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

APPENDIX CC

SAFETY AND SECURITY

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Regional Connector Transit Corridor
Safety and Security
Technical Memorandum

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ACRONYMS

CBC	California Building Code (CBC)
CCR	California Code of Regulations (CCR
CCTV	Closed-Circuit Television cameras
CEQA	California Environmental Quality Act
CPUC	California Public Utilities Commission
DHS	Department of Homeland Security
DVR	Digital Video Recorder (DVR)
FTA	Federal Transportation Authority
LACFD	Los Angeles County Fire Department (LACFD)
LACSD	Los Angeles County Sheriff's Department's (LACSD)
LACMTA	Los Angeles County Metropolitan Transportation Authority
LADWP	Los Angeles Department of Water and Power (LADWP)
LAFD	Los Angeles Fire Department (LAFD)
LAPD	Los Angeles Police Department (LAPD
LRT	Light Rail Transit
LRV	Light rail vehicles
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association (NFPA
ROW	Right-of-Way
SAFETEA-LU	Safe, Accountable, Flexible, and Efficient Transportation Act: A Legacy for Users
TSA	Transportation Security Administration (TSA)

TVA	Threat and Vulnerability Analysis
UFC	Uniform Fire Code

1.0 SUMMARY

This technical memorandum identifies, evaluates, and characterizes existing and future safety and security issues within the project area as they relate to passengers, pedestrians, motorists, and the public using the surrounding areas. Safety refers to the prevention of accidents to passengers, pedestrians, motorists, or employees through a formal process of hazard identification, assessment, and resolution. Security refers to the prevention of acts defined as unlawful, criminal, or intended to bring harm to another person or damage property.

This crime and security assessment used available crime statistics for the City of Los Angeles and included a review of other transit systems in the United States that are similar to the Regional Connecter Transit Corridor project alternatives.

The affected environment in the project area is represented by a highly urban environment which, for the most part, provides a substantial and adequate infrastructure to benefit pedestrians and the travelling public. As part of the field work for this analysis, observations were made within the project area to document this infrastructure and identify cursory issues that may need to be addressed as the Regional Connector Transit Corridor project proceeds further in design. The assessment found that the existing infrastructure is generally adequate to accommodate the proposed project from a safety perspective.

The alternatives evaluated include:

- No Build Alternative
- Transportation System Management (TSM) Alternative
- At-Grade Emphasis Light Rail Transit (LRT) Alternative
- Underground Emphasis LRT Alternative
- Fully Underground LRT Alternative – Little Tokyo Variation 1
- Fully Underground LRT Alternative – Little Tokyo Variation 2

Results of the safety and security assessment show there are no significant adverse safety and security impacts associated with project alternatives that could not be mitigated by design refinements. Although some impacts may be more prevalent between alternatives, all impacts can be mitigated by actions identified in Section 6.0 of this technical memorandum. All proposed mitigation measures relevant to safety and security would be developed in conformance with Metro's Rail Transit Design Criteria and Standards, Fire/Life Safety Criteria, Volume IX. Proposed mitigation measures include providing safe detours for pedestrians and motorists around construction zones and implementing project operational modifications to address potential safety and security issues.

2.0 INTRODUCTION

The purpose of this technical memorandum is to identify, evaluate, and characterize existing and future safety and security issues within the project area as they relate to passengers, pedestrians, motorists, and the public using surrounding areas. This analysis focuses on potential safety and security impacts that may result from the proposed Regional Connector Transit Corridor project.

Safety refers to the prevention of accidents to passengers, pedestrians, motorists, or employees through a formal process of hazard identification, assessment, and resolution. Security refers to the prevention of acts defined as unlawful, criminal or intended to bring harm to another person or damage property. Security also means freedom from threats or uncertainty about the likelihood of such acts.

All proposed stations, at-grade intersections along the light rail transit (LRT) alignment, and crossing locations between intersections were assessed for safety and security issues. The major focus of the safety analysis is how the proposed action(s) may affect light rail transit system passengers, employees, and the overall pedestrian environment/infrastructure. The assessment is not a detailed analysis of motorized travel conditions and traffic mitigation in Los Angeles. However, where appropriate, relevant traffic mitigation and/or concerns have been identified if they might influence pedestrian/motorist interactions.

3.0 METHODOLOGY FOR IMPACT EVALUATION

3.1 Regulatory Framework

The following sections briefly discuss the regulatory framework used to guide the evaluation of project safety and security.

3.1.1 Federal

3.1.1.1 NEPA

The National Environmental Policy Act (NEPA) does not include specific guidance or direction for evaluating alternatives and their relative effects on public safety and security.

3.1.1.2 SAFETEA-LU

SAFETEA-LU was passed to address issues such as improving safety, reducing traffic congestion, improving efficiency in freight movement, increasing intermodal connectivity, and protecting the environment. SAFETEA-LU further promotes efficient and effective federal surface transportation programs by focusing on transportation issues of national significance.

Some of the key programs targeted by SAFETEA-LU include safety, equity, innovative finance, congestion relief, mobility and productivity, efficiency, environmental stewardship, and environmental streamlining. SAFETEA-LU gives states more flexibility to use road pricing to manage congestion, and promotes real-time traffic management in all states to improve transportation security.

3.1.1.3 FTA New Starts Program

States with rail fixed guideway systems must comply with Federal Transportation Authority's (FTA) State Safety Oversight Rule. Codified at 49 CFR Part 659, the State Safety Oversight Rule (or Part 659) sets forth FTA's requirements to improve rail transit safety and security. Only those states with rail fixed guideway systems must comply with FTA's State Safety Oversight Rule.

Part 659 requires a state to establish and carry out a safety program plan for rail-based New Starts projects. Part 659 requires safety and security to be considered well before a rail-based New Starts project begins revenue service. Project sponsors must ensure that safety considerations are weighed during the preliminary engineering phase.

3.1.1.4 Fire Services

The Uniform Fire Code (UFC) contains regulations related to construction and maintenance of buildings and use of their premises. Topics addressed in the UFC include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire safety requirements for new and existing buildings and their premises. The UFC contains specialized technical regulations related to fire and human safety.

3.1.2 State

3.1.2.1 CEQA

Appendix G of California Environmental Quality Act (CEQA) Guidelines draws particular attention to those projects that would "create a potential public health hazard" or "interfere with emergency response plans or emergency evacuation plans." In particular, CEQA highlights the following safety and security concerns:

- Pedestrian and/or bicycle safety;
- Safety conditions for users of public transit systems, including station accidents, boarding and disembarking accidents, right-of-way (ROW) accidents, collisions, fires, and major structural failures;
- Delivery of community safety services, such as police, fire, or emergency services, to locations along a proposed alignment; and
- Security conditions, including incidents, offenses, and crimes.

3.2.2.2 California Public Utilities Commission

The California Public Utilities Commission (CPUC) has adopted General Order 143-B (GO 143B), the *Safety Rules and Regulations Governing Light-Rail Transit in California*. The order describes all the general requirements for light-rail transit, including braking, lighting, operating speeds, ROW standards, and maintenance of light-rail vehicles (LRVs). The Regional Connector Transit Corridor project would be subject to rules and regulations set forth by GO 143-B. In accordance with GO 143 B, all LRV equipment shall be maintained in safe and proper working condition. Once the LRT carrier/operator establishes operating rules and procedures, including grade crossings, the CPUC would have final review and approval of the operating plan. The following lists some of the major rules set forth in GO 143-B.

