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)

		4:08 PM	4:31 PM		
Timepoint	**Distance (miles)[2]**	**Time Run 1 (mm:ss)**	**Time Run 2 (mm:ss)**	**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)

		4:18 PM	4:41 PM		
Timepoint	**Distance (miles)[2]**	**Time Run 1 (mm:ss)**	**Time Run 2 (mm:ss)**	**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]	4:08 PM Time Run 1 (mm:ss)	4:31 PM Time Run 2 (mm:ss)	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]	4:18 PM Time Run 1 (mm:ss)	4:41 PM Time Run 2 (mm:ss)	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]	3:10 PM Time Run 1 (mm:ss)	3:45 PM Time Run 2 (mm:ss)	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]	3:30 PM Time Run 1 (mm:ss)	3:54 PM Time Run 2 (mm:ss)	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.

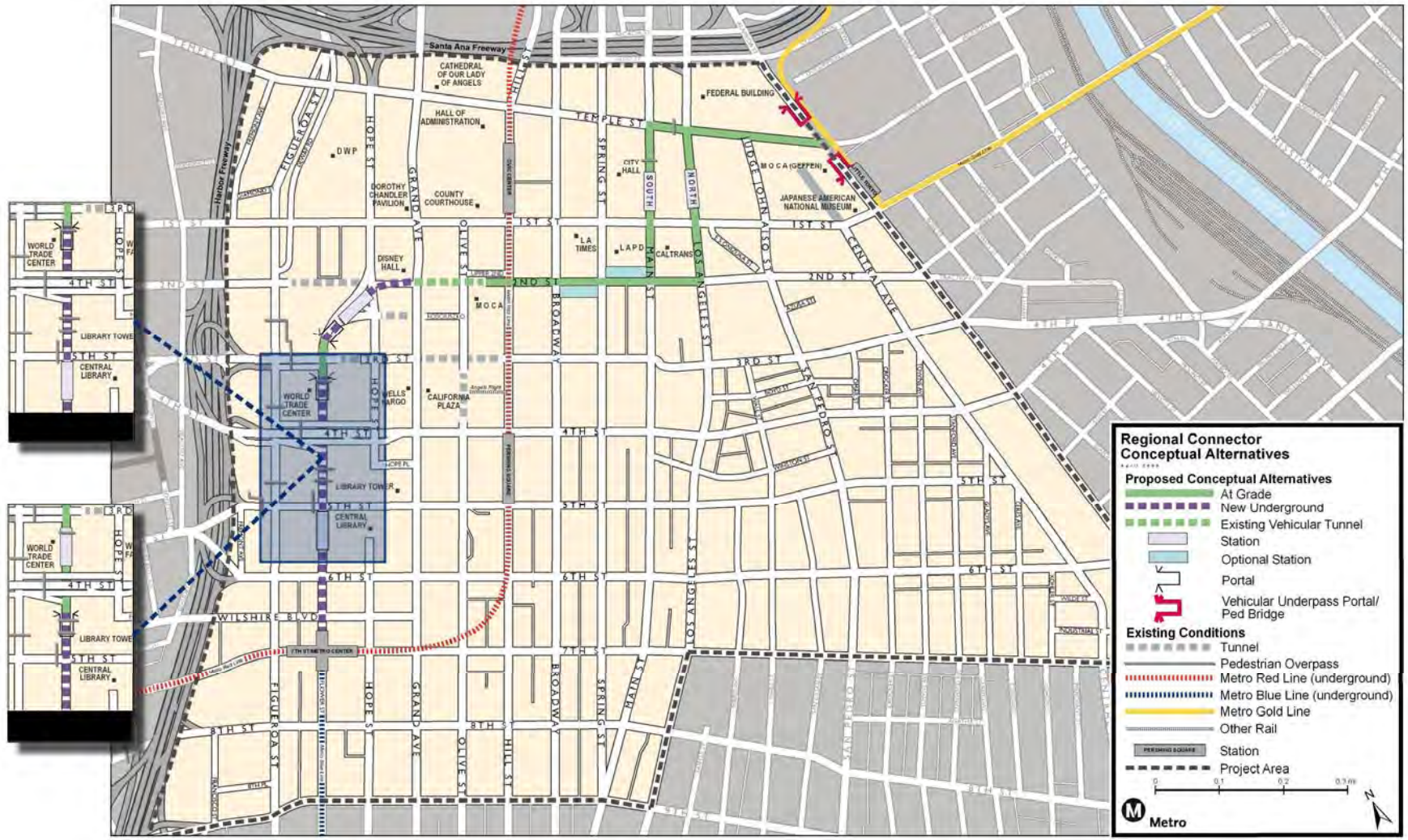

Figure 2-20 At-Grade Emphasis LRT Options A & B

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.

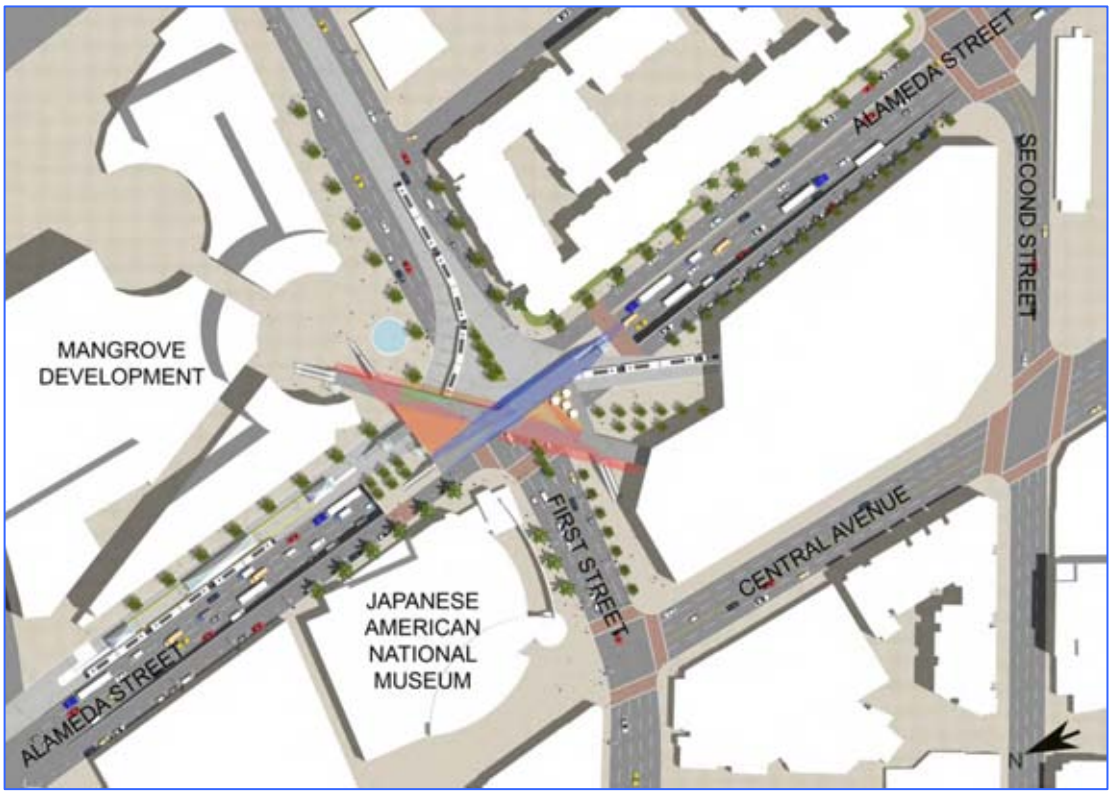

Figure 2-49 Underground Emphasis LRT Alternative – Intersection of Alameda and 1st Streets

