largest minority population is Hispanic, making up approximately 45 percent of the total population. According to the 2000 U.S. Census, approximately 18 percent of Los Angeles County is characterized as low-income.

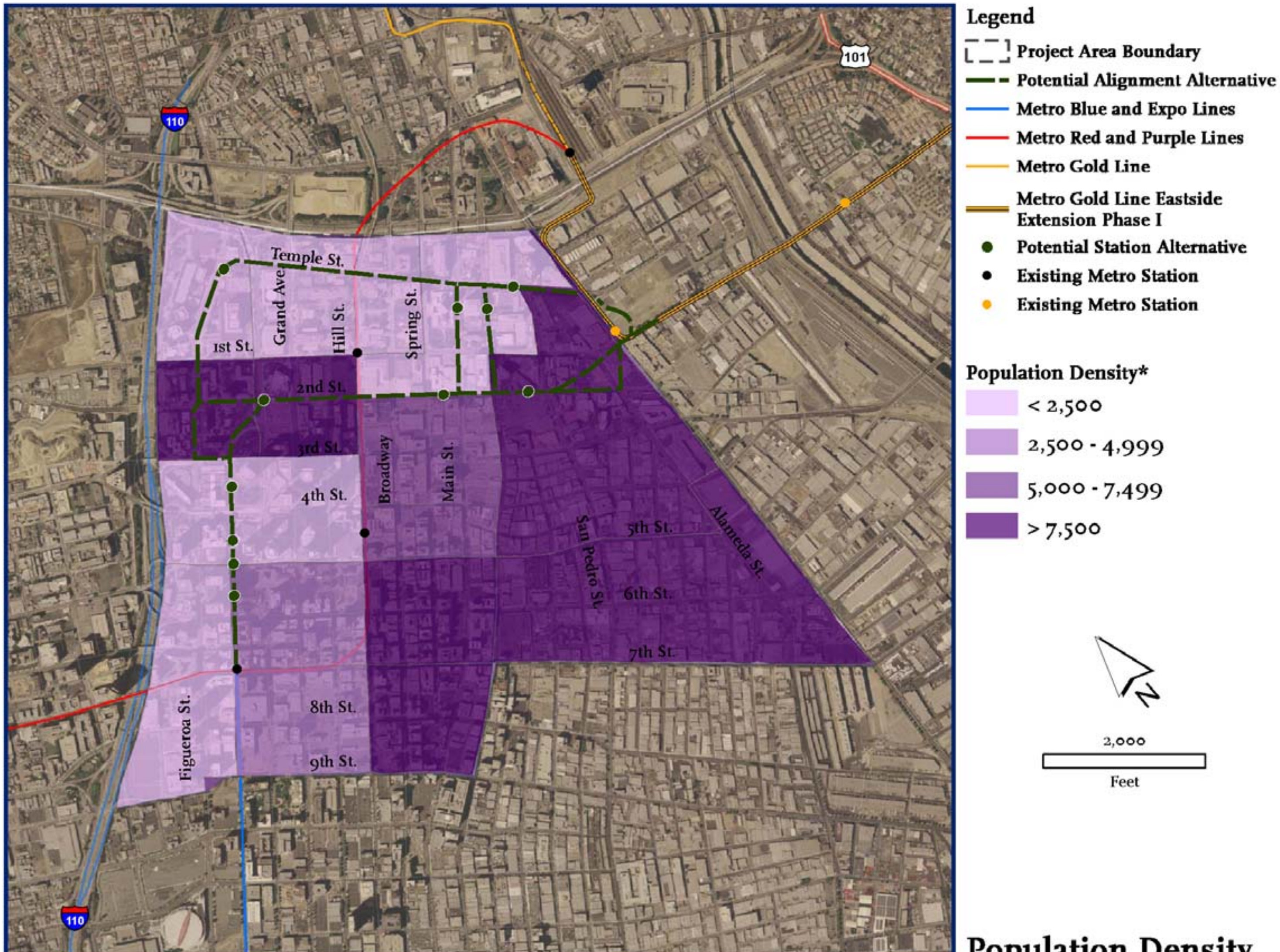
Project Study Area

The PSA is located entirely within the City of Los Angeles and includes several districts within the City of Los Angeles, including the Financial District, Bunker Hill, Civic Center, Little Tokyo, Fashion District, Toy District, Historic Core, Jewelry District, and Central City East. Little Tokyo is the only one of these communities that has been identified as an ethnic enclave, and where disproportionate impacts could occur. As shown in Table 4-28, as of the 2000 U.S. Census, there are 18,202 persons residing within the PSA. Based on the 2000 U.S. Census data, most of the PSA has a population density of less than 250 persons per acre (Figure 4-28). In addition, there are 9,150 households and approximately 300,000 jobs8 within the PSA. The resident unemployment rate for the PSA is 35 percent, compared to the overall Los Angeles County unemployment rate of five percent.

Approximately 80 percent of the PSA population belongs to a minority group, as shown in Table 4-28. The minority group with the largest representation in the Regional Connector PSA is African-American (29.4 percent). The second and third largest minority groups in the Regional Connector PSA are Asian (24.5 percent) and Hispanics/Latinos (21.9 percent), respectively. The Regional Connector PSA is composed of less than ten percent of the following races: American Indian or Native Alaskan, Native Hawaiian or other Pacific Islander, or other race. Of the total population, 3.2 percent identify themselves as belonging to more than one race. Additionally, the percentage of White, Non-Hispanic for the PSA is approximately 20 percent. The demographic density for the PSA is shown in Figure 4-9.

The median household income in the PSA was $10,295 according to the 2000 U.S. Census. Of the various income levels shown in Table 4-28, the highest percentage of the working population (15 percent) earned less than $10,000 per year. In the 2000 U.S. Census, which is the latest census information, 92 percent of the PSA's population (16,722 persons) was evaluated for poverty status. Poverty status computations are derived by the U.S. Census using the Health and Human Services poverty thresholds (Table 4-29). As shown in the Table 4-28, 46.8 percent of the population in the PSA is living below the poverty threshold.

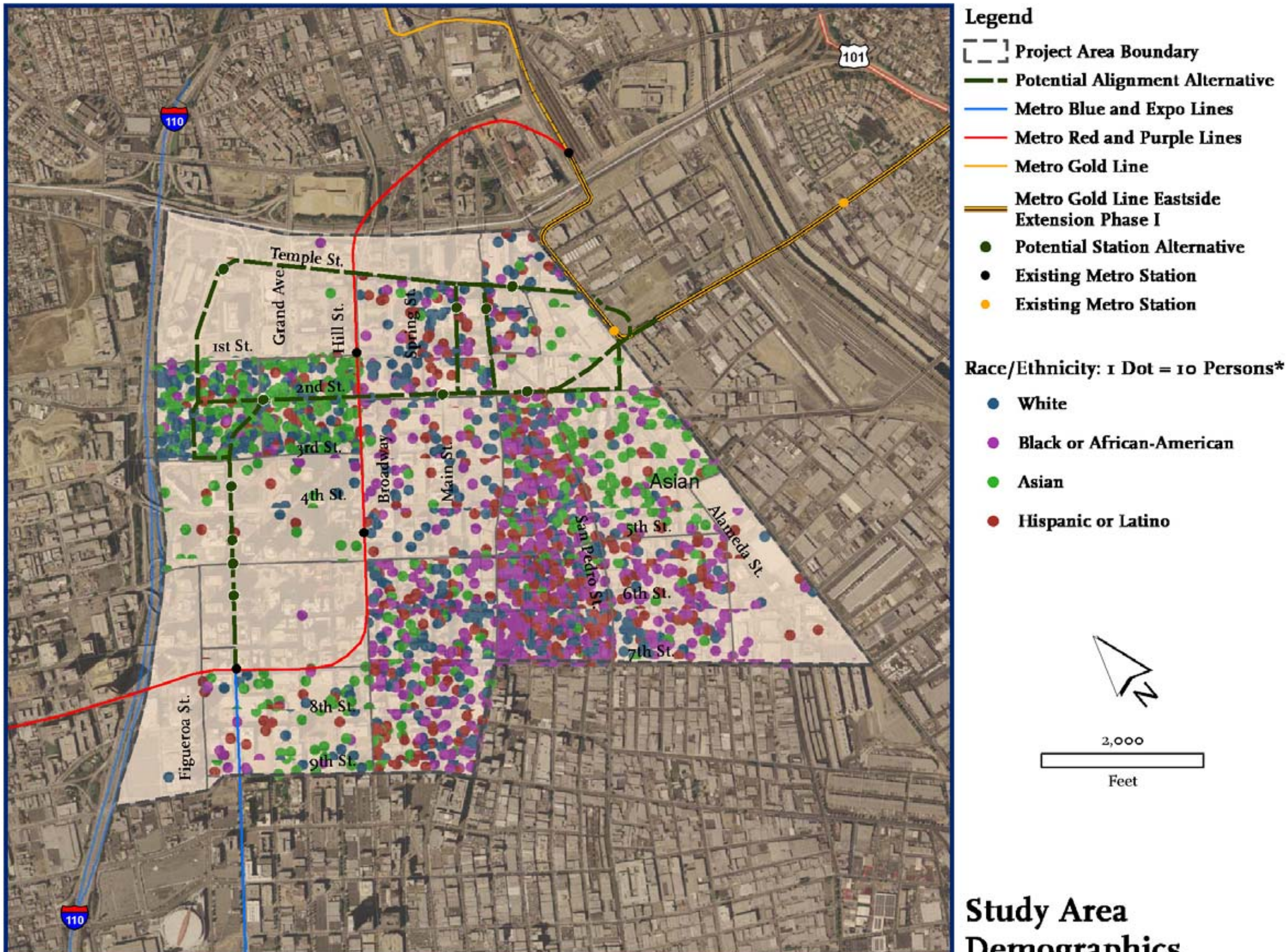
[8] Southern California Association of Governments (SCAG) 2004 Regional Transportation Plan.



Source: U.S. Census Bureau, 2005. * Weighted-Average calculation of Total Population per square mile.

Population Density

Figure 4-8 Population Density



Source:Source: U.S. Census as provided by ESRI, 2007. *Weighted-Average calculation of White, Black or African-American, Asian and Hispanic or Latino populations.

Study Area Demographics

Figure 4-9 PSA Demographics

Table 4-28 Project Study Area Demographic Data		
General		
Total Persons	18,202	
Total Households	9,150	
Race	Persons	% of Total Population
White	3,615	19.9%
Black or African American	5,354	29.5%
American Indian or Native Alaskan	122	0.7%
Asian	4,455	24.4%
Native Hawaiian and Other Pacific Islander	9	0.1%
Some Other Race	65	0.4%
Two or more Races	588	3.2%
Hispanic or Latino	3,994	21.9%
Total Minority Population	14,587	80.1%
Annual Income	Total	% of Total Working Population /a/
Less than $10,000	2,625	15%
Between $10,000 and $14,999	940	5.4%
Between $15,000 and $19,999	711	4.1%
Between $20,000 and $24,999	543	3.1%
Between $25,000 and $29,999	466	2.7%
Between $30,000 and $39,999	355	2%
Between $40,000 and $54,999	475	2.7%
Between $55,000 and $99,999	741	4.2%
Over $100,000	529	3%
Median Household Income	$10,295	
Poverty Levels	Total	% of Total Population /b/
Population below Poverty Threshold	7,853	46.8%
Population above Poverty Threshold	8,919	53.2%

/a/ The total working population is 17,447 persons.
/b/ Percentage of total population evaluated for poverty status is 16,772 persons, which is 92 percent of the total population.

Table 4-29 2000 U.S. Census Poverty Thresholds	
Household Size	Income Threshold
One-Person	$8,794.00
Two-Person	$11,239.00
Three-Person	$13,738.00
Four-Person	$17,603.00
Five-Person	$20,819.00
Six-Person	$23,528.00
Seven-Person	$26,754.00
Eight-Person	$29,701.00
Nine-Person	$35,060.00

Source: U.S. Census Bureau, Housing and Household Economic Statistics Division, 2000

Limited English Proficiency

Executive Order 13166 requires federally assisted programs to identify any need for services to those persons with limited English proficiency (LEP) and develop and implement a system to provide those services so LEP persons can have meaningful access to them. The 2000 U.S. Census data indicates that approximately 21 percent of the population in the PSA was linguistically isolated (i.e., all household members over age five have limited English proficiency [not well to not at all]). Approximately 63 percent of this linguistically-isolated population (1,872 persons, or 14 percent of total population over five years of age) spoke an Asian or Pacific Island language and 35.44 percent (1,059 persons or 10.4 percent of total population over five years of age) spoke Spanish (Figure 4-9). The geographic distribution of linguistically isolated Asian or Pacific Island language-speaking households corresponds with the distribution of the Asian population in the area around Little Tokyo (Figure 4-9).

Elderly Population

According to the 2000 U.S. Census, approximately 19 percent of the PSA population is elderly (approximately 3,500 persons). As shown in Figure 4-11, the distribution of the elderly population corresponds with the geographic distribution of LEP residents in Little Tokyo (Figure 4-10).

The Homeless and Single Room Occupants

In downtown Los Angeles, a major low-income group primarily consists of the homeless. However, the 2000 U.S. Census does not include the homeless in their calculations. In 2007, the Los Angeles Homeless Services Authority released the 2007 Greater Los Angeles Homeless Count, which is a report on a physical counting effort conducted to better estimate the number of homeless in the City of Los Angeles. The count found approximately 68,600 homeless persons at any one time in the City of Los Angeles. In the area where the PSA is located, there are approximately 22,030 homeless persons, which account for 32 percent of the total homeless population of the City of Los Angeles. As approximately one-third of the total estimated homeless population of the City is in the PSA, many services and shelters that serve this population are present as well. There are approximately four shelters, some year-round, 15 to 16 single-room occupancy establishments (SROs), and approximately nine homeless service providers within one-quarter mile of the proposed alignments. Resources for the homeless population within the PSA are listed in Table 4-30.

Alignment Areas

The total alignment is approximately 1.7 miles. Since the proposed stations would be in close proximity to each other, over the short distance of the two build alternatives, any analysis at the station level would be repetitious. Therefore, an analysis of the entire alignment was conducted for socioeconomic impacts. Census block groups within a one-quarter mile radius of the alignment locations were evaluated. The results are summarized in Table 4-31.

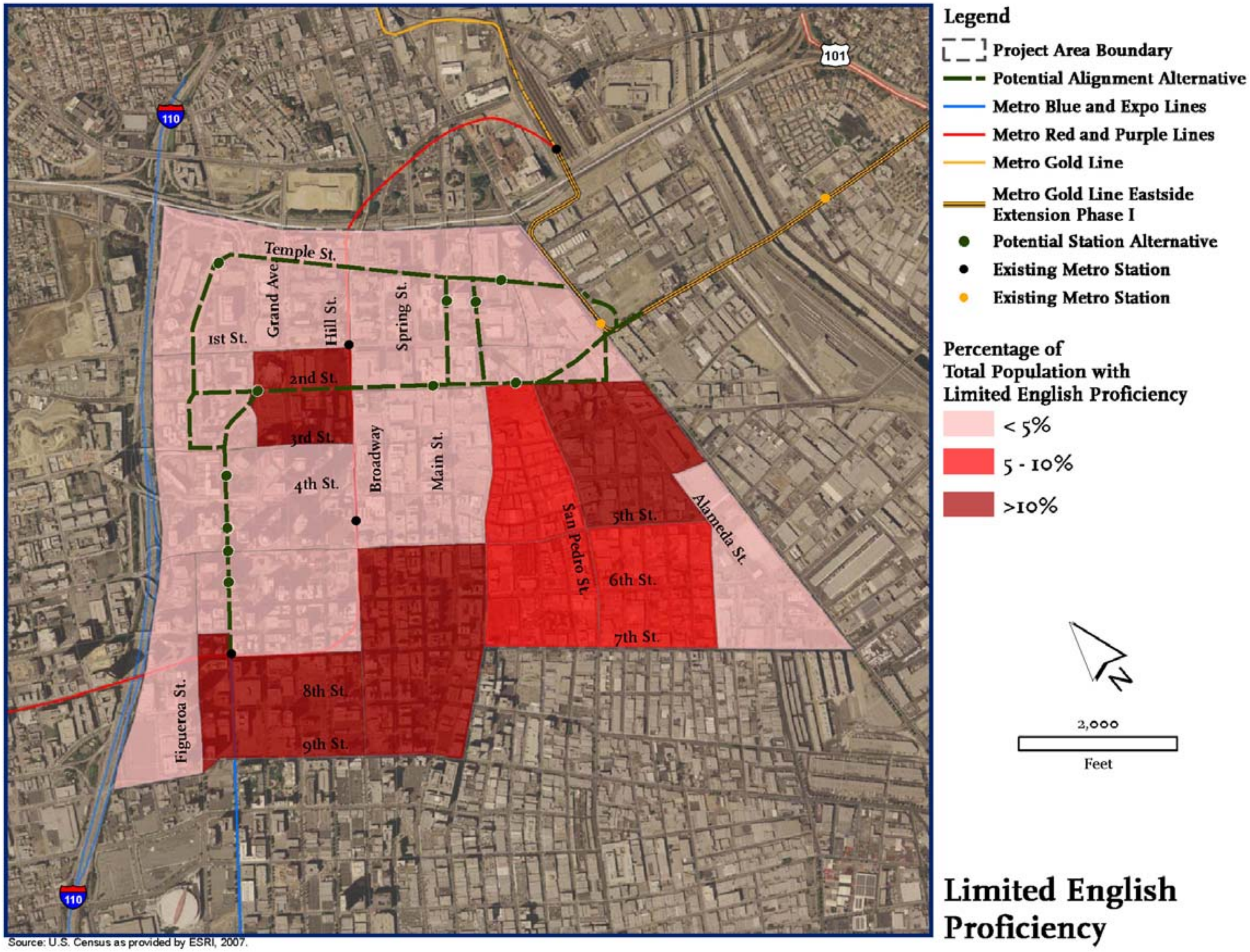
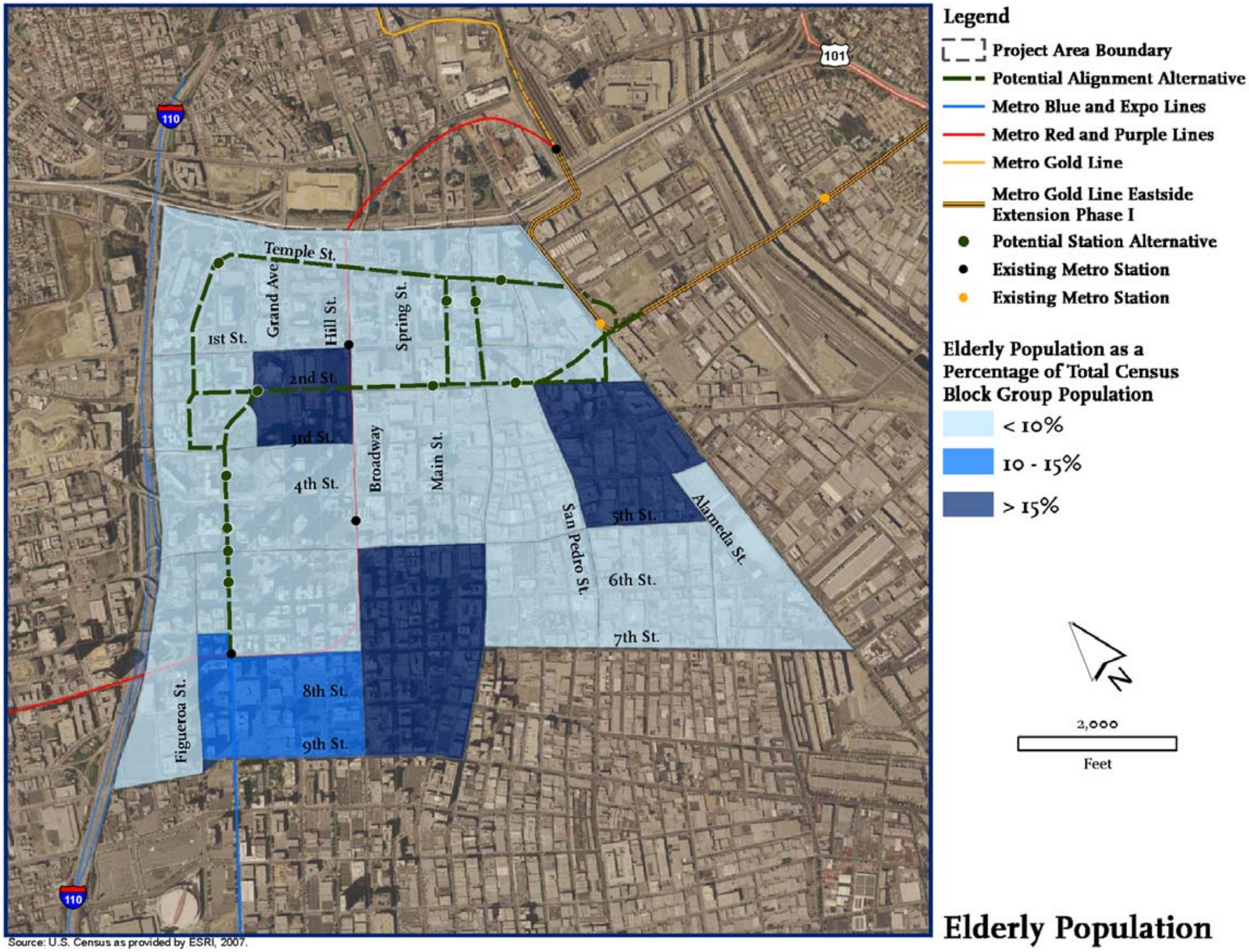


Figure 4-10 Limited English Proficiency



Source: U.S. Census as provided by ESRI, 2007.

Figure 4-11 Elderly Population

Table 4-30 Alignment Areas Homeless Shelters, SROs, and Service Providers

Name	Address	Affected Alignments*	No. of Units/ Beds	Availability
Shelters				
Emmanuel Baptist Mission - Bible Program In-House Residency	530 E. 5th St.	A,B, U	N/A	Emergency
Los Angeles Mission - Anne Douglas Center of the Los Angeles Mission	310 Winston St.	A,B, U	N/A	Transitional
Los Angeles Mission - Overnight Beds for Men	303 E. 5th St.	A,B, U	N/A	Emergency
Year Round Overnight Emergency Shelter	1208 Pleasant Ave.	A,B, U	N/A	Emergency
SROs				
Year Round Overnight Emergency Shelter	832 W. James M. Wood Blvd.	A,B, U	6	Emergency
La Posada - Emergency Shelter	1320 Pleasant Ave.	A,B, U	10	Emergency
Proyecto Pastoral	171 S. Gless St.	U	45	Emergency
Zahn New Emergency Housing Program	832 W. James M. Wood Blvd.	A,B, U	64	Emergency
Year Round Overnight Emergency Shelter	403 E. 5th St.	A,B, U	100	Emergency
Panama Hotel	403 E. 5th St.	A,B, U	221	Emergency
LTSC - Far East Building	347 E. 1st St.	A,B, U	16	Permanent
Brownstone	425 E. 5th St.	A,B, U	48	Permanent
Southern	412 E. 5th St.	A,B, U	55	Permanent
Harold Hotel	323 E. 5th St.	A,B, U	58	Permanent
Florence Hotel	310 E. 5th St.	A,B, U	61	Permanent
Leonide Hotel	512-516 S. Main St.	A,B, U	66	Permanent
Fred Jordan Missions - Men's Christian Discipleship	445 S. Towne Ave.	A,B, U	36	Transitional
JWCH Institute	515 6th St.	A,B, U	45	Transitional
Golden West Transitional Housing	417 E. 5th St.	A,B, U	61	Transitional
Casa Olivares	1208 Pleasant Ave.	A,B, U	150	Transitional
Service Providers				
Assistance for Skid Row Families	207 S. Broadway	A,B, U	N/A	Year-Round
Day Labor Program	516 S. Main St.	A,B, U	N/A	Year-Round
Downtown Women's Center	325 S. Los Angeles St.	A,B, U	N/A	Year-Round
Employment Program	516 S. Main St.	A,B, U	N/A	Year-Round
Family Transition Program	207 S. Broadway	A,B, U	N/A	Year-Round
Golden West Hotel Life Skills Program	417 E. 5th St.	A,B, U	N/A	Year-Round
LTSC Emergency Care Givers	231 E. 3rd St.	A,B, U	N/A	Year-Round
Street Works	516 S. Main St.	A,B, U	N/A	Year-Round
Weingart Access Center	506 S. Main St.	A,B, U	N/A	Year-Round

Source: Community Redevelopment Agency of Los Angeles, 2008.
* At-Grade Alternative - Option A (A)
At-Grade Alternative - Option A (B)
Underground Alternative (U)

As shown in Table 4-31, there are 11,369 persons and 5,482 households within one-quarter mile of the At-Grade Emphasis LRT Alternative. The unemployment rate for the area within one-quarter-mile of the At-Grade Emphasis LRT Alternative is 24.1 percent compared to the overall Los Angeles County unemployment rate of five percent.

Approximately 80 percent of the population in the area within one-quarter mile of the At-Grade Emphasis LRT Alternative belongs to a minority group, as shown in Table 4-31. The minority group with the largest representation for the At-Grade Emphasis LRT Alternative is Asian (33.3 percent). The second and third largest minority groups are Hispanic/Latino (24.2 percent) and African American (19.1 percent), respectively. The area within one-quarter mile of the At-Grade Emphasis LRT Alternative is composed of less than ten percent of the following races: American Indian or Native Alaskan, Native Hawaiian or other Pacific Islander, or other race. Of the total population, 2.2 percent identify themselves as belonging to more than one race. Additionally, the percentage of White, non-Hispanic population for the area within one-quarter mile of the At-Grade Emphasis LRT Alternative is approximately 20 percent.

The median household income in the area within one-quarter mile of the At-Grade Emphasis LRT Alternative was $14,753 according to the 2000 U.S. Census. Of the various income levels shown in Table 4-31, the highest percentage of the working population (31.7 percent) earned less than $10,000 per year. In the 2000 U.S. Census, 90.3 percent of the PSA's population (10,275 persons) was evaluated for poverty status. Poverty status computations are derived by the U.S. Census using the Health and Human Services poverty thresholds (Table 4-29). As shown in the Table 4-31, 36.6 percent of the population in the area within one-quarter mile of the At-Grade Emphasis LRT Alternative is living below poverty.

For the Underground Emphasis LRT Alternative, as shown in Table 4-31, there are 11,496 persons and 5,677 households within one-quarter mile. The unemployment rate for the area within one-quarter mile of the Underground Emphasis LRT Alternative is approximately 23.3 percent compared to the overall Los Angeles County unemployment rate of five percent.

Approximately 79 percent of the population in the area within one-quarter mile of the Underground Emphasis LRT Alternative belongs to a minority group, as shown in Table 4-31. The minority group with the largest representation for the Underground Emphasis LRT Alternative is Asian (33.6 percent). The second and third largest minority groups are Hispanics/Latinos (23.5 percent) and African-Americans (18.8 percent), respectively. The area within one-quarter mile of the Underground Emphasis LRT Alternative is composed of less than ten percent of the following races: American Indian or Native Alaskan, Native Hawaiian or other Pacific Islander, or other race. Of the total population, 2.4 percent identify themselves as belonging to more than one race. Additionally, the percentage of White, Non-Hispanic for the area within one-quarter mile of the Underground Emphasis LRT Alternative is approximately 20 percent.

Table 4-31 Alignment Areas Demographic Data				
Socioeconomic Characteristic	At-Grade Alternative		Underground Alternative	
General				
Total Persons	11,369		11,496	
Total Households	5,482		5,677	
Race	Persons	% of Total Population	Persons	% of Total Population
White	2,272	20.0%	2,364	20.6%
Black or African American	2,167	19.1%	2,158	18.8%
American Indian or Native Alaskan	74	0.7%	74	0.6%
Asian	3,784	33.3%	3,861	33.6%
Native Hawaiian and Other Pacific Islander	23	0.2%	23	0.2%
Some Other Race	42	0.4%	42	0.4%
Two or more Races	255	2.2%	277	2.4%
Hispanic or Latino	2,752	24.2%	2,697	23.5%
Total Minority Population	9,097	80.0%	9,132	79.4%
Annual Income	Total	% of Total Working Population /a/	Total	% of Total Working Population /b/
Less than $10,000	1,571	30.0%	1,515	27.8%
Between $10,000 and $14,999	590	11.3%	601	11.0%
Between $15,000 and $19,999	488	9.3%	527	9.7%
Between $20,000 and $24,999	344	6.6%	351	6.4%
Between $25,000 and $29,999	362	6.9%	381	7.0%
Between $30,000 and $39,999	322	6.1%	411	7.5%
Between $40,000 and $54,999	411	7.8%	468	8.6%
Between $55,000 and $99,999	643	12.3%	686	12.6%
Over $100,000	509	9.7%	509	9.3%
Median Household Income	$14,753		$18,776	
Poverty Levels	Total	% of Total Population /c/	Total	% of Total Population /d/
Population below Threshold	3,758	36.6%	3,620	34.8%
Population above Threshold	6,517	63.4%	6,782	65.2%

/a/ The total working population for the At-Grade Alternative is 10,765 persons.
/b/ The total working population for the Underground Alternative is 10,892 persons.
/c/ Percentage of total population evaluated for poverty status for the At-Grade Alternative is 10,275 persons, which is 90.3 percent of the total population.
/d/Percentage of total population evaluated for poverty status for the Underground Alternative is 10,402 persons, which is 90.5 percent of the total population.
Source: 2000 U.S. Census

The median household income in the area within one-quarter mile of the Underground Emphasis LRT Alternative is $18,776 according to the 2000 U.S. Census. Of the various income levels shown in Table 4-31, the highest percentage of the working population (13.9 percent) earned less than $10,000 per year. In the 2000 U.S. Census, 90.5 percent of the PSA's population (11,496 persons) was evaluated for poverty status. Poverty status computations are derived by the U.S. Census using the Health and Human Services poverty thresholds (Table 4-29). As shown in the Table 4-31, 34.8 percent of the population in the area within one-quarter mile of the Underground Emphasis LRT Alternative is living below the poverty threshold.

4.18.1.3 Public Participation

To ensure opportunities for public participation during the project development process, Metro held four public project scoping meetings, two in the early planning process and two after the alternatives screening process. The first early scoping meeting was held on November 6, 2007, at the City of Los Angeles Central Library in downtown Los Angeles, and the second on November 7, 2007, at the Japanese American National Museum in Little Tokyo. A total of 117 people attended the two meetings to provide comments on the alignment alternatives for the proposed project. Two additional meetings to provide a progress update of the alternatives screening were held at the Japanese American National Museum and at the City of Los Angeles Central Library on February 26, 2008.

The format of the scoping meetings included an open house element where attendees had the opportunity to review the project information prior to the start of the presentation and the comment period. Project team members were present at the display boards to address questions related to the project. Spanish and Japanese translators were made available, as appropriate. Following the open house period, a PowerPoint presentation was made to provide attendees with information regarding the purpose of the scoping meeting and the proposed project. Emphasis was placed on the importance of the community's participation in providing comments in person at the scoping meetings, or by telephone, fax, postal mail, or e-mail. Following the presentation, the public was given the opportunity to make verbal comments, which were recorded by a transcriber. The deadline for receiving comments was November 30, 2007. A total of 88 comments were received by Metro from public agencies, community organizations, elected officials, and the general public.

Of the 88 comments received by Metro, 16 were directly related to the topic of environmental justice. Three of these 16 comments were regarding Americans with Disabilities Act (ADA) compliance and access, and regarding community impacts. There was much coordination with numerous downtown community committees, including the Little Tokyo Subcommittee and other groups. Several presentations were conducted, including those after the second round of public meetings held in October 2008, in order to keep community members informed of project updates and public participation.

Table 4-32 Public Meetings			
Type of Meeting	Date	Location	Number of Attendees
Early Scoping Meeting	November 6, 2007	Central Library	68
Early Scoping Meeting	November 7, 2007	Japanese American National Museum	49
Community Update Meeting Series #1	February 26, 2008	Japanese American National Museum	59
Community Update Meeting Series #1	February 28, 2008	Central Library	55
Community Update Meeting Series #2	October 16, 2008	Central Library	109 Combined
Community Update Meeting Series #2	October 21, 2008	Japanese American National Museum	

4.18.1.4 Project Alignment Alternatives Screening Process

As part of the required screening process, segments of several proposed alignments were eliminated from consideration in the PSA. As part of the public outreach effort, 33 alternatives were presented at the early scoping meetings in November 2007. At each of the two public meetings, each alternative was presented in various ways, from poster boards to PowerPoint slides; which were accessible as well by internet through the Metro page www.metro.net. After the public input was incorporated into the screening process, eight alternatives remained and were identified for further screening. With a thorough screening process as described in the Alternative Screening Report, six of the eight alternatives were eliminated from further consideration for environmental evaluation. The two remaining alternatives were presented at the May 2008 public meetings.

4.18.2 Evaluation Methodology

In assessing compliance of the proposed project with the intent of Executive Order 12898 regarding environmental justice, there are three major considerations:

- Whether the project provides transit service equity;
- Whether any potential adverse impacts would be disproportionately borne by low-income and minority communities; and
- Whether low-income and minority communities have had opportunities to actively participate in the planning of the project.

The analysis of impacts also considers:

- Adverse impacts to human health;
- Adverse environmental impacts to natural resources;
- Impacts that would adversely affect the stability and economic and social functioning of a community or neighborhood; and

- Adverse impacts related to noise and vibration, displacement and relocation, and pedestrian safety and security in low-income and minority communities.

As mentioned in Section 4.18.1.2, Little Tokyo is the only established ethnic community in the PSA. For this analysis, disproportionate impacts to Little Tokyo will be evaluated.

4.18.3 Environmental Issues

The following are potential environmental justice impacts associated with the proposed project.

At-Grade Emphasis LRT Alternative

- Transit Service Equity Impacts. The At-Grade Emphasis LRT Alternative would bypass and place stations outside the only established minority community in the PSA, Little Tokyo, but would keep the current location of the Little Tokyo/Arts District station along Alameda St. Additionally, as shown in Figure 4-11, Little Tokyo contains a high concentration of elderly, which are often transit dependent. Routing the alignment and locating a proposed station outside Little Tokyo can be perceived as a potential environmental justice impact because it can be interpreted as a lack of transit infrastructure investment in an under-represented community. However, the close proximity of the Little Tokyo/Arts District Station (one-quarter mile away), which is part of the Metro Eastside Extension, minimizes the potential of these justice impacts.

- Displacement Impacts. Pertaining to the homeless, changes in sidewalk widths may potentially have direct impact on homeless encampments.

Underground Emphasis LRT Alternative

- Transit Service Equity Impacts. The alignment for the Underground Emphasis LRT Alternative would traverse Little Tokyo underground and surface at a proposed portal at 1st and Alameda Streets. The Underground Emphasis LRT Alternative would introduce a station on 2nd St. between Los Angeles and Main Streets. Although the station is not within Little Tokyo, it is located next to the Little Tokyo branch library as well as the future location of the Block 8 development which is a significant Japanese inspired condominium and rental housing property scheduled to be opened in the Spring of 2009.

- Noise Impacts. The proposed project has potential to have noise impacts related to the proposed portal location at 1st and Alameda Streets. There are sensitive receptors around the portal area (museums and residences). This could be considered disproportionate because the portal would be located in the only minority community in the PSA.

- Construction Impacts. Bored tunnel construction impacts would be largely concentrated at portal areas where equipment is inserted for underground use or where debris from tunnel mining is removed. Portals will be concentration points of construction activity, including workers, stationary equipment, and truck activity. Construction in the portal area within the Little Tokyo community may be particularly disruptive to residences and businesses in this minority community.

4.19 Major Utilities

As part of the evaluation of existing conditions along the different alignment alternatives, major utilities are identified in order to assess potential impacts to the infrastructure. This process allows for identification of potential conflicts and resolution to these issues in the early stages of design and development of alternatives.

4.19.1 Affected Environment

There are several items that control the utility work design, including gravity lines, sanitary sewers, storm drains, telephone cables, and other power lines such as water and gas. The physical dimensions of these utilities vary from one to the next and various elements affect the placement and relocation of each. Gravity lines are usually the deepest utility which eventually controls the top of the station structure; sanitary, sewer, and storm drains are in this category. For sanitary sewers, polyvinylchloride (PVC) is utilized temporarily during underground station construction. Permanent vitrified clap pipe (VCP) is then installed during the restoration phase. For storm drains, temporary lines are installed during underground station construction. Permanent reinforced concrete pipe (RCP) is then constructed during the restoration phase.

Generally, it is preferable to save telephone cables. During underground and at-grade station construction support, the existing telephone duct bank remains in place. If the telephone duct bank is shallow, then breaking the existing ducts is required and lower supports are needed in order to clear the decking structure. During restoration phase, the telephone duct is encased in concrete.

Overhead power lines impacted by construction are to be relocated or new underground cables are installed as needed. For an underground configuration, during station construction, electrical ducts should be supported in place. If the electrical duct bank is shallow, then it requires lowering and supporting to clear the decking structure. Existing water lines are usually cast iron, which means they tend to have weak joints. During underground construction, new steel water lines will be constructed above the excavation, to be supported from the decking structure. The use of ductile iron pipes is restricted to lengths up to 20 feet. Also, for underground structures, new steel gas lines are to be installed above the excavation and to be supported from the decking structure.

The identification of all the above utilities is essential in order to understanding the existing conditions in the PSA as well as to understand potential design restrictions which must be considered.

4.19.2 Evaluation Methodology

The main source used for utility locations is the City of Los Angeles' Electronic Vault. This resource, which is part of the Bureau of Engineering division, provides detailed data history and utility characteristics which aid in assessing the impacts of construction.

For assessing the impact of construction, the existing utility data and information was incorporated and superimposed on LADOT Traffic Geometric plans, along with all the potential alternative alignments. One of the crucial issues for drawing existing utilities from as-built maps to the various alternative corridors was to locate the exact location of the current right-of-way. The mapping and discussions related to utilities were directed at street segments where a number of conflicts and/or issues may arise. Existing utility data were first obtained at intersections along the alignment, including Alameda St., 2nd St. and Flower St. Other key locations are intersections along 2nd St, including Central Ave, San Pedro St., Los Angeles St., and Main St., and the Flower St. segment with intersections at 3rd, 4th, 5th and 6th Streets.