- **Title 5, Section 01—Headlights.** Every LRV that operates on a separate right-of-way shall be equipped with a headlight or headlights that are capable of revealing a person or motor vehicle in clear weather at a distance of 600 feet. Every LRV that operates on a public street or road shall be equipped with a headlight or headlights that are capable of revealing a person or motor vehicle in clear weather at a distance of 350 feet and shall be designed and adjusted so as not to interfere with the vision of drivers of motor vehicle. Headlights may be dimmed or extinguished under conditions where their use could pose a safety hazard to motorists in adjacent traffic lanes.
- **Title 7, Section 01—Basic Speed Rule.** The operator of an LRV shall at all times operate at a safe speed that is consistent with weather, visibility, track conditions, traffic signal indications, and the indication of Automatic Train Protection systems where used.

- **Title 7, Section 08—Crossing of Street and Highways at Grade.** LRT systems that cross streets, roads, and highways at grade shall install and maintain automatic gate crossing signals to control motor vehicle traffic and automatic warning signals to control pedestrian traffic. When LRV operation is on a street or highway that permits motor vehicle traffic, all intersections shall be controlled by traffic control devices.

- **Title 7, Section 09—Audible Warning.** The LRV operator shall sound an audible warning:

  - When approaching at-grade crossings protected by automatic crossing signals conforming to the requirements of General Order 75-C to control vehicle and pedestrian traffic,

  - At other locations specifically identified in the LRT system's operating rules, and

  - Whenever the operator believes it is necessary and in accordance with the LRT system's operating rules and regulations.

- **Title 9, Section 03—Installation of Curbs, Fences, and Barriers.** Concrete curbs, fences, or barriers shall be installed along sections of the separate right-of-way of an LRT system when there is a likelihood that motor vehicles or pedestrians may leave the traveled way of any nearby street or highway and encroach onto a mainline track.

- **Title 9, Section 04—Alignment Classification.**

  - Exclusive: A right-of-way without at-grade crossings that is grade separated or protected by a fence or substantial barrier, as appropriate to the location (includes subways and aerial structures).

  - Semi-Exclusive: (1) Fully exclusive right-of-way with at-grade crossings, protected between crossings by a fence or substantial barrier, if appropriate to the location; (2) within the street right-of-way, but protected by 6-inch-high curbs and safety fences between crossings (the safety fences should be located outside the tracks).

- **Title 9, Section 05—Emergency Walkways.** An unobstructed emergency walkway at least 30 inches wide and accessible to persons getting off disabled trains shall be provided along all tracks in subways and tunnels, on bridges, and on alignment Classifications 9.04a, 9.04b(1), and 9.04b(2). Walkways shall have a reasonably regular surface and shall not have a slope exceeding 1 foot vertical to 6 feet horizontal. A single walkway may serve more than one track.

- **Title 11, Section 01—Fire Protection Requirements.** All LRT systems shall establish fire protection requirements to control potential fire hazards. The minimum requirements for underground segments of the LRT system shall be as specified in the Standards for Fixed Guideway Transit Systems published by the National Fire

Protection Association (NFPA 130). The minimum requirements for all other segments shall be established by the LRT system based upon a documented engineering analysis of the factors affecting fire hazards and fire risks using NFPA 130 as a guide.

3.1.2.2 Fire Services

California Code of Regulations (CCR) Title 24 of the California Building Code (CBC) is a compilation of building standards. State fire regulations are set forth in Section 13000 et seq. of the California Health and Safety Code and include regulations for building standards (as also set forth in the CBC), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, and fire suppression training. This code would apply to design criteria for safety of the proposed project.

3.1.3 Regional/Local

Public services (i.e., police and fire protection) are generally regulated by local agencies. Therefore, design of these components and operation of the proposed project alternatives would be regulated primarily by the policies and agencies of Los Angeles County and the City of Los Angeles. Metro also implements policies, plans, and actions specifically directed toward maintaining safety and security during operation of the transit system.

3.1.3.1 Los Angeles County Metropolitan Transportation Authority (Metro)

Metro is responsible for compliance with all FTA and CPUC regulations governing the safe operation of the transit systems, both for patrons and its employees. In operating light-rail transit, subways, and bus transit throughout Los Angeles County, Metro has established departments to address specific issues. Metro relies on the Grade Crossing Policy, revised in December of 2003, for determining appropriate grade separation of LRT. The Metro Emergency Response Plan is incorporated into Metro's standard operating procedures and was established to address the potential for emergencies to occur and the ways in which Metro employees are to respond. Excerpts from both of these documents are provided in the following paragraphs.

Metro Grade Crossing Policy for Light-Rail Transit

The Grade Crossing Policy is intended to provide a structured process for evaluating potential grade separations versus at-grade operation along light-rail lines. The policy describes a three-step process.

Milestone 1: Initial Screening. A preliminary planning-level assessment of roadway crossings based upon readily available, planning-level data for roadway volumes and proposed train frequencies leading to an initial categorization of roadway crossings into three groups: "At Grade Should be Feasible," "Possible At Grade Operation," and "Grade Separation Usually Required."

Milestone 2: Detailed Analysis. This milestone is a detailed evaluation of operations, taking into account peak period, movement-by-movement, analysis of roadway traffic in

conjunction with an assessment of potential impacts to rail operations due to priority control. It provides a more refined assessment of feasibility of at-grade operation and also identifies operational trade-offs between roadway traffic conditions and rail operations. This review includes an initial assessment of safety issues based on site-specific evaluation of geometric conditions and observed and/or projected use of proposed crossings. It results in a preliminary determination of locations that may be operated at-grade versus grade-separated.

Milestone 3: Verification. This step includes the process of developing consensus regarding the proposed design solution with local constituencies, including other involved agencies and the community as appropriate. This step may include preliminary engineering studies and cost estimates for alternative treatments. It may also include refinement of projected traffic volumes and validation of traffic and rail operations using simulation modeling. Finally, it may include additional effort on safety issues and countermeasures. At the conclusion of this milestone, it is expected that all technical studies will have been completed leading to a final recommendation by Metro for the crossing configuration.

Metro Rail Emergency Response Plan

The Emergency Response Plan is intended to establish guidelines for standard operating policy and procedures for the mobilization of Metro employees and resources during an emergency situation. The Plan is shared with other public safety resources and agencies to provide a fast, controlled, and coordinated response to the various emergencies that may occur on the Metro rail system.

The goal of this Plan is to establish guidelines that would impact the fewest number of responders, allowing the emergency situation to be mitigated with as little impact to the system as practicable and service to be restored as quickly as possible. To this end, only the personnel who are essential to respond to a particular emergency situation should be called. As an incident grows, the list of responders may also grow to conduct investigations and provide recovery efforts necessary to restore service.

Certain objectives must be met to implement guidelines in the Emergency Response Plan. They are:

- Minimize potential danger to passengers, employees, and others during emergency incidents.
- Maximize the effectiveness of the Metro during an emergency incident.
- Ensure there is proper investigation into the cause of the incident.
- Restore service or provide alternative service at the earliest possible time.

Fire/Life Safety Design Criteria

The Fire/Life Safety Design Criteria would need to address specific fire protection requirements for design and construction of the Regional Connector Transit Corridor project systems and equipment. The criteria would establish minimum requirements to provide a reasonable degree of safety from fire and its related hazards.