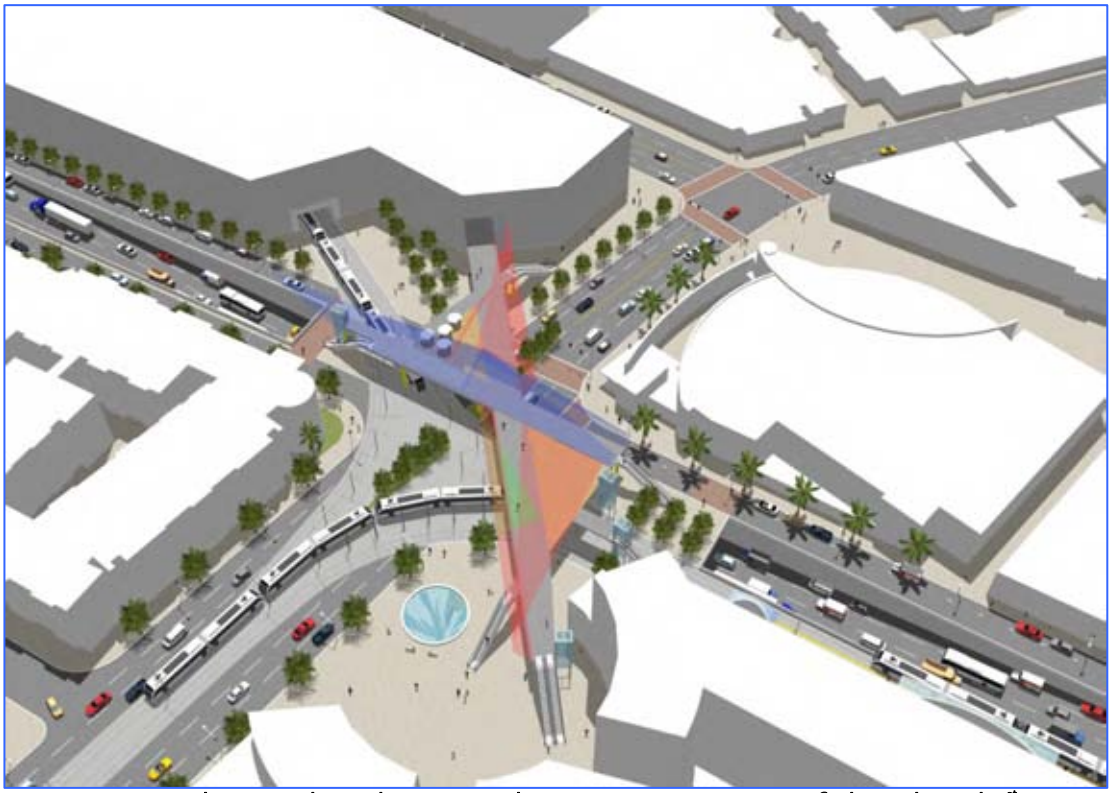

Figure 2-50 Underground Emphasis LRT Alternative – Intersection of Alameda and 1st Streets Looking Southwest