4.19.3 Environmental Issues

Implementation of the Underground Alternative would result in potential impacts to underground utility lines that would be avoided with the At-Grade Emphasis LRT Alternative. The following describes the utility issues along the alignment for the Underground Emphasis LRT Alternative and the impacts they may present.

At-Grade/Underground Affects on Flower St. and Intersections at 6th, 5th, 4th, and 3rd Streets

Between 3rd and 4th Streets there is a 33-inch storm drain line. There is a large gravity line, 72-inch to 84-inch reinforced concrete pipe (RCP) which turns from 4th St. onto Flower St. and continues south to 6th St. At 5th St., the 84-inch pipe changes temporarily to an eight-feet six-inch by 36-inch concrete box to allow a sanitary sewer line to cross underneath. At 6th St., the 72-inch RCP discharges into a 48-inch line and a 36-inch line. At the intersection of Flower and 6th Streets, the pipes are approximately 15-feet deep. There are also two storm drain manholes within this intersection.

Heading south on Flower St. from the potential station at Grand Ave., the alignment heads underground. The large gravity lines in this area will impact the location of the underground structures such as the tunnel, cut and cover, and stations. Identification of these lines in plan and cross sections are being studied at the present time.

A 15-inch concrete sanitary sewer crosses 7th St. 12 feet below grade. A 21-inch sanitary sewer crosses Wilshire Blvd. 14 feet below grade. A 20-inch sanitary sewer crosses 5th and 6th Streets 12-feet below-grade. A 30-inch storm drain crosses 4th St., one to 15 feet below-grade and an 18-inch sanitary sewer crosses 3rd St. 27 feet below-grade.

One of the noticeable things about the sanitary sewer pipes is the change in sizes throughout various segments of the pipeline. This may indicate merging pipe through deep man holes or junction structures. These would impact the underground structures.

At-Grade/Underground Affects on 2nd St. between Hill St. and Spring St.

An information gap for the section of 2nd St. between Hill St. and Spring St. exists in data files, and further research is being conducted in order to correctly identify all utility types and locations. Currently, relieving pressure system discharges storm water over the 2nd St. tunnel, directing 12-inch to 24-inch diameter drain lines located at both sides of the tunnel adjacent to the sidewalks. More investigation is needed to identify the causes of this occurrence. A storm drain is also located on the north side of 2nd St., east of the 2nd St. tunnel.

At-Grade/Underground Affects on 2nd St. between Main St. and Los Angeles St.

Currently, there is a large storm drain gravity line, nine-feet six-inch by 11-feet six-inch reinforced concrete box. There is also a 14-inch storm drain line running on the northern side of the 2nd St., approximately 13 feet away from the northern property line and about four feet underground. There are two sanitary sewer lines located on each side of the nine-feet six-inch by 11-feet six-inch storm drain, with an 18 inch distance from the center line to the face of the larger pipe. One of the lines is a 14-inch diameter pipe with 17.5 feet distance from the northern line of the property, located 16 feet underground. The second line is an eight-inch diameter pipe with 23-feet distance from the southern line of the property, located 16 feet underground.

Other utilities in this area are telephone, cable, and power lines with three-inch to 22-inch diameter conduits located approximately four feet underground. Water and gas lines are also located four feet underground and between two inches to six inches in diameter. Two gas lines are abandoned and one line of gas and the water line are active lines.

One of the options for the Underground Emphasis LRT Alternative is the location of a potential station somewhere in between these streets on 2nd St. Although the location of this station has not been determined, existing utility lines may impact the station wall footings and catenary pole footings.

At-Grade/Underground Affects on 2nd St. between Los Angeles St. and Central Ave.

Between Los Angeles St. and Central Ave. there is a large storm drain gravity line and an 11-feet six-inch by 13-feet reinforced concrete box. There is also a 44-inch storm drain line running on the north side of 2nd St., 16 feet away from the northern property line and about six feet underground. There are two sanitary sewer lines located on both sides of the large storm drain 18 inches or more in distance away from the storm drain line's outside face. The first line is an eight-inch sanitary sewer line, 23 feet away from the northern property line, located 16 feet underground. The second line is an eight-inch sanitary sewer line, 18 feet away from the southern property line, located 16 feet underground.

Other utilities in this area are telephone, cable, and power lines with four-inch to 25-inch diameter conduits located approximately four feet underground. Water and gas lines are also located four feet underground, with the water line at eight inches and the gas line at six inches in diameter.

Potential impacts may occur in the area where the alignment curves off Alameda St. to enter southwest through private properties toward 2nd St. This area has a higher than average level of congested utility lines and would need to be further studied and evaluated.

At-Grade/Underground Affects on 2nd St. between Main St. and Spring St.

Between Main and Spring Streets there is a large storm drain gravity line and a 9.5-feet by 11.5-feet reinforced concrete box. There is also a 14-inch storm drain line running on the north side of the street approximately 15 feet away from the northern property line, about six feet underground. There are two sanitary sewer lines located along this segment. One of the lines is an eight-inch sanitary sewer line located above the large storm drain pipe, located ten feet underground. The second line is an eight-inch sanitary sewer line located on the north side of the large storm drain pipe, located ten feet underground and approximately 25.5 feet away from the northern property line.

Other utilities in this area are telephone, cable, and power lines with diameters ranging from 12-inch to 29-inch located at a maximum of six feet underground. Water and gas lines are also located four feet underground, and range from four inches to six inches in diameter. Two gas lines and one water line are abandoned.

At-Grade/Underground Affects on 2nd St. between Spring St. and Broadway

Between Spring St. and Broadway there is a large storm drain gravity line, and a 9.5-feet by 11.5-feet reinforced concrete box. There is a 14-inch line running on the north side of the street, approximately 15 feet in distance from the northern property line and six feet underground.

There are two sanitary sewer lines located along this segment. One of the lines is an eight-inch sanitary sewer line located above the large storm drain, approximately ten feet underground. The second line is also an eight-inch sanitary sewer line located north, off the large storm drain line, approximately ten feet underground, and 25.5 feet away from the northern property line.

Other utilities in this area are telephone, cable, and power lines with 12-inch to 29-inch diameter conduits located approximately six feet underground. Water and gas lines ranging from four inches to six inches in diameter are located at a maximum of four feet underground. Two gas lines and one water line are abandoned.

At-Grade/Underground Affects on 2nd St. between Broadway and Hill St.

Between Broadway and Hill St. there is a storm drain large gravity line, ten-inch diameter reinforce concrete pipe (RCP) approximately 22 feet underground. This line alignment moves north approximately 15 feet after passing the Hill St. intersection. There are also two eight-inch storm drain lines running on the north and south sides of the street, approximately three feet underground.

An eight-inch sanitary sewer line is located north of the large sanitary sewer approximately 18 feet underground.

Other utilities in this area are telephone, cable, and power lines with 22-inch to 41-inch diameter conduits located at a maximum of six feet underground. This particular location, however, also has a deeper line at 16 feet underground. Water and gas lines ranging from four inches to eight inches in diameter are located at a maximum of four feet underground. There is an eight-inch gas line that is abandoned.

Affects on Alameda St. at Temple St. (At-Grade), 1st St., and 2nd St. (Underground)

In the PSA, Alameda St. is a very heavily trafficked corridor that is used by both automobiles and large freight trucks. The land uses around the Alameda St., 1st St., and 2nd St. intersections has experienced a change from low scale industrial to residential/commercial in the past years. Because a grade separation is being proposed as a solution for possible congestion issues, utilities in and around the area must be identified thoroughly in order to design the station and tunnel to appropriate standards.

Currently, there is a 12-inch water line located approximately in the center of Alameda St. and another 36 inch water line located on the west side of the street. A 14-inch sanitary sewer is located on the eastern side of Alameda St. A 75-inch storm drain is also located on the eastern side of Alameda St. as well as 14-inch lines that run along the length of the street. There also exist electrical boxes with two and three conduits, telephone lines, and a six-inch abandoned gas line. This area is critical because a grade separation (underpass) built along Alameda St. from approximately north of Temple St. to south of 2nd St. will mean the removal and relocation of these utility lines.

For this particular scenario, it is advised that the 75-inch storm drain cannot be located under the northbound bus deck because there would not be enough room. Instead, two possibilities are suggested: 1) change the storm drain pipe such that it runs under the southbound bus deck (west of Alameda St.) or 2) relocate the project alignment east of the Metro Eastside Extension LRT tracks where there is a passage. With the first option,, the storm drain pipe would be relocated to pass the grade separation (north of Temple St.) and meet its original alignment south of 2nd St. This option would be preferred over altering the project alignment, as that would require significant additional analyses and public input. Once the large storm drain is relocated, the smaller pipes can be moved under the bus deckway. The crossing utility lines can be supported from the beam bridge decks at Temple and 1st Streets.

4.20 Summary of Environmental Issues

Table 4-33 Comparison of Alternatives

Environmental Resource Area	No Build	TSM	At-Grade	Underground
Land-Use and Development	0	+	+	+
Displacement and Relocation of Existing Uses	0	+	-	-
Community and Neighborhood Impact	0	+	-	-
Visual and Aesthetic Impacts				
Air Quality Impacts	0	+	+	+
Noise and Vibration	0	-	-	-
Ecosystems/Biological Resources	0	-	-	0
Geotechnical/Subsurface/Seismic and Hazardous Materials Impacts	0	0	-	-
Water Resources	0	0	0	0
Energy				
Historic, Archeological and Paleontological Impacts	0	0	-	-
Parklands and Other Community Facilities	-	+	-	-
Economic and Fiscal Impacts	-	-	-	-
Safety and Security	-	-	-	-
Construction Impacts	-	-	-	-
Growth Inducing Impacts	+	+	+	+
Environmental Justice				
Major Utilities				
Total				

Section 5 Financial Analysis

5.1 Introduction

This section provides a comparison of the capital and operating and maintenance costs and revenues associated with the promising alternatives under consideration for the project. These alternatives consist of a No Build, TSM and two build alternatives. The build alternatives are comprised of an at-grade and cut-and-cover alternative (At-Grade Emphasis LRT Alternative) that includes two configuration options (Option A and Option B) and a twin-bore tunnel alternative (Underground Emphasis LRT Alternative). It is important to note that this financial analysis was conducted prior to the recent national economic crisis. As the impacts of this crisis are still working their way through the private and public sectors, including transit systems, the cost and revenue assumptions described in the following sections should be considered preliminary and will likely need to be refined. As the Regional Connector continues through the project implementation process, cost, funding and financing projections will be revised to reflect the best available information.

Section 5.2 focuses on the capital costs of the alternatives. Costs are presented in both base year and Year of Expenditure (YOE) dollars using annual inflation rates and a preliminary implementation schedule developed for the project. In order to understand the financial impact of actual funds that would need to be expended in the actual year of expenditure and the relative effects of inflation on costs and revenues, an inflation rate is used to project from base year dollars to YOE dollars. More specifically, YOE dollar values are computed by multiplying base year dollar values by the compounded escalation factor for the year in which funds would be expended. For example, in YOE dollars, $1.00 in 2008 is equivalent to $1.04 in 2009, using an inflation rate of 4.0 percent.

Additionally, the capital costs are presented using FTA's Standard Cost Categories (SCC). FTA implemented the SCC to establish a consistent format for the reporting, estimating and managing of capital costs for projects proceeding through the New Starts major capital project development process.

Following the discussion of capital costs, Section 5.3 describes the potential federal, state, and local capital revenue sources and funding strategies that could be used for the Regional Connector project. For purposes of this analysis, the Regional Connector build alternatives are assumed to be funded with a combination of federal and non-federal funds, including 50 percent in FTA New Starts (Section 5309) funding and 50 percent in local funding from a combination of state and local sources. The proposed funding sources are described first, followed by a discussion of other potential state and local sources. Funding strategies considered include the potential for changes to Metro's policy regarding bonding capacity. Also considered is the potential to work with FTA to include the Regional Connector project as part of a multi-corridor program of projects, to be funded through the FTA New Starts program, similar to the process being used in Salt Lake City and Houston.

Section 5.4 compares projected operating and maintenance (O&M) costs of the alternatives and projected farebox revenues assuming average fares consistent with Metro services. This section also identifies potential system-wide operating savings that could be realized due to improved efficiency of service associated with the selected alternatives. An estimate is also provided of the potential level of operating support required.

Section 5.5 summarizes the key findings of the preliminary financial analysis. As the alternatives selection process moves forward, future iterations of the financial analysis will be conducted, with increasing levels of detail and refinement. The refined financial analysis will include a detailed cash flow analysis in YOE dollars through the project horizon year of 2030.

5.1.1 Background

The Regional Connector project is proposed to create a connection in downtown Los Angeles that will link the Metro Blue and Expo Lines termini at 7th St./Metro Center Station (7th and Flower Streets) to the Metro Gold Line Pasadena and Eastside links at the Little Tokyo/Arts District Station at 1st and Alameda Streets. This connection will provide through service between the Metro Blue Line to Long Beach, the Metro Gold Line to Pasadena and East Los Angeles, and the Metro Expo Line to Culver City. With the implementation of the Regional Connector, these four lines will share tracks and stations in downtown Los Angeles. The result of this connection will be enhanced regional connectivity without the need to transfer thus making it easier for potential riders to get to and from downtown Los Angeles.

5.1.2 Status of the Regional Connector Transit Corridor in Existing Long Range Financial Plans

The Regional Connector Transit Corridor is included in both of the existing long range financial planning documents for the region: Metro's 2008 Long Range Transportation Plan (LRTP) and the Southern California Association of Governments Regional Transportation Plan (SCAG RTP). Within the LRTP, the Regional Connector Transit Corridor is the highest priority project within the Strategic Unfunded component of the plan and is one of 12 "Tier 1" projects that are "currently under planning study or environmentally cleared/route refinement study." Projects in the Strategic Unfunded component of the plan could be implemented if additional funding were made available from new sources. With regard to the SCAG RTP, the Regional Connector is included as a funded project (project identification number 1TR0404) at an estimated cost of $4.24 billion and is assumed to be completed by 2035.

5.1.3 Description of the Alternatives

The following provides a brief overview of the alternatives under consideration in order to reflect assumptions used for the cost estimates. See section 2 for maps of alternatives for consideration.

No Build Alternative

The No Build alternative includes all existing transportation facilities as well as all committed transportation projects outlined in the Metro LRTP (2001) and the SCAG Regional Transportation Plan (2004). This includes the Metro Gold Line Eastside Extension (Phase 1) scheduled to open in 2009, the first and second phase of the Metro Exposition Line scheduled to open in 2010, and the second phase of the Metro Rapid Bus expansion plan scheduled to be completed in 2008. An update to Metro's LRTP was released for public review in March 2008 and is anticipated to be finalized and approved during the winter of 2008. This final AA study will reflect the 2001 LRTP commitments but acknowledge the potential inclusion of additional projects pending the approval of the updated plan. The No Build Alternative would preserve existing service levels, as well as the projects listed in the LRTP and Regional Transportation Plan. It may also call for improving service frequency in some areas, but will largely leave the present transit coverage unchanged.

TSM Alternative

The TSM Alternative would assume no build and would imitate the proposed light rail link between 7th St./Metro Center Station and Union Station using two shuttle bus routes. Shuttle buses operated by Metro would run frequently, perhaps just a few minutes apart during peak hours, and routes would be designed to move passengers between the two stations as quickly as possible. The shuttle buses would use mixed-flow arterial street lanes or existing bus only lanes and attempt to avoid major conflicts with existing bus routes. Peak-hour parking restrictions would facilitate the movement of the shuttle buses along the routes. Intermediate stops would provide additional transit coverage of Bunker Hill, Little Tokyo, and the Civic Center. A variety of bus sizes could be used to tailor capacity to demand, ranging from 30-foot shuttle buses to 60-foot articulated buses.

In addition to frequent headways, Regional Connector shuttle buses could employ a Transit Priority System (TPS) system similar to the ones currently used on Metro Rapid lines within the City of Los Angeles. Transponders mounted to the undersides of the buses would trigger detector loops embedded in the pavement in advance of each signalized intersection along the route. Upon detecting the bus, the City's central Automated Traffic Surveillance and Control (ATSAC) system would trigger the signal controller to grant additional green phase time to the oncoming bus (usually 10-15 percent of the total cycle time), up to once per cycle. Metro Rapid lines have shown TPS to keep buses moving quickly, reduce trip times, and increase passenger throughput.

Build Alternatives

Based on the results of a detailed screening process, two build alternatives are being recommended to be carried forward for further evaluation: a combined at-grade/underground alternative that includes one-way couplets on Main St. and Los Angeles St. (At-Grade Emphasis LRT Alternative) and an alternative that is almost entirely underground (Underground Emphasis LRT Alternative). The At-Grade Emphasis LRT Alternative includes two alignment options that are still under consideration. A description of the alternatives is provided below.

At-Grade Emphasis LRT Alternative Option A

The At-Grade Emphasis LRT Alternative Option A is 1.8 miles long with approximately 71 percent of the alignment at grade and 29 percent of the alignment underground. The underground portions of the alignment are proposed to use the cut and cover construction technique. The estimated capital cost of the At-Grade Emphasis LRT Alternative – Option A is $795.7 million in FY2008 constant dollars, or $1.019 billion in Year of Expenditure throughout (YOE) dollars, inclusive of inflation.

The At-Grade Emphasis LRT Alternative Option A has a total of three station locations, of which two are underground and one is at-grade. The underground stations are at Flower St. between 5th and 6th Streets, and adjacent to the Grand Avenue Project development, south of 2nd St. The third station is a split station (two platforms) located at grade with one on Main St. and one on Los Angeles St.

As shown in Figure 5-1, the alignment for the At-Grade Emphasis LRT Alternative – Option A, from west to east, begins/ends at the existing underground 7th St./Metro Center station and heads north under Flower St. resurfacing to an at grade alignment via a portal located north of 4th St. The alignment continues across 3rd St. in a northeasterly direction where it then enters the existing hillside and 'punches' into the existing 2nd St. tunnel.

The alignment then uses the existing 2nd St. tunnel to run east, at-grade in a dual track configuration until it reaches Main St. The alignment splits into a couplet configuration at grade, with one track continuing north on Main St. and the other track continuing east on 2nd St. to north on Los Angeles St.

Both tracks then head east on Temple St. realigning into a dual track configuration at Los Angeles and Temple Streets. The alignment then heads east until the connection with the Metro Gold Line at Temple and Alameda Streets. In this alignment, 2nd St. between Los Angeles St. and Hill St. is transformed into a transit mall.

At-Grade Emphasis LRT Alternative Option B

The At-Grade Emphasis LRT Alternative Option B is 1.79 miles long with approximately 79 percent of the alignment at grade and 21 percent of the alignment underground. The underground portions of the alignment are proposed to use the cut and cover construction technique. The estimated capital cost of this option is $709.3 million in FY2008 constant dollars, or $909.1 million in YOE dollars, inclusive of inflation.

The At-Grade Emphasis LRT Alternative Option B has a total of three stations locations, of which one is underground and two are at-grade. One at-grade station is on Flower St. between 3rd and 4th St. A second station is located adjacent to the Grand Avenue Project development, and a third station is a split station (two platforms) located at-grade with one on Main St. and one on Los Angeles St.

As shown in Figure 5-2, the alignment for the At-Grade Emphasis LRT Alternative – Option B, from west to east, begins/ends at the existing underground 7th St./Metro Center Station and heads north under Flower St., resurfacing to an at-grade alignment from a portal located north of 5th St. The alignment continues on Flower St. at-grade and then across 3rd St. in a northeasterly direction where it then enters the existing hillside and 'punches' into the existing 2nd St. tunnel. The alignment then uses the existing 2nd St. tunnel to run east, at-grade in a dual track configuration until it reaches Main St. The alignment splits into a couplet configuration at-grade, with one track continuing north on Main St. and the other track continuing east on 2nd St. then north on Los Angeles St. Both tracks then head east on Temple St., realigning into a dual track configuration at Los Angeles and Temple Streets. The alignment then heads east until the connection with the Metro Gold Line at Temple and Alameda Streets. In this alignment, 2nd St. between Los Angeles St. and Hill St. is transformed into a transit mall.

Underground Emphasis LRT Alternative

The Underground Emphasis LRT Alternative is 1.58 miles long and is proposed to use a bore tunneling construction technique. The estimated capital cost of this alternative is $910.4 million in FY2008 constant dollars, or $1.167 billion in YOE dollars, inclusive of inflation.

The Underground Emphasis LRT Alternative has a total of three stations, all underground. One station is under Flower St. between 4th and 5th Streets. A second station is located underneath the Grand Avenue Project development, and a third station is under 2nd St. between Main and Los Angeles Streets.

As shown in Figure 5-3, the alignment for the Underground Emphasis LRT Alternative begins at the existing underground 7th St./Metro Center Station and heads north under Flower St. It then turns northeast under the Grand Avenue Project development and heads east beneath the 2nd St. tunnel. The alignment continues east under 2nd St. until Central Ave., then it turns northeast under private property and rises through a new portal to the surface. The alignment then crosses the intersection of 1st St. and Alameda St. at grade to join the Metro Gold Line Eastside Extension tracks.

Based on the above descriptions, Table 5-1 summarizes the key alignment characteristics of the build alternatives. As shown in the table, the Underground Emphasis LRT Alternative is approximately 1,000 feet shorter than the At-Grade Emphasis LRT Alternative, with all of its alignment in bored tunnel underground. While the two At-Grade Emphasis LRT Alternative options are similar in length, Option A has a larger share its alignment in cut-and-cover underground and one more station underground compared to Option B.

Table 5-1 Key Alignment Characteristics of the Build Alternatives						
	At-Grade Emphasis LRT Alternative – Option A		At-Grade Emphasis LRT Alternative – Option B		Underground Emphasis LRT Alternative	
Alignment	Feet	%	Feet	%	Feet	%
At-Grade	4,830	51%	5,520	58%	-	0%
Couplet	1,900	20%	1,900	20%	-	0%
Underground	2,790	29%	2,030	21%	8,342	100%
Total Feet	9,520		9,450		8,342	
Miles	1.8		1.79		1.58	
Stations						
At-Grade	1		2		0	
Underground	2		1		3	

5.2 Capital Costs

5.2.1 Capital Costs of the Alternatives

This section describes the capital costs of the alternatives. As shown in Table 5-2, capital costs are presented in 2008 constant dollars and in Year of Expenditure dollars inclusive of inflation. The capital costs of the alternatives range from $62.7 million ($73.5 million in YOE dollars) for the TSM Alternative to $910.4 million ($1,166.9 million in YOE dollars) for the Underground Emphasis LRT Alternative. At this stage of project development, a conceptual implementation plan has been assumed for the build alternatives, whereby all cost categories are assumed to be incurred over a ten-year implementation period. In future iterations of the financial analysis, the costs and implementation schedule will be refined.

Table 5-2 Capital Costs in 2008 Dollars and YOE Dollars ($ millions)		
Alternative	2008 Dollars	YOE Dollars
TSM	$62.74	$73.51
At-Grade Emphasis LRT Alternative Option A	$795.67	$1,019.91
At-Grade Emphasis LRT Alternative Option B	$709.30	$909.17
Underground Emphasis LRT Alternative	$910.36	$1,166.91

Table 5-3 and Figure 5-4 present the capital costs of the alternatives using the FTA's Standard Cost Categories. FTA requires submission of capital costs in the SCC format at key milestones in the major capital project development process, including the application to enter Preliminary Engineering which follows the AA. The ten main cost categories are:

- 10 Guideway and Track Elements
- 20 Stations, Stops, Terminals, Intermodal
- 30 Support Facilities: Yards, Shops, Administration Buildings
- 40 Sitework and Special Conditions (removal of structures or existing trackwork, utility relocations, roadway modifications, and environmental mitigation)
- 50 Systems (overhead catenaries and communication infrastructure)
- 60 Row, Land, Existing Improvements
- 70 Vehicles
- 80 Professional Services
- 90 Unallocated Contingency
- 100 Finance Charges

Cost categories 10 through 60 are the construction and right-of-way elements associated with each alternative. Category 70 is the cost of vehicles and includes buses (TSM Alternative) and/or light rail vehicles (build alternatives). Categories 80 through 100 represent “soft costs.” These costs include allowances for professional services (Category 80) such as engineering and design, construction management, agency program management, project management oversight, project implementation, and training/start-up/testing. The allowances are computed by applying a percentage to the total construction cost estimated for each cost category (Categories 10 through 50). Unallocated contingency (Category 90) is an overall project contingency which is typically higher during the early stage of project development and decreases as more detailed planning and engineering is completed. Finally, finance charges are estimated if the financial plan for the project includes the issuance of bonds. No financing charges have been assumed at this time.

Costs for each alternative are shown in Table 5-3 and Figure 5-1, and explained below.

Table 5-3 Capital Costs of the Alternatives, by FTA Standard Cost Category (2008 $, in millions)				
		Build Alternatives		
FTA Standard Cost Categories	TSM	At-Grade Emphasis LRT Alternative-Option A	At-Grade Emphasis LRT Alternative-Option B	Underground Emphasis LRT Alternative
10 Guideway and Track Elements		$215.59	$204.64	$231.02
20 Stations, Stops, Terminals, Etc.		$82.75	$44.75	$116.27
30 Support Facilities	$21.00	$15.60	$15.60	$5.20
40 Sitework and Special Conditions		$154.87	$144.87	$184.91
50 Systems		$32.61	$32.52	$30.92
60 ROW, Land, Existing		$3.78	$3.78	$54.18
70 Vehicles	$29.11	$52.67	$52.67	$17.56
80 Professional Services	$6.93	$165.47	$145.99	$187.54
90 Unallocated Contingency	$5.70	$72.33	$64.48	$82.76
100 Finance Charges				
Total	**$62.74**	**$795.67**	**$709.30**	**$910.36**

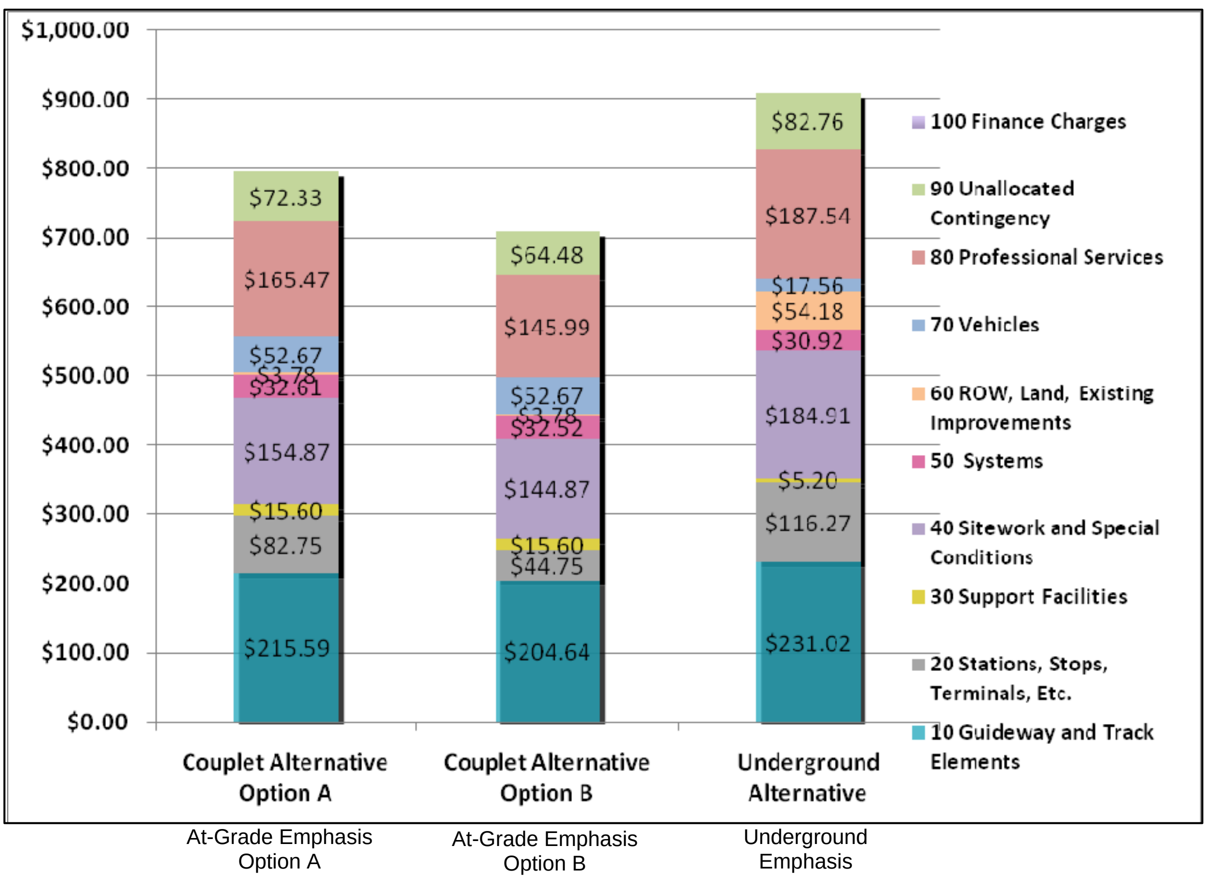


Figure 5-1 Capital Costs of the Alternatives, by Standard Cost Category(2008 $, in millions)

TSM Alternative

Of the $62.7 million cost of this alternative, approximately $50.1 million (80 percent) is for support facilities (33 percent) and vehicles (46 percent). This reflects the need for a new maintenance facility and a total of 42 new buses for this alternative. Professional services account for approximately $6.9 million (11 percent), with $5.7 million (9 percent) for unallocated contingencies.

At-Grade Emphasis LRT Alternative Option A

Of the $795.7 million cost of this alternative, approximately $501.5 million (63 percent) is related to the construction elements of the FTA SCC, with guideway and track (27 percent), sitework and special conditions (19 percent) and stations (10 percent) accounting for the majority of the construction costs. Twelve light rail vehicles would be required for this alternative which is $52.7 million (7 percent) of the total costs. Professional services account for $165.5 million (21 percent), with $72.3 million (9 percent) for unallocated contingencies.

At-Grade Emphasis LRT Alternative Option B

Similar to Option A, of the $709,3 million cost of this alternative, approximately $442.4 million (62 percent) is related to the construction elements of the FTA SCC, with guideway and track (29 percent), sitework and special conditions (20 percent) and stations (6 percent) accounting for the majority of the construction costs. Station costs are lower with Option B since only one station is underground compared to two in Option A. Similar to Option A, 12 light rail vehicles would be required for this alternative at a cost of $52.7 million (7 percent of the total costs). Professional services account for $146.0 million (21 percent), with $64.5 million (9 percent) for unallocated contingencies.

Underground Emphasis LRT Alternative

Of the $910.4 million cost of this alternative, $568.3 million (62 percent) is related to the construction elements of the FTA SCC, with guideway and track (25 percent), sitework and special conditions (20 percent) and stations (13 percent) accounting for the majority of the construction costs. Compared to the At-Grade Emphasis LRT Alternative, only four light rail vehicles would be required for this alternative which is $17.6 million (2 percent of total costs). Professional services account for $187.5 (21 percent), with $82.8 million (9 percent) for unallocated contingencies.

5.2.2 Year of Expenditure Cost Analysis

For the YOE cost analysis, capital costs were escalated from 2008 dollars using annual growth rates and a preliminary implementation plan developed by other team members. The annual and compound growth rates are shown in Table 5-4. In addition to these escalation rates, the percentage of project completion by year (cost curve) shown in Table 5-5 was used to estimate the annual costs for the TSM and the build alternatives.

Table 5-4 Year of Expenditure Dollar Escalation Rates		
Capital Costs	Growth Rate	Compound Annual Growth Rate
2009	1.04	1.04
2010	1.04	1.08
2011	1.04	1.12
2012	1.04	1.17
2013	1.04	1.22
2014	1.04	1.27
2015	1.03	1.30
2016	1.03	1.34
2017	1.03	1.38
2018	1.03	1.42

Table 5-5 Cost Curve Assumptions		
	Assumed Cost Curves	
Year	TSM Alternative	Build Alternatives
2009	14.3%	1.6%
2010	14.3%	2.4%
2011	14.3%	3.2%
2012	14.3%	12.0%
2013	14.3%	13.6%
2014	14.3%	14.4%
2015	14.3%	15.2%
2016		15.2%
2017		14.4%
2018		8.0%

Table 5-2, shown previously, compares the total costs for each build alternative in 2008 dollars and in YOE dollars. Table 5-6 and Figure 5-2 provide a comparison of the alternatives with respect to costs incurred per year in YOE dollars. As shown in the tables and figure, the major expenditures for the build alternatives are assumed to occur in years 4 through 9 of the 10-year project implementation period, while the costs of the TSM Alternative are assumed to be incurred over the first 7 years.

Table 5-6 Comparison of Annual Capital Costs (YOE$, in millions)				
Year	TSM Alternative	Couplet Alternative-Option A	Couplet Alternative-Option B	Underground Alternative
2009	$9,321	$13,240	$11,803	$15,148
2010	$9,694	$20,654	$18,412	$23,631
2011	$10,082	$28,641	$25,532	$32,769
2012	$10,485	$111,699	$99,574	$127,799
2013	$10,905	$131,656	$117,365	$150,632
2014	$11,341	$144,977	$129,239	$165,872
2015	$11,681	$157,622	$140,512	$180,340
2016	$0	$162,350	$144,727	$185,750
2017	$0	$158,420	$141,223	$181,253
2018	$0	$90,651	$80,811	$103,717
Total	$73,510	$1,019,910	$909,197	$1,166,911

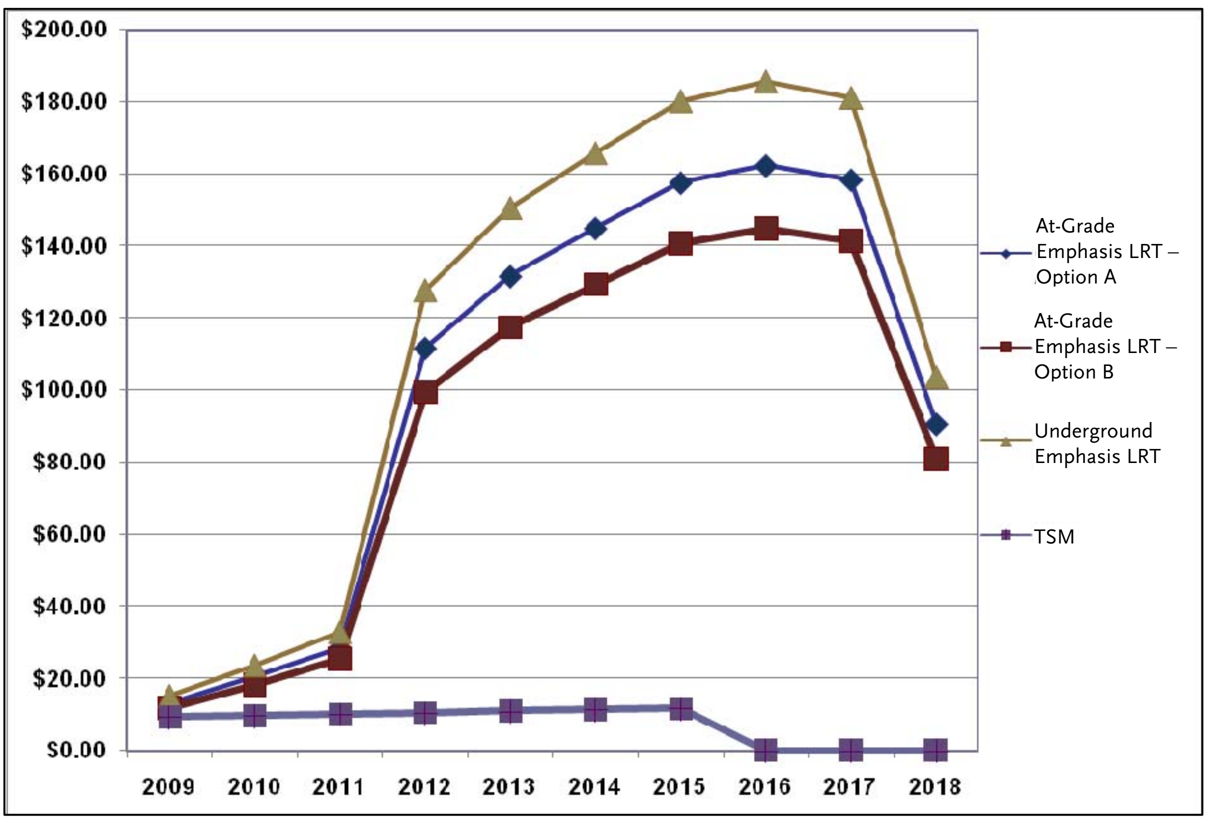


Figure 5-2 Annual Capital Costs by Alternative (YOE dollars, in millions)

5.3 Potential Capital Revenue Sources

This analysis identifies potential funding sources and financing strategies to fund the capital costs of the TSM and build alternatives. As shown in Table 5-7, the preliminary assumption is that the TSM and build alternatives would be funded 50 percent from federal sources and 50 percent from local sources. However, as the project development process continues and a locally preferred alternative is selected, these funding split assumptions may change, as may the funding sources proposed.

Table 5-7 Preliminary Funding Assumptions

Funding Source	TSM Alternative	Build Alternatives
Federal	50%	50%
State	0%	0%
Local	50%	50%

The subsequent sections provide a description of the conceptually proposed federal and local funding sources identified at this stage of project development. This is followed by descriptions of other potential state and local funding sources that could be examined in greater detail in future iterations of the financial analysis.

5.3.1 Conceptually Proposed Funding Sources

The federal and local/state funding sources conceptually proposed for the TSM and build alternatives are:

Federal:

- FTA Section 5309 New Starts (for the build alternatives);
- FTA Section 5309 Bus Discretionary (for the TSM Alternative); and
- Congestion Mitigation and Air Quality (CMAQ).

Local/State:

- Proposed New Countywide Transportation Sales Tax;
- Proposition A and Proposition C Countywide Transportation Sales Taxes (if restrictions on expenditure for subway construction were removed); and
- Regional Improvement Program (RIP).