Fire safety on a light-rail transit system is achieved through a composite of facility design, operating equipment, hardware, procedures, and software subsystems that are integrated to provide protection of life and property from the effects of fire. The criteria identify and discuss fire safety as they relate to the following specific design criteria: station and guideway facilities; passenger vehicles: vehicle yard and maintenance facilities: system fire/life safety procedures; communications; rail operations control; and inspection, maintenance, and training.

3.1.3.2 Los Angeles County

The Los Angeles County General Plan includes policies that also affect police and fire services in the project area, including:

- *Police Services*: Policy PS 8.1 promotes phased development, whereby land use proposals are developed in conjunction with approved law enforcement capabilities.
- *Fire Services*: The Los Angeles County Fire Code and the General Plan safety element establish the standards, policies, and goals for fire suppression facilities within the County. In addition, the General Plan includes policies (such as Policy PS 7.1) that promote phased development, whereby land use proposals are developed in conjunction with approved fire protection capabilities.

3.1.3.3 City of Los Angeles

City of Los Angeles General Plan

The City of Los Angeles General Plan Safety Element identifies various goals and policies to improve the overall safety and security of all residents within the City. Specifically, Goal 2 of the General Plan indicates that the City should strive to respond with the maximum feasible speed and efficiency to disaster events to minimize injury, loss of life, property damage, and disruption of the City's social and economic life and its immediate environs. Objective 2.1 of this General Plan Goal further clarifies that the City should develop and implement comprehensive emergency response plans and programs that are integrated with each other and with the City's comprehensive hazard mitigation and recovery plans and programs.

The City's General Plan policies regarding safety and security include:

2.1.1 Coordination. Coordinate program formulation and implementation between City agencies, adjacent jurisdictions, and appropriate private and public entities to achieve, to the greatest extent feasible and within the resources available, the maximum mutual benefit with the greatest efficiency of funds and staff.

2.1.3 Information. Develop and implement, within the resources available, training programs and informational materials designed to assist the general public in handling disaster situations in lieu of or until emergency personnel can provide assistance.

2.1.5 Response. Develop, implement, and continue to improve the City's ability to respond to emergency events.

2.1.6 Standards/fire. Continue to maintain, enforce, and upgrade requirements, procedures, and standards to facilitate more effective fire suppression. The Fire Department and/or appropriate City agencies shall revise regulations or procedures to establish minimum standards for location and expansion of fire facilities based upon fire flow requirements, intensity and type of land use, life hazard, occupancy, and degree of hazard to provide adequate fire and emergency medical event response.

Police Services: While there are no specific local or regional plans that address police services, the City's citywide General Plan framework and specific community plan documents do contain policies and objectives that deal with ensuring adequate police service infrastructure for the Los Angeles Police Department (LAPD).

Fire Services: The City of Los Angeles both surrounds and adjoins other cities, counties, and state and federally controlled lands; therefore, it has joined a variety of mutual aid agreements with other jurisdictions for the cooperative response and management of fires and other emergency incidents. The Los Angeles Fire Department (LAFD) participates in automatic response agreements with the County. The City of Los Angeles General Plan, the City of Los Angeles Fire Code (part of the City's municipal code), and the General Plan safety element contain the goals, objectives, and policies related to fire prevention and suppression services.

City of Los Angeles Community Plans

The project area crosses two designated City of Los Angeles communities: Central City and Central City North. Both of these communities have community plans that have applicable policies for police services and fire services. These policies are discussed in the following paragraphs.

Central City Community Plan

The Central City area is located south of Sunset Boulevard/Cesar Chavez Avenue, north of the Santa Monica Freeway (I-10), east of the Harbor Freeway (SR 110), and west of Alameda Street. Applicable Central City Community Plan policies, listed by community facility type are as follows:

Police Services: Policy 5-1.1 requires consultation with the LAPD during review of development projects and land use changes to determine law enforcement needs and requirements. Programs complementing this policy include requiring decision-makers to address a proposed project's potential demand for police services.

Fire Services: Policy 6-1.1 requires coordination with the LAFD during review of significant development projects to determine potential impacts on fire service demand. Implementation of this policy requires decision-makers to address potential impacts of a development project on fire services and encourages consultation with the LAFD.

Central City North Community Plan

The Central City North area is located adjacent to downtown Los Angeles. The Los Angeles River bounds it on the east; the City of Vernon to the south; Alameda Street, Cesar Chavez Avenue, Sunset Boulevard, and Marview Avenue to the west; and Stadium Way, Lilac Terrace, and North Broadway to the north. Applicable Central City North Community Plan policies, listed by community facility type, are as follows:

Police Services: Policy 8-1.1 requires consultation with the LAPD during review of significant development projects to identify potential impacts on police services.

Fire Services: Policy 9-1.1 requires coordination with the LAFD during review of significant development projects to determine potential impacts on fire services. This policy requires decision-makers to address potential impacts of a proposed project on fire services.

City of Los Angeles Emergency Preparedness Department

In addition to numerous police and fire stations located near the proposed alignments, the City of Los Angeles' Emergency Preparedness Department is responsible for providing citywide emergency management services. The Mayor and City Council established the Emergency Preparedness Department in July 2000 to improve the direction and control of local emergency preparations, response, and recovery activities, and to ensure that the needs of all the citizens of Los Angeles are met in the event of a local emergency.

The Emergency Preparedness Department coordinates the interdepartmental preparedness, planning, training, and recovery activities of the Emergency Operations Organization, its divisions, and all City departments. Additionally, it serves as a liaison with other municipalities, state and federal agencies, and the private sector, and performs related public education and community preparedness activities.

3.2 Standards of Significance

Appendix G of the California State CEQA Guidelines draws particular attention to those projects that would "create a potential public health hazard" or "interfere with emergency response plans or emergency evacuation plans." A significant adverse safety and security impact would occur under CEQA if an alternative would:

- Create the potential for increased pedestrian and/or bicycle safety risks
- Create substantial adverse safety conditions, including station accidents, boarding and disembarking accidents, right-of-way accidents, collisions, fires, and major structural failures
- Substantially limit the delivery of community safety services, such as police, fire, or emergency services, to locations along the proposed alignment
- Create the potential for adverse security conditions, including incidents, offenses, and crimes

3.3 Evaluation Methodology

3.3.1 Safety

A safety assessment includes consideration of potential safety conflicts for pedestrians, bicyclists, transit riders, and automobiles as well as existing conditions of the project area, which is a very heavily used and diverse urban environment. The pedestrian safety assessment along the proposed LRT corridor focused on three separate categories, including:

- Pedestrian safety at station locations
- Pedestrian safety near the trackway

- Pedestrian safety at designated grade crossings

To evaluate these potential issues, other similar conditions were reviewed along existing LRT lines within Los Angeles County. In addition, lessons learned from other system studies were utilized, including TriMet's (Portland, OR) recently published *Light Rail Pedestrian and Bicycle Crossing Final Report* (TriMet 2008). Best practices in safety and security analysis relative to LRT systems were evaluated using guidance contained in the *Transit Cooperative Research Program (TCRP) Report 17 – Integration of Light Rail Transit into City Streets* (Korve Engineering, Inc. 1996), *TCRP Report 69 – Light Rail Service: Vehicular and Pedestrian Safety* (Korve Engineering, Inc. 2001), and *TCRP Report 117 – Design, Operation, and Safety of At-Grade Crossings of Exclusive Busways* (Vanesse, Hangen, Brustlin, Inc. 2007). Input from Metro fire and life safety staff was sought, and information and concerns were gathered at public meetings and during scoping.