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

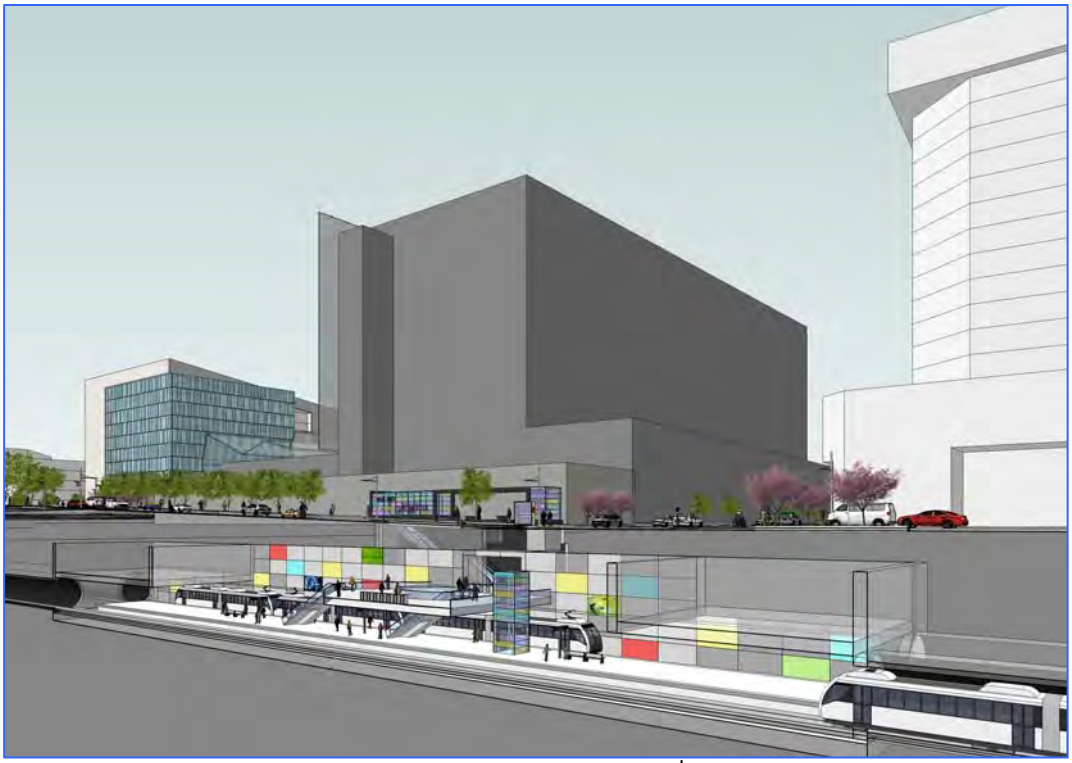

Figure 2-58 Underground Emphasis LRT Alternative – 2nd St. Underground Alignment and Station