5.3.1.1 Conceptually Proposed Federal Sources

FTA Section 5309 New Starts Program

The most viable federal funding source for the build alternatives is the FTA New Starts program. The New Starts program is the federal government's primary financial resource for supporting locally-planned, implemented, and operated transit fixed guideway capital investments, such as the build alternatives identified for the project. Since the TSM

Alternative does not include a fixed guideway element, it would not be eligible for New Starts funds.

Projects applying for New Starts funding must undergo evaluation by the FTA throughout the entire project development process. Projects are evaluated according to a variety of criteria such as mobility improvements, environmental benefits, cost-effectiveness, operating efficiencies, transit supportive land use, and local financial capacity. At this stage of project development, FTA's New Starts program is proposed to provide 50 percent of the total funding for the project.

According to Metro's 2008 LRTP, the agency anticipates receiving between $80-$100 million dollars a year in New Starts funds for a variety of planned fixed guideway projects. The projects identified in the LRTP to receive New Starts Funds are the:

- Eastside Light Rail Project;
- Exposition Phase II to Santa Monica; and
- Crenshaw Transit Corridor.

Metro has a successful history of obtaining New Starts funds, including the Red Line and the Eastside Light Rail Project, which received a Full Funding Grant Agreement in the amount of $490.7 million in June 2004.

Metro's LRTP assumes that after the $490.7 million is received for the Eastside Light Rail Project, the agency will receive approximately $80 million per year through FY 2025. As stated above, these funds are currently planned to be used on the Exposition Phase II to Santa Monica and the Crenshaw Transit Corridor projects, with the Regional Connector Transit Corridor not currently identified.

Beyond 2025, Metro staff have determined that no local funds will be available to provide match for federal New Starts funds. According to the LRTP, if in the future local matching funds become available, Metro will evaluate and select future capital projects to be included into the New Starts applications.

Assuming that Metro will have additional New Starts funds available for the Regional Connector's build alternatives in the near future, a 50 percent share would require the following total funding amounts.

- At-Grade Emphasis LRT Alternative – Option A: $509.9 million
- At-Grade Emphasis LRT Alternative – Option B: $454.59 million
- Underground Emphasis LRT Alternative: $583.45 million

Since the Eastside, Exposition, and Crenshaw projects currently have a higher priority than the Regional Connector, the timing for receipt of the New Starts funds could likely be at the end of the project's construction period. If this is the case, Metro would have to use local funds to cover FTA shares and be paid back when New Starts funds are available. Analysis of this issue will be addressed in future iterations of the financial analysis.

FTA Section 5309 Bus Discretionary Program

The Section 5309 Bus Discretionary Program allocates grants on an annual basis primarily through Congressional earmarks. Eligible purposes are acquisition of buses for fleet and service expansion, bus maintenance and administrative facilities, transfer facilities, bus malls, transportation centers, intermodal terminals, park-and-ride stations, acquisition of replacement vehicles, bus rebuilds, bus preventive maintenance, passenger amenities such as passenger shelters and bus stop signs, accessory and miscellaneous equipment such as mobile radio units, supervisory vehicles, fareboxes, computers, shop and garage equipment, and costs incurred in arranging innovative financing for eligible projects. Grants are typically provided in the form of an 80 percent federal and 20 percent local match. The primary components of the TSM Alternative, buses and a new maintenance facility, would be eligible for federal funding under this program.

Congestion Mitigation and Air Quality Program

The CMAQ program is a federal formula grant program for use on projects that contribute to attainment of national ambient air quality standards. Within the 2008 LRTP, Metro has programmed CMAQ funds for new transit lines including Eastside, Exposition Light Rail Line Phases I and II, Crenshaw Transit Corridor and for the first three years of operation of various Metro Rapid bus projects.

While the deadline for compliance with federal air quality standards is 2020, Metro has programmed declining levels of CMAQ funds through 2030 within the 2008 LRTP. The Regional Connector would qualify for CMAQ funding as a project that would contribute to attainment of national ambient air quality standards and reduce congestion.

5.3.1.2 Conceptually Proposed Local/State Funding Sources

Los Angeles Countywide Sales Taxes for Transportation

Currently there are two existing countywide transportation sales taxes in Los Angeles County – Proposition A and Proposition C. However, the 1998 Reform and Accountability Act restricts the use of Proposition A and C funds to construct underground subways. In order to use these funds for the build alternatives, this restriction would need to be removed.

Proposition A

Proposition A is a county-wide half-cent sales tax that was passed in 1980. This voter-approved sales tax is used to improve and expand public transportation throughout Los Angeles County. Proposition A funds are allocated among four funding programs: Local Return Program (25 percent), Rail Development Program (35 percent), Discretionary Program (40 percent), and the 5 percent of 40 percent Incentive Program. The build alternatives would likely only be eligible for one of these programs, the Rail Development program. The TSM Alternative would be eligible under the Local Return and Discretionary programs. Neither the build alternatives nor the TSM Alternative would be eligible under the 5 percent of 40 percent Incentive Program, as this is for paratransit and special transit programs.

Rail Development Program: For previous major construction projects, such as the Blue, Green and Red Lines, Metro has leveraged these funds by bonding in accordance with the agency's adopted debt policy. Bond debt service has the first claim of funds from this program. Other eligible uses include the acquisition, renovation, rehabilitation, and replacement of rail vehicles, rail facilities, and wayside systems, operation of rail systems, and acquisition and maintenance of rights of way.

Local Return Program: Funds from this program are distributed to Los Angeles County and the cities in the County on a per capita basis for public transit uses. These funds may be traded to other jurisdictions in exchange for general or other funds if the traded funds are used for public transit purposes. Eligible uses include expenditures related to fixed route and paratransit services, Transportation Demand Management (TDM), Transportation System Management (TSM), and fare subsidy programs that exclusively benefit transit.

Discretionary: These funds are allocated based on Metro Board policy for County bus operators by formula based on projected receipts plus CPI, and adjusted once during the mid-year reallocation. Eligible uses include any transit purpose, however current practice limits expenditures to bus capital and operations.

Proposition C

Proposition C is a county-wide half-cent sales tax that was passed in 1990. This voter-approved sales tax is used for public transit purposes throughout Los Angeles County. Proposition C funds are allocated among five funding programs: Rail and Bus Security (5 percent), Commuter Rail/Transit Centers (10 percent), Local Returns (20 percent), Transit-related Improvements to Freeways and State Highways and Public Mass Transit Improvements to Railroad Rights-of-Way (25 percent) and Discretionary program (40 percent). The build alternatives would likely only be eligible for one of these programs, the Discretionary program. The TSM Alternative would be eligible for funds from the Discretionary and Local Returns programs.

Discretionary Program: Funds from this program are currently allocated at the discretion of Metro Board to Metro and non-Metro operators and agencies after all other funding opportunities are exhausted. Eligible uses include the improvement and expansion of rail and bus transit countywide, provision of fare subsidies, increased graffiti prevention and removal, and increased energy-efficient, low polluting public transit service. These funds may also be used for Metro's Call for Projects and other regionally significant transit programs at discretion of Metro Board.

Local Returns Program: These funds are distributed to cities on a per capita basis exclusively for public transit purposes. Unlike the Proposition A Local Returns program, these funds may not be traded to other jurisdictions in exchange for general or other funds. Eligible uses include expenditures related to fixed route and paratransit services, Transportation Demand Management (TDM), Transportation System Management (TSM), fare subsidy programs that exclusively benefit transit, Congestion Management Programs, commuter bikeways and bike lanes, street improvements supporting public transit service, and Pavement Management System projects.

Regional Improvement Program (RIP)

The State's funding for transportation is programmed in the State Transportation Improvement Program (STIP). Within the STIP, 75 percent of the funding is allocated and programmed by the regional transportation planning agencies such as Metro under the Regional Improvement Program (RIP). The remaining 25 percent is programmed by the State under the Interregional Improvement Program. The actual sources of RIP funding are the federal Surface Transportation Program (STP) and the State's Public Transportation Account (PTA). PTA revenues accrue from a sales tax on gasoline and diesel fuel, with revenues used for transit.

Based on a fund estimate prepared by Caltrans, the California Transportation Commission develops the annual RIP programming targets for each agency. Metro selects and programs the projects to be funded through its Call for Projects process and the Metro Long and Short Range Transportation Plans. Metro has programmed and re-programmed its STIP projects to conform to the targets, which have been subject to change based on level of funds available and the extent of borrowing of PTA revenues by the State for use in balancing the State Budget. Future RIP revenues could potentially be used to assist in funding the Regional Connector.

5.3.2 Other Potential Funding Sources

As the project moves forward, the following sources may become viable revenue sources for the alternatives. These potential sources described below include one state source and five local sources.

5.3.2.1 Potential State Source

At this stage of project development, five other potential local funding sources have been identified. While these sources may provide funding in the future, they should be considered as minor supportive sources as they would generate a much smaller revenue stream than the county-wide sales taxes and RIP funding described previously.

Benefit Assessment District Revenues

Under a benefit assessment district, a fee is placed on properties in a specified area to pay part or all of the cost of specific capital improvements made within and specifically benefiting that area. The underlying principle for the creation of benefit assessment districts is that owners of property located within close proximity to a particular public asset, such as a rail transit station, derive benefits from the presence of that asset and, therefore, should share in the costs of its construction, maintenance, operation, and/or upgrading. In a benefit assessment district, a connection between benefit received and cost charged is essential, in that assessments charged should be proportional to and no greater than the benefit received by the assessed property.

In July 1985, Metro established two benefit assessment districts as part of the funding plan for Segment 1 of the Red Line. The districts, referred to as District A1 and A2, were formed in advance of the initiation of service in 1993. Annual assessments were levied on the gross square footage of the assessable improvement or parcel area of non-residential properties. For District A1, the 2007-2008 assessment rate is $0.33 while the assessment rate for District A2 is $0.32.

Funding from the two benefit assessment districts provided approximately $130.0 million or 9 percent of the Red Line's total costs. The $130.0 million was in the form of bond proceeds to support the construction of stations in each district. The benefit assessment districts have provided the revenue stream to repay the bonds. The final assessment fee was collected in April 2009 with the final bond payment scheduled for September 2009.

At the time the two existing benefit assessment districts were formed, Metro was not required to conduct an election in order to levy an assessment on property owners. With passage of State Proposition 218 in 1996, new assessment districts require approval by a two-thirds vote of property owners. The 2008 LRTP assumes no future funding from benefit assessment districts.

While the existing benefit assessments are expiring, it is of interest to note the considerable overlap between these districts and the PSA boundaries. For this reason, a description of the two districts is provided below.

<u>District A1 – Central Business District</u>: District A1 covers approximately 1,205 acres and includes Bunker Hill, the Civic Center portions of Chinatown, Little Tokyo and the Financial District areas of downtown Los Angeles. This district includes four Red Line stations, Union Station, Tom Bradley Civic Center Station, Pershing Square Station and 7th St./Metro Center Station. The benefit assessment district boundaries were set at a one-half mile distance from the station locations. Within the District A1's one-half mile boundaries there are approximately 2,700 properties, of which 1,250 properties are assessable and contain 63.2 million square feet. Bonds in the amount of $123.5 million were issued for this assessment district to support the construction of the four stations.

<u>District A2 – Westlake/MacArthur Park District</u>: District A2 is located on Wilshire Blvd., midway between Miracle Mile to the west and the Los Angeles Central Business District to the east. The district reflects a one-third mile boundary around one Red Line station, Westlake/MacArthur Park Station, and covers approximately 207 acres. Within the district there are approximately 460 properties of which 230 are assessable and contain 3.3 million square feet. Bonds in the amount of $6.5 million were issued for this assessment district to support the construction of the station.

Joint Development Proceeds

Metro has a long, successful history of joint development projects along its major transit corridors. According to Metro's Joint Development Policies and Procedures document, joint development is a real property asset development and management program designed to secure the most appropriate private and/or public sector development on Metro-owned property at and adjacent to transit stations and corridors. Joint Development also includes coordination with local jurisdictions in station area land use planning in the interest of establishing development patterns that enhance transit use.

The goals of Metro's Joint Development Program include:

- Encouraging comprehensive planning and development around station sites and along transit corridors; and
- Reducing auto use and congestion through encouragement of transit-linked development.

For the specific sites, the Metro's Joint Development Program seeks developments that

- Promote and enhance transit ridership;
- Enhance and protect the transportation corridor and its environs;
- Enhance the land use and economic development goals of surrounding communities and conform to local and regional development plans; and
- Generate value to the MTA based on a fair market return on public investment.

Table 5-8 summarizes the current status of Metro's Joint Development Program. The table includes completed projects, projects under construction, projects that have been approved by Metro's Board, and potential future joint development sites. Additional joint development sites could potentially be identified for the Regional Connector.

Mello-Roos District Revenues

The Mello-Roos Community Facilities Act of 1982, Gov. Code §§ 53311 ff. provides an alternative method of financing certain public capital facilities and services, especially in developing areas and areas undergoing rehabilitation. A local legislative body may create a Mello-Roos Community Facilities District (or "CFD") within defined boundaries to finance a broad range of facilities and services, including the purchase, construction, expansion, improvement, or rehabilitation of any real or other tangible property with an expected useful life of 5 years or longer which the agency conducting the proceedings is authorized by law to construct, own, or operate, or to which it may contribute revenue. The CFD may impose a "special tax" within the boundaries of the CFD, which requires a two-thirds vote of registered voters (if the district is developed). If the vote passes, a "Notice of Special Tax Lien" is recorded which imposes a continuing lien on affected properties. CFD's may issue bonds secured by the special tax.

Table 5-8 Metro Joint Development Project Status

Joint Development Projects	Development Summary
Completed Projects	
Union Station Gateway, 1995	• 600k Square foot Metro headquarters building • 11 Bay Patsaouras Plaza • Union Station East Portal • 2,800 space below-grade parking garage • Space for additional 2 million square feet of commercial/retail
7th St./Metro Center Station, 1993	• Station in basement of a 550k square foot office tower
Metro Blue Line Willow Station, 1999	• 528k square foot site • 132k net rentable square feet of neighborhood shopping • Major grocery store, retail and food services facilities • 700- car transit parking structure
Metro Red Line Hollywood/Highland Station, 2001	• 389k square feet of retail/entertainment • 3,500 seat Kodak Theater • 640-room Renaissance Hollywood Hotel • 3,000-space parking structure
Metro Red Line Hollywood/Western Station, 2004	• 60 affordable housing units and retail • 9k square foot retail • 4k square foot child care center
Wilshire and Vermont, 2008	• 380 residential units • 26k square feet of commercial space • Child care center • 800 student middle school • 700 space parking structure
Projects in Construction	
Hollywood-Vine	• 300 room W Hotel • 150 W branded condos integrated with hotel • 350 apartments • 72k square feet street level retail • bus layover facility
Wilshire-Western	• 195 Condominiums • 49k square feet retail/restaurant • 700 space parking • bus layover facility with 12 spaces
Projects with Board Approval	
Westlake-MacArthur Park	• 310 affordable housing units • 86k square feet of retail • 483 space parking structure
Potential Sites	
North Hollywood	17.4 Acre 4 parcel potential site
Universal City	12 Acre 2 parcel potential site
Metro Orange Line Sepulveda Station	12.48 Acre 1 parcel potential site
Chatsworth Metrolink Station	12 Acre 2 parcel potential site

Table 5-8 Metro Joint Development Project Status	
Joint Development Projects	Development Summary
Metro Gold Line Eastern Extension	Various Parcel potential site
Taylor Yard	23 Acre 1 parcel potential site
Blue Line Artesia Station Bus Divisions (Div. 7; El Monte)	6.4 Acre potential site
Metro Orange Line Balboa Station	2.2 Acre potential site
Vermont/Beverly	.5 Acre potential site
Vermont/Sunset	.7 Acre potential site

Currently transit capital and operating expenses are not eligible to receive funding from Mello-Roos Districts. In the spring 2008, the Mello-Roos Act and Public Transit (AB 2705) was submitted which would authorize the use of Mello-Roos Community Facilities Districts to finance public transit facilities and operating expenses in new developments. In future iterations of the financial analysis, this pending legislation will be reviewed and further evaluated for potential applicability to the project.

Revenue from Potential Congestion Pricing Strategies

Congestion pricing is the concept of charging for the use of a transportation facility, such as a roadway, based on the level of traffic congestion. The greater the level of congestion, usually occurring during morning and evening rush hours, the higher the cost (tolls) to use the facility.

It is assumed that revenues generated by the tolls would be used first to pay for the operations of the priced lanes and any outstanding debt associated with implementing congestion pricing in a corridor. After paying these expenses, any additional revenues generated from the tolls could be used to improve or enhance transportation services in the corridor where the toll is generated. These enhancements may include additional bus and rail services, roadway improvements, and other complementary services.

Los Angeles County was recently selected to implement a one-year congestion pricing demonstration project under a United States Department of Transportation funding program. The project, called FastLanes, will test innovative pricing strategies to alleviate congestion, maximize freeway capacity usage, and fund additional transit alternatives on High Occupancy Vehicle (HOV) lanes on I-110 between 182nd St./Artesia Transit Center and Adams Blvd. and on I-10 between Alameda St./Union Station and I-605.

Revenue from Potential Countywide Transportation Impact/ Mitigation Fee

Transportation impact fees are charges assessed by local governments against new development projects that attempt to recover the cost incurred by government in providing the public facilities required to serve the new development. Impact fees are typically only used to fund facilities that are directly associated with the new development. While transportation impact fees may be used to pay the proportionate share of the cost of public facilities that benefit the new development, the fees usually cannot be used to correct existing deficiencies in public facilities. Revenue from the impact fees could be pledged for payment of annual debt service to implement the improvement project.

Metro is currently conducting a Countywide Congestion Mitigation Fee Study which has the following primary objectives:

- Establish a regional mitigation program by meeting regional mitigation requirements under Metro's Congestion Mitigation Program (CMP) and the California Environmental Quality Act (CEQA), replacing the existing CMP debit/credit program and ensuring the continued flow of more than $95 million annually in gas tax revenue to local governments;
- Ensure local control by allowing projects to be selected by each jurisdiction consistent with guidelines, allowing fees to be collected separately by each jurisdiction, and allowing fees to be deposited in separate interest-generating accounts;
- Generate new revenue for unmet transportation needs; and
- Provide a level playing field county-wide.

Results from the study indicate that implementation of mitigation fees could generate between $2 and $15 billion in funding for transportation projects over the 2005 to 2030 period, depending upon the fee imposed. Although Metro is developing and overseeing this program, the cities would have the control to implement the program on a local level. Additionally, the study recommends establishing an advisory committee to oversee the program's implementation and assist in guiding the program's recommendations.

5.3.3 Potential Financing Strategies

This section describes two potential funding strategies that could be evaluated in detail during future iterations of the financial analysis.

Metro Bonding Capacity

Metro leverages a portion of its revenues from Proposition A and Proposition C county-wide sales taxes for use in paying the debt service on bonds issued to support bus, rail, and highway capital projects. Within the 2008 LRTP, the agency's long range financial plan calls for Metro to modify its current debt policy by increasing the percentage of cash to be used for debt as opposed to using it on a pay as you go basis. Specifically, the LRTP assumes increasing the percent of revenue available for debt service within the following funding programs:

- Proposition C 25 Percent Funds (Transit-related Improvements to Freeways and State Highways and Public Mass Transit Improvements to Railroad Rights-of-Way program): from 60 percent to 75 percent; and
- Proposition C 10 Percent Funds (Commuter Rail/Transit Centers program): from 40 percent to 50 percent.

Project Packaging for FTA New Starts Process

Transit agencies across the country are identifying alternative project delivery strategies to implement major capital projects faster. In both Houston and Salt Lake City, the transit agencies have been successful in reaching an agreement with FTA to submit a package of fixed guideway projects that would have a portion of the projects funded entirely with local sources and the remainder of the projects funded jointly between the federal government and the local agency. For example, the Utah Transit Authority (UTA) has entered into a Memorandum of Understanding (MOU) with the FTA for the FrontLines 2015 Program. According to the MOU, the overall funding split for the $2.5 billion five-corridor program will be 20 percent federal and 80 percent local. However, for the two highest performing projects FTA has agreed to an 80 percent federal and 20 percent local funding split. For the remaining three projects in the FrontLines Program, UTA will use 100 percent local funds with the majority of this funding provided through the issuance of bonds.

It's important to note that in order for this approach to be successful there would need to be enabling language included in the SAFETEA-LU reauthorization bill and a successful negotiation of an MOU with the FTA.

5.4 Operations and Maintenance (O&M) Costs and Revenues

5.4.1 O & M Costs

System-wide O&M cost estimates were developed for each of the alternatives and reflect operating plans for the year 2030. For this report, costs are shown in 2008 dollars. In future versions of the financial analysis, O&M costs will be shown in YOE dollars and will be included in a detailed cash flow analysis.

Table 5-9 summarizes the total annual cost by mode for each alternative. Table 5-10 compares the change in annual O&M costs relative to the No Build Alternative, while Table 5-11 compares the change in costs relative to the TSM Alternative. Key findings from these comparisons are described below.

In comparison to the No Build Alternative:

- The Underground Emphasis LRT Alternative has the lowest annual increase in O&M cost ($5.1 million), followed by the At-Grade Emphasis LRT Alternative ($9.6 – $9.8 million). The TSM Alternative has the largest increase in annual O&M costs ($13.6 million) due to the significant increase in bus service and relatively small savings in heavy rail and light rail costs (less than $100,000).

In comparison to the TSM Alternative:

- The Underground Emphasis LRT Alternative has the lowest annual increase in O&M cost and provides the largest annual savings (approximately $8.5 million savings).

- The annual O&M costs of the At-Grade Emphasis LRT Alternative are lower than the TSM Alternative. Option A has a savings of $3.8 million, while Option B has a savings of $4.1 million.

In comparison within/to the At-Grade Emphasis LRT Alternatives:

- At-Grade Emphasis LRT Alternative - Option B annual O&M costs were slightly lower than Option A (approximately $0.25 million less).
- The annual O&M cost of the Underground Emphasis LRT Alternative is approximately $4.5 million lower than the At-Grade Emphasis LRT Alternative.

Table 5-9 2030 Annual Operating Cost of the Alternatives (in 2008 $, Millions)

Mode	No Build Alternative	TSM Alternative	Couplet Alternative-Option A	Couplet Alternative-Option B	Underground Alternative
Heavy Rail	$117.09	$117.06	$116.30	$116.26	$116.11
Light Rail	$258.01	$257.95	$268.61	$268.42	$264.20
Bus Including BRT	$987.92	$1,001.61	$987.91	$987.88	$987.87
System-wide Total	**$1,363.02**	**$1,376.62**	**$1,372.82**	**$1,372.57**	**$1,368.17**

Table 5-10 Comparison of 2030 Annual Operating Costs to the No Build Alternative (in 2008 $, Millions)

Mode	No Build Alternative	TSM Alternative	Couplet Alternative-Option A	Couplet Alternative-Option B	Underground Alternative
Heavy Rail	-	-$0.03	-$0.79	-$0.83	-$0.98
Light Rail	-	-$0.06	$10.60	$10.41	$6.19
Bus/BRT	-	$13.69	-$0.01	-$0.04	-$0.05
System-Wide Total	-	$13.60	$9.80	$9.55	$5.15

Table 5-11 Comparison of 2030 Annual Operating Costs to the TSM Alternative (in 2008 $, Millions)					
Mode	No Build Alternative	TSM Alternative	Couplet Alternative Option A	Couplet Alternative Option B	Underground Alternative
Heavy Rail	N/A	-	-$0.76	-$0.80	-$0.95
Light Rail	N/A	-	$10.66	$10.47	$6.25
Bus/BRT	N/A	-	-$13.70	-$13.73	-$13.75
System-Wide Total	N/A	-	-$3.80	-$4.05	-$8.45

5.4.2 O & M Revenue Sources

The sections below describe preliminary estimates of farebox revenue, farebox recovery rates, and levels of annual system-wide operating support associated with the alternatives.

5.4.2.1 Farebox Revenues and Farebox Recovery

Table 5-12 summarizes the annual system-wide farebox revenues and farebox recovery rates of the alternatives for the 2030 horizon year. Annual estimates of 2030 farebox revenues were developed based on the travel forecasting model projections of 2030 total daily linked trips by alternative and Metro's 2007 average fare revenue per linked trip. Total daily linked trips were annualized using an annualization factor of 317.39, consistent with the factor used in calculation of user benefits. The resulting annual numbers of system-wide linked trips are shown in the table below. Annual farebox revenues were then estimated assuming Metro's 2007 average linked trip fare of $0.66. This average fare reflects Metro's most recent fare increase and the current level of use of discounted fare media and programs.

As shown in the table, annual system-wide farebox revenues for the 2030 horizon year are projected to range from $317.5 million for the No Build Alternative to $319.7 million for the Underground Emphasis LRT Alternative. Relative to the annual system-wide O&M costs projected for the 2030 horizon year, farebox recovery is estimated to range from 23.1 for the TSM Alternative to 23.4 for the Underground Emphasis LRT Alternative. While the actual farebox recovery rates are preliminary, the data indicate that the Underground Emphasis LRT Alternative would generate higher levels of fare revenue and farebox recovery than the other alternatives, followed by the At-Grade Emphasis LRT Alternative.

Table 5-12 2030 Annual Farebox Revenues and Farebox Recovery by Alternative (2008 $)					
	No Build Alternative	TSM Alternative	At-Grade Emphasis LRT Alternative		Underground Emphasis LRT Alternative
			Option A	Option B	
Annual Linked Trips (millions)	481.11	481.41	483.52	483.77	484.34
Annual Farebox Revenue (2008 $, millions)	$317.53	$317.73	$319.13	$319.29	$319.67
Farebox Recovery	23.3%	23.1%	23.2%	23.3%	23.4%

5.4.2.2 Operating Support from Metro

The combined effect of lower annual system-wide O&M costs and higher farebox revenues is projected to reduce the level of annual operating support that Metro would be required to fund. Table 5-13 summarizes the reduction in annual operating support associated with the build alternatives relative to the TSM Alternative. As shown in the table, the Underground Emphasis LRT Alternative is projected to reduce the level of annual system-wide operating support required from Metro by $10.4 million. The At-Grade Emphasis Alternative is projected to reduce Metro's system-wide operating subsidy by $5.2 million to $5.6 million.

Table 5-13 2030 Reduction in Annual Operating Support Relative to the TSM Alternative (2008 $, Millions)				
	TSM Alternative	At-Grade Emphasis LRT Alternative		Underground Emphasis LRT
		Option A	Option B	
Increase in Farebox Revenues	-	$1.40	$1.56	$1.94
O&M Cost Savings	-	$3.80	$4.05	$8.45
Reduction in Operating Support	-	$5.20	$5.61	$10.39

5.5 Summary of Findings

The key findings of the financial analysis are summarized below.

- The Regional Connector is included in both of the existing long range financial planning documents for the region: Metro's 2008 Long Range Transportation Plan (LRTP) and the Southern California Association of Governments Regional Transportation Plan (SCAG RTP). Within the LRTP, the Regional Connector is the highest priority project within the Strategic Unfunded component of the plan. Projects in the Strategic Unfunded component of the plan could be implemented if additional funding were made available from new sources. With regard to the SCAG's Regional Transportation Plan, the Regional Connector is included in the financially constrained plan as a funded project (project identification number 1TR0404).

- The alternatives under consideration for the Regional Connector are the Transportation System Management (TSM) Alternative and two build alternatives, in addition to a No Build Alternative. The TSM Alternative would use buses to shuttle passengers between the 7th St./Metro Center Station and Union Station. The build alternatives would provide a continuation of existing light rail service between the two stations. The build alternatives reflect two options for a combined at-grade/cut-and-cover underground alternative that includes one-way couplets on Main St. and Los Angeles St. (At-Grade Emphasis LRT Alternative) and an alternative that is 100 percent underground bore tunnel (Underground Emphasis LRT Alternative).

- The capital costs of the Regional Connector alternatives range from $62.7 million ($73.5 million in YOE dollars) for the TSM Alternative, to $709.3 - $795.7 million ($909.2 - $1,019.9 million in YOE dollars) for At-Grade Emphasis LRT Alternative Options A and B respectively, and to $910.4 million ($1,166.9 million in YOE dollars) for the Underground Emphasis LRT Alternative. At this stage of project development, a conceptual ten year implementation plan has been assumed for the build alternatives and seven years for the TSM Alternative. In future iterations of the financial analysis, the costs and implementation schedule will be refined.

- The capital costs of the TSM and build alternatives are assumed to be funded 50 percent from federal sources and 50 percent from local/state sources. The federal and local/state funding sources conceptually proposed are:

Federal:

- FTA Section 5309 New Starts (for the build alternatives);

- FTA Section 5309 Bus Discretionary (for the TSM Alternative); and

- Congestion Mitigation and Air Quality (CMAQ).

Local/State:

- Proposed New Countywide Transportation Sales Tax;

- Proposition A and Proposition C Countywide Transportation Sales Taxes (if restrictions on expenditure for subway construction were removed for the build alternatives); and

- Regional Improvement Program (RIP).

FTA New Starts funding is proposed to total approximately $600 million ($60 million per year over the 10 year implementation period).

The build alternatives are projected to have lower system-wide operating and maintenance (O&M) costs than the TSM Alternatives. Relative to the TSM Alternative, the Underground Emphasis LRT Alternative would reduce 2030 annual O&M costs by $8.45 million. The At-Grade Emphasis Alternative Options A and B would reduce 2030 annual O&M costs by $3.80 million and $4.05 million respectively.

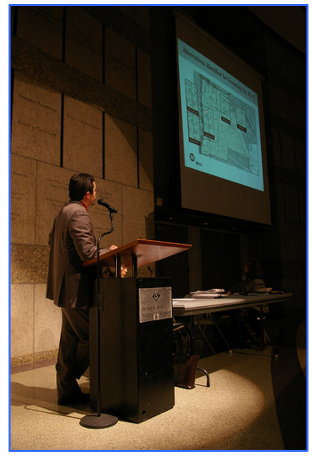
The build alternatives are projected to generate higher system-wide ridership and farebox revenues than the TSM Alternatives. Relative to the TSM Alternative, the Underground Emphasis LRT Alternative would increase annual farebox revenues by $1.94 million. The At-Grade Emphasis LRT Alternative Options A and B would increase annual farebox revenues by $1.40 million and $1.56 million respectively.

With the combined effect of lower system-wide O&M costs and higher farebox revenues, the build alternatives are projected to reduce the annual operating support that would be required from Metro. Relative to the TSM Alternative, the Underground Emphasis LRT Alternative would reduce Metro's annual system-wide operating subsidy by $10.39 million. The At-Grade Emphasis LRT Alternative Options A and B would reduce Metro's annual system-wide operating subsidy by $5.20 million and $5.61 million respectively.

As the alternatives selection process moves forward, future iterations of the financial analysis will be conducted, with increasing levels of detail and refinement. The refined financial analysis will include a detailed cash flow analysis in YOE dollars through the project horizon year of 2030.

Section 6 Community Outreach and Public Involvement

6.1 Understanding of Public Outreach Challenges and Opportunities



The Regional Connector is a project that brings challenges as well as opportunities to the public involvement process. While its actual design, engineering and operational impacts are focused on a relatively small area in downtown Los Angeles, its potential benefits accrue to all those served by transit throughout the entire Southern California region. Therefore, it was important to reach out not only to downtown stakeholders, including the employees, residents, tourists and businesses within the PSA, but also to those benefiting from improved system connectivity from one side of Los Angeles County to the other.

Downtown Los Angeles has undergone a transformation over the last decade from primarily a daytime employment destination to a dynamic community with a growing residential population. Established business organizations, Chambers of Commerce, Business Improvement Districts (BIDs), Neighborhood Councils, and others, provided access to stakeholders and organized groups. Through these key groups, the project team established contact and ongoing communication channels to downtown stakeholders.

It was equally important to reach out to stakeholders and commuters who could potentially benefit from the regional transit connectivity of the project. These constituents included transit users from the Metro Blue Line which begins in Long Beach, the Metro Gold Line from Pasadena and transit users who would potentially utilize public transit once the Metro Expo Line and Metro Gold Line Eastside Extension finished construction. The project team reached this widely disbursed population segment through electronic and web-based communications as well as by placing meeting notices on existing public transit vehicles prior to the scoping process and each subsequent meeting.

6.1.2 Community Outreach and Public Involvement Program

A detailed Community Outreach and Public Involvement Plan was developed in order to ensure that the public was kept informed about the Regional Connector AA study on an ongoing basis and provided with opportunities to comment at key milestones throughout the study. The Plan included detailed stakeholder identification, communications protocols, public input tracking, and a proposed schedule for interfacing with the public and recommendations for how meetings should be conducted at various stages of the study. Additional recommendations for key stakeholder interviews or briefings, inter-agency coordination, and topical meetings were also included in the Plan. The Plan was developed with the necessary flexibility to accommodate changing circumstances and enhanced approaches required for complex projects. Details of outreach efforts can be found in the Community Participation Summary and Report prepared in November 2008. Other documents such as public comment sheets, meeting handouts, presentation materials, public notices, and various meeting items can be found in the appendix sections of the Community Participation Summary and Report.

6.1.3 Stakeholder Identification and Database Development

A comprehensive stakeholder identification process was initiated to coincide with the early scoping process. A comprehensive study database was developed for the purposes of a targeted email and direct mail campaign to:

- Elected officials on the local, state and federal level
- Neighborhood Councils and other elected groups
- Homeowners Associations and Neighborhood Organizations
- Chambers of Commerce and business leaders
- Community-based and civic organizations
- Key employment centers and cultural/entertainment destinations
- Transportation advocates and interest groups
- Print, broadcast and electronic media, including community-based publications and blogs
- Local Business Improvement Districts (BIDs)
- Property management firms serving lofts and condominiums in the Downtown Los Angeles area

A copy of the stakeholder database is located in Appendix A.

Hand-in-hand with the development of the project database was preparation of a Community Profile which highlights the key opinion leaders for this project, as well as their possible issues, concerns and potential support/opposition to the alternatives.

6.2 Public Meetings

Three series of public meetings were held in November 2007, February 2008, and October 2008 as part of the ongoing community outreach and public involvement process.

6.2.1 Early Scoping Meetings

In addition to the Early Scoping Notice which was published in the Federal Register on October 31, 2007, a Public Meeting Notice was developed to notify communities about the Regional Connector study, the early scoping meetings, and opportunities for stakeholders to provide their input prior to the deadline for public comment.

Public Meeting Notices were distributed in a number of ways. A detailed list of 83 regional media outlets was developed which included mainstream, community-based and ethnic/foreign language print and broadcast outlets. A complete list of the media contacted for this project is included in Appendix H.

A press release (provided in Appendix C.5 of the Community Participation Summary and Report) was developed and distributed to all 83 outlets; for the community-based and ethnic print media, a specific request was made for inclusion of early scoping meeting information in their community calendars.

In addition, display advertisements for the early scoping meetings were placed in three (3) newspapers in the PSA and were selected based on their geographic focus, language needs and audited circulation numbers. Newspaper advertisements for the early scoping meetings were placed in the following newspapers:

Outlet	Run Date	Language	Circulation
Los Angeles Downtown News	October 26, 2007	English	49,000
Los Angeles Garment and Citizen	October 26, 2007	English, Spanish	25,000
Rafu Shimpo	October 23, 2007	Japanese	45,000

Approximately 400 individuals and organizations with email addresses were included in the initial stakeholder database. Email notices were sent out on October 23, 2007, with follow-up reminders sent on November 5, 2007. An electronic reminder to the community to submit comments was sent on November 21, 2007. Comments were accepted until November 30, 2007 – an extension of the original date of November 21st.

Over 500 notices were mailed to residents, agencies, and organizations in the PSA. Meeting notices were mailed on October 23, 2007. Notices were posted online at www.metro.net/regionalconnector.

Copies of the postal mailer document were delivered to property managers at 12 residential loft and condominium locations for posting in their public areas.

“Take-Ones” were placed on Metro buses and trains serving, and feeding into, the PSA on October 29, 2007.

All those on the stakeholder database either received two (2) email notices about the early scoping meetings (i.e., an initial notice followed by a reminder), or one (1) piece of direct mail. The offices of elected officials representing portions of the PSA were also contacted and alerted about the meetings.

Multiple organizations were contacted requesting that they forward invitations to the early scoping meetings to their members or constituents. These organizations included transportation advocacy groups, neighborhood and business organizations, civic groups, and academic institutions.

Metro staff also made follow-up calls to agencies inviting them to attend the Agency Early Scoping Meeting.

One (1) Agency Early Scoping Meeting and two (2) Public Early Scoping Meetings were held as described below.

6.2.2 Agency Early Scoping Meeting

Tuesday, October 30, 2007; 12:30 – 2:30 p.m.
Metro Headquarters, Board Overflow Room
One Gateway Plaza, Los Angeles, CA 90012

In attendance were 15 individuals, representing the following agencies:

- City of Los Angeles
- Department of City Planning
- Department of Transportation
- Department of Public Works: Bureau of Engineering
- Cultural Affairs Department
- Los Angeles County
- Metro
- Sheriff's Department: Transit Safety Bureau
- Los Angeles Community College District
- Los Angeles Regional Water Quality Control Board
- Southern California Regional Rail Authority
- State of California
- Public Utilities Commission

- United States Department of Homeland Security: Transit Security Agency

Comments were received during the review period from the City of Los Angeles Community Redevelopment Agency (CRA), the Metropolitan Water District (MWD) and the City of Los Angeles Department of Public Works Bureau of Engineering. A copy of the agency early scoping meeting materials is provided in Appendix N of the Community Participation Summary and Report, including the Early Public Scoping Packet, copy of the Power Point presentation and the exhibits.

6.2.3 Public Early Scoping Meetings

Two (2) Public Early Scoping Meetings were scheduled for November 2007. Public comment received at these Early Scoping Meetings formed the basis for development of a comprehensive range of alternatives for further study in the AA.