Analysis factors were evaluated at appropriate locations such as at intersections, along existing corridors, at proposed station platforms, and near important generators of pedestrian movements such as the Civic Center, the Financial District, and Little Tokyo. In addition, fire services and emergency response factors were taken into account. Station and track design and operational procedures are also pertinent to efficiency in emergency response and were assessed.

Pedestrian and bicycle safety analysis factors considered included, but were not limited to, the following:

- Necessary clearances for boarding platforms and emergency walkways
- Location and adequacy of public street crossings
- Location and adequacy of LRT crossings
- Location and adequacy of barriers (curbs, fences, and vegetation) to channelize pedestrians and bicyclists
- Presence of existing and planned lighting
- Potential for decreased emergency services response times

Mitigation of rail passenger and employee accident potential was evaluated through a process of hazard identification, assessment, and resolution. The number and types of potential accidents for each of the alternatives were estimated based on existing Metro data and other available information. This was expressed in the number of "accidents per mile" (i.e., accident rate) within the corridor. In addition, accident potential was categorized by potential for station accidents, boarding and disembarking accidents, and right-of-way accidents. Developing potential accident rates and data was helpful in identifying possible system concerns that might be mitigated.

System safety factors evaluated included the alignment configuration, engineering safeguards, and the type of control system proposed. System safety documentation prepared previously was reviewed for information appropriate to this environmental document. All proposed grade crossings were evaluated for consistency with the Los Angeles County Metropolitan Transportation Authority (LACMTA) Board adopted *Grade Crossing Policy for Light Rail Transit* (Metro 2003) to ensure safe surface or grade-separated operation.

Other data evaluated for the safety analysis include traffic queuing at select locations; sight distance at intersections and along the proposed LRT alignment, type and availability of pedestrian/patron stacking areas, overall area geometrics, readability/delineation of proposed signing and pavement markings, and overall operational observations.

3.3.2 Security

Security refers to prevention of acts defined as unlawful, criminal, or intended to bring harm to another person or damage property. The project alternatives, including proposed station areas, operational parameters, and surrounding neighborhoods, were evaluated to determine potential for crime risks.

To fully evaluate the security risks, a Threat and Vulnerability Analysis (TVA), following FTA (FTA C 5800.1 and FTA Project Management Guidelines, Chapter 2) and Metro protocols, will ultimately be conducted for the selected locally preferred alternative. That process will give a more refined and detailed analysis of the security environment by identifying domestic and international security threats and potential vulnerabilities/shortcomings in the transit system, and result in recommendations to reduce those vulnerabilities to acceptable levels.

The process for determining vulnerabilities begins with identifying and grouping transit agency assets based on their 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 Metro's ability to provide transit services and to protect people.

Threat types are then identified using existing crime statistics for the area and threat information received from local, state, and federal law enforcement sources. Each critical asset is then assessed for its vulnerability to each potential threat, coupled with the probable frequency of occurrence for each threat. Severity of consequences for each threat is then given a rating from catastrophic to negligible.

This information is put into a criticality matrix, which organizes the resulting consequences into categories of high, serious, and low. The matrix helps to prioritize consequences and focus available resources on the most serious threats requiring resolution while effectively managing the available resources.

To evaluate security risks of the proposed alternatives, interviews were conducted with the Metro Security team including representatives of the LAPD and U.S. Homeland Security, to determine current protocols; identify and document current crime statistics around existing

Metro rail stations and major bus stops in the project area; identify project-likely crime issues around the proposed LRT stations; and identify design factors that may maximize the security of the expected patrons and pedestrians around station areas. Comparative crime statistics from Metro's recent experience with the Metro Gold Line to Pasadena and Metro Orange Line, along with statistics from other Metro urban area LRT systems and metropolitan areas in the United States, were reviewed to help identify potential effects on neighborhood crime and security with the proposed operating facilities. Crime data for the areas surrounding the proposed alignment compared to other existing Metro station area neighborhoods and other urban LRT systems similar to this project would be incorporated in the Threat and Vulnerability Assessment.

Mitigation measures were identified that could be incorporated into the security plan for the locally preferred alternative. The measures identify possible threats and propose appropriate actions to minimize potential impacts of the project.

4.0 AFFECTED ENVIRONMENT

Existing conditions along the Regional Connector Transit Corridor alternatives alignments were assessed to establish a baseline by which alternatives could be evaluated. For purposes of safety and security, this evaluation was performed on a qualitative basis. The assessment of existing conditions centers on safety of pedestrians, LRT passengers, and employees; response times for emergency services (police, fire, and ambulance); crime and security statistics; and other relevant data as available through Metro and other sources.

4.1 Safety

Metro is the regional agency that serves as transportation planner and coordinator, designer, builder, and regional operator of transit services in Los Angeles County. Metro is regulated by the CPUC. In operating LRT, subways, and bus transit (including dedicated bus transit ways) throughout Los Angeles County, Metro has established departments to address specific issues. One department is the Transit Education Programs Department, which works to create programs to educate the public on proper safety practices with respect to LRT.

To improve the safety of passengers and pedestrians, Metro operates all transit-related vehicles according to the guidelines established by the CPUC. The CPUC sets requirements for vehicle and pedestrian crossing gates to discourage pedestrians and motorists from crossing tracks when an LRV is approaching.

Other general safety regulations established by the CPUC for LRV include rear view mirrors, audible warning devices, and grab handles for standing passengers. The CPUC also regulates LRV braking, lighting, and operating speeds.

Separating the tracks from street level reduces potential for conflict between vehicles and LRVs. Metro has also established a Grade Crossing Policy for LRT that establishes a three-step analysis to determine the required grade crossing (at-grade or grade-separated) along light-rail alignments. Additional programs, such as the Rail Safety Education Program, educate local residents, specifically children, on safety around LRVs.

Metro is constantly working to improve passenger and bystander safety along its current LRT lines. There are a variety of programs established by Metro to educate rail users and nonusers alike about proper safety precautions around operating transit vehicles. The transit safety team offers courses aimed at improving passenger and bystander safety. Photos and video from existing stations and rail crossings along the Blue and Gold Lines are used to illustrate safety around rail alignments and rail crossings.

Additionally, the Rail Safety Orientation Safety Program offers guided tours for students, including safety and system information and limited rides on the Gold, Red, and Blue Lines. While most of the education and training is geared toward elementary and middle school students, the transit safety team also works with community organizations to educate local residents on the proper safety procedures and precautions around LRVs.

In addition to safety considerations for the day-to-day operations of the LRT lines, safety must also be considered during construction activities for the LRT infrastructure. During construction, precautions must be made for the safety of pedestrians, bicyclists, motor vehicle drivers, and construction workers. In many cases, interim modifications to sidewalks, parking areas, travel lanes, and traffic control signing must be made to advise the public of construction activities. Depending on the type of construction, and also the construction sequencing, temporary barricades and fencing may be necessary to prevent specific travel movements that may create pedestrian and vehicle circulation hazards. Security measures would have to be in place when construction activities expose underground utilities and/or when excavated trenches have been created and left in an open state. These conditions often require temporary, secure barricades during the night time hours when construction personnel are not on site.

Construction methods and sequencing may also affect emergency service response times. Construction traffic control planning would be utilized during construction activities to coordinate temporary route modifications such that emergency service providers can plan ahead and minimize potential delays in response times due to LRT construction activities.