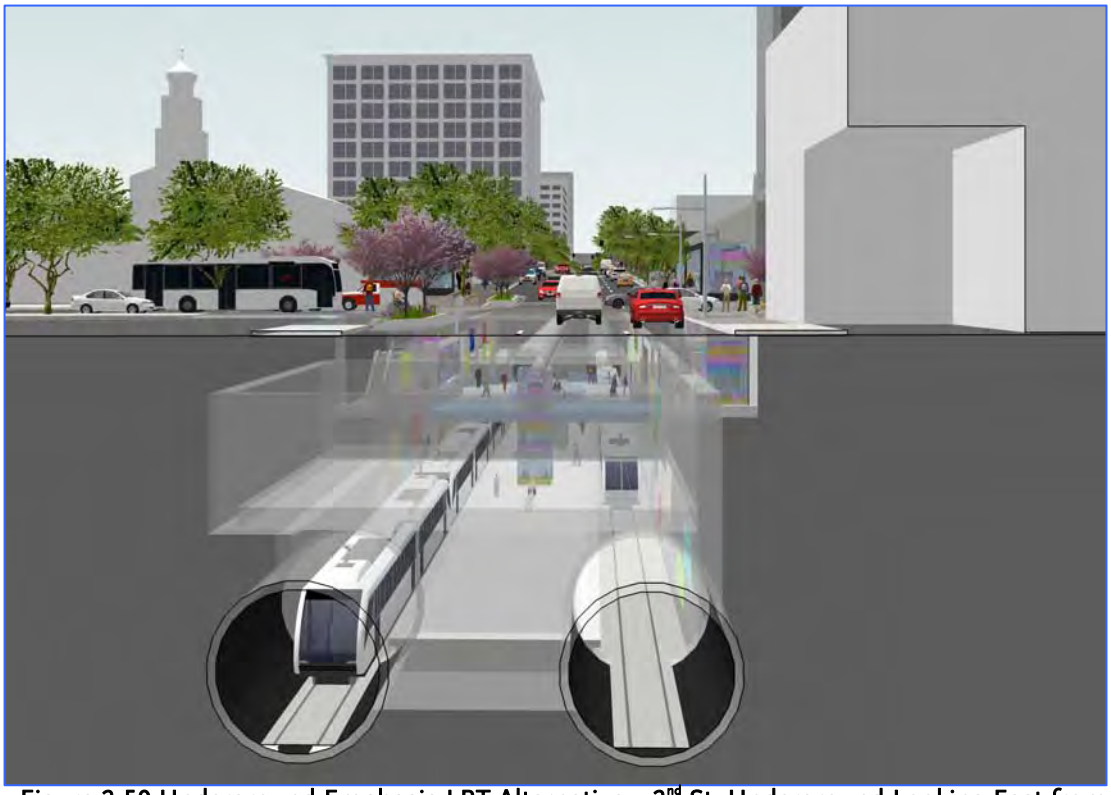

Figure 2-59 Underground Emphasis LRT Alternative – 2nd St. Underground Looking East from Los Angeles St.

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

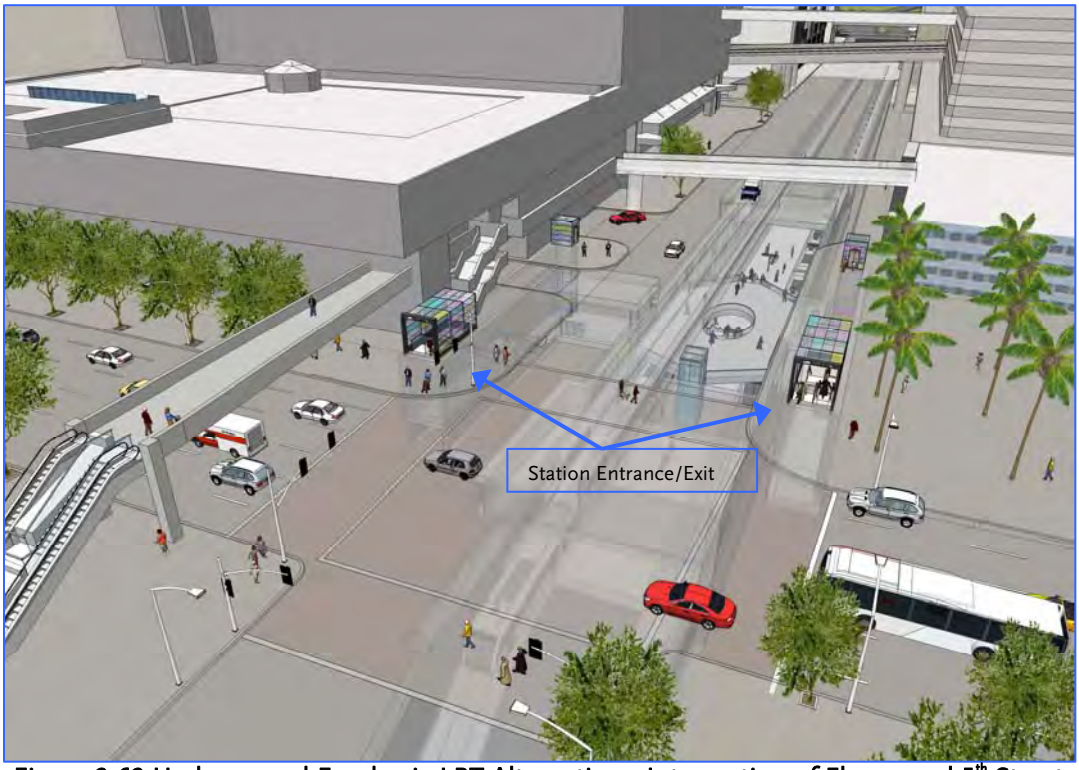

Figure 2-62 Underground Emphasis LRT Alternative – Intersection of Flower and 5th Streets Looking Northwest