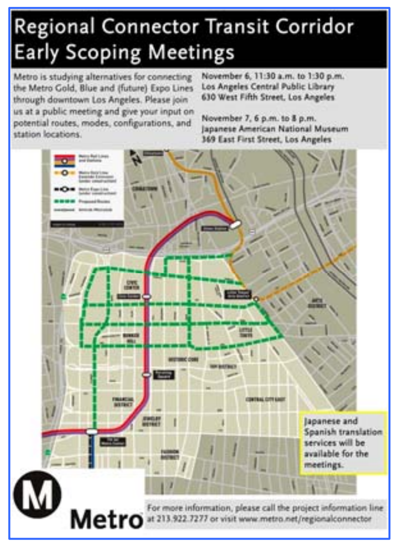
Meeting locations were selected to reflect equitable geographic coverage, proximity to public transportation and to minimize overlap with other meetings scheduled in the PSA. The public comment period was facilitated, and speakers were asked to limit their comment to two minutes.

The Public Early Scoping Meetings were scheduled as follows:

Early Scoping Meeting #1: Central Business District/Downtown Los Angeles,
Tuesday, November 6, 2007; 11:30 a.m. to 1:30 p.m.
Los Angeles Central Public Library, Meeting Room A
630 W. 5th St., Los Angeles, CA

68 people signed in at this meeting, and 17 individuals elected to speak. Metro received 15 written comments at the end of this meeting.

Early Scoping Meeting #2: Little Tokyo area/Downtown Los Angeles
Wednesday, November 7, 2007; 6 p.m. to 8 p.m.
Japanese American National Museum
369 E 1st St., Los Angeles, CA



49 people signed in at this meeting, and 16 individuals elected to speak. Metro received 13 written comments at the end of this meeting.

6.2.3.1 Overview of Comments Received

The public comment period for the Regional Connector commenced with the publication of the Early Scoping Notice in the Federal Register on October 31, 2007 and written comments were accepted until November 30, 2007.

A total of 132 individuals signed in at the Agency and Public Early Scoping Meetings. However, it is estimated that at least 160 people attended all three meetings. Formal public comments were collected from 88 people in the following five possible ways prior to the close of the comment period:

- 27 Verbal comments at Public Early Scoping Meetings
- 18 Written comments at Public Early Scoping Meetings
- 29 Written comments via email
- 14 Written comments via US mail
- 0 Verbal comments on the Information Phone Line

This section summarizes the 88 comments received from the public in verbal testimony at the early scoping meetings, written comments submitted at the early scoping meetings, via emails, and letters mailed to Metro.

The overwhelming majority of comments received supported the need for a Regional Connector to enhance the efficiency of the current and future rail system by providing through service between the Metro Blue Line, Gold Line, Gold Line Eastside Extension and Expo Line, and service to link these rail corridors directly to Union Station. Most commenter's supported almost equally a Grand Avenue and 1st St. alignment, below-grade (i.e. subway), and utilizing Light Rail Transit (LRT) technology. Several potential stations received wide popularity, including, in order of their level of support, Little Tokyo, 7th St./Metro Center, Bunker Hill, Union Station, Main/1st St. and Civic Center (i.e., in the northern portion of the PSA).

No comments were received opposing the Regional Connector, though a few remarks noted that other transit projects may need to receive a higher priority. Many commenter's specifically pointed out the need to develop a transit system that connects multiple lines, as well as expanding the 7th St./Metro Center Station to accommodate enhanced service and upgrading various operational systems. Of those providing feedback about the evaluation criteria, most thought that access was paramount.

The detailed comments were scanned and are provided in Appendix D.4 of the Community Participation Summary and Report. The following sections provide a summary of the general type of comments received and number of comments received associated with each type and issue by general subject matter and issues identified.

Comments Related to Mode

Whether the comments provided were written, emailed or submitted at the early scoping meetings, public comments showed tremendous support for LRT technology as the preferred mode for the Regional Connector. There was some support for looking at streetcars, but negligible interest in considering Bus Rapid Transit (BRT), Personal Rapid Transit (PRT) or monorail technology.

Comments Related to Grade

Almost all of the comments received by speakers at the early scoping meetings were in favor of a subway, or for a below-grade system. Of the 44 comments that spoke directly to grade preference, 36 stated a preference for a below-grade system. Of the 23 comments that spoke directly to a mode preference, 15 stated a preference for LRT. One comment received was mode neutral.

Comments Related to Alignment

Comments from these early scoping meetings indicated a nearly even split between supporters of a Grand Ave. alignment or a 1st St. alignment. Also receiving limited support was 2nd St., and an extension of the Blue Line. Limited preference was expressed for other routes including 3rd St. and Flower, with even less interest in the other potential alignments identified on the map that was displayed and distributed at the early scoping meetings.

There was also a small, but vocal, minority concerned with the lack of alignment options to provide connectivity with the southern portion of the PSA, and the lack of existing transit options serving Central City East and the Toy District. Some felt that the alignment should move considerably south, using Alameda St., and make a connection through these underserved areas directly to the 7th St./Metro Center Station.

Comments Related to Station Locations

Several potential stations showed wide popularity, and were somewhat reflective of those preferring the 1st St. route or a Grand Ave. option. The potential station location that received the most support was Little Tokyo, which was seen as the gateway of the Regional Connector into the PSA; followed by the 7th St./Metro Center Station, which is regarded as a key hub; Bunker Hill; Union Station; Main/1st St.; and Civic Center, serving the area in the northern portion of the PSA.

Key Issues Identified

Those stakeholders providing their comments about key issues felt strongly about the need for the Regional Connector to provide a link with Metro's transit line. Those providing input also noted that construction of this project would eventually require upgrades to power distribution, signals and controls systems, and would likely entail an expansion of and upgrades to the 7th St./Metro Center Station. Other issues raised included the need to add rail cars, improve station maintenance, examine increased safety for both stations and the lines, and consider implementing the technology used to construct the Gold Line tunnels.

Comments Related to Evaluation Criteria

There were only a few comments submitted that related to additional evaluation criteria that should be used. Three commenter's requested that evaluation criteria include pedestrian, stroller and ADA access. A smaller number of commenter's suggested that air quality and community impacts (with respect to downtown development) be heavily weighted.

Other General Comments

Of the general comments received, 28 expressed overall support for the project, and emphasized the need for connections to even more transit lines. Other responders emphasized that completion of the Regional Connector would ensure access to the Westside from all around the region. Others felt that the Regional Connector was not as important as other projects and should not be Metro's first priority. In addition, some felt that local funding for the Regional Connector should be sought, and that funding for the project should not come from raising fares.

6.3 Community Update Meeting Series #1

After the initial scoping meetings, a set of two community update meetings was held to present stakeholders with the results of the early scoping process.

In preparation for the meetings, focused outreach to the neighboring communities, key stakeholder groups, and local media was conducted. Beginning February 13, 2008, with the distribution of the media notice, a multimedia approach was conducted to alert the community to the upcoming meetings using direct mail and distribution of electronic notices.

In addition, to reach both residents and those working in the downtown area, advertisements were placed in Rafu Shimpo, Los Angeles Garment and Citizen, and the Los Angeles Downtown News. The advertisements were developed by Metro's graphic department.

Outlet	Run Date	Language	Circulation
Los Angeles Downtown News	February 18, 2008	English	49,000
Los Angeles Garment and Citizen	February 22, 2008	English, Spanish	25,000
Rafu Shimpo	February 21, 2008	English	45,000

Over 500 notices were mailed to residents, agencies, and organizations in the PSA via US mail or direct mail where no email contacts were available. Meeting notices were mailed on February 10, 2008. Notices were also posted online at www.metro.net/regionalconnector.

All those in the stakeholder database either received two (2) email notices about the early scoping meetings (i.e., an initial notice followed by a reminder), or one (1) piece of direct mail. The offices of elected officials representing portions of the PSA were also contacted and alerted about the meetings.

Multiple organizations were contacted requesting that they forward invitations to the early scoping meetings to their members or constituents. These organizations included transportation advocacy groups, neighborhood and business organizations, civic groups, and academic institutions.

Meeting notices were sent via email to those with email addresses in the study database. Approximately 383 individuals and organizations with email addresses were included in the initial stakeholder database. Email notices were sent out on February 14, 2008, with follow-up reminders sent again on February 18, 2008. An electronic reminder to the community to submit comments was sent on March 6, 2008.

Community meetings were held at the following locations:

Little Tokyo area/Downtown Los Angeles
Tuesday, February 26, 2008; 6 p.m. to 8 p.m.
Japanese American National Museum
369 E 1st St., Los Angeles, CA

Central Business District/Downtown Los Angeles
Thursday, February 28, 2008: Noon to 1:30 p.m.
Los Angeles Central Public Library, Meeting Room A
630 W. 5th St., Los Angeles, CA

6.3.1 Overview of Comments Received

Eleven alternatives were presented to the community at this series of meetings. All alternatives identified LRT as the preferred mode; however, of the alignments presented, most were below-grade, though one alternative included an aerial component. Of the alternatives considered, 7 utilized the 2nd St. tunnel.

Fifty-nine (59) people signed in at the Japanese American National Museum, with 14 people speaking at the meeting. Fifty-five (55) people signed in at the meeting held at the Central Los Angeles Public Library, with 12 people speaking at that meeting. In total, 57 comments were received, as follows:

- 26 Verbal comments at Public Community update meetings
- 6 Written comments at Public Community update meetings
- 25 Written comments via email
- 0 Written comments via US mail
- 0 Verbal comments on the Information Phone Line

This section summarizes the 57 comments received from the public in verbal testimony at the meetings, written comments submitted at the community update meetings, and via emails.

The majority of those who submitted comments supported a below-grade alignment. There was very little support for an at-grade alignment, particularly in the financial district. There were no concerns expressed about noise and vibration during tunneling through downtown Los Angeles. The community expressed interest in identifying ways to minimize transfers between the transit lines, and improved connections to the Metro Red Line.

Comments Related to Mode

All public comments received (written, emailed or submitted at the community update meetings) expressed continued support for LRT technology as the preferred mode for the Regional Connector.

Comments Related to Grade

Almost all the comments received by speakers at the community update meetings were in favor of subway, or for a below-grade system. Citing congestion concerns, the community preferred that the alignment be located below-grade.

Comments Related to Alignment

The community responded overwhelmingly in support of the project's concept, and specifically for alternatives 5, 6, and 8.

Alternative 5 begins at-grade at the Little Tokyo Gold Line station, and continues below grade through Civic Center, Little Tokyo, Grand Ave., and the financial district. Alternative 6, which appeared to have initial community support, places the entire alignment below-grade, and requires the reconstruction of the Little Tokyo Gold Line station. Alternative 8 would require the Little Tokyo Gold Line station to be relocated further west of the station's current location.

Comments Related to Station Locations

When asked about potential station locations, Grand Ave., Little Tokyo, and Bunker Hill were the most requested by those commenting. Several potential stations were widely popular, and were somewhat reflective of those preferring the 2nd St. option. The order of the level of support was: Little Tokyo, a station connecting Broadway to the LRT alignment at 2nd and Broadway, the 7th St./Metro Center Station, Bunker Hill, and one at the Civic Center, in the northern portion of the PSA.

Key Issues Identified

Those stakeholders providing their comments about key issues were emphatic about the need for the Regional Connector to provide a link with Metro's transit lines. In summary, the project is widely supported; LRT is the preferred mode; and an underground alignment is favored. Other issues raised included the potential need to add rail cars, improve station maintenance, and to consider implementing the technology used to construct the Metro Gold Line tunnels.

6.4 Community Update Meeting Series #2

A final round of community update meetings was held in October 2008 to present to the public Metro's recommendations for the Regional Connector AA study. In preparation for the meetings, focused outreach to the neighboring communities, key stakeholder groups, and local media was conducted. Beginning with the distribution of the media notice, a multimedia approach was implemented to notify stakeholders of the meetings. Ads in major newspapers, community papers, and notification through on-line blogs, direct mail and e-mails rounded out the outreach process.

In order to reach out to downtown residents and those working in the downtown area, advertisements were placed in Rafu Shimpo, Los Angeles Garment and Citizen, and the Los Angeles Downtown News. The advertisements were developed by Metro's graphic department.

Outlet	Run Date	Language	Circulation
Los Angeles Downtown News	October 13th & 20th	English	49,000
Los Angeles Garment and Citizen	October 10th & 17th	English, Spanish	25,000
Rafu Shimpo	October 11th	English	45,000

Meeting notifications were sent to the stakeholder database on September 26, 2008 via US mail or direct mail where no email contacts were available. All project information as well as information about the meetings was posted online at www.metro.net/regionalconnector. All elected officials at the local, state and federal levels within the PSA were also sent notification of the meetings.

Multiple organizations were contacted requesting that they forward invitations to the early scoping meetings to their members or constituents. These organizations included transportation advocacy groups, neighborhood and business organizations, civic groups, and academic institutions.

Approximately 109 people attended the final round of community meetings. The meetings were held as follows:

Thursday, October 16th; 12:00 p.m. to 1:30 p.m.
Los Angeles Central Public Library
630 W. 5th St., Los Angeles, CA

Tuesday, October 21st; 6:30 p.m. to 8 p.m.
Japanese American National Museum
369 E 1st St., Los Angeles, CA

6.4.1 Overview of Comments Received

51 comments were received from the final round of community meetings:

- 33 Verbal comments at Public Community update meetings
- 11 Written comments at Public Community update meetings
- 4 Written comments via email
- 3 Written comments via US mail
- 0 Verbal comments on the Information Phone Line

Comments Related to Mode

Stakeholders who attended the last round of meetings were overwhelmingly in support of building the Regional Connector as an underground LRT to the extent possible. Due to the heavy vehicular and pedestrian traffic in downtown Los Angeles, stakeholders believed that above ground rail will further congest this area. In addition, there are many festivals, films and other events happening in downtown Los Angeles and stakeholders did not want above ground rail to disturb these activities.

Comments Related to Alignment

There was considerable support in the community within the PSA to run the Regional Connector underground, with Alternative 1 as the preferred alignment. The underground alignment emerges at grade in the Little Tokyo area and there were several concerns raised about safety and congestion because of the heavy pedestrian traffic in this area.

Comments Related to Station Locations

Community members did not offer many comments related to station locations. Those commenting were supportive of Alternative 1, and the few comments related to station locations were centered on building the stations to accommodate the future growth of the Metro system. Another comment related to the mezzanine level station proposed at 2nd St., and suggested that this station be located underground. One other commentator mentioned that closing the 2nd St. tunnel to traffic would be very disruptive and suggested a below-grade option.

Key Issues Identified

The majority of comments from meeting attendees focused on the need for an underground system for this project, and warned of the congestion potential presented by the at-grade alternative. In addition, there were concerns about safety and congestion for the above ground section of Alternative 1 where it emerges in the Little Tokyo area. There were also structural concerns raised about the historic buildings in the PSA, especially during tunnel excavation. Most were opposed to perceived disruptions and noise from trains running at-grade.

6.5 Additional Meetings

In addition to the public community meetings held in October, Metro was asked by the Little Tokyo Community Council to attend its October 21st meeting to present the AA findings. Approximately 60 people attended this meeting. Metro's PowerPoint presentation was followed by members of the Council discussing their support for the project as it moves forward. Concerns were raised by several speakers who wanted Metro to consider a construction mitigation program, and look for ways to protect the unique features of Little Tokyo as a neighborhood.

6.5.1 Additional Stakeholder Outreach Meetings

In addition to the public meetings, the project team proactively conducted a series of meetings with key stakeholders on an ongoing basis. The purpose of meeting with these groups was to create an informal forum to discuss specific concerns with individual stakeholder groups and to create an ongoing dialogue with these critical stakeholders as the project moved forward.

At the time the AA was initiated, Little Tokyo was the epicenter for the construction of the Metro Gold Line's Eastside Extension. The Historic Core, the City of Los Angeles, and Broadway theater owners had just started their investigation of integration of a streetcar into downtown Los Angeles. Additionally, the Metro planning team met with the Grand Avenue Project committee to discuss the evolution of that project. This convergence of projects and their associated champions provided Metro with established forums for stakeholder engagement.

6.5.1.1 Little Tokyo

Metro's team subsequently met with two groups from Little Tokyo on an ongoing basis: the Little Tokyo Community Council (LTCC) and the Little Tokyo Service Center (LTSC). The LTCC represents residents, business owners, land owners, civic leaders, City agencies, and educational institutions. As a Community Development Corporation, the Service Center provides social service and other programs to Little Tokyo residents, and assisted the project team in coordinating a meeting with business owners along 2nd St.

Metro's first presentation to the LTCC took place shortly after the first community update meeting on March 12, 2008. In response to concerns regarding the 11 alternatives presented to the community, the LTCC established a subcommittee to communicate directly with Metro as the AA moved forward. The initial concerns regarding the project centered around preserving the identity of the neighborhood, pedestrian impacts, and construction impacts.

Many on the committee felt the Temple St. alignment would best serve the Little Tokyo community. Alternative 2, using Figueroa, Flower, Dewap, to Temple Streets, would have required additional construction to the new LRT bridge at Temple and Alameda St. That alternative was determined to be financially infeasible. Additionally, potential station locations were identified as less desirable when compared to other project alternatives and potential station locations.

At this initial meeting, a "mitigated" Alternative 5 was presented to the group. This alternative would require a grade separation for auto traffic on Alameda St. Since the group responded positively to this change, additional details were presented at a second meeting.

The second meeting of the subcommittee was held on April 2, 2008. The subcommittee reviewed key concerns: pedestrian impacts, loss of neighborhood identity, and how construction might impact small businesses. In response to these concerns, Metro presented a "mitigated" project alternative, which would minimize construction impacts, and increase pedestrian access to the station and nearby neighborhood activities.

During this meeting, Alternatives 3b and 7 were presented to the group. Alternative 3b involves a couplet on both Los Angeles and Main Streets between 2nd and Temple Streets. Alternative 7 uses 2nd St. from Flower to Los Angeles St., turns at Los Angeles St. and at Temple St. While both alternatives were considered acceptable to the community, Alternative 5 remained as the preferred option.

Alternative 5 includes a grade separation along Alameda St., and the addition of a pedestrian bridge that serves to connect the Japanese American National Museum, the Mangrove project area, and provides an aerial crossing at 1st St. and the Office Depot property (located diagonally from the Little Tokyo/Arts District Gold Line Station.) The appeal of the intersection's treatment and the location of the potential portal satisfactorily addressed the subcommittee's primary concern regarding the construction and operational impacts of the Regional Connector.

A meeting with the Little Tokyo Service Center sought to address the concerns of business owners along 2nd St. This meeting took place on May 13, 2008 at the Japanese American Cultural Center. While there were many operational questions (e.g., how often would the trains cross into Little Tokyo, would the community feel the train passing) that would be addressed during the next phase of the project, the purpose of the meeting was to present the remaining Alternatives 3b, 5, and 7. Overall there was support for the project, and consensus that the business owners would like to be further engaged as the project moves forward. Community preference was for the alignment to be located below-grade, to minimize the construction impacts on access to area businesses.

6.5.1.2 Bringing Back Broadway

The Broadway Streetcar project is looking at ways to provide streetcar service along Broadway, connecting the Grand Avenue Project to LA Live. The project is a public/private venture with support from the City of Los Angeles (with the Community Redevelopment Agency and Council District 14 taking the lead on the project). Metro met with 5 separate organizations that play different roles in the Streetcar project:

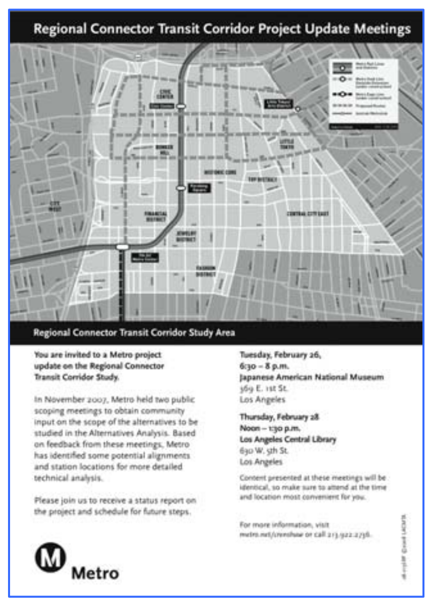
- The Downtown Los Angeles Neighborhood Council
- Historic Core Business Improvement District
- Bringing Back Broadway Coalition
- Downtown Los Angeles Business Improvement District
- Central City East Association

Initially, there was some uncertainty among stakeholders regarding differences between the Streetcar and Regional Connector projects. Metro clearly defined the differences in the project, namely the project goals, potential funding sources, services provided, and agency support. The intent of the Broadway Streetcar is to act as a "walk extender" and to support downtown pedestrian access, whereas the initial intent of the Regional Connector is to provide continuous service between the LRT options traveling through downtown Los Angeles.

With this concern resolved, the organizations began to consider how the Regional Connector could interact with the Broadway Streetcar. The Historic Core Business Improvement District and the Bringing Back Broadway Coalition agreed that a connection at 2nd and Broadway made the most sense.

The groups also recognized that a station need not be located directly at 2nd and Broadway if a portal located near 2nd and Broadway would provide the necessary access to the area as well. It was agreed that as long as transit users felt like they were accessing the station at 2nd and Broadway, it did not matter if they needed to walk a block below-grade to access the train.

The Historic Core Business Improvement District discussed the economic and transit oriented development opportunities located at 2nd and Broadway. They were hopeful that as the Regional Connector Transit Corridor Study continues, the Bringing Back Broadway Coalition will be active participants in the process, as the two projects are complementary. While the Broadway Streetcar issues did not appear to be as multifaceted as the concerns held in Little Tokyo, these two stakeholder groups played a significant role throughout the AA process.



All of the additional meetings are summarized in Table 6-1.

6.6 Collateral Materials

Various informational materials such as meetings notices, Fact Sheets and Newsletters were completed during the AA.

6.6.1 Meeting Notices

A postal mailer and an email notice were distributed prior to each series of community meetings. The postal mailer was distributed approximately 10 days prior to the first community meeting. The email notice was sent out twice (once as a "Save the Date" and later as a formal announcement) to the stakeholder list. The Regional Connector database is predominately email-based. A follow up email notice was sent to individuals included in the stakeholder database and those who attended the community meetings.

Table 6-1 Meeting Details			
Organization	Meeting Details	Key Issues	Follow-Up
Office of Councilwoman Jan Perry	July 31, 2007 Attendance: 6	Discussed status of Chief Legislative Analyst's Office RFP for development of property at 1st and Alameda Streets.	None required.
City of Los Angeles Downtown Street Standards	September 14, 2007 Attendance:15	Wanted additional details once the project has proceeded further (e.g., station lengths).	Scheduled a follow-up meeting after Early Scoping completed
Grand Avenue Committee	October 9, 2007 Attendance: 11	Wanted to schedule a working meeting with Committee's architect and engineer to consult as the construction of Grand Avenue proceeds.	Scheduled a meeting with Committee's architect and engineer
Elected Officials Briefing	October 17, 2007 Attendance:9	Interested in the participation of other elected officials both within and outside the PSA as this is a regional project. Concerned about potential impacts to the Little Tokyo community. Supportive of the economic benefit and environmental benefit potential.	Metro established a regular briefing schedule.
Central City Association, Transportation & Infrastructure Committee	October 25, 2007 Attendance: 15	Interested in galvanizing its membership in support of this study. Also undertook to circulate early scoping meeting information to its membership.	Returned to present this Committee with results of early scoping.
Downtown Neighborhood Council	November 13, 2007 Attendance: 45	Wanted to find ways to bring more transit opportunities to the downtown area. While no final recommendation was supported, the board president felt it was very important Union Station be considered as a part of the PSA.	Returned to present this Committee with results of early scoping.
Little Tokyo Service Center	November 20, 2007 Attendance: 64	Supported the project. Concerned that if the Little Tokyo/Arts District Gold line station becomes a terminus, the station would be at capacity. Encouraged by the idea that Little Tokyo would be easier to access, but wanted to protect pedestrian access.	Returned to present this Committee with results of early scoping.
Elected Officials Briefing	2/12/08	Supportive of the project and had a good understanding of the project's benefits. Favored the alterative that was going to be the most cost-effective.	Continued briefings at key milestones.
Little Tokyo Community Council	2/19/08	Standing community council meeting. Attended as a guest.	Participated with the Council's Regional Connector Subcommittee

Table 6-1 Meeting Details			
Organization	Meeting Details	Key Issues	Follow-Up
Little Tokyo Community Council	3/12/08	The group was concerned that an at-grade alignment would negatively impact the Little Tokyo community. Earlier in the day, the planning committee passed a resolution recommending the LTCC not support the Regional Connector if it runs along 2nd St., either above or below-grade. This group's preference was for the alignment to follow Temple. Alternative 5 with additional mitigations was then presented. The group reacted positively once the Alternative showing grade separation for auto traffic on Alameda was shown. However, they wanted more information on the operational impacts of the station. The group was willing to consider a presentation of the proposed resolution to support Alternative 5.	LTCC liaison coordinated next meeting with Metro Project Manager
Office of Councilman Huizar	3/14/08	Supported the project. Understood the regional significance of the project and recommended additional meetings outside of the downtown area.	Additional meetings to be conducted in the next phase of the project.
Rotary: LA Morning Club	3/20/08	The Metro team presented the current list of alternatives currently under review. The presentation was warmly received, with most of the questions focused on how to fund the project and what kind of system connections would be afforded.	Outreach consultant followed up to identify a date for a presentation to the LA 5 Rotary group. (Completed)
Downtown Los Angeles Neighborhood Council (DLANC): Transportation Committee	3/24/08	The presenters emphasized Metro's commitment to investment in Downtown Los Angeles, as well as balancing the need to provide regional service expansion. Those attending the meeting were most receptive to the below-grade alternatives. When asked about the potential for direct connections to Broadway and the Historic Core neighborhood, the Metro team concluded that technical, physical, and geographic limitations (regardless of grade) makes a direct connection infeasible.	Scheduled briefing for "Bringing Back Broadway" and HCBID for May 2008. Scheduled follow-up briefing with the DLANC Transportation Comittee for April 2008.
Little Tokyo Community Council	4/2/08	The group was concerned that an at-grade alignment through Little Tokyo would negatively impact the community. The community was especially concerned about how construction might impact the businesses along 2nd St., or affect plans for the "Go for Broke" monument planned on Temple. Metro's technical consultant requested specific details about the monument's location and construction timeline from the "Go for Broke" organization.	Continued to alert Community Council about upcoming community workshops LTCC liaison coordinated next meeting with Outreach Consultant (Completed)

Table 6-1 Meeting Details			
Organization	Meeting Details	Key Issues	Follow-Up
Historic Core BID	4/30/08	The Historic Core Business Improvement District (HCBID) requested to meet with Metro's project team for the Regional Connector Transit Corridor study to discuss potential impacts to Broadway, more specifically the HCBID's plans for implementing a streetcar on Broadway. Metro encouraged the HCBID to continue with its planning efforts for the Broadway Streetcar (BSC), and offered to work with the BSC planners to coordinate efforts to make the BSC a success. The HCBID asked whether the BSC should be included in the Regional Connector study, but Metro discouraged this approach.	Outreach Consultant secured meeting sign in sheet (Completed)
Downtown Center BID	5/07/08	Supported the project and saw it as an opportunity to promote business growth in the downtown area. Wanted to make sure there is a nexus between the proposed Broadway Streetcar and future station identification.	Continued to alert BID about upcoming community workshops
Bringing Back Broadway	5/07/08	The BBB organization was in the process of studying potential alignments for a local streetcar. The Broadway Streetcar study was then in its conceptual design phase, with the goal to complete the AA by July 2008. The organization hoped to secure a Negative Declaration designation of impact for the project.	Continued to alert group about upcoming community workshops
South Park Stakeholders Group	5/12/08	Group was supportive of the project and saw it as an opportunity to encourage more transit use in the neighborhood, encourage additional residential development, and assist the highly transit-dependent local area workforce. Wanted to find out if the project would include funding for improvements to the current Pico/Chick Hearn station.	Letter of support from the organization. (Letter has not yet been received, followed up with Group liaison via voicemail)
Little Tokyo Service Center	5/13/08	Meeting attendees were most interested in discussing potential construction impacts to 2nd St. Business owners along 2nd St. wanted more specific information regarding construction impacts to business owners, how long construction would impact the street, and traffic restrictions. One person asked if they would be able to feel the vibration of a below-grade LRT system under their building. Metro responded by letting the group know the topic would be covered in the EIS/R portion of the study.	Outreach Consultant added the contact information of those in attendance to the project stakeholder database (Completed)

Table 6-1 Meeting Details

Organization	Meeting Details	Key Issues	Follow-Up
Little Tokyo Community Council	5/20/08	The Little Tokyo Community Council requested a brief project update during their regular board meeting. The Regional Connector presentation took approximately 20 minutes. The Council remained supportive of the project in concept, and looked forward to participating during the EIR/S process, should the board approve this step.	Continued to alert Community Council about upcoming community workshops
Central City East Association	5/28/08	The group was supportive of the project moving forward into the EIR/S phase. CCEA wanted more information during the EIR/S process about how the project would interface with the Broadway Streetcar, and whether construction of the project could be expedited.	Continued to alert BID about upcoming workshops
Downtown Living Weekend	6/6-8/08	Questions from the community surrounded Metro pass prices. Many of the people who asked about pass prices wanted to know which pass to use for access to both Metro and DASH services (EZ Transit Pass). Youth asked how to go about getting bus passes through the school district. Many people who visited the booth were seeking system maps.	No follow up needed
Westside Central Service Sector Governance Council	7/9/08	The Westside Central Service Sector Governance Council requested a brief project update during their regular meeting. The Regional Connector presentation took approximately 20 minutes. The Council was extremely supportive of the project in concept, and looked forward to future updates.	Report back in next phase
Higgins Building HOA	8/7/08	The group was supportive of the project; however, they were concerned about construction impacts. The group requested that the "box" of any station located at 2nd and Main be located closer to 2nd and Spring or Los Angeles, but station entrances could still be located next to the building.	Continued to alert the HOA about upcoming workshops.
Elected Officials Briefing	10/14/08	The briefing for elected officials was held at Metro. Questions asked pertained to when the project will go to the Board for approval to move into the environmental study. There were questions about station design and connections to the Gold Line and Eastside Extension.	No follow up necessary.

6.6.2 Fact Sheets

In order to provide the community with an updated project summary, fact sheets were developed and distributed at community update meetings and for community events (such as the Downtown Living Weekend). Four fact sheets were developed for public distribution, and posting on the project webpage.

6.6.3 FAQs

Used as both content for the project webpage and to provide a location for additional information, a "Frequently Asked Questions" was developed and updated as the project moved forward.

6.6.4 Project Website

A project website www.metro.net/regionalconnector was established to provide the public with electronic access to information about the project including collateral materials, the dates, times and locations of the community meetings, as well as an opportunity to provide public comment. In total, 56 emails were received via the project website. The website was updated at key project milestones and as needed.

6.6.5 Project Information Line

A dedicated phone line was also established to provide project information to the public. The telephone number for the information line is (213) 922-7277, and information is available on the line in English, Spanish, and Japanese. Information on the line includes times, dates, and locations of the public scoping and update meetings. Additionally, the callers were encouraged to leave public comment, questions about the project, and requests to be placed on the stakeholder mailing list in order to receive study information as it became available.


Regional Connector Transit Corridor Study

地域接続線交通回廊の調査

ファクトシート（2）初期意見聴取集会における一般意見の要約

市民集会
地域接続線交通回廊（Regional Connector Transit Corridor）の調査における一般の意見は、Federal Registerに「初期意見聴取の通知（Early Scoping Notice）」を掲載することにより2007年10月31日に始まりました。本調査の初期意見聴取プロセスの一環として、メトロでは地域集会を2回、以下のように開催しました。

2007年11月6日（火）11:30 a.m.～1:30 p.m.
Los Angeles Central Public Library（ロサンゼルス中央市民図書館）

2007年11月7日（水）6:00 ～ 8:00 p.m.
Japanese American National Museum（全米日系人博物館）

メトロでは、初期意見聴取集会でのほか、電子メール、郵便、情報電話ライン、本プロジェクトのウェブサイトより一般意見を集めました。初期意見聴取期間における正式な一般意見の受付期間は、2007年11月30日に終了しました。

一般意見の要約
集まった意見の圧倒的多数は、メトロのブルー線、ゴールド線、ゴールド線のイーストサイド延長線およびエキスポ線間の直通サービスを提供し、これらの路線回廊を直接ユニオン駅に繋げることにより、現在および将来の鉄道システムの効率を上げる地域接続線の必要性を支持するものでした。意見提供者のほとんどは、Grand Avenueあるいは1st Streetに沿った地下鉄線で、ライト・レール・トランジット（LRT）技術を利用することを支持しました。駅の可能性として幅広い支持を得たものには、「リトル東京」、「7th Street/Metro」、「バンカーヒル」、「ユニオン駅」、「Main/1st」、「シビックセンター」などがありました。

地域接続線に反対する意見は皆無でした。多くの意見者が具体的に指摘したのは、複数の線を接続する交通システムを開発し、サービス強化のため7th Street/Metro駅を拡大、さらに様々な運用制度をグレードアップする必要性でした。本評価基準に関する意見を提供した方の中ではほとんどの意見が、最も重要なのはアクセス性である、というものでした。一般意見は全般的に以下のように集中しました。

The information line was activated in September 2007, and was updated in November 2007, February 2008 and September 2008. The information line was checked on a weekly basis when no community meetings were planned within 30 days. The information line was checked daily two weeks before and after community meetings. A tracking matrix was established to record incoming calls, and manage the follow-up process. There have only been three messages left on the information line to date. These calls were all reservations for a meeting with the Little Tokyo Service Center (held May 13, 2008).

6.6.6 Media Relations (Print & Broadcast)

A detailed list of 83 regional media outlets was developed which included mainstream, community-based and ethnic/foreign language print and broadcast outlets. A complete list of the media contacted for this project is included in Appendix H of the Community Participation Summary and Report.

Press releases were distributed by Metro to regional media outlets. The outreach consultant redistributed the press release to the list of media outlets as well as online media outlets, such as blogs, to help draw additional coverage.

To ensure that the AA process addressed the growing prevalence of "new" media in this region, outreach was also conducted to "blogs" which can best be described as an online continual open conversation. The Southern California region is host to thousands of blogs, and after some research, 34 key websites were located that discussed transit, traffic, community development, and neighborhood issues. All of the 34 blogs identified were sent a copy of Metro's press releases and the Public Notices.

Many of these blogs posted notices about the project, the AA process, the meetings, comments about the project, and summaries of the meetings after they occurred. In many cases, lively on-line "conversations" were initiated. Although it is difficult to ascertain how many "hits" each blog received about the project, the online conversations did contribute to a heightened awareness about the project and increased turnout at the community meetings. In addition, articles and comments posted on the blogs provided the study team with additional insight into public sentiment about the project.

6.6.7 New Media

New media is an ever-changing but widely used medium for communicating vital information quickly and effectively. Recognizing that the use of new media tools is relatively new to many government agencies, Metro committed itself to exploring and pursuing appropriate online media to proactively engage a full range of stakeholders. To this end, Metro established the Regional Connector Facebook page designed to reach out to a relatively untapped audience of college students and young adults. Facebook is a prime example of a communications need meeting a technological opportunity. Launched in September, the Regional Connector Facebook site has registered 64 unique users that are actively engaged in conversation about the project.

Facebook is a social network that connects people with friends and others who work, study and live around them. People use Facebook to keep up with friends, upload an unlimited number of photos, share links and videos, and learn more about the people they meet. Facebook has served as an online complement to the project website. Additionally, this new media element of outreach expanded current visibility encouraging any targeted demographic to access/join.

Assigned administrators updated the site with events, reports, videos and presentations. The Facebook group was monitored daily by the project team, and all comments left on discussion board and group's wall were captured in a tracking matrix as well as page PDFs. The content was refreshed frequently to ensure that these stakeholders were provided the most accurate information possible. Members of the Regional Connector Facebook page were also able to RSVP to Metro events such as the monthly board meeting, and converse with each other about the project.

Section 7 Comparative Analysis of Alternatives

7.1 Introduction

This section presents the comparative analysis of the two build alternatives, the No Build, and the Transportation System Management (TSM), carried from the initial screening process. As described in more detail in Section 2, after review and input received during the early scoping process on modes, alignments, station locations, and configurations, over thirty alternatives previously identified in a number of studies were evaluated. The number of alternatives was reduced during preliminary screening to 8, which were then evaluated using screening criteria established during the early scoping process. Based on this evaluation, the number of alternatives was further reduced to two build alternatives with one variation, a TSM, and a No Build Alternative. All other alternatives were eliminated from further consideration due to their inability to meet the project's goals and objectives.

The two build alternatives are as follows:

- At-Grade Emphasis Light Rail Transit (Alternatives 3A & 3B)
- Underground Emphasis Light Rail Transit (Alternative 5)

In addition, the TSM and the No Build alternatives were further analyzed and refined. The analysis and the recommendations are summarized in this section. This section is organized by the developed evaluation criteria, which expanded upon the FTA New Starts Evaluation and Ranking criteria.

7.2 Approach

Based on the Alternative Methodology Report provided to Metro, a final screening of the alternatives is the next step for evaluating alternatives. This final screening involves evaluating the remaining alternatives on a conceptual level and applying the goals and objectives for this project to each alternative. The following goals were identified for the Regional Connector Transit Corridor project:

Goal 1 - Support Community Planning Efforts: Support the progression of the PSA as an integrated destination and a dynamic and livable area, accommodating projected growth in a sustainable manner.

Goal 2 - Support Public Involvement and Community Preservation: Incorporate the public in the planning process and balance the benefits and impacts while preserving communities in the area, such as Little Tokyo/Arts District, Bunker Hill, Civic Center, and Historic District.

Goal 3 - Improve Mobility and Accessibility both Locally and Regionally: Develop an efficient and sustainable level of mobility within L.A. County to accommodate planned growth and a livable environment.

Goal 4 - Support Efforts to Improve Environmental Quality: Minimize adverse environmental impacts.

Goal 5 - Provide a Cost Effective Alternative Transportation System: Develop a system that serves as an economical alternative mode of transportation.

Goal 6 - Achieve a Financially Feasible Project: Develop a project that maximizes opportunities for funding and financing, and that is financially sustainable.