4.1.1 Pedestrian Safety

Downtown Los Angeles contains a great diversity of streets, places, buildings, and environments. Adding an LRT connection along the Flower and 2nd Street alignment may have the effect of increasing potential safety conflicts for pedestrians, bicyclists, transit riders, and automobiles within some of the most heavily used portions of downtown Los Angeles. There is a high level of pedestrian traffic in the project area. Pedestrian density is most concentrated in the vicinity of the commercial and governmental facilities in the Civic Center and Financial Districts.

4.1.2 Existing At-Grade Intersection Conditions

The following sections describe the existing at-grade intersection conditions applicable to pedestrian safety within the project area. These existing conditions would inform the design process and proposed mitigations to address pedestrian and motorist safety concerns.

4.1.2.1 Flower Street and 6th Street (Photo 1)

- This intersection has marked crosswalks on all four legs of the intersection.
- Diagonal wheelchair ramps are present on all corners of the intersection. Note that there is only a single wheelchair ramp per corner, and is generally pointing toward the middle of the intersection

- Crosswalks are colored asphalt with a stamped brick pattern. Stamped pattern is absent for the path connecting the diagonal wheelchair ramps, presumably to provide a smooth travel surface for wheelchair users.
- Intersection is well lit, with street lighting present on all four corners.
- 6th Street is a one-way facility in the eastbound direction and traffic at this location, on 6th, is primarily from the SR 110 freeway off-ramps. This can cause elevated travel speeds in the eastbound direction which may be a concern to pedestrians.

Photo 1 - The west leg of 6th Street carries one-way traffic from SR 110. Vehicle speeds were observed in the field to be higher than would be expected in a downtown environment.

4.1.2.2 Flower Street and 5th Street (Photo 2)

- This intersection has marked crosswalks on all four legs of the intersection.
- Wheelchair ramps are present on all corners of the intersection. Note that there is only a single wheelchair ramp per corner for three of the corners, and it generally points toward the middle of the intersection. The southeast corner of the intersection does have two wheelchair ramps lining up with the appropriate crosswalk across the relevant leg of the intersection.

Photo 2 - The west leg of 5th Street carries one-way traffic to SR 110.

- Crosswalks are colored asphalt with a stamped brick pattern. Stamped pattern is absent for the path connecting the diagonal wheelchair ramps, presumably to provide a smooth travel surface for wheelchair users.

- Intersection is well lit, with street lighting present on all four corners.
- 5th Street is a one-way facility in the westbound direction and traffic at this location, on 5th, is primarily heading west to enter the US 110 freeway on-ramps. This can cause elevated travel speeds in the westbound direction, which may be a concern to pedestrians.
- There is a pedestrian grade-separated crossing over the west leg of 5th Street that connects to the Westin Hotel complex located on the northwest corner of the intersection.

4.1.2.3 Flower Street and 4th Street (Photo 3)

- This intersection has marked crosswalks on all four legs.
- Wheelchair ramps are present on all corners of the intersection. Note that there is only a single wheelchair ramp per corner, and is generally pointing toward the middle of the intersection.
- Crosswalks are colored asphalt with a stamped brick pattern. Stamped pattern is absent for the path connecting the diagonal wheelchair ramps, presumably to provide a smooth travel surface for wheelchair users.
- Intersection is well lit, with street lighting present on all four corners. Pedestrian facilities are shaded and dark at times because of the overpasses on the north leg of the intersection.

Photo 3 - The intersection of Flower Street and 4th Street is essentially a "tee" intersection because the south leg serves a parking garage access. The overall intersection is dark with limited pedestrian sight distance due to bridge piers.

Ped4.1.2.4 Flower Street and 3rd Street (Photo 4)

- This intersection has marked crosswalks on all four legs.
- Pedestrian push buttons are not consistent on each signal standard.
- Wheelchair ramps are present on all corners of the intersection. Note that there is only a single wheelchair ramp per corner, and it generally points toward the middle of the intersection.

Photo 4 - The Flower Street and 3rd Street intersection has excellent sight distance and is very open. The east leg begins the uphill grade to Bunker Hill.

- The north leg of the intersection has a raised median that extends into the crosswalk. This raised median does not have an accessible wheelchair lay-down.
- Crosswalks are colored asphalt with a stamped brick pattern. Stamped pattern is absent for the path connecting the diagonal wheelchair ramps, presumably to provide a smooth travel surface for wheelchair users.
- Intersection is well lit, with street lighting present on all four corners.
- 3rd Street is a one-way facility in the westbound direction. This can cause elevated travel speeds in the westbound direction, which may be a concern to pedestrians.
- The World Trade Center is on the southwest corner of the intersection.

4.1.2.5 Flower Street/Hope Street and Kosciuszko (Photo 5)

- Sight distance issues exist approaching the intersection from the south due to the steep approach grade of the roadway.
- A five-legged intersection exists at this location, creating a rather large, unfriendly crossing for pedestrians.
- Triple left turns onto Kosciuszko travelling eastbound. As a result, there is no pedestrian crossing across the northwest leg of the intersection. There are "no pedestrian crossing" signs at this location.
- There are pedestrian crosswalks across remaining three legs. These are only marked with white thermoplastic bars (i.e., no colored or stamped asphalt).
- Intersection is well lit, with street lighting present on all four corners.

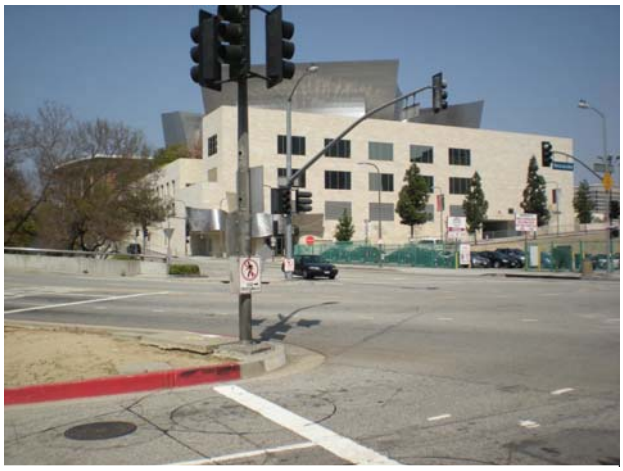

Photo 5 - Flower Street/Hope Street and Kosciuszko intersection is difficult to navigate as a pedestrian due to prohibited crossings, poor sight distance, and skewed intersection geometry.

- Sidewalk infrastructure is aging, with various degrees of concrete settlement on the corners of the intersection where pedestrians are present.

- Wheelchair ramps are present on all corners of the intersection, except across the northwest leg of the intersection (i.e., eastbound Kosciuszko). Note that there is only a single wheelchair ramp per corner, and it generally points towards the middle of the intersection.

4.1.2.6 2nd Street and Hope Street (Photo 6)

- This intersection is located just north of the intersection of Kosciuszko and Hope Street. It is located at the western corner of the Disney Concert Hall block. The Disney Concert Hall is a significant pedestrian generator in this area.

- There is only one pedestrian crossing opportunity at this intersection, located on the east leg of 2nd Street. This crossing is marked with white thermoplastic bars (i.e., no colored or stamped asphalt).

- Intersection is well lit, with street lighting present on all corners.

Photo 6 - Hope Street and 2nd Street provides for a pedestrian crossing on the east leg of the intersection only.