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

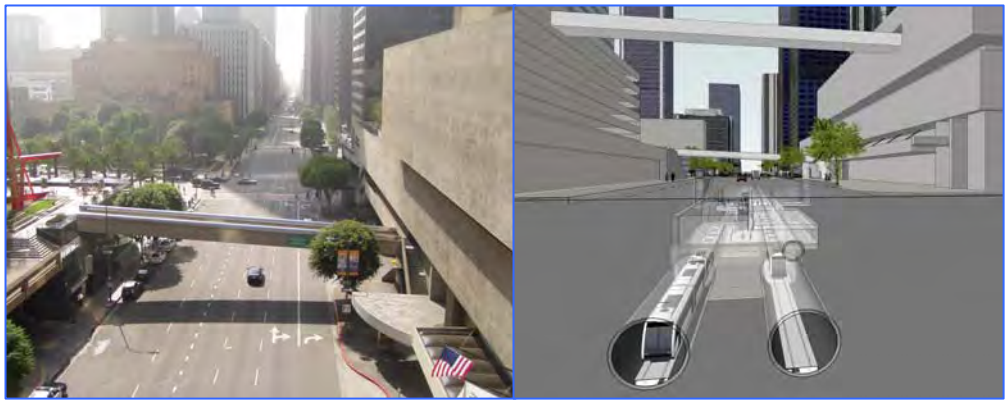

Figure 2-64 Underground Station on Flower St.

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.