Goal 7 - Provide a Safe and Secure Alternative Transportation System: Develop a project that is safe for riders, pedestrians, and drivers, while meeting the region's needs for security.

The goals established for the Regional Connector are consistent with FTA New Starts Evaluation and Ranking Criteria as shown in Table 7-1.

Table 7-1 Project Justification Criteria and Measures
FTA New Starts Evaluation Criteria/Measures

Criterion	Measure(s)
Mobility Improvements	• Normalized Travel Time Savings (Transportation System User Benefits per Project Passenger Mile) • Number of Transit Dependent Riders Using the Proposed New Starts Project • Transit Dependent User Benefits per Passenger Mile on the Project • Share of User Benefits Received by Transit Dependents Compared to the Share of Transit Dependents in the Region
Environmental Benefits	• EPA Air Quality Designation
Cost Effectiveness	• Incremental Cost per Hour of Transportation System User Benefit • Incremental Cost per New Rider (for informational purposes only)
Transit Supportive Land Use and Future Patterns	• Existing Land Use • Transit Supportive Plans and Policies • Performance and Impacts of Policies
Other Factors	• Economic Development • Making the Case for the Project • Congestion Pricing • Optional considerations

As developed during the early scoping process, specific measures and criteria were established for each goal as a means of assessing whether an alternative meets the goal. A comparative analysis was performed to see how well each alternative performed in comparison to the others.

7.3 Goal 1: Support Community Planning Efforts

- Support land use policies and Community Plans
- Support and coordinate with development and redevelopment efforts
- Support the City's efforts to improve urban design and the pedestrian environment by contributing to a healthy environment
- Support efforts to improve safety and security for downtown residents, employees, and visitors
- Support transit dependent communities

7.3.1 Initial Screening Criteria

The initial screening criteria for Goal 1, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM alternatives are presented in Table 7-2. Subsequent sections explain each performance measure and the results for each alternative.

Population, Population Density, Housing, Housing Density

For the two build alternatives, population and population density are higher for the underground versus the at-grade alternative, due to the fact that the underground alternative's alignment travels directly through the Little Tokyo community under 2nd St. Thus, within one-quarter mile of this alternative there are residential developments in Little Tokyo, as well as some converted warehouse lofts in the adjacent Arts District. The at-grade alternative heads north on Main and Los Angeles Streets and traverses the Civic Center area, which contains fewer households and residents, and more offices.

Transit Oriented Design supportive plans and policies in place

Transit Oriented Design (TOD) plans and policies include all state and local policies that support transit friendly development and design. Both the underground and at-grade alternatives are affected by five TOD supportive plans, including the LA City General Plan design/street standards, the Community Redevelopment Agency (CRA) 2006 Streetcar Study, part of the CRA Identified Redevelopment Areas, the CRA City Center Redevelopment Plan, and the Little Tokyo Planning and Design Guidelines. The underground alternative was rated a point higher for this measure because an underground system provides more development opportunities above station entrances and on properties used for construction. The at-grade alignments under consideration are street-running, and therefore do not provide the same off-street development opportunities.

Number of Jobs

For the two build alternatives, the at-grade alternative has higher employment and employment density when compared to the underground alternative. The at-grade alternative runs north-south on Main and Los Angeles Streets, adjacent to City Hall and various other city and federal buildings in the Civic Center. The densities of workers per square mile are greater in these buildings as opposed to the buildings in the vicinity of the underground alternative alignment.

Table 7-2 Support Community Planning Efforts
Initial Screening Criteria

Goal	Performance Measure	At-Grade Option A	At-Grade Option B	Underground
1	Population, Population Density, Households, Housing Density for year 2030 (within 1/4 mile of alignment)			
1	Population (within 1/4 mile of alignment)	10,889	10,889	10,997
1	Population Density (within 1/4 mile of the alignment)	10,675 persons per sq mile	10,675 persons per sq mile	11,201 persons per sq mile
1	Households (within 1/4 mile of alignment)	8,523	8,523	8,744
1	Household Density (within 1/4 mile of alignment)	8,356 units per sq mile	8,356 units per sq mile	8,922 units per sq mile
1	Transit Oriented Design Supportive of Plans and Policies in place (Score 1-worst to 5-best)	4	4	5
1	Number of Jobs, Employment Density for year 2030 within 1/4 mile of alignment			
	Employment (within 1/4 mile of alignment)	133,888	133,888	124,110
	Employment Density (within 1/4 mile of alignment)	131263 jobs per sq mile	131263 jobs per sq mile	126,623 jobs per sq mile
1	Number of direct connections to key activity centers within 1/4 mile of alignment (Score 1-worst to 5-best)	5	5	5
1	Number of Opportunities for Redevelopment within 1/4 mile of alignment (underdeveloped or underutilized properties along alternative alignment)	8	8	9

Number of direct connections to key activity centers

The underground and the at-grade alternatives all received the best score of 5 for the number of direct connections to key activity centers within one-quarter mile of each alignment. Both alternatives traverse some of the busiest downtown corridors, with easy walking distances for key destinations, including the Civic Center, Little Tokyo, the Museum of Contemporary Art, the Grand Avenue Project, and the Bunker Hill/Library district. Further analysis of the final locations of stations and portals will assist in providing exact distances; however, the compact nature of the downtown blocks and the initial placement of the stations provide good coverage of key activity centers.

Number of opportunities for redevelopment

The number of opportunities for redevelopment within one-quarter mile of the alignments is calculated by estimating the number of underdeveloped or underutilized lots that may potentially be obtained for TOD, mixed use development, or transit friendly uses. There were a total of eight locations along the at-grade alternative that were identified as having redevelopment potential, while nine locations were identified for the underground alternative.

7.3.2 Final Screening Criteria

The final screening criteria developed for Goal 1 and its associated performance measures are presented in Table 7-3. The results of the findings for the two build, No Build, and TSM alternatives are presented in subsequent sections.

Table 7-3 Support Community Planning Efforts
Final Screening Criteria

Goal	Performance Measure	At-Grade Option A	At-Grade Option B	Underground
1	Number of planned development projects in the area over the next 10 years, including residential/office space/commercial units within 1/4 mile of alignment	20	20	22
1	Number of connections with sidewalks that support the City's Downtown Street Standards (Score 1-worst to 5-best)	5	5	5

Number of planned development projects in the area over the next 10 years, including residential/office space/commercial units

Downtown Los Angeles has experienced resurgence in high-rise residential and business development. The at-grade alternative corridor has approximately 20 planned or currently under construction projects within one-quarter mile of the alignment and the underground corridor has approximately 22 projects. These planned or currently under construction projects do not include the conversion of office space to residential lofts. Some of these new developments include the Yards, Mura, Block 8/Gateway, Vibiana Lofts, The Medallion, Zen, and Park Fifth.

Number of connections with sidewalks that support the City's Downtown Street Standards

The City of Los Angeles' Downtown Street Standards are a set of design guidelines which aid in the current and future planning and development efforts of sidewalks, streets, design enhancements, and any other features which would introduce a more cohesive street network in the downtown area. The design guidelines would not directly affect the underground alternative; however, design guidelines would affect station and portals locations. The at-grade alternative would be more directly affected by the design standards due to the need for redesigning street widths, right-of-ways, and sidewalks.

Both the at-grade and underground alternatives receive a high score for integration potential with the existing street design standards that are in place today. The station designs, as shown in the renderings in Section 2.3.3 and 2.3.4, remain consistent with the standards applicable to the specific street.

7.4 Goal 2: Support Public Involvement and Community

- Balance the benefits and impacts to low income and minority communities
- Enable workers and visitors to gain access to the regional center to increase its economic vitality and benefit from its economic opportunity

7.4.1 Initial Screening Criteria

The initial screening criteria for Goal 2, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM alternatives are presented in Table 7-4. Subsequent sections explain each performance measure and the results for each alternative.

Table 7-4 Support Public Involvement and Community
Initial Screening Criteria

Goal	Performance Measure	At-Grade Option A	At-Grade Option B	Underground
2	Evaluation of potential disproportionate effects: Environmental justice effects will be evaluated per NEPA/CEQA requirements (Score 1-worst to 5-best)	4	4	2
2	Initial areas identified for potential acquisitions for station and alignment	Approx.8 Locations	Approx. 8 Locations	Approx. 11 Locations
2	Evaluation of potential disproportionate effects: Number of low income households (HH) within 1/4 mile of proposed alignment (does not include actually in construction)			
	# of Low Income HH	3,702or 34.7%	3,702or 34.7%	3,390 or 35.3%
	# of SROs and shelters	19 (approx. 997 beds/rooms)	19 (approx. 997 beds/rooms)	20 (approx. 1,042 beds/rooms)
	# of Homeless Service Providers	9	9	9
2	Number of residents by ethnicity within 1/4 mile of alignment (US Census)			
	White	3,105	3,105	3,163
	African American	3,437	3,437	3,390
	American Indian/Eskimo	103	103	119
	Asian	8,978	8,978	4,699
	Hawaiian/ PI	23	23	23
	Other	60	60	54
	Two or more	334	334	322

Goal	Performance Measure	At-Grade Option A	At-Grade Option B	Underground
	Hispanic	5,861	5,861	7,769
2	Urban fit potential for alignment and for stations, including physical scale, visual fit, and cultural preservation	4	4	2
2	Percentage of service grade separated	34%	21%	91%
	Total underground - new tunnel & existing 2nd St. tunnel	46%	38%	94%
2	Community acceptance (high, medium, low)	High	High	High

Table 7-4 Support Public Involvement and Community Initial Screening Criteria

Evaluation of potential disproportionate effects: Environmental justice effects will be evaluated per NEPA/CEQA requirements

Although both build alternatives would be evaluated under NEPA/CEQA requirements, scoring was used to determine which alternatives would potentially have more severe environmental justice impacts relative to others. The at-grade alternative received a score of four because it would not directly impact the Little Tokyo community (the only residential community in the PSA), as the alignment would not run directly through this community. The underground alternative received a lower score of two based on the alignment running directly under the Little Tokyo community, as well as the potential effects due to the 1st and Alameda St. intersection.

Area identified for potential acquisitions

Both build alternatives will require the acquisition of property. The at-grade alternative will require less property acquisition than the underground alternative but will still need property for traction power substations and other ancillary facilities, for incorporation of split stations into the public sidewalks, for portals, for the additional space required to allow for the train turns on the street surface and finally, for construction staging. The following is a list of potential areas impacted by acquisition with the At-Grade Emphasis LRT Alternative:

- Temple St. - south side between Alameda and Judge Aiso St.
- Main and Los Angeles Streets between Temple and 1st Streets to accommodate train turn movements and station platforms
- Corners of 2nd St. at Main and Los Angeles Streets to accommodate train turn movements
- 2nd St. between Hill and Los Angeles Streets to accommodate sidewalk widening, ancillary facilities such as traction power substations and construction staging

- Northeast corner of 3rd and Flower St. for train portal and construction staging
- Station entrances and emergency exits locations adjacent to 5th St.

The Underground Emphasis Alternative will require more property acquisition than the At-Grade Emphasis Alternative, as larger properties would be needed to place relief shafts, emergency exits, station entrances, train portals and construction staging. Although more area is required for the Underground Emphasis Alternative, there is a strong history of successful developments that Metro has undertaken with developers that produces revenue for Metro in terms of ground lease as well as new housing and commercial spaces for the community. Potential areas impacted by acquisition are as follows:

- Property bounded by Alameda, 1st, 2nd Streets and Temple Ave.
- 2 locations for station entrances for each station, total 6 sites
- Blast relief shafts (3) and emergency exits
- One traction power substation location

Evaluation of potential disproportionate effects: Number of low income HH

The evaluation of disproportionate effects considers the number of low income, single-occupancy units (SROs) and homeless shelters along each alignment. Of the total number of households within one-quarter mile of the at-grade alternative, 3,702 or 34.7% are low income households, compared to 3,390 or 35.3% of those within one-quarter mile of the underground alternative alignment. The number of SROs is 19 for the at-grade alternative and 20 for the underground alternative. The same number of homeless shelters are found within one-quarter mile of both alternatives.

Number of residents by ethnicity

The number of residents by ethnicity demonstrates the demographics of the downtown community. Both of the build alternatives are similar in that the population within one-quarter mile of the each alignment is composed of over 80 percent minorities. The ethnic majority population within one-quarter mile of the underground alternative is Hispanic, and the second highest ethnic population is Asian. The Asian population is the ethnic majority in the vicinity of the at-grade alternative, and the Hispanic population is the second highest population, followed by African American, then White.

Urban fit potential, including physical scale, visual fit, and cultural preservation by station and assignment

The urban fit potential was rated by station and by overall alignment. The results for the two build alternatives were rated as ‘fitting’ well into the existing urban environment while offering the maximum available direct connections to key activity centers within one-quarter mile of the alignment.

Percentage of service grade separated

The underground alternative contains a higher percentage of service grade separation, with 94 percent of the total alignment located underground. The at-grade alternatives differ slightly from each other due to differing lengths of underground alignments along the Flower St. portion of the line. Option A remains underground on Flower St. until just below 3rd St., while Option B surfaces on Flower St. just below 4th St. Thus, more Option A is located underground, including the new tunnel and existing 2nd St. tunnel, than Option B.

Community Acceptance

Both of the build alternatives received 'High' scores for the level of community acceptance, due to the high levels of positive response from community members, community organizations, and feedback received throughout the screening process. Initial comments expressed concern for impacts to the Little Tokyo community from the at-grade alternative. However, because the LRT alignment traverses the edges of the community, the direct impacts on Little Tokyo would be limited.

7.4.2 Final Screening Criteria

The final screening criteria developed for Goal 2 and its associated performance measures are presented in Table 7-5. The results of the findings for the two build, No Build, and TSM alternatives are presented in subsequent sections.

Table 7-5 Support Public Involvement and Community Final Screening Criteria

Goal	Performance Measure	At-Grade Option A	At-Grade Option B	Underground
2	Number of potential acquisitions	12	12	11
2	Percentage of service grade separated	34%	21%	94%
2	Evaluation of potential disproportionate effects and risk to environmental justice populations related to construction activities (Score 1-worst to 5-best)	4	4	5
2	Urban fit potential, including pedestrian accessibility and urban design enhancement opportunities	4	4	4

Number of potential acquisitions

The At-grade Emphasis LRT Alternative includes approximately 12 locations where property acquisition may occur. Specific parcels and property owners will be identified in the next phase, the Draft EIR/EIS. The Underground Emphasis LRT Alternative includes approximately 11 properties where potential property acquisitions may occur.

Percentage of service grade separated

See previous section for a description of the percentage of service that would be grade separated under each build alternative.

Evaluation of potential disproportionate effects and risk to environmental justice populations related to construction activities

The at-grade alternative does not run through, but adjacent to, the only residential community in the PSA, Little Tokyo. Therefore, construction activities would only have limited effects on this community, with most of the activity located to the west and north of Little Tokyo. Construction activities for the underground alternative, which runs underneath Little Tokyo, would affect the community. Construction impacts at the 1st and Alameda Streets intersection and the 2nd and Los Angeles Streets intersection would be mitigated, as these are the areas in Little Tokyo where LRT portals and station entrances would be located.

Urban fit potential including pedestrian accessibility and urban design enhancement opportunities

Both the at-grade and underground alternatives maintain a high level of urban fit potential with the surrounding land uses, including pedestrian accessibility possibilities. The alternatives have the potential to be integrated into the existing environment and dense streetscape. There also exists various possibilities to introduce creative new transit and pedestrian friendly street features, such as bicycle centers, 'green-scapes', and other enhancements.

7.5 Goal 3: Improve Mobility and Accessibility both Locally and Regionally

- Improve the connectivity of the regional transit service and provide a more attractive travel alternative for residents, workers, and visitors in the region
- Facilitate sustainable regional development
- Increase ridership of the Metro transit system and reduce single occupancy trips
- Maintain or enhance transit services to the transit dependent
- Improve travel time for transit users system-wide
- Improve person throughput
- Reduce growth of congestion in corridor

7.5.1 Initial Screening Criteria

The initial screening criteria for Goal 3, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM alternatives are presented in Table 7-6. Subsequent sections explain each performance measure and the results of each alternative.

Increase in daily transit boarding's

Of the two build alternatives, the underground alternative demonstrates a significant increase in the number of daily transit users, with 19,800 users compared to the at-grade increase of 10,100 users. Some station locations for the At-Grade Emphasis LRT Alternative are not in prime locations where there is an abundance of dense residential, commercial, and office uses.

New daily transit trips compared to No Build and TSM Alternatives

The TSM alternative would result in the smallest increase in daily transit trips (about 1000). This is likely because it does not reduce transfers for any rail passengers, but does provide a convenient new shuttle service through downtown Los Angeles. The Underground Emphasis LRT Alternative would likely attract the most new users to the system because it has the shortest trip time and it directly serves several major destinations in the PSA. The At-Grade Emphasis LRT Alternative would bring between 7,600 and 8,400 new users to the transit system.

Traffic impacts

With the Underground Emphasis LRT Alternative, all of the intersections in the PSA will either remain at the same level of service as under the No Build Alternative or improve. Traffic congestion at 1st and Alameda Streets would lessen by about 20%. Traffic congestion will be largely the same under the TSM Alternative as under the No Build Alternative. However, traffic congestion will worsen at many intersections under the At-Grade Emphasis LRT Alternative, including 1st and Broadway, 1st and Spring, 1st and Los Angeles, 1st and Judge John Aiso, 2nd and Main, 2nd and Los Angeles, 2nd and Spring, 2nd and Main, Los Angeles and 3rd, San Pedro and 3rd, Temple and Main, Los Angeles and Temple, Judge John Aiso and Temple, and Temple and Alameda.

Reduction in number of transfers

Both of the build alternatives would reduce transfers for many Metro Blue, Gold, and Expo Line passengers. The At-Grade Emphasis LRT Alternative would eliminate 16,600 transfers from both existing and new transit trips system-wide. The Underground Emphasis LRT Alternative would attract more new riders to the system due to its faster speeds and favorable station locations. As such, it would eliminate 20,700 transfers daily.

Goal	Performance Measure	No Build	TSM	At-Grade Option A	At-Grade Option B	Underground
	Table 7-6 Improve Mobility and Accessibility Both Locally and Regionally Initial Screening Criteria					
3	Increase in daily transit boarding's (amount of transit users increased compared to No Build)			10,100	10,100	19,800
3	New daily transit trips (compared to No Build)		1000	7,600	8,400	10,200
3	New daily transit trips (compared to TSM)			6,700	7,400	9,200
3	Traffic Impacts (number of intersections with E or F Level of Service)			3	3	1
3	Reduction in number of transfers by operational plan of alignment (daily reductions at Union Station & 7th St./Metro Center Station)			16,600	16,600	20,700
3	Total number of lanes reduced (cumulative for all streets)			24	27	0
3	Number of potentially impacted intersections			12	13	1
3	Peak period travel time through Regional Connector Alignment (including 5 min. for each transfer)					
	North-South: Union Station to Pico Station	17 min	22 min	14 min	14 min	12 min
	East-West: 1st St./Utah St. (to Union Station) to Pico Station	23 min	30 min	15 min	14 min	10 min
3	Number of left turn pockets affected			8	10	4
3	Number of on-street public parking spaces affected			88	88	0
3	Number of driveways affected			26	30	2
3	Daily hours of transportation user benefits (compared to No Build)		700	8,900	9,900	12,100

Total number of lanes reduced

The number of lanes reduced is the cumulative number of roadway segments (blocks) where there will potentially be a reduction in the lane width due to an LRT alignment. The At-Grade Emphasis LRT Alternative will have a greater number of possible lane width reductions, with Option A affecting 24 lanes and Option B affecting 27 lanes. Traffic impacts are also considered higher due to the resulting reduction in the existing roadway capacity.

The Underground Emphasis LRT Alternative would not cause a reduction in any street lane widths along the alignment. Although the underground alternative introduces an underpass along Alameda St., the existing lanes would drop below ground while street level movements would retain the current number of lanes. The At-Grade Emphasis LRT Alternative has a similar underpass proposed at Temple and Alameda Streets, so there would be little difference between the two alternatives in terms of impacts on Alameda St. traffic.

Number of potentially impacted intersections

The number of potentially impacted intersections is the number of intersections that the LRT alignment will pass through that may experience disruption or alteration due to current configuration or physical features. The At-grade Emphasis LRT Alternative options differ at the 4th and Flower St. intersection; Option A may impact a total of 12 intersections, while Option B may potentially impact 13 intersections. The Underground Emphasis LRT Alternative has only one intersection that may be impacted, at 1st St. and Alameda St. These estimates include only permanent impacts, not temporary construction impacts.

Peak period travel time between major origins and destinations

In addition to reducing transfers, one of the objectives of the Regional Connector is to provide faster travel to downtown destinations and to destinations outside of downtown. For north to south movement, the Metro Gold Line and Blue Line would be connected, resulting in reduced travel time between Union Station and Pico Station. Currently, the travel time between these destinations is approx. 17 minutes. The underground alternative lessens this travel by nearly six minutes to 12 minutes total. For the at-grade alternative, the trip from Union Station to Pico Station would take about 14 minutes.

For east to west movements, the Eastside Gold Line and Exposition Line would be connected, reducing travel time between 1st St./Utah St. and Pico Station. When the Eastside Gold Line begins operation in 2009, the travel time between these two destinations will be about 23 minutes. The underground alternative would see a peak period reduction of this trip to 12 minutes. For the at-grade alternative, the trip would take 14-15 minutes.

Number of left turn pockets affected

This performance measure considers the number of left turn pocket lanes that will be removed or displaced by the LRT alignment. The at-grade Option A would displace a total of 8 left-turn pocket lanes, while Option B would displace a total of 10 left-turn pocket lanes. In comparison, the underground alternative would displace a total of 4 left-turn pockets.

Number of parking spaces potentially affected

The total numbers of potentially affected parking spaces are those that exist along the alignment that could potentially be removed and would need to be replaced. Both options for the at-grade alternative could affect 88 parking spaces located along 2nd, Main, Los Angeles, and Temple Streets. Comparatively, the underground alternative has minimal impacts on existing parking spaces due to being predominantly below-grade.

Number of driveways affected

The driveways that would potentially be impacted are those located directly along the alignment corridor. The at-grade alternative Option A would impact a total of 26 driveways along the alignment compared to a total of 30 driveways with Option B. The additional driveways for Option B are located along the Flower St. segment between 5th St. and 3rd St. and are those associated with the World Trade Center, the Westin Bonaventure, and other financial district buildings. The underground alternative does not affect any driveways along the alignment corridor.

7.5.2 Final Screening Criteria

The final screening criteria developed for Goal 3 and its associated performance measures are presented in Table 7-7. The results of the findings for the two build, No Build, and TSM alternatives are presented in subsequent sections.

Table 7-7 Improve Mobility and Accessibility Both Locally and Regionally
Final Screening Criteria

Goal	Performance Measure	No Build	TSM	At-Grade		Underground
				Option A	Option B	
3	Daily hours of transportation user benefits (compared to No Build)		700	8,900	9,900	12,100
3	Congestion relief (Number of intersections with improved LOS/worsened LOS in both AM and PM peak periods)		Same as No Build	1 improved (AM) 11 worsened (AM) 1 improved (PM) 16 worsened (PM)	1 improved (AM) 11 worsened (AM) 1 improved (PM) 16 worsened (PM)	1 improved (AM) 0 worsened (AM) 1 improved (PM) 0 worsened (PM)
3	Comparison of peak period travel times between major travel pairs (assuming 5 minutes per transfer)					
	Sierra Madre Villa to Long Beach Transit Mall	97 mins	102 mins	94 mins	94 mins	92 mins
	Sierra Madre Villa to Pomona/Atlantic	49 mins	49 mins	58 mins	58 mins	58 mins
	Sierra Madre Villa to Washington/National	70 mins	75 mins	72 mins	71 mins	70 mins
	Pomona/Atlantic to Washington/National	61 mins	66 mins	52 mins	51 mins	48 mins
	Pomona/Atlantic to Long Beach Transit Mall	88 mins	93 mins	84 mins	84 mins	80 mins
3	Peak period travel times (Union Station to Staples Center - Pico Station)	17 mins	22 mins	14 mins	14 mins	12 mins
3	Travel times savings (over No Build)			3 mins	3 mins	5 mins
3	Reduction in VMT			N/A	N/A	N/A
3	Assessment of expandability (Score 1-worst to 5-best)			4	4	2

Hours of transportation user benefits

The Underground Emphasis LRT Alternative would yield about 12,000 daily hours of user benefit, the most of any alternative under consideration. This is partly due to the fact that it would have the fastest travel speeds and is projected to attract the most riders. The At-Grade Emphasis LRT Alternative would generate 8,900 daily hours of user benefit under Option A and 9,900 under Option B. The TSM Alternative would yield the fewest hours of benefit, 665, beyond the No Build scenario, as it would not eliminate any transfers for rail passengers or significantly speed their trips.

Congestion relief

The TSM Alternative would not have any effect on LOS at intersections within the PSA. The Underground Alternative would improve the intersection of 1st St. and Alameda St during both the morning and afternoon peak periods, but would leave LOS at the rest of the PSA's intersections largely unchanged. The At-Grade Emphasis LRT Alternative would yield LOS improvements at the intersection of 2nd St. and Broadway in the morning and at 2nd St. and San Pedro St. in the evening, but would worsen the performance of 14 to 16 other intersections in the PSA. This is likely because the At-Grade Emphasis LRT Alternative would require the conversion of existing traffic lanes to street-running rail right-of-way.

Comparison of peak period travel times between major travel pairs

For the most part, each of the build alternatives would yield a travel time savings of three to eight minutes during peak hours on trips involving the Metro Blue, Gold, or Expo Lines. For some trips, including those involving the Metro Expo Line and the Pasadena Gold Line, trip times would increase by one or two minutes under the build alternatives, but passengers would have one less transfer and would accordingly experience less uncertainty regarding their travel times. All build alternatives would add a new transfer to trips between the Pasadena and East Los Angeles branches of the Metro Gold Line, thus lengthening the trip time by about 9 minutes. The TSM alternative would increase trip times slightly because the shuttle buses would not run as quickly as the existing Metro Red and Purple Line subway.

Peak period travel times

The peak period travel times from Union Station to Pico Station would be 17 minutes under the No Build Alternative. The TSM Alternative would lengthen this time to 22 minutes due to the use of shuttle buses in mixed-flow traffic lanes. The At-Grade Emphasis LRT Alternative would shorten the trip to approximately 14 minutes, and the faster Underground Emphasis LRT Alternative would yield a travel time of 12 minutes. It should be noted that peak hour headways on the Metro Blue, Red, Purple, and Gold Lines are all different, and the actual transfer times between these lines vary from trip to trip. One advantage of the Regional Connector would be the elimination of transfers and the associated trip time uncertainty.

Travel times savings

During peak hours, when headways are short on all Metro Rail lines, the travel time savings over the No Build Alternative would range from three minutes on the At-Grade Emphasis LRT Alternative to five minutes on the Underground Emphasis LRT Alternative. During off-peak and late night hours, when headways are typically 20 minutes, the travel time savings will increase to 15 minutes or more.

Reduction in VMT

Due to the small length of the Regional Connector project, the reduction in VMT are minor compared to the overall system and may not be statistically meaningful in distinguishing one project from the other. However, both build alternatives are considered to provide some level of VMT reductions for the PSA.

Assessment of expandability

Due to the built out nature of the PSA, the existing light rail system and the proposed build alternatives would require significant infrastructure to expand in the future. Metro has identified at least two extensions in its 2007 Draft Long Range Transportation Plan, including an extension to the northwest and an extension south eventually connecting with Metro's Harbor subdivision. While the At-grade Emphasis LRT Alternative provides greater accessibility, at some point either extension will require aerial or underground configurations due to topography, the built environment and traffic considerations. The Underground Emphasis LRT Alternative initiates below-grade, so the cost of extension is already high; however, extension may be feasible depending on growth projections in jobs, population and ridership. The Underground Emphasis LRT Alternative does not currently include provisional design features to facilitate such a future extension.

7.6 Goal 4: Support Efforts to Improve Environmental Quality

- Minimize adverse environmental impacts
- Implement mitigation measures to reduce environmental effects to acceptable levels
- Reduce emissions and improve air quality

7.6.1 Initial Screening Criteria

The initial screening criteria for Goal 4, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM alternatives are presented in Table 7-8. Subsequent sections explain each performance measure and the results of each alternative.

Goal	Performance Measure	At-Grade Option A	At-Grade Option B	Underground
4	Noise (number of curves for LRT alignment)	6	6	3
4	Potential visual impacts to notable architectural resources within 1/4 mile of alignment (Score 1-worst to 5-best)	1	2	4
4	Number of Potential Sensitive Receptors within 1/4 mile of alignment (Score 1-worst to 5-best)	5	5	5
4	Potential impacts to historically significant locations within 1/4 mile of alignment	217	217	203
4	Geologic and geotechnical issues along alignment (Score 1-worst to 5-best)	2	2	1

Table 7-8 Support Efforts to Improve Environmental Quality
Initial Screening Criteria

Noise

To evaluate noise, the number of required curves in the track is used, as curves have higher potential to generate noise. Curves include on-street turns as well as turns from surface to underground configurations. The At-Grade Emphasis LRT Alternative would require six curves, while the underground alternative surfaces at one location and also contains three directional movements that may impact noise levels. Therefore, the at-grade alternative has a higher potential than the underground alternative for direct noise impacts.

Potential visual impacts to notable architectural resources

Through the initial screening process, current landmarks and notable architecturally significant buildings were identified as potentially sensitive to visual impacts. The underground alternative scores higher than the at-grade alternative in this regard because there is less potential for visual impacts along an underground alignment. The at-grade alternative Option A scores lower than Option B because, although identical in alignment, the differences in configuration cause differences in visual impacts.

Number of potential sensitive receptors along alignment

Sensitive receptors are initially described as individuals with respiratory diseases, children, and the elderly who occupy sensitive land uses such as daycare facilities, libraries, parks, churches. Due to the minimal amount of these sensitive land uses within the PSA, both build alternatives receive a high score for having low potential impacts on sensitive receptors.

Potential impacts to historically significant locations along alignment

Of the two build alternatives, the underground alternative has a higher (less impactful) score in terms of potential impacts to historically significant locations within one-quarter mile of the alignment, which include two National Historic Landmarks, four National

Register Districts, 78 individual National Register properties/resources, 88 California Register destinations, and 31 local landmarks. In comparison, the at-grade alternative has the potential to impact a handful more locations, including two National Historic Landmarks, five National Register Districts, 75 Individual National register properties/resources, 98 California Register designations, and 37 local landmarks.

Geologic and geotechnical issues along the alignment

Geologic and geotechnical issues are generally related to the amount of new underground configuration the alternative includes. Therefore, the underground alternative has the higher potential for these issues since the alignment is over 90% underground. The at-grade alternative also has the potential for geologic and geotechnical issues along the Flower St. tunnel. This portion of the alignment connects with the existing 7th St./Metro Center Station, in a new tunnel segment.

7.6.2 Final Screening Criteria

The final screening criteria developed for Goal 4 and its associated performance measures are presented in Table 7-9. The results of the findings for the two build, No Build, and TSM alternatives are presented in subsequent sections.

Table 7-9 Support Efforts to Improve Environmental Quality
Final Screening Criteria

Goal	Performance Measure	At-Grade		Underground
		Option A	Option B	
4	Expected level of impacts after mitigation to biological, social, and physical resources will be evaluated per CEQA/NEPA requirements (Score 1-worst to 5-best)	3	3	4
4	Reductions in PM10, NOx, and SOx emissions (Score 1-worst to 5-best)	N/A	N/A	N/A
4	Reduction in carbon footprint for average user (Score 1-worst to 5-best)	N/A	N/A	N/A

Expected level of impacts after mitigation to biological, social, and physical resources will be evaluated per NEPA/CEQA requirements

During the initial study, it was determined that there was no evidence that the proposed alignments would cause significant environmental effects on the following impact areas: biological, land use and planning, and population and housing. Because of existing downtown Los Angeles characteristics, both the at-grade and underground alternatives can be integrated into the existing urban environment. The at-grade alternative receives a point less since it has higher potential for impacts to these resources, being located at-grade versus underground.

During next phases of analysis (EIR/EIS), mitigation measures will be proposed to reduce any significant impacts on issues such as air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, mineral resources, noise, public services, recreation, transportation and traffic, and utilities and service systems, among others.

Reductions in PM10, NOx and SOx emissions

There is no difference in reductions in PM10, NOx, and SOx emissions under the at-grade or underground alternative.

Reduction in carbon footprint for average user

There is no difference in carbon footprint reduction for the average user under the at-grade or underground alternative.

7.7 Goal 5: Provide a Cost Effective Alternative Transportation System

- Increase ridership on the Metro system
- Minimize cost per passenger
- Maximize travel time savings

7.7.1 Initial Screening Criteria

The initial screening criteria for Goal 5, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM alternatives are presented in Table 7-10. Subsequent sections explain each performance measure and the results of each alternative.

Table 7-10 Provide a Cost Effective Alternative Transportation System
Initial Screening Criteria

Goal	Performance Measure	TSM	At-Grade Option A	At-Grade Option B	Underground
5	Rough order of magnitude annual O&M (2008 $) costs per alignment (millions)	$13.60 M	$9.80 M	$9.55 M	$5.15 M
5	User Cost - Cost Effectiveness compared to No Build ($/hour of transit user benefit)	$97.28	$24.75	$20.36	$18.63

Rough order of magnitude (ROM) O&M costs

Operating and maintenance (O&M) costs are correlated with the number of peak LRT vehicles needed for daily operations. Estimating the number of total and peak LRT vehicles for each alternative requires the development of an operating plan for each alternative, including running times and 'recovery' times, the number of cars per train, and the number of vehicles needed for spares and other services. Based on the operating plans for each alternative, the at-grade alternative will require 319 LRT vehicles and the underground alternative will require 303 LRT vehicles (due to the better travel time underground).

The ROM annual operating and maintenance cost for the at-grade alternative would be $10 Million, while the underground alternative O&M cost would be $5 Million.

User Cost – Cost Effectiveness

The cost effectiveness index measures the annualized change in capital cost and the annual O&M cost divided by the annual hours of transit-users benefits. FTA currently uses approximately $24 to $25 per hour of transit user benefit. The underground alternative rates the highest in cost effectiveness at $19. The at-grade alternative Option A performs the worst at $25, with Option B following at $20.

7.7.2 Final Screening Criteria

The final screening criteria developed for Goal 5 and its associated performance measures are presented in Table 7-11. The results of the findings for the two build, No Build, and TSM alternatives are presented in subsequent sections.

Table 7-11 Provide a Cost Effective Alternative Transportation System
Final Screening Criteria

Goal	Performance Measure	TSM	At-Grade Option A	At-Grade Option B	Underground
5	Annualized cost per hour of user benefit beyond the No Build Alternative	$97.28	$24.75	$20.36	$18.63
5	Year 2030 Annual O&M costs (in millions)	$13.60	$9.80	$9.55	$5.15

Annualized cost per hour of transit system user benefit compared to No Build and TSM Alternatives

The TSM Alternative would have the highest cost per hour of transit system user benefit of all of the alternatives. Even though it has the smallest capital cost, the TSM Alternative does not eliminate any transfers for rail passengers, and would impart a much lower level of benefit than the build alternatives. The At-Grade Emphasis LRT Alternative would have a cost per hour of user benefit of $20.36 to $24.75. The Underground Emphasis LRT Alternative would have the lowest cost per hour of user benefit ($18.63), largely because it serves the same area as the At-Grade Emphasis LRT Alternative but has a shorter travel time and station locations are more conducive to high ridership.

Annual O&M costs

Though it has the highest capital costs, the Underground Emphasis LRT Alternative would be the least expensive to operate. At $5.15 million per year, operational costs would be just over half of the annual O&M costs of the At-Grade Emphasis LRT Alternative ($9.55-$9.8 million). This is because the speeds on the underground alignment would be faster, and fewer trains would be needed to operate the service. The TSM alternative would be the most expensive to operate, at $13.6 million per year, likely due to the high volume of buses that would be needed to yield frequent headways.

7.8 Goal 6: Achieve a Financially Feasible Project

- Opportunities for private/public funding
- Opportunities for Federal and outside funding

7.8.1 Initial Screening Criteria

The initial screening criteria for Goal 6, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM alternatives are presented in Table 7-12. Subsequent sections explain each performance measure and the results of each alternative.

Table 7-12 Achieve a Financially Feasible Project
Initial Screening Criteria

Goal	Performance Measure	TSM	At-Grade Option A	At-Grade Option B	Underground
6	ROM Capital Costs - total and per mile per alignment (millions) (2008$)				
	total	$62.74	$795.67	$709.30	$910.36
	per mile per alignment		$424	$339	$414
6	Evaluation of availability and eligibility of capital funds at federal/state local levels to construct, operate and maintain (Score 1-worst to 5-best)				
	Federal (CEI)		1	2	5
	State (cost)		1	2	2
	Local (Cost & Subway restrictions)		1	2	1

ROM Capital Costs – total and per mile

The categories estimated for each alternative include fixed-guideway construction costs, station costs, LRT vehicles, parking (if required), maintenance and operating facility allowance, and a 10 percent unallocated contingency. The lowest cost alternative is the at-grade Option B at $709.60 million, followed by Option A at $795.67. The underground alternative capital cost would be $910.36 million.

Another measure of interest is the capital cost per mile. Again, the at-grade Option B has the lowest capital cost per mile at $339 million, followed by the underground alternative at $414 million per mile. The at-grade Option A would have the highest capital cost per mile at $424 million.

Evaluation of availability and eligibility of capital funds at federal/state/local levels to construct, operate and maintain

Three measures for funding sources were evaluated: federal, state, and local. The FTA New Starts Program is the primary funding source for federal funds. For this evaluation, the cost-effectiveness threshold is used as the measure for federal funding potential. The higher the cost-effectiveness compared to the threshold, the better the alternative. FTA currently uses a cost-effectiveness threshold of approximately $24 to $25 per hour of transit user benefit. The underground alternative currently rates the highest (best) in cost-effectiveness at $19, followed by the at-grade Option B at $20, then at-grade Option A at $25.