- Sidewalk infrastructure is aging, with various degrees of concrete settlement on the corners of the intersection where pedestrians are present.

- Wheelchair ramps are present on two corners and line up appropriately with the crosswalk alignment.

4.1.2.7 2nd Street and S. Grand Avenue (Photo 7)

- The intersection of 2nd Street and South Grand Avenue is newly constructed and located at the south corner of the Disney Concert Hall block. The Disney Concert Hall is a significant pedestrian generator in this area.

- The intersection includes marked crosswalks on all four legs, of various widths. These crossings are marked with white thermoplastic bars (i.e., no colored or stamped asphalt).

- On the Disney Concert Hall block, a vast pedestrian stacking area exists near the northern corner of the intersection.
- The intersection uses pedestrian countdown timers for pedestrian signalization control.
- Wheelchair ramps are present on all corners of the intersection. Note that there is only a single wheelchair ramp per corner, and is generally pointing toward the middle of the intersection. The exception to this is the southern corner of the intersection, which exhibits two wheelchair ramps in line with the adjacent crosswalks across the intersection legs.

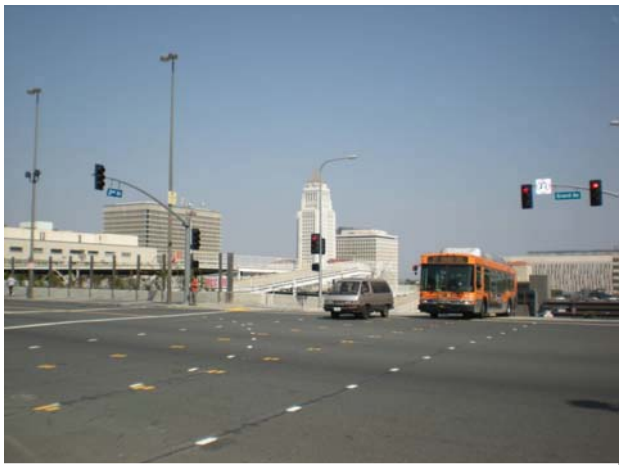

Photo 7 - 2nd Street and S. Grand Avenue is near the Walt Disney Concert Hall – a very large pedestrian generator.

- Intersection is well lit, with street lighting present on all corners.

4.1.2.8 2nd Street and S. Olive Street (Photo 8)

- There is no pedestrian crossing on the north leg of the intersection. This is because of the eastbound double left turning movements coming off the west leg of 2nd Street. There are "no pedestrian crossing" signs at this location directing pedestrians to the other crosswalks.
- Crosswalks of various widths are marked on three legs of the intersection. These crossings are marked with white thermoplastic bars (i.e., no colored or stamped asphalt).
- Wheelchair ramps are present on all corners of the intersection. Note that there is only a single wheelchair ramp per corner, and is generally pointing toward the middle of the intersection. The exception to this is the southern corner of the intersection, which exhibits two wheelchair ramps in line with the adjacent crosswalks across the intersection legs.

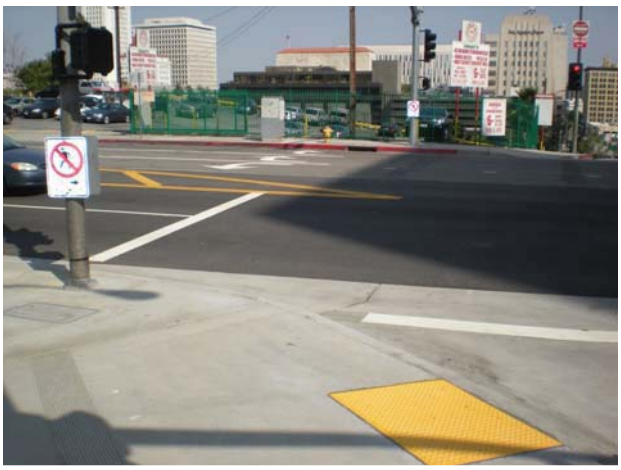

Photo 8 – Pedestrian movements are prohibited across the north leg of the intersection due to the protected green phase for the dual left turns off of the west leg of 2nd Street.

- Intersection is well lit, with street lighting present on all corners.

4.1.2.9 2nd Street and Hill Street (Photo 9)

Photo 10 – The intersection of 2nd Street and Broadway includes adequate pedestrian crossing features on all legs. There are vehicle turning restrictions during peak hours due to heavy traffic flows

- This intersection has marked crosswalks on all four legs.
- Diagonal wheelchair ramps are present on all corners of the intersection. Note that there is only a single wheelchair ramp per corner, and is generally pointing toward the middle of the intersection.
- Crosswalks are colored asphalt with a stamped brick pattern. There is no smooth surface within the stamped pattern connecting the diagonal wheelchair ramps, as encountered in other area intersections.
- Intersection is well lit, with street lighting present on all four corners.
- 2nd Street and Upper 2nd Street converge as the west leg at this intersection. 2nd Street is an existing tunnel in the eastbound direction, while Upper 2nd Street traverses down a hill with the top at Olive Street and the bottom at Hill Street. Where these two facilities converge, there is a concrete median extension that is in disrepair and not suitable as a pedestrian stacking refuge.

4.1.2.10 2nd Street and Broadway (Photo 10)

- This intersection has marked crosswalks on all four legs.
- Diagonal wheelchair ramps are present on all corners of the intersection. Note that there is only a single wheelchair ramp per corner, and is generally pointing toward the middle of the intersection.
- Crosswalks are colored asphalt with a stamped brick pattern. There is no smooth surface within the stamped pattern connecting the diagonal wheelchair ramps, as is encountered in other area intersections.
- Intersection is well lit, with street lighting present on all four corners.
- The actual intersection, within the areas bounded by the colored stamped crosswalks, is comprised of colored concrete materials. This can cause a slick surface during storm events because vehicles may slide into the intersection crosswalks–a potential concern for pedestrians.

4.1.2.11 2nd Street and Spring Street (Photo 11)

Photo 11 – The intersection of 2nd Street and Spring Street exhibits varying degrees of infrastructure repair - potentially causing safety concerns for pedestrians and bicyclists.

- This intersection has marked crosswalks on all four legs.
- Diagonal wheelchair ramps are present on all corners of the intersection. Note that there is only a single wheelchair ramp per corner, and is generally pointing toward the middle of the intersection.
- Crosswalks are of various widths. The crossings are marked with white thermoplastic bars (i.e., no colored or stamped asphalt).
- The intersection surfacing is a mix of asphalt and concrete surfacing in various stages of disrepair. This can present a tripping hazard to pedestrians crossing the intersection.
- Intersection is well lit, with street lighting present on all four corners.

4.1.2.12 2nd Street and Main Street (Photo 12)

Photo 12 – 2nd Street and Main Street is adjacent to the Caltrans building. All legs of this intersection have marked crosswalks.

- This intersection has marked crosswalks on all four legs.
- Diagonal wheelchair ramps are present on all corners of the intersection. Note that the north and east corners of the intersection each have two wheelchair ramps, in line with the adjacent crosswalks. The south and west corners only have a single wheelchair ramp per corner, and it generally points toward the middle of the intersection.
- Crosswalks are of various widths. The crossings are marked with white thermoplastic bars (i.e., no colored or stamped asphalt).
- This intersection is next to a large pedestrian traffic generator–the CalTrans building. The intersection is located at the west corner of the CalTrans block.