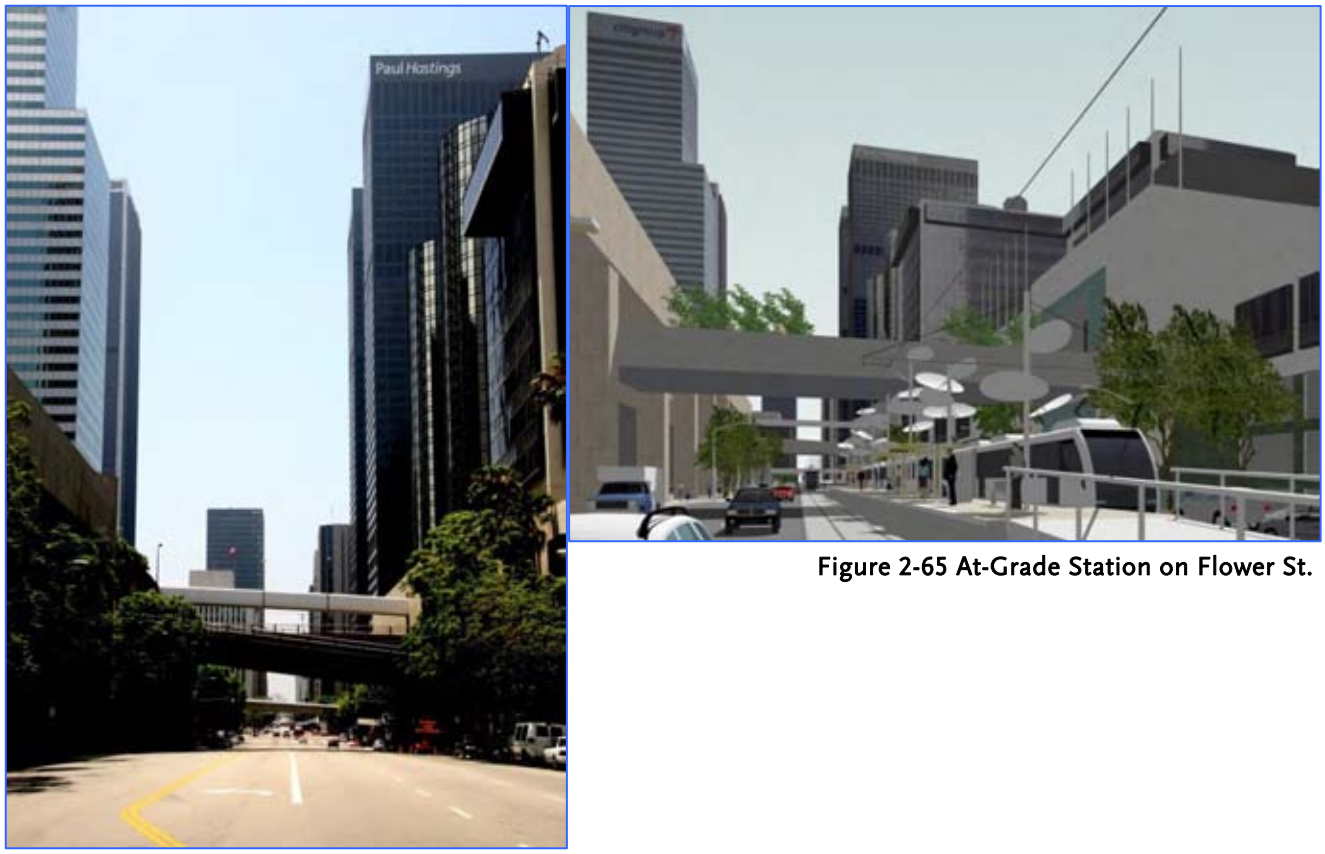

Figure 2-65 At-Grade Station on Flower St.

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.

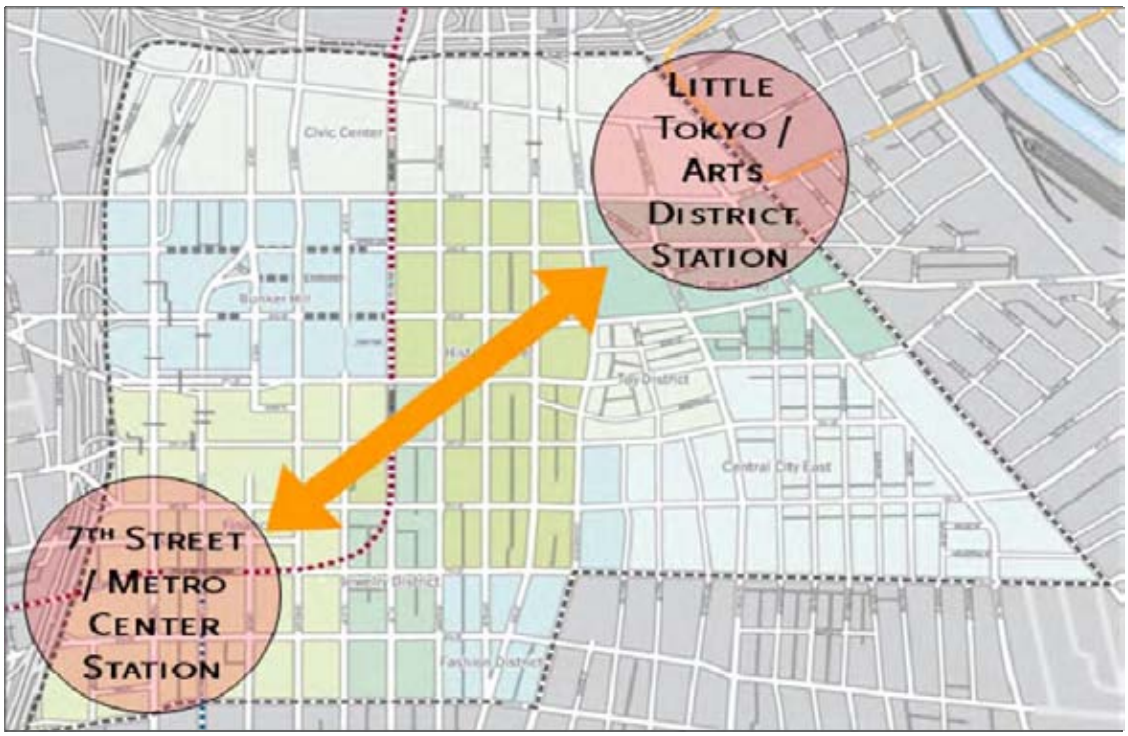

Figure 3-2 Gap in the Light Rail System

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:

Grand/Temple/Los Angeles Alignment: 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.

Figueroa/Flower/2nd/3rd/Alameda Alignment: 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.