For state funding, the alternative with the lowest capital cost has the higher potential for state funding assistance. Because of the competitiveness of this project with other high priority transit projects, both the underground and the at-grade Option B receive the same score of two, while the at-grade Option A (with the highest capital cost) receives the lowest score of 1.

7.8.2 Final Screening Criteria

A comparative discussion of the build alternatives based on the final screening criteria and associated performance measures developed for Goal 6 is provided below. Table 7-13 contains a comparison of each build alternative's costs broken down into FTA's Standard Cost Categories. The results of the findings for the No Build, TSM, and two build alternatives are discussed in subsequent sections.

Table 7-13 Achieve a Financially Feasible Project
Final Screening Criteria

Goal	Performance Measure	At-Grade Option A	At-Grade Option B	Underground
6	Capital cost per rail route mile estimate disaggregated by right of way (ROW), guideway, stations, yards, and vehicles (in millions of dollars)			
	Guideway and Track Elements	$120.4	$114.3	$146.2
	Stations, Stops, and Terminals	$46.3	$25.0	$73.6
	Support Facilities: Yards, Shops, Maintenance Buildings	$8.7	$8.7	$3.3
	Site work and Special Conditions	$86.5	$80.9	$117.0
	Systems	$18.2	$18.2	$19.6
	ROW, Land, Existing Improvements	$2.1	$2.1	$34.3
	Vehicles	$29.4	$29.4	$11.1
	Professional Services	$92.5	$81.6	$118.7
	Unallocated Contingency	$40.3	$36.0	$52.4
	TOTAL COST PER ROUTE MILE	$444.4	$396.2	$576.2

Capital cost estimate disaggregated by ROW, guideway, stations, yards, and vehicles on a cost per mile basis

At-Grade Emphasis LRT Alternative Option B has the lowest capital cost per route mile because it has the least amount of track mileage underground and only one underground station. Option A has a higher cost per route mile because there it has one additional underground station and more underground tracks. The Underground Emphasis LRT Alternative is almost entirely underground and has three underground stations, resulting in the highest capital costs.

7.9 Goal 7: Provide a Safe and Secure Alternative Transportation System

- Secure entire alignment, stations, track and other facilities
- Develop direct and indirect safety measures that exceed safety precautions typical of the Metro system
- Develop a system that balances the need for accessibility and mobility with security
- Develop a system that uses accessibility and mobility as measures for safety and security

7.9.1 Initial Screening Criteria

The initial screening criteria for Goal 7, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM alternatives are presented in Table 7-14. Subsequent sections explain each performance measure and the results of each alternative.

Table 7-14 Provide a Safe and Secure Alternative Transportation System
Initial Screening Criteria

Goal	Performance Measure	At-Grade		Underground
		Option A	Option B	
7	Safety - determined to be able to provide measures typical of requirements per ADA, per typical CPUC requirements, fire life safety guidelines, and per Metro Design Guidelines for access to and from stations (amount grade separated) (Score 1-worst to 5-best)	2	1	5
	Total underground - new tunnel, existing 2nd St. tunnel, and aerial	46%	38%	94%
7	Number of emergency facilities located within 1/4 mile of the alignment (i.e., fire stations, police stations, hospitals)	4	4	4
7	Number of public events within 1/4 mile of alignment	14	14	14

Safety- determined to be able to provide measures typical of requirements per ADA, typical CPUC requirements, fire life safety guidelines and Metro Design Guidelines for access to and from stations

The measures used to evaluate the build alternatives included the percentage of the alignment that was fully grade separated and the percentage of the alignment totally underground in a new tunnel or in the existing 2nd St. tunnel. It is generally assumed that the more grade separated the alignment, the 'more safe and secure' it will be. Based on that assumption, the underground alternative received the best score, with 94 percent of the line underground, as opposed to the at-grade alternative Option A which is 46 percent underground and Option B which is 38 percent underground.

Number of emergency facilities located within one-quarter mile of the alignment, (i.e. fire stations, police stations, hospitals, etc.)

Both build alternatives have four emergency facilities located within their one-quarter mile buffer, three fire stations and one police station.

Number of public events

Currently, there are a total of 14 annually scheduled public events within one-quarter mile of the at-grade and underground alternatives, including 12 street closures and two additional annual events. These public events include the Little Tokyo Cherry Blossom Festival, the Los Angeles Marathon, Fiesta Broadway, City of Angels Half-Marathon, El Grito Celebration, and the St. Patrick's Day Parade.

7.9.2 Final Screening Criteria

The final screening criteria developed for Goal 7 and its associated performance measures are presented in Table 7-15. The results of the findings for the two build, No Build, and TSM alternatives are presented in subsequent sections.

Table 7-15 Provide a Safe and Secure Alternative Transportation System
Final Screening Criteria

Goal	Performance Measure	At-Grade Option A	At-Grade Option B	Underground
7	Number of crossings with high pedestrian activities on a daily basis	10	10	1
7	Number of events along the alignment	14	14	14
7	Potential issues related to accessibility and line of sight for pedestrians and vehicle drivers (Score 1-worst to 5-best)	1	1	4

Number of crossings with high pedestrian activities on a daily basis

The at-grade alternative has considerably more intersections with high pedestrian activity, 10 total, due to its at-grade configuration and its location along a pedestrian heavy corridor, specifically along 2nd St. The pedestrian activity along 2nd St. is not limited to

Civic Center purposes, but includes the historic and art buildings along 2nd St. as well. Many people walk along 2nd St. and up and down Main and Los Angeles Streets, especially during weekday lunch hour. In addition, because Civic Center buildings are all centrally located, people walk during most of the day to and from different departments.

The underground alternative would affect one intersection, 1st St. and Alameda St. In the past, this was a predominantly vehicle and truck heavy only intersection, but with the recent addition of residential developments along Alameda St. and the Arts District, and with the future Metro Goldline Extension and mixed-use development, this will be a pedestrian heavy intersection.

Number of events along the alignment

See Section 7.9.1 for a description of public events.

Number of potential issues related to accessibility and line of sight for pedestrian and vehicle drivers

An at-grade LRT may have a higher number of potential issues related to accessibility and line of sight for pedestrians and vehicles. An at-grade LRT introduces a new, fixed, transit route that drivers may not be accustomed to. Train movements and signal operations may be unfamiliar and cause initial confusion or uncertainty. Likewise, for pedestrians, an at-grade LRT presents safety concerns due to train speeds, track crossings, and/or proper notifications for oncoming trains. For these and other reasons, the at-grade alternative receives a low score in terms of potential issues that may arise.

The underground alternative presents fewer concerns for pedestrians and street vehicular traffic due to its underground configuration throughout much of the alignment, with the exception of the 1st St. and Alameda St. intersection. Some potential issues at this intersection include through-traffic ability, driver confusion, proper signage for turning movements, and vehicle approaching train signals. There are various features of the underground alignment that will facilitate both vehicular and pedestrian movements. The underpass for north-south traffic removes the vehicular activity from street level to underground, leaving only the LRT and local traffic movements. In addition, the introduction of a pedestrian bridge provides pedestrians with the option to move from street level to an upper platform space. For this reason, the underground alternative received a high score with respect to potential accessibility issues.

7.10 Summary of Recommendations

After the screening of alternatives from eight build alternatives to two build alternatives, a number of refinements were made to both alternatives with input from the community and stakeholders. Much of the input received was regarding the impacts to the Little Tokyo community, connections to a potential historic trolley line on Broadway, and a connection to the Grand development. The addition of a new underpass and pedestrian bridge for both alternatives help to address some key concerns. Continued engineering refinement and coordination with the stakeholders during the next phase of this process will help resolve any remaining issues.

At this point, both build alternatives are viable and can be constructed. However, the Underground Emphasis LRT Alternative has a greater benefit in the long term. This segment will be the core of the light rail system for the PSA and the region as a whole. A high number of trains will be traversing this nearly two-mile segment to go north, south, east or west in the County. The Underground Emphasis LRT Alternative avoids surface conflicts with autos and pedestrians which is beneficial both from a safety standpoint as well as an operational standpoint, as one unplanned stop by a train could cause significant delays for riders in different parts of the County.

Still, the Underground Emphasis LRT Alternatives creates some significant short term impacts to the culturally sensitive Little Tokyo community. This community has a lot to gain in the long run as it will be at the core for public transit in the region. However, there is a concern that Little Tokyo business and therefore Little Tokyo itself will be significantly impacted during construction. Specific considerations for this community will need to be reviewed during the next phase, the Draft EIR/EIS. Therefore, both build alternatives are recommended for further study in a Draft EIR/EIS to evaluate potential impacts and mitigation and to further engineer the details for each option.

7.11 Tradeoffs between Alternatives

Table 7-16 provides a summary comparison of the build alternatives that will be carried on to the next phase for full environmental review. The No Build and TSM Alternatives are required by the state and federal processes to be included in the environmental review as well.

Due to the regional significance of this central 1.8-mile connection, both alternatives will provide substantial mobility and accessibility improvements, consistent with Goal 3. However, due to the volume of potential conflicts with autos that an at-grade alternative provides, and considering that such conflicts would generate substantial interruptions for existing transit operations in the region, the Underground Emphasis LRT Alternative would perform the best, with only one potential conflict location. In addition, the Underground Emphasis LRT Alternative provides better travel times and in turn attracts more riders due to the avoidance of at-grade traffic conditions and at-grade traffic signals.

The cost for either project is significant due to the urban and built out character of the PSA. Both alternatives have substantial portions below-grade, with the At-Grade Emphasis LRT Alternative below-grade for more than 40 percent of the alignment. The capital cost differential between the two alternatives is approximately $200 million, but the O&M cost between the two alternatives is substantially different. The At-Grade Emphasis LRT Alternative will require additional vehicles to account for the slower speeds through downtown LA due to traffic conditions. Additional costs will also be incurred by the maintenance of at-grade components, including track repair, OCS maintenance, station cleaning and station facility repairs. As both alternatives score well using FTA criteria for transit system user benefits, either alternative would be financially feasible.

Table 7-16 Summary Comparison of Alternatives

<table>
<tr><th>Goal</th><th>At-Grade Alt – Option A</th><th>At-Grade Alt – Option B</th><th>Underground Alt</th></tr>
<tr><td>1: Community Planning</td><td colspan="3">Similar demographic characteristics, transit oriented design policies, connections to activity centers, and redevelopment opportunities under all build alternatives.</td></tr>
<tr><td>2: Public Involvement, Community Preservation</td><td colspan="2">- Smaller proportion of alignment is grade separated
- Similar urban fit and potential disproportionate environmental justice effects compared to Underground Emphasis LRT Alt.
- One more acquisition needed than Underground Emphasis LRT Alt.</td><td>-Greater proportion of alignment is grade separated.
-Similar urban fit and potential disproportionate environmental justice effects compared to At-Grade Emphasis LRT Alt.
-One fewer acquisition needed than At-Grade Emphasis LRT Alt.</td></tr>
<tr><td>3: Improve Mobility and Access</td><td>-8,900 daily hours of transportation user benefits
-Union Station to Pico in 14 minutes (3 faster than No Build)
-Easily adapted for further system expansions</td><td>-9,900 daily hours of transportation user benefits
-Union Station to Pico in 14 minutes (3 faster than No Build)
-Easily adapted for further system expansions</td><td>-12,100 daily hours of transportation user benefits
-Union Station to Pico in 12 minutes (5 faster than No Build)
-Not easily adapted for further system expansions</td></tr>
<tr><td>4: Improve Environmental Quality</td><td colspan="2">Slightly more impacts than Underground Emphasis LRT Alt. to biological, social, and physical resources after mitigation</td><td>Slightly fewer impacts than At-Grade Emphasis LRT Alt. to biological, social, and physical resources after mitigation</td></tr>
<tr><td>5: Cost Effectiveness</td><td>-Operating Costs: $9.8M/yr
-Annualized cost per hour of user benefit: $24.75</td><td>-Operating Costs: $9.6M/yr
-Annualized cost per hour of user benefit: $20.36</td><td>-Operating Costs: $5.2M/yr
-Annualized cost per hour of user benefit: $18.63</td></tr>
<tr><td>6: Financial Feasibility</td><td>-Capital Costs: $796M ($424M per mile)
-Low eligibility for federal/state/local funds</td><td>-Capital Costs: $709M ($339M per mile)
-Moderate-Low eligibility for federal/state/local funds</td><td>-Capital Costs: $910M ($414M per mile)
-Moderate-Low eligibility for state/local funds
-High eligibility for federal funds</td></tr>
<tr><td>7: Safety and Security</td><td colspan="2">-10 high-activity grade crossings
-Many potential issues related to accessibility and vehicle line of sign
-Similar number of public events along the alignment, compared to Underground Emphasis LRT Alt.</td><td>-1 grade crossing
-Few potential issues related to accessibility and vehicle line of sight
-Similar number of public events along the alignment, compared to At-Grade Emphasis LRT Alt.</td></tr>
</table>

The build alternatives meet one of two distinct criteria important to the general community. The Underground Emphasis LRT Alternative addresses the desire for the project to be primarily, if not entirely, underground. The At-grade Emphasis LRT Alternative addresses the desire for an alternative that does not directly impact the community of Little Tokyo by traversing Temple, Los Angeles and Main Streets instead. Though the Underground Emphasis LRT Alternative avoids directly conflicting with Little Tokyo's busy streets and businesses, this alternative features a single at-grade crossing at Alameda and 1st Streets, and potential impacts to Little Tokyo are still a great concern.

After initial screening, Metro worked closely with a special task force created within the Little Tokyo community, as well as with major stakeholders within the historic core, financial district, Bunker Hill and the Civic Center. The decision to include underpasses for intersections at Temple and 1st St., and to include a pedestrian bridge for both alternatives, has led to support from the Little Tokyo community for both alternatives. In addition, the historic core will continue to be involved in the potential fourth station at 2nd and Spring Streets and the final location of an underground station on 2nd St., in order to best enhance a connection to a proposed street-car on Broadway. Both alternatives score well based on support for community planning efforts.

Based on the comparative analysis, the following alternatives are being recommended for consideration for future study in a Draft EIR/EIS process:

- No Build (required)
- Transportation System Management (TSM) (required)
- At-Grade Emphasis LRT (including Alameda underpass and pedestrian bridge at Temple Street)
- Underground Emphasis LRT (including Alameda underpass and pedestrian bridge at 1st Street)

These alternatives are considered the best alternatives that meet the Purpose and Need for the Regional Connector Transit Corridor and are the most competitive for possible Federal New Starts funding participation.

The following issues will continue to be addressed during development of the Draft EIR/EIS and the selection of the Locally Preferred Alternative (LPA). The LPA will be submitted to the Federal Transit Administration as the project Metro recommends for Preliminary Engineering.

- Design of auto underpasses, pedestrian crossings, and pedestrian bridges for both build alternatives
- Decision about specific location and configuration of stations
- Decision about a possible fourth station for the At-Grade Emphasis LRT

- Impact identification and proposed mitigation for construction and operations
- Costs
- Evaluation of the cost effectiveness of project elements

Appendix A References

American Public Transit Association, 1999. Public Transportation and the Nation's Economy. http://www.apta.com/research/info/online/documents/vary.pdf. Accessed on November 19, 2008.

Antelope Valley Transportation Authority. "AVTA Route 785." http://www.avta.com/commuter/commuter_route785.htm. Accessed on November 18, 2008.

California Association of Realtors, 1999. "Housing Price Data, 3rd Quarter, 1999."

California Environmental Protection Agency – State Water Resources Control Board. "The Plan for California's Nonpoint Source Pollution Control Program." http://www.swrcb.ca.gov/nps/protecting.html. Accessed on November 19, 2008.

California Regional Water Quality Control Board, 1994. Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties. http://www.swrcb.ca.gov/rwqcb4/water_issues/programs/basin_plan/basin_plan_documentation.shtml. Accessed on November 19, 2008.

Cartifact, 2007. "Downtown Los Angeles." (map)

City of Gardena. "Gardena Municipal Bus Lines." http://www.ci.gardena.ca.us/government/Transportation/Maps.asp. Accessed on November 18, 2008.

City of Los Angeles Department of Transportation. "LADOT Transit Online." http://www.ladottransit.com. Accessed on November 18, 2008.

City of Los Angeles Department of Transportation. "Traffic Volume Counts." http://ladot.lacity.org/tf_hist_auto_counts.htm. Accessed on November 19, 2008.

City of Los Angeles, 2003. Central City Community Plan. http://cityplanning.lacity.org/complan/pdf/CCYCPTXT.PDF. Accessed on November 19, 2008.

City of Los Angeles, 2005. LAPD Police Headquarters Draft Environmental Impact Report.

City of Los Angeles, Bureau of Engineering. "NavigateLA." http://navigatela.lacity.org. Accessed on November 18, 2008.

City of Los Angeles, Department of City Planning, Office of Historic Resources. "Historic Preservation Overlay Zones." http://www.preservation.lacity.org/hpoz/la. Accessed on November 18, 2008.

City of Los Angeles, Department of City Planning, Office of Historic Resources. "Historic-Cultural Monument Report." http://cityplanning.lacity.org/complan/HCM/HCM.CFM. Accessed on November 18, 2008.

City of Los Angeles, Department of City Planning, Office of Historic Resources. "Proposed Historic Preservation Overlay Zones." http://www.preservation.lacity.org/hpoz/proposed. Accessed on November 18, 2008.

City of Los Angeles. "Angels Walk." http://www.lacity.org/angelswalk/index.htm. Accessed on November 19, 2008.

City of Los Angeles. "General Plan." http://www.lacity.org/PLN/Cwd/GnlPln/index.htm. Accessed on November 12, 2008

City of Montebello. "Montebello Bus Lines." http://www.cityofmontebello.com/depts/transit/bus/default.asp. Accessed on November 18, 2008.

City of Santa Clarita. "City of Santa Clarita Transit." http://www.santa-clarita.com/cityhall/admin/transit/. Accessed on November 18, 2008.

City of Santa Monica. "Big Blue Bus – Bus Routes." http://www.bigbluebus.com/busroutes/index.asp. Accessed on November 18, 2008.

City of Torrance. "Bus Routes & Schedules." http://www.ci.torrance.ca.us/128.htm. Accessed on November 18, 2008.

Community Redevelopment Agency of the City of Los Angeles and Little Tokyo Planning and Design Guidelines Joint Task Force, 2005. Little Tokyo Planning and Design Guidelines.

Community Redevelopment Agency of the City of Los Angeles, 1967. Bunker Hill Urban Renewal Project Amended Redevelopment Plan. http://www.crala.net/internet-site/Projects/Bunker_Hill/upload/bhredevelopmentplan.pdf. Accessed on November 18, 2008.

Community Redevelopment Agency of the City of Los Angeles, 1970. Little Tokyo Redevelopment Project – The Redevelopment Plan. http://www.crala.net/internet-site/Projects/Little_Tokyo/upload/littletokyoredevelopmentplan.pdf. Accessed on November 18, 2008.

Community Redevelopment Agency of the City of Los Angeles, 1975. Redevelopment Plan for Central Business District Redevelopment Project. http://www.crala.net/internet-site/Projects/CBD/upload/cbd.pdf. Accessed on November 18, 2008.

Community Redevelopment Agency of the City of Los Angeles, 2002. Amendment to the Redevelopment Plan for the Central Business District Redevelopment Project. http://www.crala.net/internet-site/Projects/CBD/upload/cbdamendment1.pdf. Accessed on November 18, 2008.

Community Redevelopment Agency of the City of Los Angeles, 2002. *Redevelopment Plan for the Central Industrial Redevelopment Project*. http://www.crala.net/internet-site/Projects/Central_Industrial/upload/centralindustrial-2.pdf. Accessed on November 18, 2008.

Community Redevelopment Agency of the City of Los Angeles, 2002. *Redevelopment Plan for the City Center Redevelopment Project*. http://www.crala.net/internet-site/Projects/City_Center/upload/citycenter.pdf. Accessed on November 18, 2008.

Community Redevelopment Agency of the City of Los Angeles, 2005. *Bunker Hill Redevelopment Project Five-Year Implementation Plan*. http://www.crala.net/internet-site/Projects/Bunker_Hill/upload/BH-5YrPlan2004-2009-2.pdf. Accessed on November 18, 2008.

Community Redevelopment Agency of the City of Los Angeles, 2006. *Feasibility Study for the Resurrection of the Red Car Trolley Services in the Los Angeles Downtown Area*.

Community Redevelopment Agency of the City of Los Angeles, 2007. *Central Business District Redevelopment Project Area (Amended) Five-Year Implementation Plan*. http://www.crala.net/internet-site/Projects/CBD/upload/CB%205-Year%20Plan%201Nov2007%20final.pdf. Accessed on November 18, 2008.

Community Redevelopment Agency of the City of Los Angeles, 2007. *Central Industrial Redevelopment Project Area Five Year Implementation Plan*. http://www.crala.net/internet-site/Projects/Central_Industrial/upload/CI%205-Year%20Plan%201Nov2007%20FINAL1.pdf. Accessed on November 18, 2008.

Community Redevelopment Agency of the City of Los Angeles, 2007. *City Center Redevelopment Project Area Five-Year Implementation Plan*. http://www.crala.net/internet-site/Projects/City_Center/upload/CT%205-Year%20Plan%201Nov2007%20final%20revised.pdf. Accessed on November 18, 2008.

Community Redevelopment Agency of the City of Los Angeles, 2007. *Little Tokyo Redevelopment Project Area Five-Year Implementation Plan*. http://www.crala.net/internet-site/Projects/Little_Tokyo/upload/LT5YRImplementationPlan07.pdf. Accessed on November 18, 2008.

Community Redevelopment Agency of the City of Los Angeles. "Development Opportunities." http://www.crala.net/internet-site/Development. Accessed on November 18, 2008.

County of Los Angeles, 2008. *Draft General Plan*. http://planning.lacounty.gov/generalplan. Accessed on November 18, 2008.

Downtown Center Business Improvement District, 2007. *Downtown Los Angeles Housing Information*.

Downtown Strategic Plan Advisory Committee, Steering Committee, 1993. *Metro Blue Line Connector in Downtown Los Angeles: Alignment and Station Location Recommendations*.

Federal Emergency Management Agency. "Mapping Information Platform." http://hazards.fema.gov. Accessed on November 19, 2008.

Federal Transit Administration, 2006. *Transit Noise and Vibration Impact Assessment*.

Federal Transit Administration, Office of Planning and Environment, US Department of Transportation, 2007. *Proposed Guidelines on New Starts/Small Starts Policies and Procedures*.

Federal Transit Administration. "Additional Guidance on Local Initiation of Alternatives Analysis Planning Studies." http://www.fta.dot.gov/printer_friendly/planning_environment_2590.html. Accessed on November 12, 2008.

Federal Transit Administration. "New Starts Project Planning & Development." http://www.fta.dot.gov/planning/planning_environment_5221.html. Accessed on November 12, 2008.

Foothill Transit. "Schedules and Routes." http://www.foothilltransit.org/Schedules_Routes/index.htm. Accessed on November 18, 2008.

Gebhard, David, 1994. *Los Angeles Architectural Guide*.

Grand Avenue Authority, 2006. *Final Environmental Impact Report for the Grand Avenue Project*.

Grand Avenue LS – The Related Companies, Gehry Partners L.L.P., 2006. *Grand Avenue Phase One, Entitlement Package*.

Lantis, David W. et al., 1966. *California: Land of Contrast*.

Los Angeles Civic Center Authority, 1997. *Los Angeles Civic Center Shared Facilities and Enhancement Plan*.

Los Angeles Convention Center. "Things to Do While Visiting Los Angeles." https://www.lacclink.com/pages/shared/thingsToDo/venues/?menu=. Accessed on November 19, 2008.

Los Angeles County Metropolitan Transportation Authority, 1993. *Blue Line Connection Draft Preliminary Planning Study*.

Los Angeles County Metropolitan Transportation Authority, 1994. *Rail Transit Design Criteria & Standards*.

Los Angeles County Metropolitan Transportation Authority, 1998. *Regional Transit Alternatives Analysis*.

Los Angeles County Metropolitan Transportation Authority, 2000. *Eastside Transit Corridor Study Re-evaluation/Major Investment Study*.

Los Angeles County Metropolitan Transportation Authority, 2001. *2001 Long Range Transportation Plan*.

Los Angeles County Metropolitan Transportation Authority, 2002. *Final Report, Los Angeles Metro Rapid Demonstration Program*.

Los Angeles County Metropolitan Transportation Authority, 2002. *Los Angeles Eastside Corridor Final Supplemental Environmental Impact Statement/Final Subsequent Environmental Impact Report*.

Los Angeles County Metropolitan Transportation Authority, 2003. *Short Range Transportation Plan for Los Angeles County*.

Los Angeles County Metropolitan Transportation Authority, 2004. *Congestion Management Program for Los Angeles*.

Los Angeles County Metropolitan Transportation Authority, 2004. *Regional Light Rail Connector Study Summary*.

Los Angeles County Metropolitan Transportation Authority, 2004. *Metro Rail Onboard Survey*.

Los Angeles County Metropolitan Transportation Authority, 2005. *Los Angeles Mid-City Westside Transit Corridor/Mid-City Exposition Light Rail Transit Project Final Environmental Impact Statement/Environmental Impact Report*.

Los Angeles County Metropolitan Transportation Authority, 2005. *Bicycle Transportation Strategic Plan*.

Los Angeles County Metropolitan Transportation Authority, 2007. *Countywide Congestion Mitigation Fee Feasibility Study*.

Los Angeles County Metropolitan Transportation Authority, 2008. *Draft 2008 Long Range Transportation Plan*.

Los Angeles County Metropolitan Transportation Authority, 2008. *Regional Connector Final Purpose and Need Report*.

Los Angeles County Metropolitan Transportation Authority, 2008. *Regional Connector Final Project Early Scoping Report.*

Los Angeles County Metropolitan Transportation Authority, 2008. *Regional Connector Final Alternatives Analysis Methodology Report*.

Los Angeles County Metropolitan Transportation Authority, 2008. *Regional Connector Final Alternatives Identification Report*.

Los Angeles County Metropolitan Transportation Authority, 2008. *Regional Connector Final Initial Screening of Alternatives Report*.

Los Angeles County Metropolitan Transportation Authority. "Metro Bus and Rail System Map." http://www.metro.net/riding_metro/maps/images/System_Map.pdf. Accessed on November 12, 2008.

Los Angeles County Metropolitan Transportation Authority. "Metro Rail System Map." http://www.metro.net/riding_metro/maps/images/rail_map.pdf. Accessed on November 12, 2008.

Los Angeles County Metropolitan Transportation Authority. "Metro Rail System Map – Future Lines." http://www.metro.net/riding_metro/maps/images/rail_map_future.pdf. Accessed on November 12, 2008.

Los Angeles County Metropolitan Transportation Authority. "Ridership Statistics." http://www.metro.net/news_info/ridership_avg.htm. Accessed on November 12, 2008.

Los Angeles County Metropolitan Transportation Authority. "Timetables." http://www.metro.net/riding_metro/riders_guide/planning_trip.htm. Accessed on November 12, 2008.

Los Angeles County Metropolitan Transportation Authority. 2008. *Draft Capital Cost Estimate Technical Memorandum*.

Los Angeles County Metropolitan Transportation Authority. "Joint Development Program." http://www.metro.net/projects_programs/joint_development.htm. Accessed on November 12, 2008.

Los Angeles County Transportation Commission, 1989. *Pasadena-Los Angeles Light Rail Transit Project Draft EIR.*

Los Angeles County Transportation Commission, 1994. *Pasadena – Los Angeles Light Rail Transit Project Final Supplemental Environmental Impact Report*.

Los Angeles Homeless Services Authority, 2007. *2007 Greater Los Angeles Homeless Count*. http://www.lahsa.org/homelesscount.asp. Accessed on November 19, 2008.

Orange County Transportation Authority. "Bus Information." http://www.octa.net/schedules_maps.aspx. Accessed on November 18, 2008.

Orange Empire Railway Museum. "A Short History of the Pacific Electric." http://www.oerm.org/pages/pehistory.html. Accessed on November 13, 2008.

Project Restore, 2007. *Civic Crossroads Draft Concept Plan*.

Rideshare Services Group. "CommuteSmart." http://www.commutesmart.info. Accessed on November 18, 2008.

Sanborn Fire Insurance Company, 1950. "Los Angeles Sanborn Maps."

South Coast Air Quality Management District, 2007. *Air Quality Management Plan*. http://www.aqmd.gov/aqmp/07aqmp/index.html. Accessed on November 19, 2008.

Southern California Air Quality Management District, 1993. *California Environmental Quality Act Air Quality Handbook*.

Southern California Association of Governments, 2004. *2004 Regional Transportation Plan: Destination 2030*.

Southern California Association of Governments, 2007. *State of the Region Report*.

Southern California Association of Governments, 2008. *Draft 2008 Regional Transportation Plan*.

Southern California Association of Governments, 2008. *Regional Comprehensive Plan and Guide*.

Southern California Association of Governments. "Census Data (Year 2000 Census Data)." http://www.scag.ca.gov/census. Accessed on November 12, 2008.

Southern California Regional Rail Authority. "Metrolink Fact Sheet." http://www.metrolinktrains.com/documents/About/Fact_Sheet_Dec07_2Q.pdf. Accessed on November 12, 2008.

State of California Department of Conservation. "California Geological Survey – Alquist-Priolo Earthquake Fault Zones." http://www.conservation.ca.gov/cgs/rghm/ap/Pages/Index.aspx. Accessed on November 19, 2008.

State of California Department of Fish and Game. "California Natural Diversity Database." http://www.dfg.ca.gov/biogeodata/cnddb. Accessed on November 12 2008.

State of California Department of Housing and Community Development. “TOD Housing Program.” http://www.hcd.ca.gov/fa/tod. Accessed on November 12, 2008.

State of California Department of Parks and Recreation, Office of Historic Preservation. “California Historical Landmarks, Los Angeles County.” http://ohp.parks.ca.gov/default.asp?page_id=21427 . Accessed on November 18, 2008.

State of California Department of Toxic Substances Control. “DTSC Databases.” http://www.dtsc.ca.gov/database/index.cfm. Accessed on November 12, 2008.

State of California Office of Historic Preservation. “California Historical Resources Information System.” http://ohp.parks.ca.gov/?page_id=1068. Accessed on October 15, 2008.

State of California Public Utilities Code. http://www.leginfo.ca.gov/calaw.html. Accessed on November 12, 2008.

Transit Coalition, 2005. *Downtown Regional Connector.*

Transportation Research Board, 1980. *Transportation Research Circular, No. 212, Interim Materials on Highway Capacity.*

United States Census Bureau. “Census 2000 Gateway.” http://www.census.gov/main/www/cen2000.html. Accessed on November 12, 2008.

United States Environmental Protection Agency. “National Pollutant Discharge Elimination System (NPDES).” http://cfpub.epa.gov/npdes/. Accessed on November 19, 2008.

United States National Park Service. “National Register Information System.” http://www.nr.nps.gov/nrloc1.htm. Accessed on November 18, 2008.

Appendix B Transit Lines Serving the Project Study Area

Operator	Line	Mode	Weekday Hours of Operation	Peak Hour Frequency	Route Description
AVTA	785	Freeway Express Bus	4AM-6AM, 3PM-6PM	20 mins	Palmdale/Lancaster
BBB	10 Express	Freeway Express Bus	6AM-8PM	15 mins	Santa Monica
Gardena	1	Freeway Express Bus	5AM-12AM	15 mins	Gardena/Lawndale
Foothill	481	Freeway Express Bus	6AM-9AM, 3PM-6PM	20 mins	El Monte/Wilshire Center
Foothill	493	Freeway Express Bus	5AM-8AM, 2PM-8PM	10 mins	Pomona/Phillips Ranch
Foothill	497	Freeway Express Bus	5AM-8AM, 2PM-7PM	12 mins	Chino
Foothill	498	Freeway Express Bus	5AM-8AM, 2PM-7PM	7 mins	Covina/Azusa
Foothill	499	Freeway Express Bus	5AM-8AM, 2PM-7PM	12 mins	San Dimas
Foothill	699	Freeway Express Bus	4AM-8AM. 2PM-7PM	9-12 mins	Montclair
Foothill	Silver Streak	Freeway Express Bus	24 Hours	10 mins	Montclair
LADOT	CE 409	Freeway Express Bus	6AM-9AM, 4PM-6PM	15 mins	Sylmar/Sunland/Tujunga/Montrose/Glendale
LADOT	CE 413	Freeway Express Bus	7AM-9AM, 4PM-6PM	25 mins	Van Nuys/North Hollywood/Burbank
LADOT	CE 419	Freeway Express Bus	7AM-9AM, 4PM-7PM	15 mins	Chatsworth/Northridge/Granada Hills/Mission Hills
LADOT	CE 422	Freeway Express Bus	5AM-9AM, 4PM-8PM	8 mins	Hollywood/San Fernando Valley/Agoura Hills/Thousand Oaks
LADOT	CE 423	Freeway Express Bus	7AM-9AM, 4PM-7PM	15 mins	Encino/Woodland Hills/Agoura Hills/Thousand Oaks/Newbury Park
LADOT	CE 430	Freeway Express Bus	6AM-7AM, 5PM-6PM	30-50 mins	Brentwood/Pacific Palisades
LADOT	CE 431	Freeway Express Bus	7AM-9AM, 5PM-6PM	30 mins	Westwood/Rancho Park/Palms
LADOT	CE 437	Freeway Express Bus	7AM-9AM, 4PM-6PM	15-30 mins	Venice/Marina del Rey/Culver City
LADOT	CE 438	Freeway Express Bus	7AM-9AM, 4PM-6PM	15 mins	Redondo Beach/Hermosa Beach/Manhattan Beach/El Segundo
LADOT	CE 448	Freeway Express Bus	7AM-9AM, 4PM-6PM	15 mins	Rancho Palos Verdes/Torrance/Lomita/Wilmington Harbor City
LADOT	CE 534	Freeway Express Bus	7AM-8AM, 4PM-5PM	30 mins	Century City/Westwood
LADOT	DASH A	Circulator Bus	7AM-7PM	7 mins	Little Tokyo/City West
LADOT	DASH B	Circulator Bus	6AM-7PM	8 mins	Chinatown/Financial District
LADOT	DASH C	Circulator Bus	7AM-7PM	7 mins	Financial District/South Park

Operator	Line	Mode	Weekday Hours of Operation	Peak Hour Frequency	Route Description
LADOT	DASH D	Circulator Bus	6AM-7PM	5 mins	Union Station/South Park
LADOT	DASH E	Circulator Bus	7AM-7PM	5 mins	City West/Fashion District
LADOT	DASH F	Circulator Bus	7AM-7PM	10 mins	Financial District/Exposition
LADOT	DASH CH	Circulator Bus	6AM-6PM	6 mins	City Hall Shuttle
LADOT	DASH DD	Circulator Bus	Weekend Only	20 mins	Downtown Discovery
LADOT	DASH MBH	Circulator Bus	7AM-9AM, 3PM-6PM	10 mins	Metrolink/Bunker Hill
Metro	2/302	Local/Limited Stop Bus	24 Hours	5 mins	Pacific Palisades via Sunset Bl.
Metro	4	Local Bus	24 Hours	7 mins	Santa Monica via Santa Monica Bl.
Metro	10	Local Bus	5AM-12AM	7 mins	West Hollywood via Temple St. and Melrose Av.
Metro	14/37	Local Bus	24 Hours	10 mins	Beverly Hills via Beverly Bl./West LA via Adams Bl.
Metro	16/316	Local/Limited Stop Bus	4AM-1AM	3 mins	Century City via 3rd St.
Metro	18	Local Bus	24 Hours	3 mins	Wilshire Center - Montebello via 6th St. and Whittier Bl.
Metro	20	Local Bus	24 Hours	4 mins	Santa Monica via Wilshire Bl.
Metro	26/51/52/352	Local/Limited Stop Bus	24 Hours	4 mins	Hollywood - Compton - Artesia Blue Line via Avalon Bl.
Metro	28	Local Bus	5AM-1AM	8 mins	Century City via Olympic Blvd.
Metro	30/31/330	Local/Limited Stop Bus	24 Hours	4 mins	Pico-Rimpau - Monterey Park via Pico Bl and E 1st St.
Metro	33/333	Local/Limited Stop Bus	24 Hours	2 mins	Santa Monica via Venice Bl.
Metro	38	Local Bus	24 Hours	8 mins	Fairfax and Washington via Jefferson Bl.
Metro	40	Local Bus	24 Hours	6 mins	South Bay Galleria via Hawthorne Bl., Crenshaw Bl., and MLK Bl.
Metro	42/42A	Local Bus	5AM-12AM	12 mins	LAX via MLK Bl., Stocker St., and La Tijera Bl.
Metro	45	Local Bus	24 Hours	6 mins	Montecito Heights - Rosewood via Broadway and Mercury Av.
Metro	48	Local Bus	5AM-11PM	7 mins	Avalon Green Line via Main St. and S. San Pedro St.
Metro	53/350	Local/Limited Stop Bus	24 Hours	5 mins	Carson via Central Av.
Metro	55/355	Local/Limited Stop Bus	24 Hours	4 mins	Imperial Blue/Green Line via Compton Av.
Metro	60	Local Bus	24 Hours	6 mins	Artesia Blue Line via Long Beach Bl.