- Intersection is well lit, with street lighting present on all four corners.

4.1.2.13 2nd Street and Los Angeles Street (Photo 13)

- This intersection has marked crosswalks on all four legs.
- Diagonal wheelchair ramps are present on all corners of the intersection. Note that the north corner of the intersection has two wheelchair ramps, in line with the adjacent crosswalks. The remaining three corners only have a single wheelchair ramp per corner, and it generally points toward the middle of the intersection.

Photo 13 – 2nd Street and Los Angeles Street is also adjacent to the Caltrans building. All legs of this intersection have marked crosswalks of inconsistent widths.

- Crosswalks are of various widths. The crossings are marked with white thermoplastic bars (i.e., no colored or stamped asphalt).
- This intersection is next to a large pedestrian traffic generator–the CalTrans building. The intersection is located at the south corner of the CalTrans block.
- Intersection is well lit, with street lighting present on all four corners.

4.1.2.14 2nd Street and San Pedro Street (Photo 14)

- This intersection is a "gateway" to the Little Tokyo neighborhood.
- The intersection has marked crosswalks on all four legs.
- Diagonal wheelchair ramps are present on all corners of the intersection and generally point toward the middle of the intersection.

Photo 14 – The 2nd Street and San Pedro Street intersection is a gateway to the Little Tokyo neighborhood.

- The crosswalks are all very wide and imprinted with a unique gridded pattern cut into the asphalt that is filled in with colored epoxy filler. In addition, purple designs are prevalent at numerous locations in each crosswalk.

- This is an important intersection into the neighborhood, with high aesthetic value. It is part of a recent and on-going redevelopment area (Weller Court and adjacent housing).

4.1.2.15 2nd Street and Central Avenue (Photo 15)

- This intersection is located in the Little Tokyo neighborhood.
- This intersection has marked crosswalks on all four legs.
- Diagonal wheelchair ramps are present on all corners of the intersection and generally point toward the middle of the intersection for three of the corners. At the northeast corner are two wheelchair ramps that are in line with the adjacent crosswalk direction.

Photo 15 – 2nd Street and Central Avenue, in the heart of the Little Tokyo neighborhood, exhibits the unique imprinted crosswalks found throughout the newer intersections in the area.

- The crosswalks are all very wide and are imprinted with a unique gridded pattern cut into the asphalt that is filled in with colored epoxy filler. In addition, purple designs are prevalent at numerous locations in each crosswalk.
- This is an important intersection in the neighborhood, with high aesthetic value. It is clustered with adjacent mixed land uses.

4.1.2.16 1st Street and Alameda Street (Photo 16)

- This intersection was recently re-constructed due to the Gold Line extension construction. The intersection is quite large as compared to most others along the alignment.
- This intersection has marked crosswalks on all four legs.
- Diagonal wheelchair ramps are present on all corners of the intersection. Note that there is only a single wheelchair ramp per corner, and is generally pointing toward the middle of the intersection.

- Crosswalks are colored asphalt with a stamped brick pattern. There is no smooth surface within the stamped pattern connecting the diagonal wheelchair ramps, as encountered in other area intersections.
- Intersection is well lit, with street lighting present on all four corners.
- This is an important intersection in the area for pedestrians because it is near the new Little Tokyo station, which is a major future destination and exhibits large traffic flows.
- New raised median on the east leg of the intersection provides a curb cut through the median for unimpeded wheelchair access.

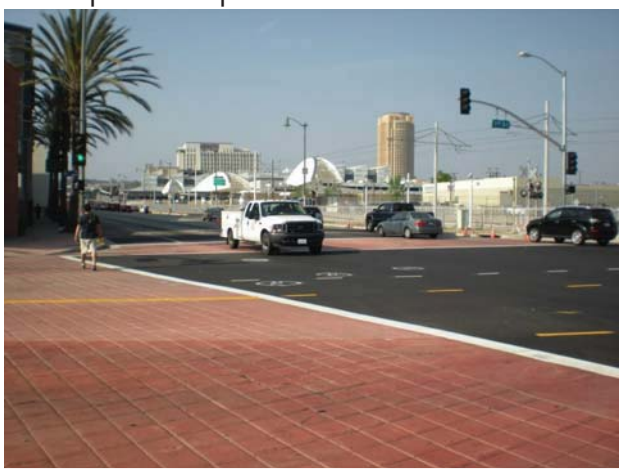

Photo 16 – The corner of 1st Street and Alameda Street is a fairly large intersection and was recently reconstructed due to the Gold Line LRT construction. The Little Tokyo/Arts District Station can be seen in the background.

4.1.2.17 Temple Street and Alameda Street (Photo 17)

- This intersection is located just north of the new Little Tokyo/Arts District Station. The Gold Line to East Los Angeles, which began operation in the Fall of 2009, crosses the east leg of this intersection.
- This intersection was also reconstructed due to construction of the adjacent LRT facilities.
- This intersection has marked crosswalks on all four legs.
- Diagonal wheelchair ramps are present on all corners of the intersection. Note that there is only a single wheelchair ramp per corner, and is generally pointing toward the middle of the intersection.

Photo 17 – The intersection of Temple Street and Alameda Street is located directly adjacent to the Little Tokyo LRT station. Crosswalks are provided on all four legs of the intersection.

- Crosswalks are colored asphalt with a stamped brick pattern. There is also a smooth surface within the stamped pattern connecting the diagonal wheelchair ramps, as encountered in other area intersections.
- Intersection is well lit, with street lighting present on all four corners.
- This is an important intersection in the area for pedestrians because it is near the new Little Tokyo station, which is a major future destination and exhibits large traffic flows.
- The sidewalk on the southwest corner of the intersection is very narrow and undulates in grade due to several abandoned driveway accesses.

4.1.2.18 Temple Street and Judge John Aiso Street (Photo 18)

- The corner of Temple Street and Judge John Aiso Street is three-legged "tee" intersection. There is no north leg to the intersection.
- The intersection is adjacent to the Federal Building complex and accordingly is a large pedestrian traffic generator.
- There are marked crosswalks on two (south and east) legs of the intersection.
- The west leg of the intersection does not contain a marked crosswalk, and signage is present to divert pedestrians to the south and east leg crossings.

Photo 18 – The intersection of Temple Street and Judge John Aiso Street is adjacent to the Federal Building complex.

- Diagonal wheelchair ramps are present on the southwest and southeast corner of the intersection, pointing toward the middle of the intersection. There is also a curb lay-down on the north side of the east leg for pedestrians approaching or leaving the Federal Building complex.
- Vehicles at this area of Temple Street were observed queuing up from the intersection of Temple Street and Los Angeles Street all the way back to Judge John Aiso Street (west leg). This is currently not a large concern because there is no pedestrian crosswalk across the affected (west) leg of the intersection).
- Intersection is well lit, with street lighting present on all four corners.

4.1.2.19 Temple Street and Los Angeles Street (Photo 19)

- The corner of Temple Street and Los Angeles Street is a four-legged intersection next to the Los Angeles Mall and near the City Hall complex.
- There are marked crosswalks on all four legs of the intersection.
- Diagonal wheelchair ramps are present on all of the intersection corners. There is only one ramp per corner and it points toward the middle of the intersection.
- Crosswalks are colored asphalt with a stamped brick pattern. There is also a smooth surface within the stamped pattern connecting the diagonal wheelchair ramps, as encountered in other area intersections.