Operator	Line	Mode	Weekday Hours of Operation	Peak Hour Frequency	Route Description
Metro	62	Local Bus	5AM-11PM	15 mins	Hawaiian Gardens via Telegraph Rd.
Metro	66/366	Local/Limited Stop Bus	4AM-1AM	2 mins	Wilshire Center - Montebello via 8th St. and Olympic Bl.
Metro	68/84	Local Bus	24 Hours	8 mins	West LA - Montebello via Washington Bl. and Cesar Chavez Av.
Metro	70/71/370	Local/Limited Stop Bus	24 Hours	5-9 mins	El Monte via Garvey Av.
Metro	76/376	Local/Limited Stop Bus	24 Hours	10 mins	Arcadia via Valley Bl., Huntington Dr. and Las Tunas Dr.
Metro	78/79/378	Local/Limited Stop Bus	5AM-1AM	10 mins	Arcadia via Huntington Dr. and Las Tunas Dr.
Metro	81/381	Local/Limited Stop Bus	5AM-1AM	5 mins	Eagle Rock - Exposition Park via Figueroa St.
Metro	83	Local Bus	24 Hours	10 mins	Eagle Rock via York Av.
Metro	90/91	Local Bus	5AM-12AM	10 mins	Sunland via Foothill Bl., Cañada Bl., and Glendale Av.
Metro	92	Local Bus	24 Hours	12 mins	Burbank via Glendale
Metro	94/394	Local/Limited Stop Bus	5AM-1AM	5 mins	Sylmar via San Fernando Rd. and Spring St.
Metro	96	Local Bus	5AM-8PM	20 mins	Sherman Oaks via Griffith Park Dr. and Riverside Dr.
Metro	439	Freeway Express Bus	5AM-9PM	40-60 mins	Aviation Green Line via Culver City
Metro	442	Freeway Express Bus	6AM-8AM, 4PM-6PM	30 mins	Hawthorne via Harbor Transitway, Manchester Bl., and La Brea Av.
Metro	444	Freeway Express Bus	5AM-8PM	10-20 mins	Rancho Palos Verdes via Harbor Transitway and Hawthorne Bl.
Metro	445	Freeway Express Bus	5AM-7PM	30 mins	San Pedro via Harbor Transitway, 1st St., and Pacific Av.
Metro	446/447	Freeway Express Bus	5AM-12AM	15 mins	San Pedro via Harbor Transitway, Avalon Bl., and Pacific Av.
Metro	450X	Freeway Express Bus	6AM-9AM, 4PM-6PM	15 mins	South Bay Express via Harbor Transitway
Metro	460	Freeway Express Bus	5AM-12AM	30 mins	Disneyland via Harbor Transitway, I-105, and I-5
Metro	484	Freeway Express Bus	5AM-12AM	5 mins	Pomona via El Monte Busway and Valley Bl.
Metro	485	Freeway Express Bus	5AM-12AM	20 mins	Altadena via El Monte Busway, Oak Knoll Av., and Lake Av.
Metro	487	Freeway Express Bus	6AM-9PM	30 mins	Sierra Madre Villa Gold Line via El Monte Busway
Metro	489	Freeway Express Bus	6AM-8AM, 3PM-5PM	12 mins	Temple City via El Monte Busway and Rosemead Bl.
Metro	490	Freeway Express Bus	5AM-11PM	10 mins	Pomona via El Monte Busway and Ramona Bl.
Metro	704	Rapid Bus	6AM-8PM	8 mins	Santa Monica Bl. Rapid

Operator	Line	Mode	Weekday Hours of Operation	Peak Hour Frequency	Route Description
Metro	714	Rapid Bus	6AM-9AM, 3PM-6PM	15 mins	Beverly Bl. Rapid
Metro	720	Rapid Bus	4AM-1AM	4 mins	Wilshire Bl. - Whittier Bl. Rapid
Metro	728	Rapid Bus	5AM-8PM	8 mins	Olympic Bl. Rapid
Metro	740	Rapid Bus	5AM-8PM	10 mins	Hawthorne Bl. Rapid
Metro	745	Rapid Bus	5AM-8PM	5 mins	South Broadway Rapid
Metro	760	Rapid Bus	5AM-8PM	8 mins	Long Beach Bl. Rapid
Metro	770	Rapid Bus	6AM-6PM	12 mins	Garvey Av. - Cesar Chavez Av. Rapid
Metro	940	Rapid Express Bus	6AM-8AM, 4PM-6PM	30 mins	Hawthorne Bl. Rapid Express
Metro	Blue Line	Light Rail	5AM-12AM	5 mins	Long Beach via South Los Angeles, Willowbrook, and Compton
Metro	Red Line	Heavy Rail	5AM-12AM	5 mins	Wilshire Center and North Hollywood
Montebello	40	Local Bus	5AM-10PM	8 mins	Montebello and Whittier via Beverly Bl.
Montebello	50	Local Bus	5AM-12AM	30 mins	Whittier and La Mirada via Washington Bl.
Montebello	341	Limited Stop Bus	7AM-9AM, 4PM-6PM	30 mins	Montebello and Whittier via Beverly Bl.
Montebello	342	Limited Stop Bus	7AM, 5PM	One Trip	Montebello and Whittier via Beverly Bl.
Montebello	343	Limited Stop Bus	7AM-8AM, 5PM-6PM	30 mins	Montebello and Whittier via Beverly Bl.
OCTA	701	Freeway Express Bus	5AM-6AM, 4PM-5PM	20 mins	Huntington Beach
OCTA	721	Freeway Express Bus	6AM-9AM, 3PM-6PM	30 mins	Fullerton
Santa Clarita	799	Freeway Express Bus	5AM-7AM, 3PM-7PM	20 mins	Valencia/Santa Clarita
Torrance	1	Freeway Express Bus	6AM-9AM, 4PM-10PM	30 mins	Torrance via Harbor Transitway and Artesia Transit Center
Torrance	2	Freeway Express Bus	7AM-7PM	60 mins	Torrance via Harbor Transitway

Appendix C Bus Lines Serving Both Union Station and 7th St./Metro Center Station

Line	Average Daily Boardings within Study Area	Average Daily Boardings for Entire Line	Route Description
78/79/378	1,405	11,868	Arcadia via Huntington Dr. and Las Tunas Dr.
484	1,393	8,914	Pomona via El Monte Busway and Valley Bl.
70/370	1,330	15,569	El Monte via Garvey Av.
76/376	1,108	11,106	Arcadia via Valley Bl., Huntington Dr. and Las Tunas Dr.
490	631	5,568	Pomona via El Monte Busway and Ramona Bl.
485	431	3,683	Altadena via El Monte Busway, Oak Knoll Av., and Lake Av.
487	410	2,985	Sierra Madre Villa Gold Line via El Monte Busway
446/447	289	4,373	San Pedro via Harbor Transitway, Avalon Bl., and Pacific Av.
444	285	3,132	Rancho Palos Verdes via Harbor Transitway and Hawthorne Bl.
445	210	1,243	San Pedro via Harbor Transitway, 1st St., and Pacific Av.
439	141	946	Aviation Green Line via Culver City
489	122	584	Temple City via El Monte Busway and Rosemead Bl.
442	56	249	Hawthorne via Harbor Transitway, Manchester Bl., and La Brea Av.
TOTAL	7,811		

Figure D-1 Plan View of Alternative 1a

Figure D-2 Plan View of Alternative 1b

Figure D-3 Plan View of Alternative 2

Figure D-4 Plan View of Alternative 3a

Figure D-5 Plan View of Alternative 3b

Figure D-6 Plan View of Alternative 4a

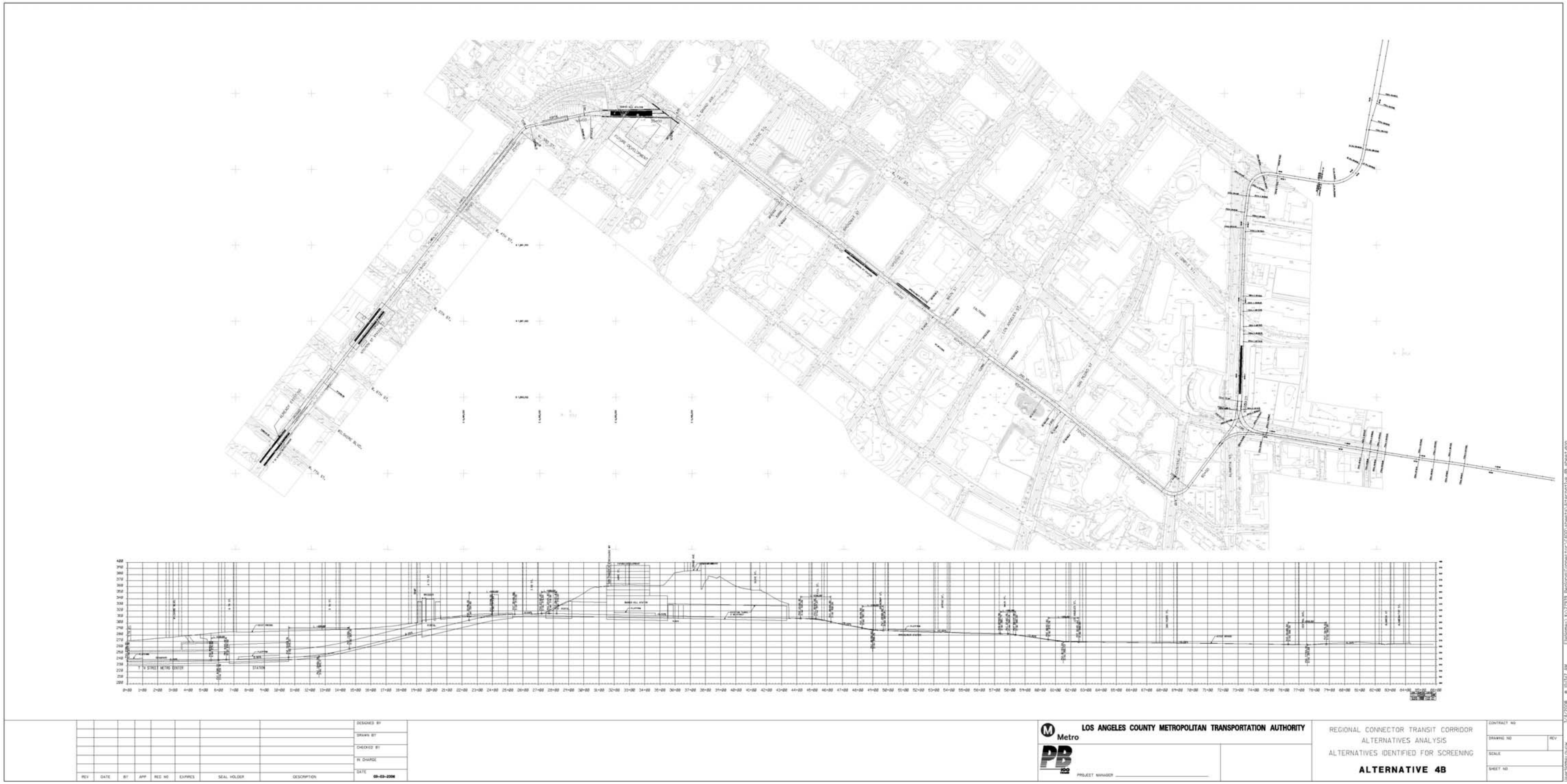


Figure D-7 Plan View of Alternative 4b

Figure D-8 Plan View of Alternative 5

Figure D-9 Plan View of Alternative 6

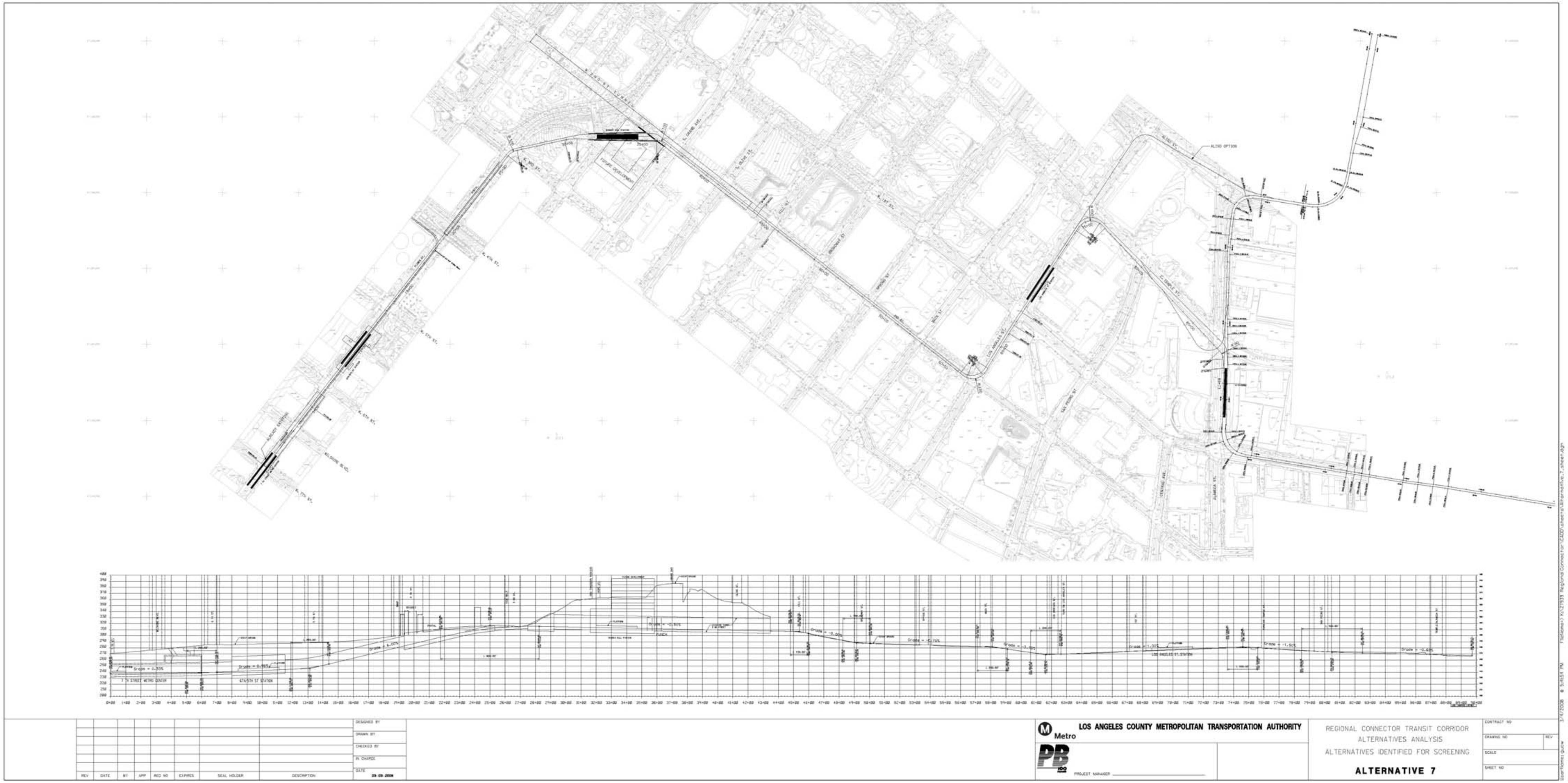


Figure D-10 Plan View of Alternative 7

Figure D-11 Plan View of Alternative 8

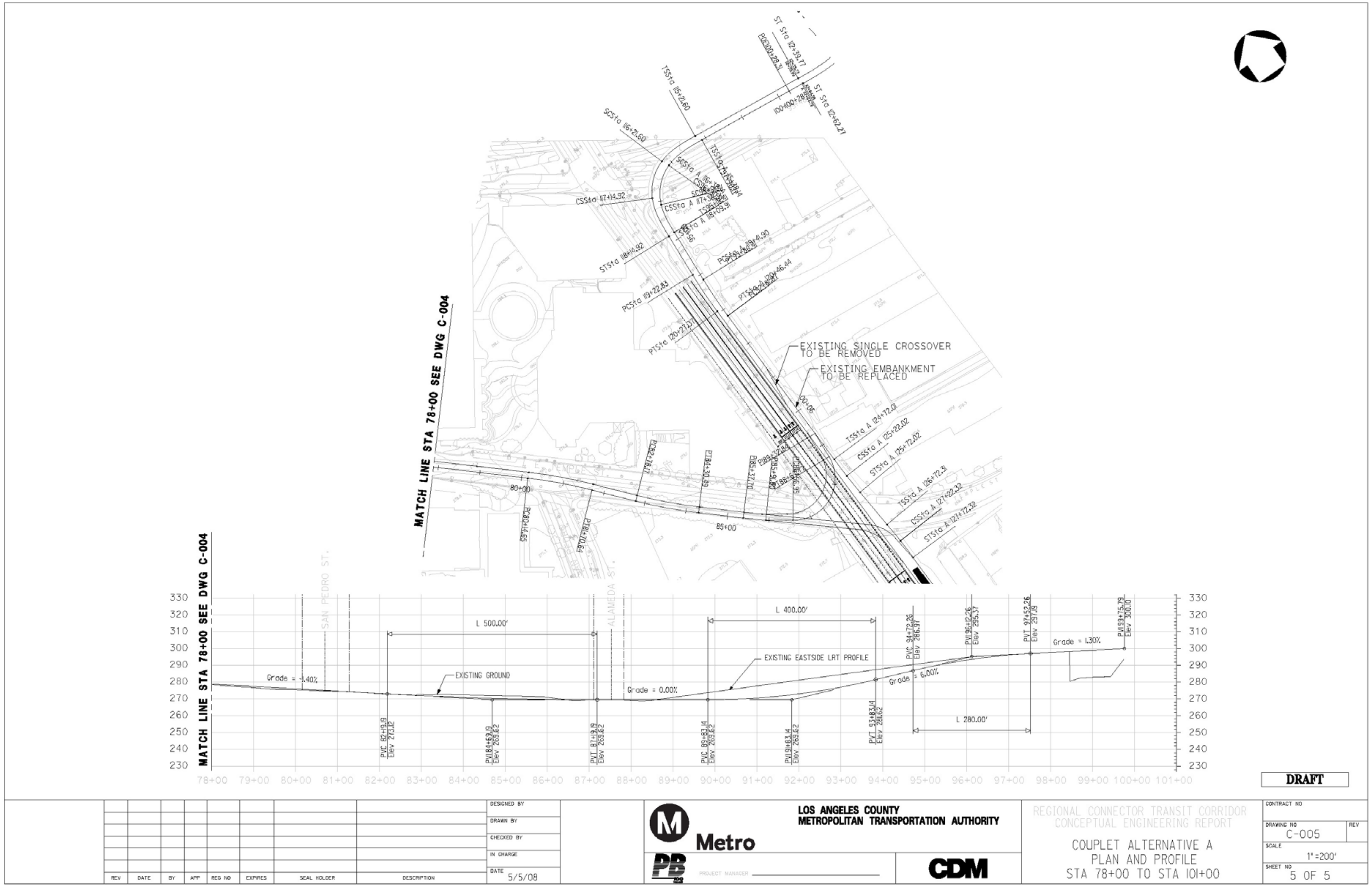


Figure D-12 At-Grade Emphasis LRT Alternative Option A: Temple St. and Alameda St. Intersection

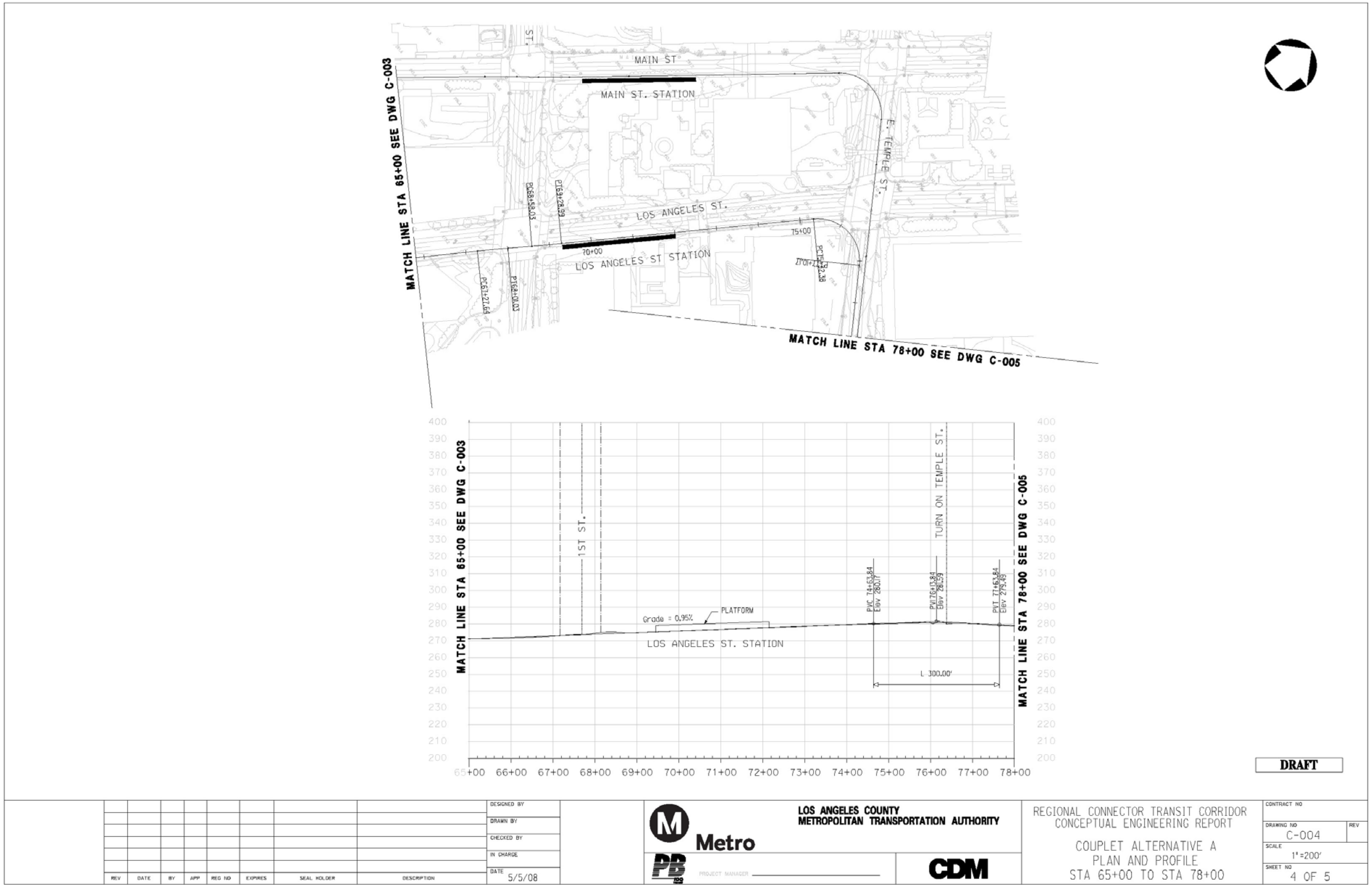


Figure D-13 At-Grade Emphasis LRT Alternative Option A: Main and Los Angeles Sts. at Temple St.

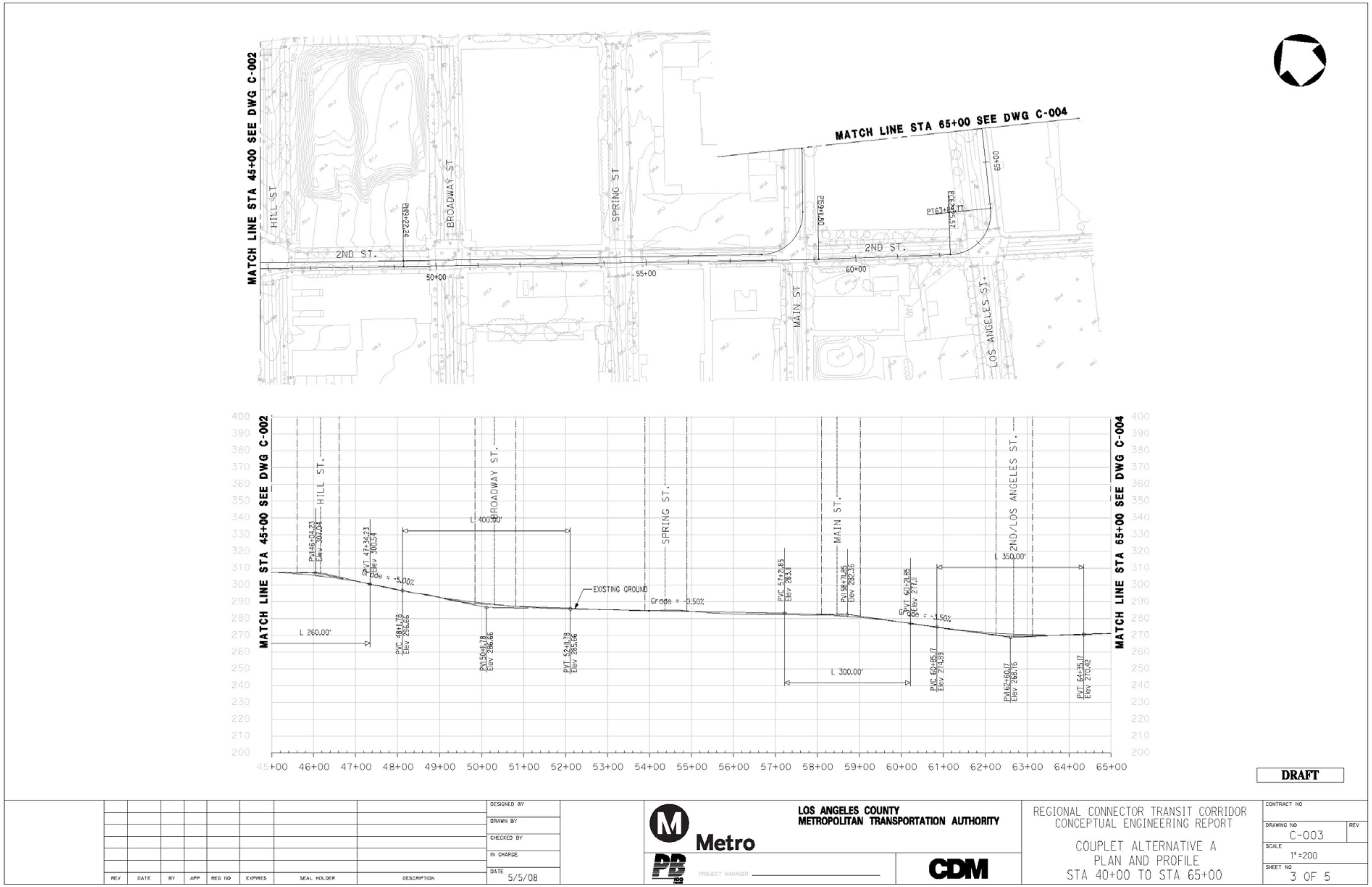


Figure D-14 At-Grade Emphasis LRT Alternative Option A: 2nd St. Corridor at main and Los Angeles Sts.

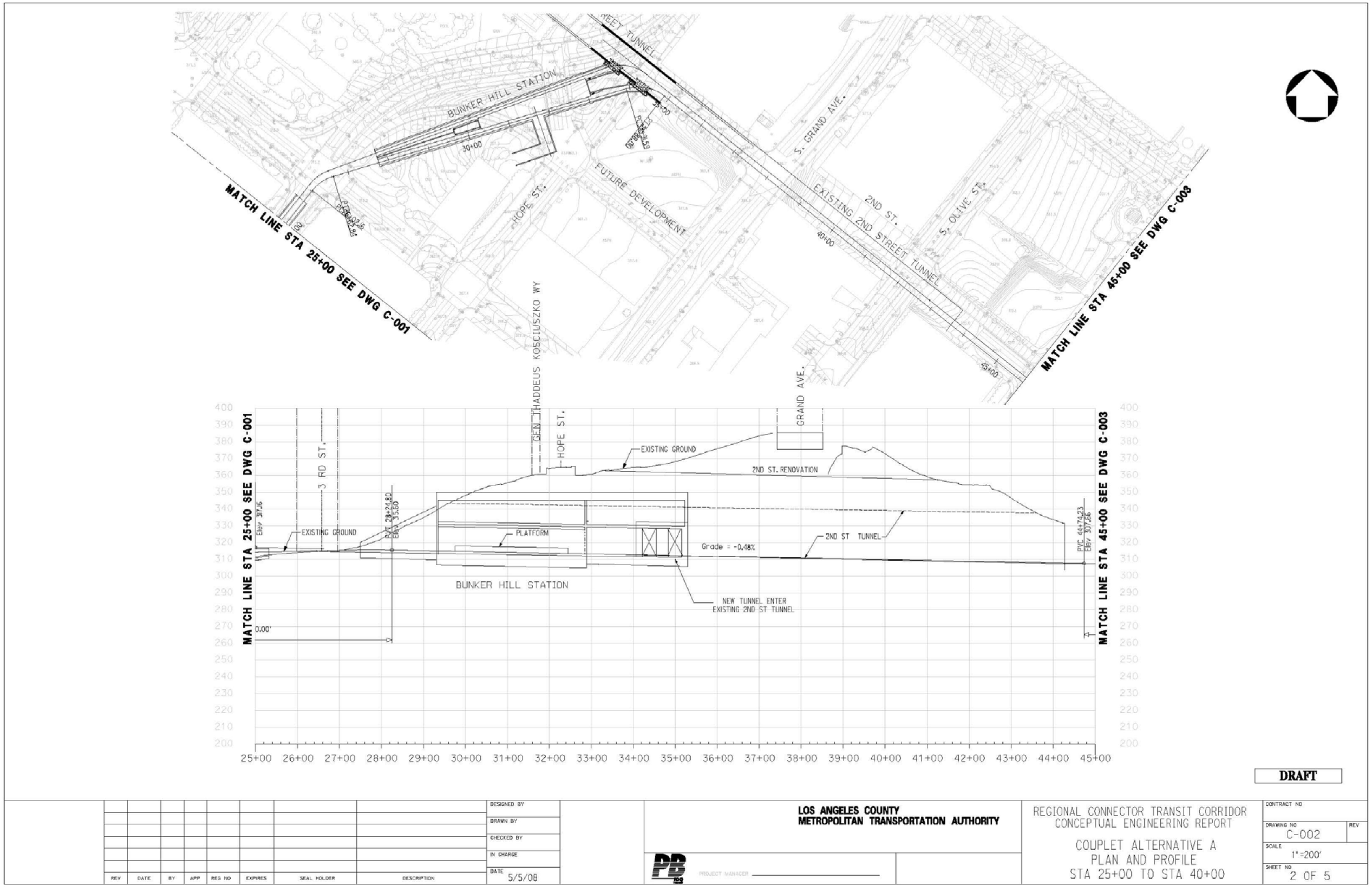


Figure D-15 At-Grade Emphasis LRT Alternative Option A: Grand Avenue Station & Portal

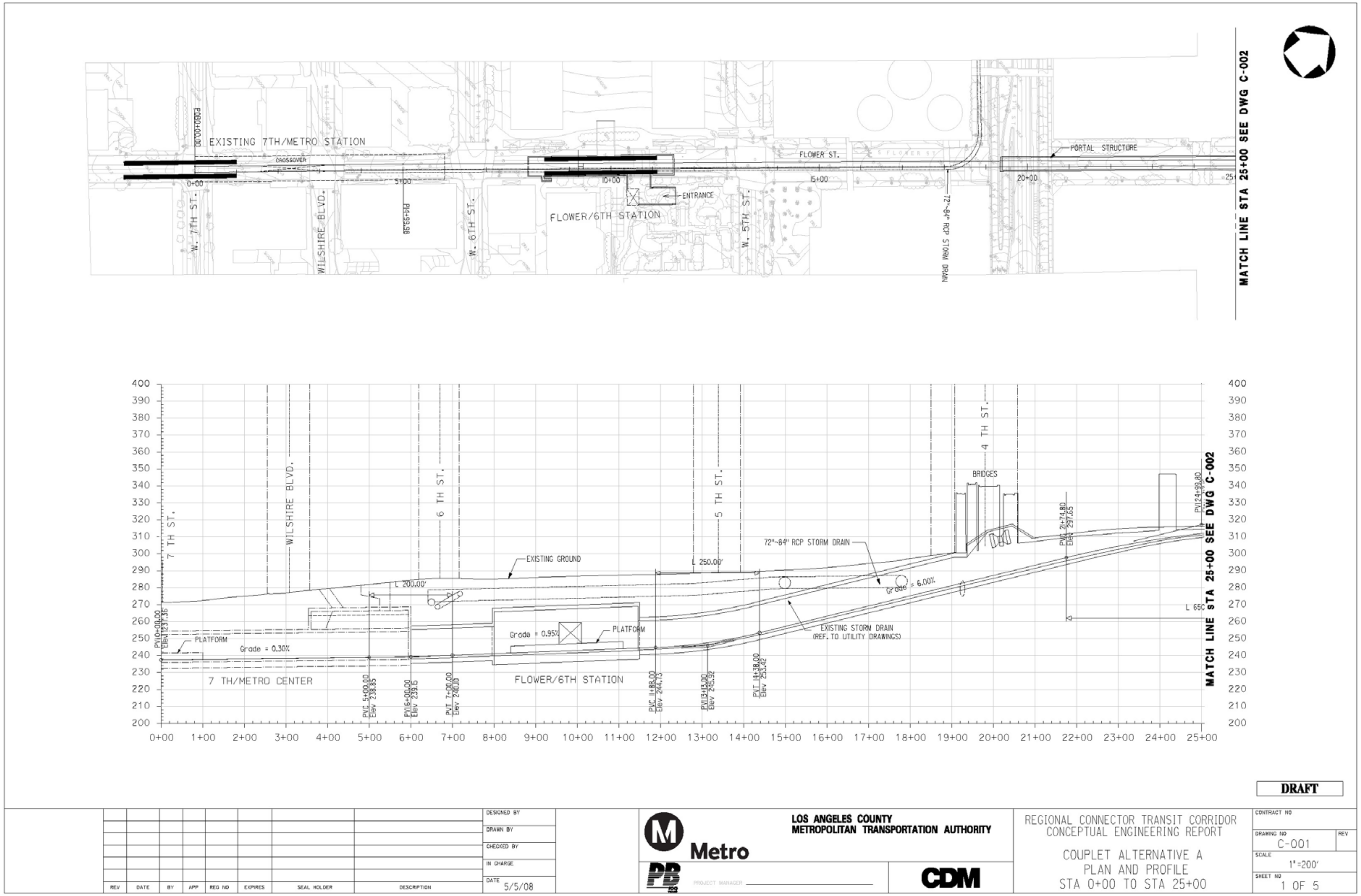


Figure D-16 At-Grade Emphasis LRT Alternative Option A: 7th St./Metro Center Station to Underground Station on Flower St.

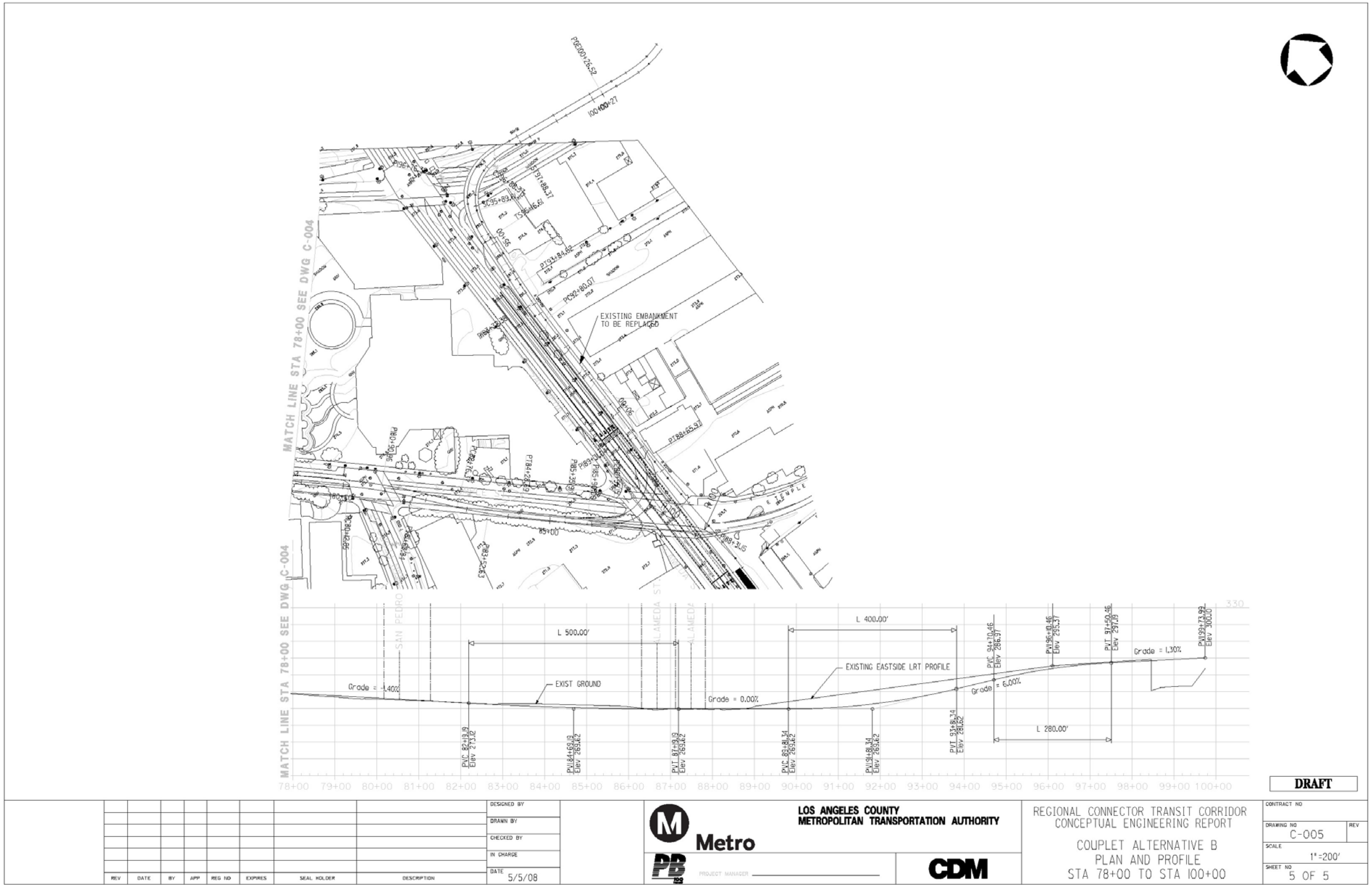


Figure D-17 At-Grade Emphasis LRT Alternative Option B: Temple St. and Alameda St. Intersection

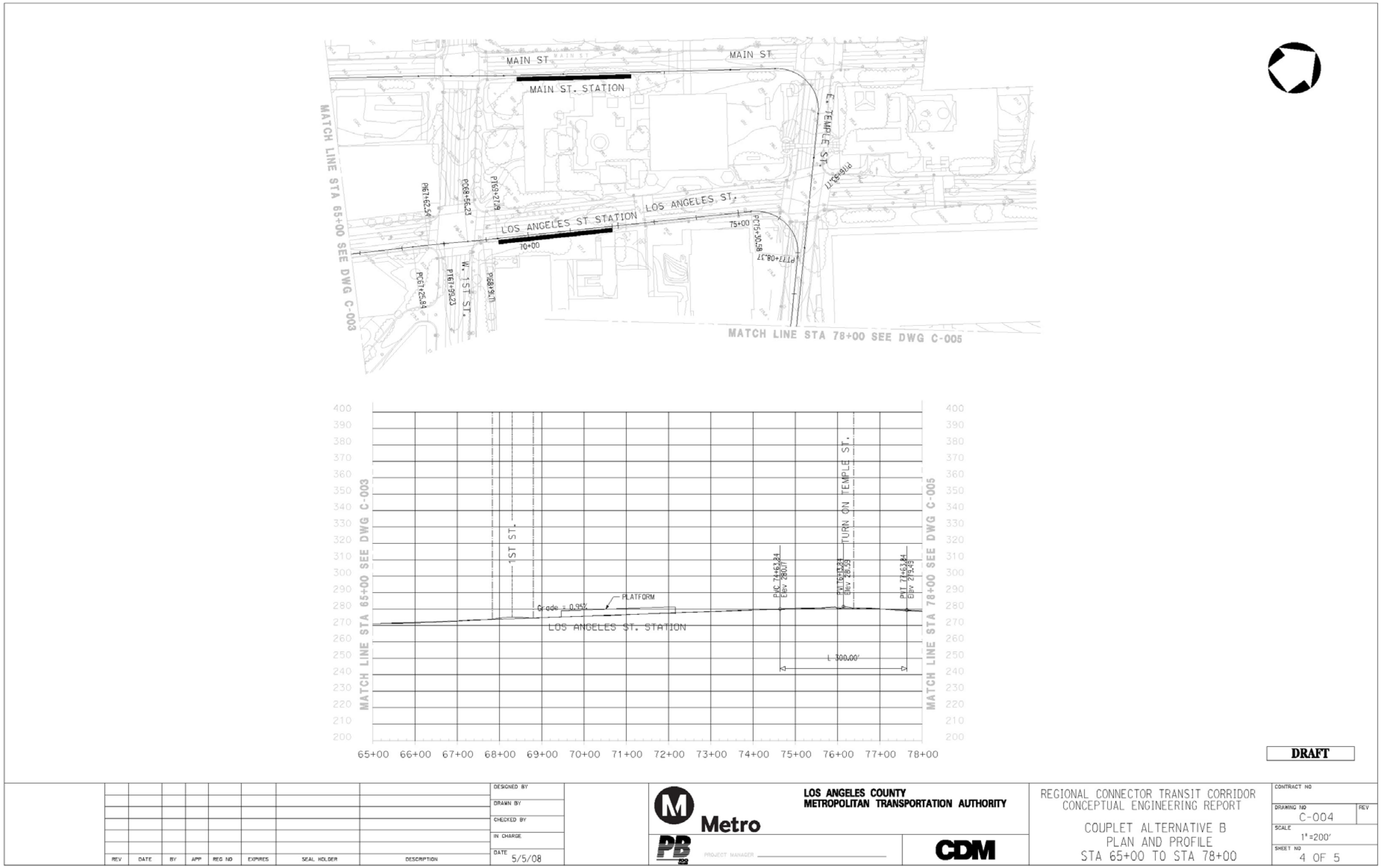


Figure D-18 At-Grade Emphasis LRT Alternative Option B: Main and Los Angeles Sts. at Temple St.

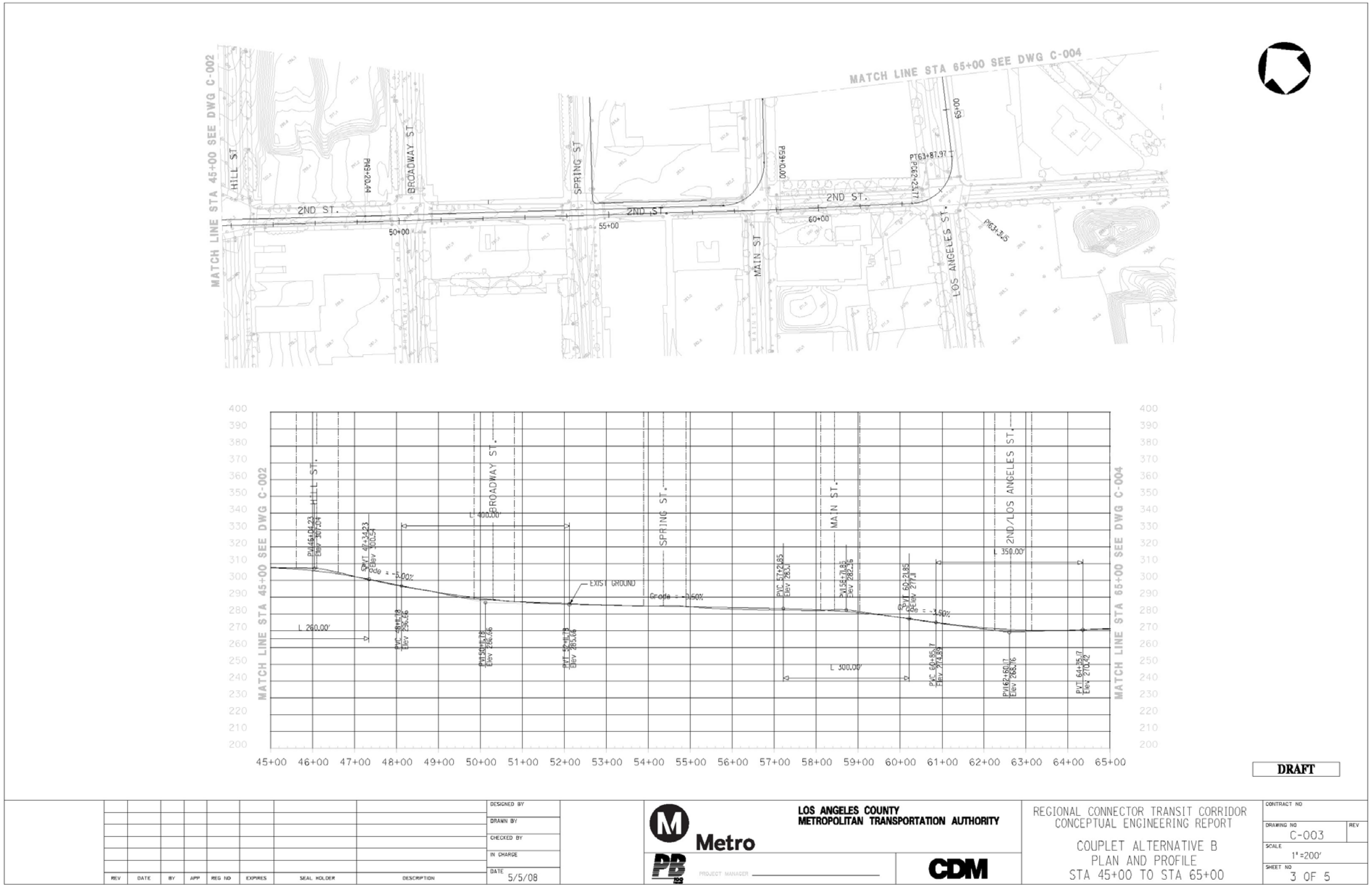


Figure D-19 At-Grade Emphasis LRT Alternative Option B: 2nd St. Corridor at Main and Los Angeles Sts.

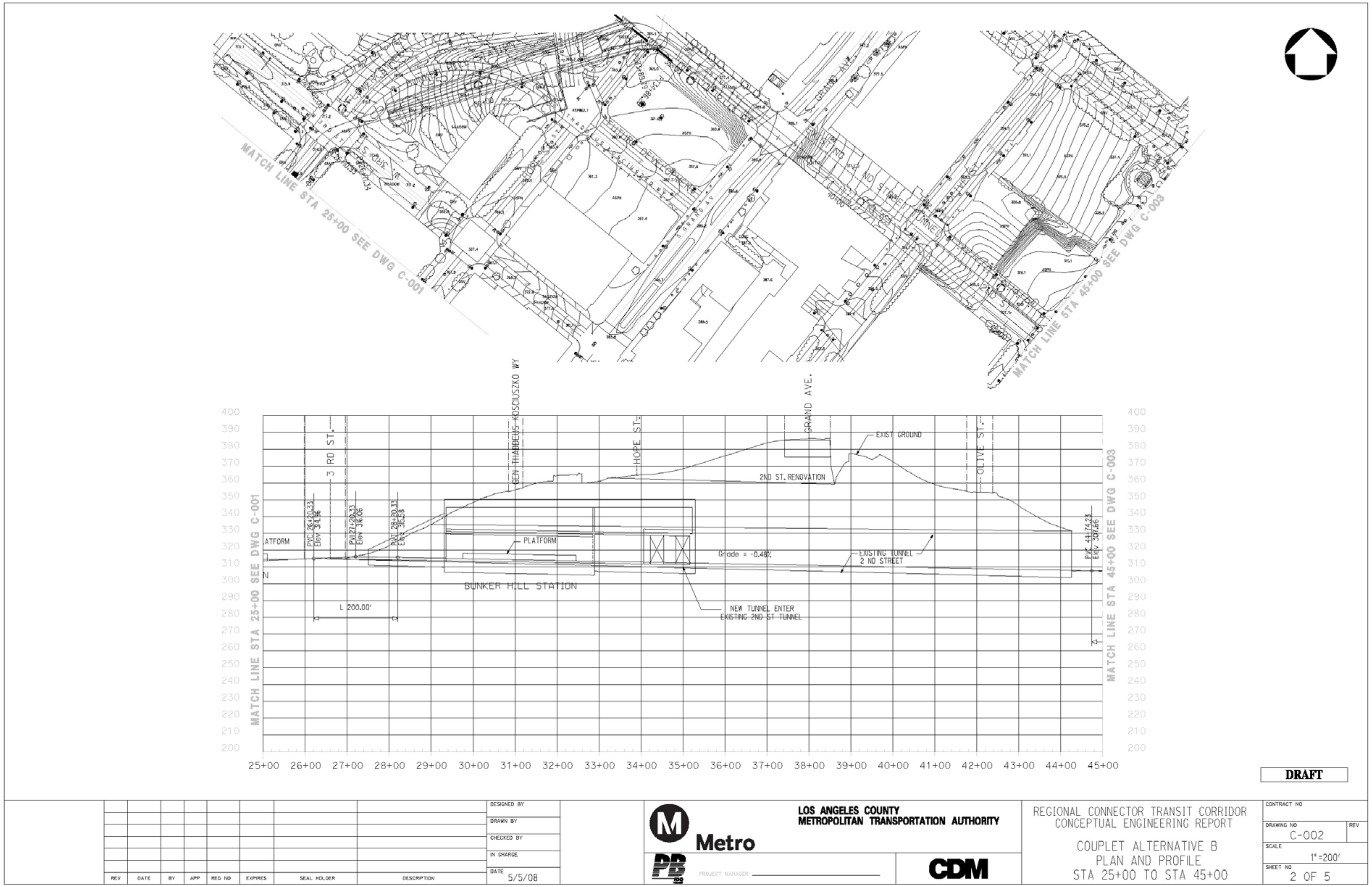


Figure D-20 At-Grade Emphasis LRT Alternative Option B: Grand Avenue Station and Portal

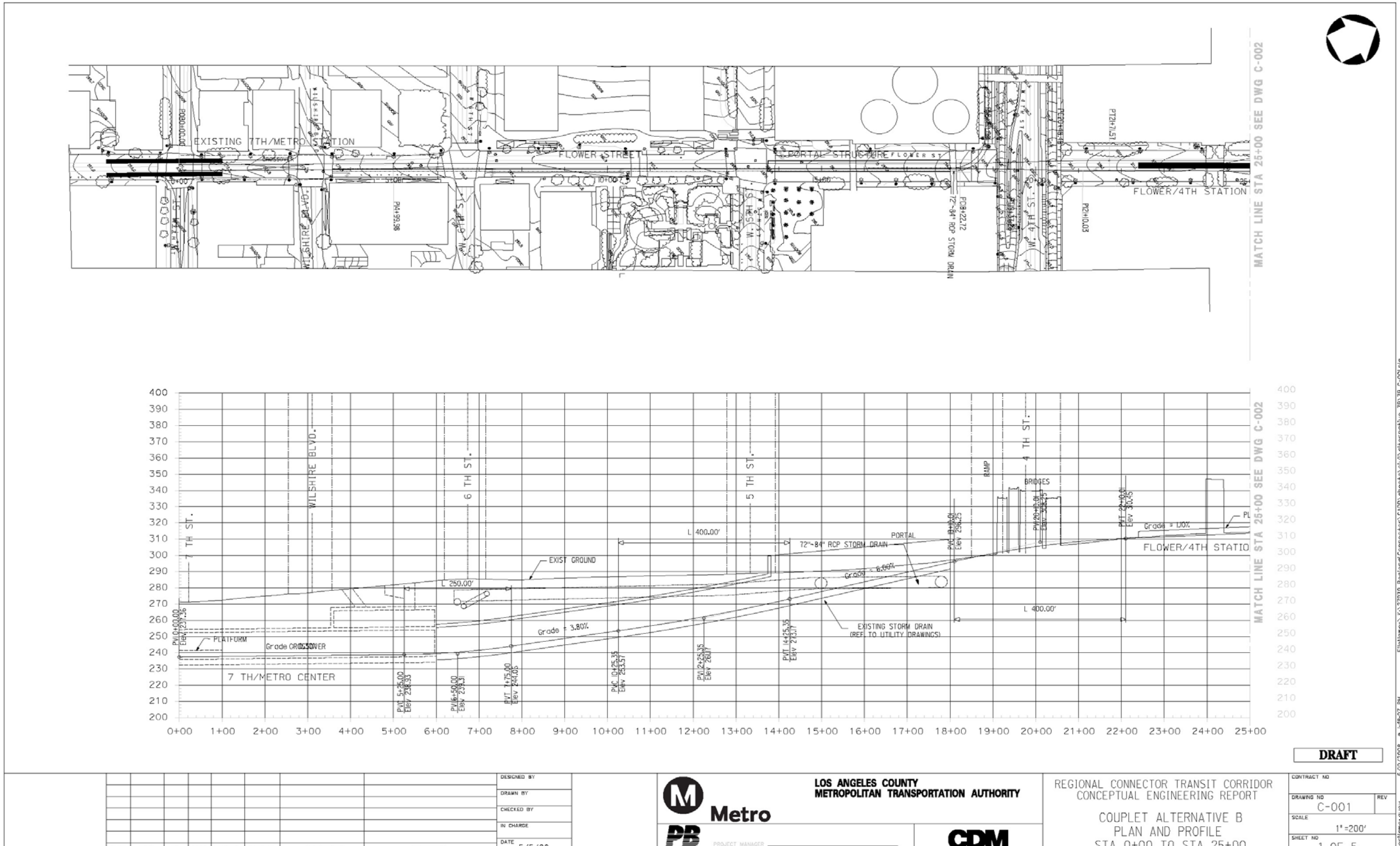


Figure D-21 At-Grade Emphasis LRT Alternative Option B: 7th St./Metro Center Station to At-Grade Station on Flower St.

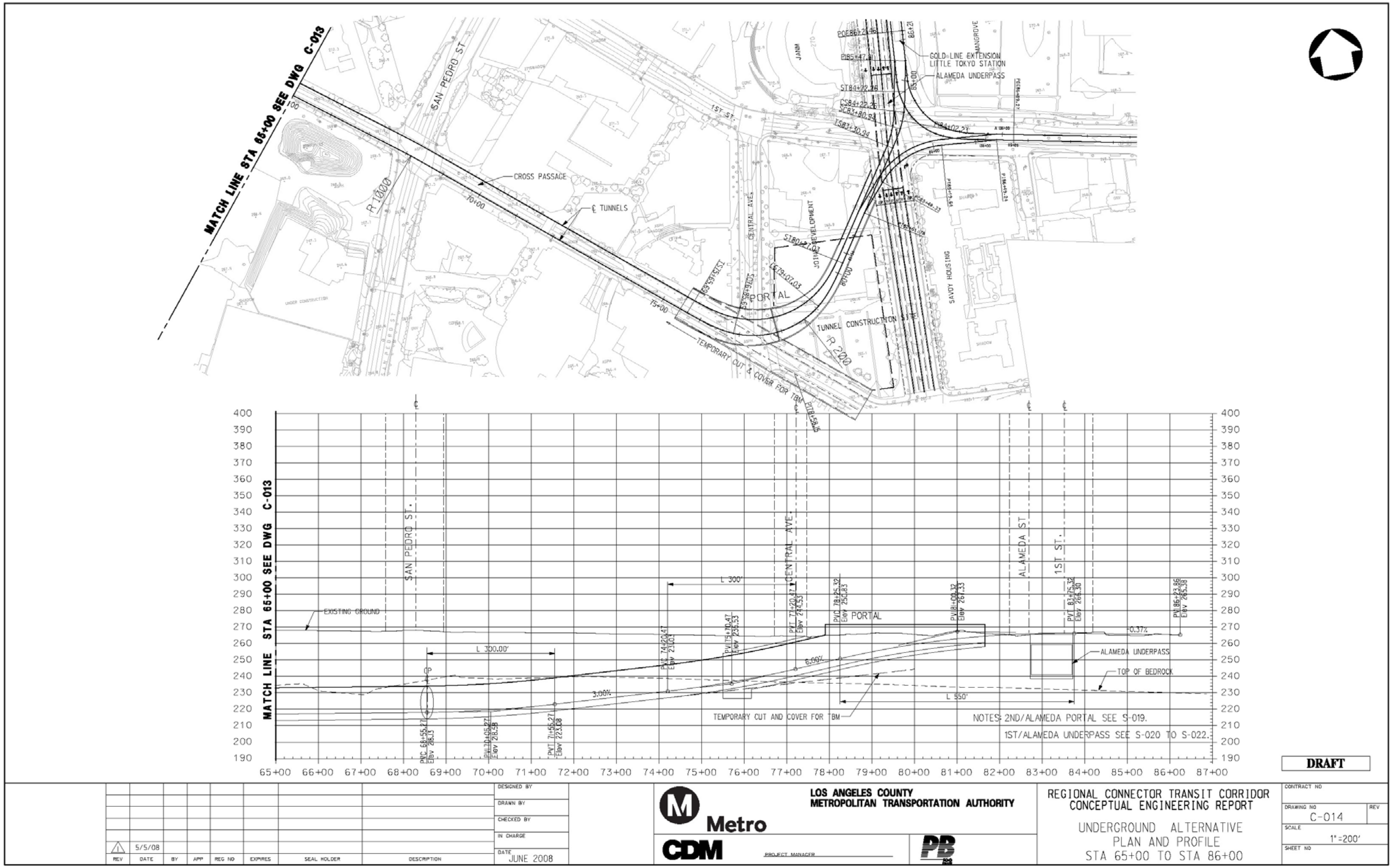


Figure D-22 Underground Emphasis LRT Alternative: 1st St. and Alameda St. intersection and Underpass

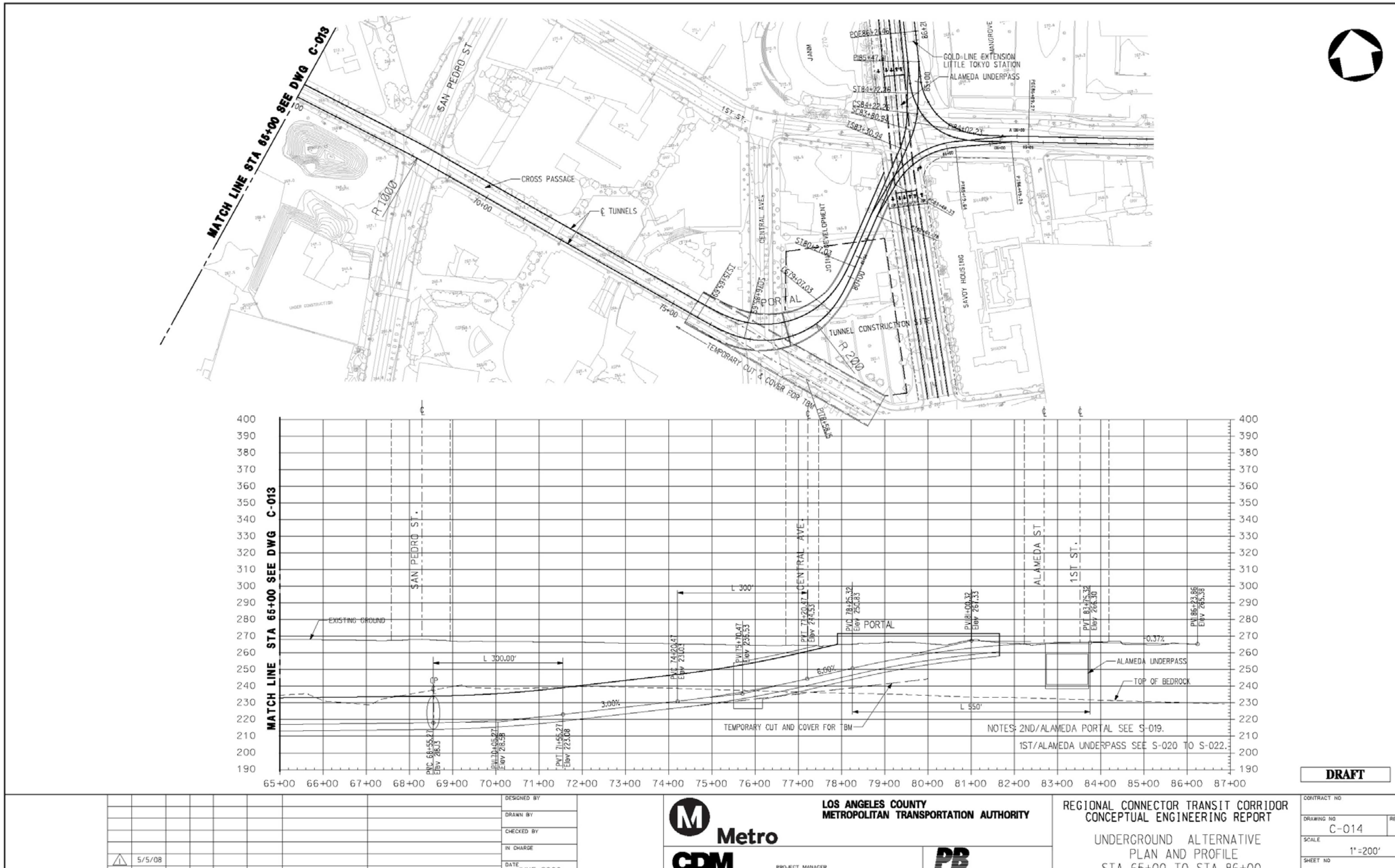


Figure D-22 Underground Emphasis LRT Alternative: 1st St. and Alameda St. intersection and Underpass

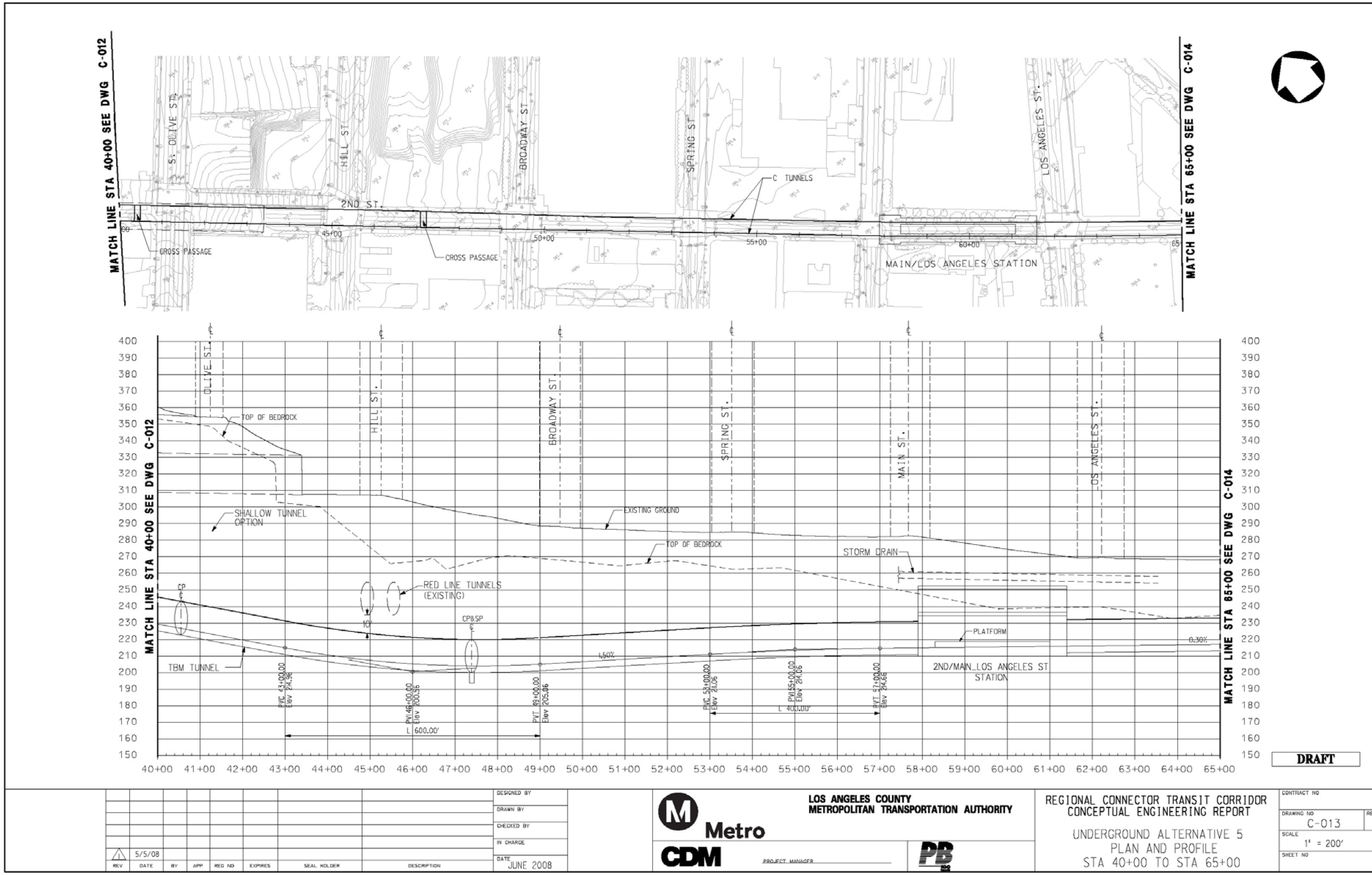


Figure D-23 Underground Emphasis LRT Alternative: 2nd St. Corridor between Los Angeles and Olive St.

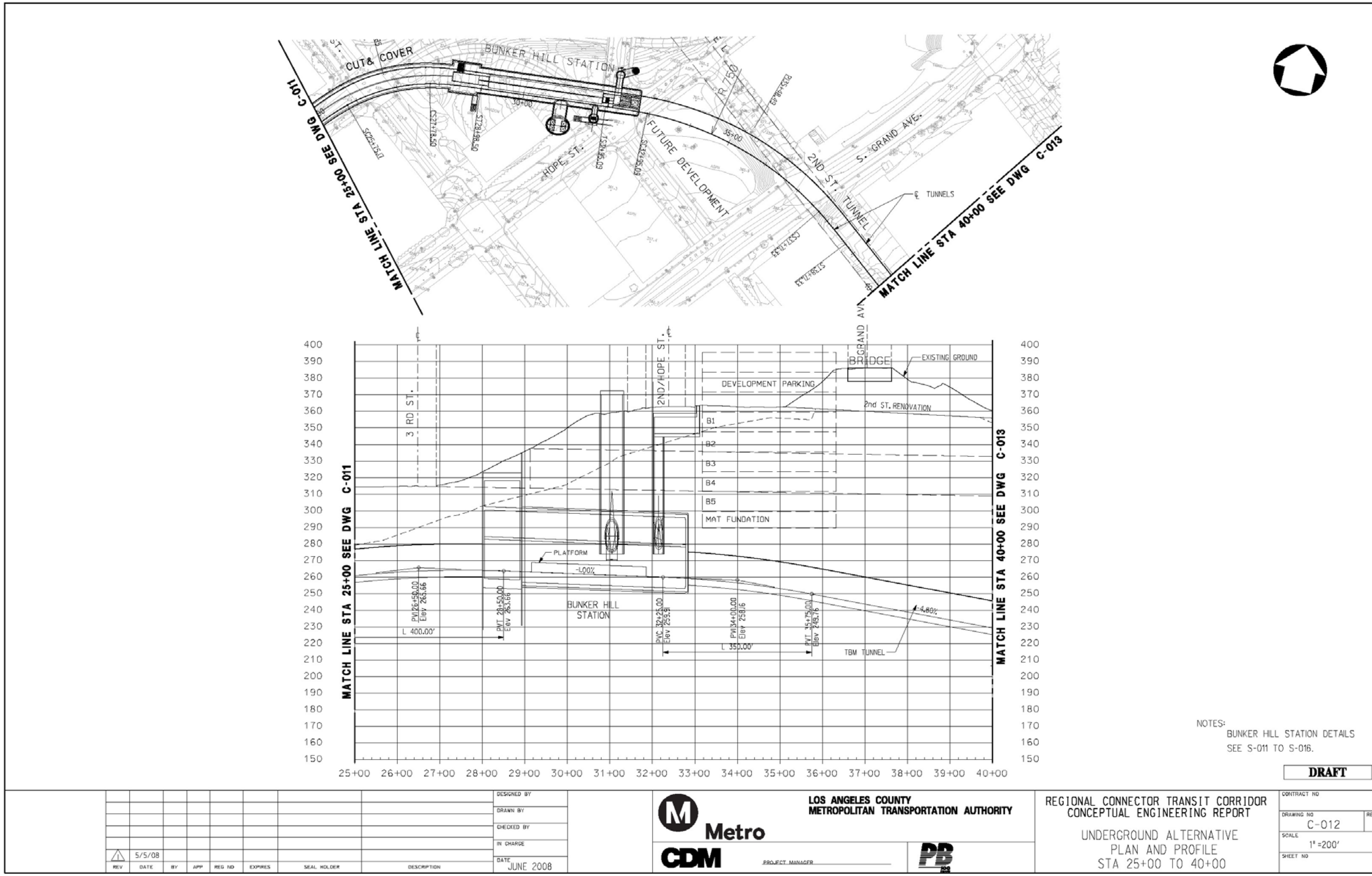


Figure D-24 Underground Emphasis LRT Alternative: Grand Avenue Station and Portal

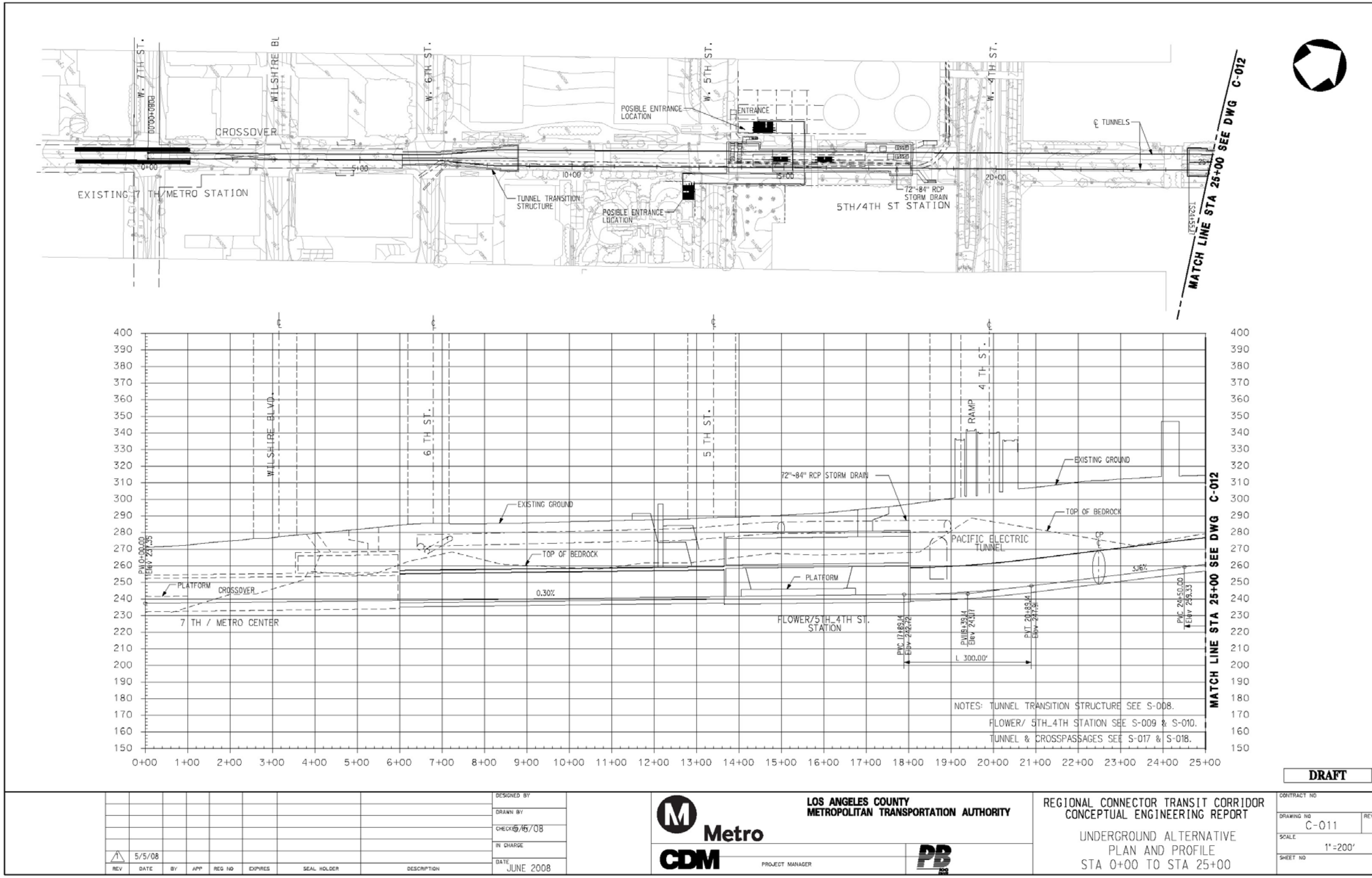


Figure D-25 Underground Emphasis LRT Alternative: 7th St./Metro Center Station to Underground Station on Flower St.

Appendix E Acronyms

AA	Alternatives Analysis
ADA	Americans with Disabilities Act
AVTA	Antelope Valley Transit Authority
ADT	Average Daily Traffic
BID	Business Improvement District
BRT	Bus Rapid Transit
CARB	California Air Resources Board
CBD	Central Business District
CDM	Camp Dresser & McKee Inc
CEQA	California Environmental Quality Act
CPUC	California Public Utilities Commission
CRA	Community Redevelopment Agency of the City of Los Angeles
DASH	Downtown Area Short Hop
DEIS/DEIR	Draft Environmental Impact Statement/Draft Environmental Impact Report
EPA	Environmental Protection Agency
FTA	Federal Transit Administration
HPOZ	Historic Preservation Overlay Zone
HRT	Heavy Rail Transit
HVAC	Heating, Ventilating, and Air Conditioning
ICU	Intersection Capacity Utilization
JANM	Japanese American National Museum
LAHSA	Los Angeles Homeless Service Authority

LADOT	City of Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power
LAPD	Los Angeles Police Department
LOS	Level of Service
LPA	Locally Preferred Alternative
LRT	Light Rail Transit
LRTP	Long Range Transportation Plan
LTCC	Little Tokyo Community Council
LTSC	Little Tokyo Service Center
Metro	Los Angeles County Metropolitan Transportation Authority
MOCA	Museum of Contemporary Art
NEPA	National Environmental Policy Act
O&M	Operation & Maintenance
OCTA	Orange County Transportation Authority
PRT	Personal Rapid Transit
PSA	Project Study Area
ROM	Rough Order of Magnitude
RTP	Regional Transportation Plan
SCAG	Southern California Association of Governments
SCRRA	Southern California Regional Rail Authority
SRO	Single-Occupancy Unit
TOD	Transit Oriented Design
TPS	Transit Priority System
TSM	Transportation System Management
U.S.	United States

USGS	United States Geological Survey
V/C	Volume –to –Capacity
VMT	Vehicle Miles Traveled
YOE	Year of Expenditure

List of Preparers

CDM

523 West Sixth Street, Suite 400
Los Angeles, CA 90014

Ray Sosa
Dorothy Meyer
Yara Jasso
Kansai Uchida
Fred Glick
Juan Ramirez
Monica Villalobos
Kim Sheller

Parsons Brinkerhoff

444 South Flower Street, Suite 3700
Los Angeles, CA 90071

Tom Jenkins
Amanda Elioff

IBI Group

321 Southwest 4th Avenue, Suite 700
Portland, OR 97204

Gary Hartnett
Steve Schiboula
Guy de Lijster

Intueor Consulting

7700 Irvine Center Drive, Suite 270
Irvine, CA 92618

Farid S. Naguib
Vijay Mididdadi

MACTEC

200 Citadel Drive
Commerce, CA 90040

David Perry

Ted Tokio Tanaka & Associates

11307 Hindry Avenue
Los Angeles, CA 90045

Ted Tanaka

Terry Hayes & Associates LLC (TAHA)

8522 National Boulevard, Suite 102
Culver City, CA 90232

Terry Hayes
Jaime Guzman

D'Leon Consulting Engineers

3065 Long Beach Blvd., Suite 235
Long Beach, CA 90807

Domingo Leon, P.E.

Sharon Greene & Associates

1100 South Coast Highway, Suite 318
Laguna Beach, CA 92651

Sharon Greene

The Robert Group (TRG)

3108 Los Feliz Boulevard, Los Angeles, CA 90039

Clarissa Filgioun
Ginny-Marie Case

SCWA Environmental Consultants

625 Fair Oaks Ave, Suite 190
South Pasadena, CA 91030

Cara Corsetti