Photo 19 – The intersection of Temple Street and Los Angeles Street is adjacent to City Hall. Vehicle queuing was observed to back up into pedestrian crosswalks during peak time – a potential safety concern.

- Vehicles at this area of Temple Street were observed queuing up from the intersection of Temple Street and Main Street all the way back to Los Angeles Street (northwest leg). This causes potential motorist/pedestrian conflict because vehicles were stacked in the crosswalk as pedestrians attempted to cross. This situation was observed in the PM peak hour of the day.
- Intersection is well lit, with street lighting present on all four corners.
- A grade-separated pedestrian crossing is located over the northwest leg of the intersection.

4.1.2.20 Temple Street and Main Street (Photo 20)

- This intersection has four legs.
- There are marked crosswalks on all four legs of the intersection.
- Diagonal wheelchair ramps are present on all of the intersection corners. There is only one ramp per corner and they each point toward the middle of the intersection.

- Crosswalks are colored asphalt with a stamped brick pattern. There is also a smooth surface within the stamped pattern connecting the diagonal wheelchair ramps, as encountered in other area intersections.
- Vehicles at this area of Temple Street were observed queuing up from the intersection of Temple Street and Spring Street, all the way back to Main Street (northwest leg). This causes potential motorist/pedestrian conflict because vehicles were stacked in the crosswalk as pedestrians attempted to cross. This situation was observed in the PM peak hour of the day.

Photo 20 – The intersection of Temple Street and Main Street is located in the general vicinity of City Hall, and vehicle queuing was observed to back up into pedestrian crosswalks during the PM peak time – a potential safety concern.

- Intersection is well lit, with street lighting present on all four corners.

4.1.2.21 1st Street and Los Angeles Street (Photo 21)

- This intersection has four legs and is located next to the CalTrans and LAPD complex.
- There are marked crosswalks on all four legs of the intersection.
- Diagonal wheelchair ramps are present on all of the intersection corners. There is only one ramp per corner and each points toward the middle of the intersection.
- Crosswalks are not colored or textured, and consist of white thermoplastic markings for delineation.
- There are quite a few mature shade trees directly in front of the LAPD complex. These cause darkened conditions at times.

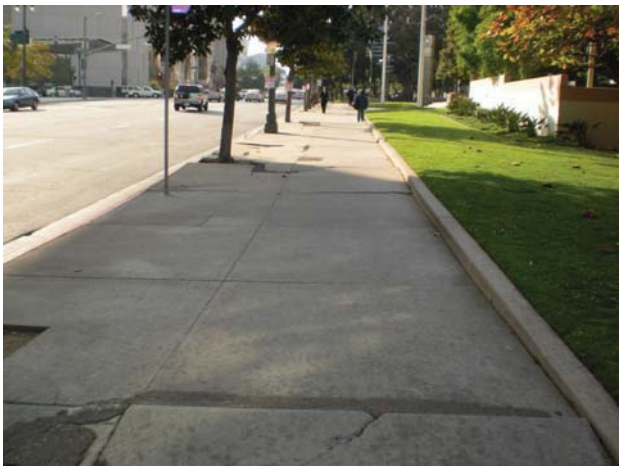

Photo 21 – Uneven and fractured concrete sidewalk, likely caused by boulevard tree roots, can be a pedestrian safety issue due to tripping hazards. This photo shows the sidewalk at the intersection of 1st Street and Los Angeles Street.

- The northwest leg of the intersection, on the north side of 1st Street, contains uneven and fractured concrete in various stages of disrepair. This is primarily caused by the root system of adjacent boulevard trees next to the curb line.
- Intersection is well lit, with street lighting present on all four corners.

4.1.2.22 1st Street and Main Street (Photo 22)

- This four-legged intersection is next to City Hall.
- There are marked crosswalks on all four legs of the intersection.
- Diagonal wheelchair ramps are present on all of the intersection corners. There is only one ramp per corner and each points toward the middle of the intersection.
- Crosswalks are not colored or textured, and consist of white thermoplastic markings for delineation.
- Intersection is well lit, with street lighting present on all four corners.

Photo 22 – 1st Street and Main Street exhibit marked pedestrian crosswalks on all four legs to the intersection. The intersection is near City Hall.

4.1.2.23 1st Street and Rose Street (Photo 23)

- The corner of 1st Street and Rose Street is a three-legged "T" intersection. The Metro Gold Line traverses through the intersection in an east-west orientation.
- Pedestrian crossings are allowed on the south leg of the intersection (Rose Street).
- Intersection contains a light standard on both the southwest and southeast corners.

Photo 23 – 1st Street and Rose Street is a "T" intersection. The Metro Gold Line traverses in an east-west direction (behind rail in photo).

4.1.2.24 1st Street and Hewitt Street (Photo 24)

- The corner of 1st Street and Hewitt Streetis a four-legged intersection. The Metro Gold Line traverses through the intersection in an east-west orientation.
- Pedestrian crossings are allowed on all four legs of the intersection and crosswalks are marked with single white transverse lines.
- Intersection is signalized and contains light standards on all intersection corners.

Photo 24 – The corner of 1st Street & Hewitt Street is a four-legged intersection. Pedestrian crossings are allowed across all intersection legs.

4.1.2.25 1st Street and Garey Street (Photo 25)

- 1st Street and Garey Street meet in a three-legged "T" intersection. The Metro Gold Line traverses through the intersection in an east-west orientation.
- Pedestrian crossings are allowed on the south leg of the intersection (Garey Street).

Photo 25 – The corner of 1st Street & Garey Street is a "T" intersection. Pedestrian crossings are allowed on the south leg. Intersection is unmarked.

4.1.2.26 1st Street and Vignes Street (Photo 26)

- This is a four-legged intersection.
- There are marked crosswalks on three legs of the intersection. The east leg of the intersection has no marked crosswalk because pedestrian crossing is prohibited.
- Intersection is signalized, with street lighting present on all four corners.

Photo 26 – 1st Street and Main Street exhibits marked pedestrian crosswalks on three legs. Pedestrian crossing is prohibited along the east leg.

4.2 Security

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 neighborhoods of all four alternative alignments.

Features included for passenger security are closed-circuit television cameras (CCTV), emergency call boxes, and fully lighted station stops and transit parking areas. These features are within all trains and buses, as well as rail stations, and are designed to offer security and a personal sense of well being for passengers.

The CCTV video in trains is recorded to a Digital Video Recorder (DVR), which is then made available for upload by the Los Angeles County Sheriff's Department's (LACSD) in the event of an incident. If no incident is reported, the video is erased after 3 days. As opposed to the CCTV on trains, the CCTV that monitors rail stops is connected directly to the Metro Control Center, where it is viewed in real time by Metro personnel. If an incident is occurring, Metro transit security is notified. Emergency call boxes in trains connect passengers directly to the train operators while those in stations connect directly to Metro central control.

Additionally, Metro personnel receive Community Emergency Response Training in collaboration with the LAFD. This training includes earthquake awareness, disaster medical procedures, and rescue operations. Security statistics for Metro can be found in Table 4-1.

As is the case with the safety considerations described in Section 4.1, security must also be considered during construction activities for the LRT infrastructure. Depending on the type of construction, and also the construction sequencing, temporary barricades and fencing may be necessary to provide an obstruction thus preventing unauthorized personnel from entering construction areas, especially after hours and/or when construction is dormant. This is especially important when construction activities expose underground utilities and/or when excavated trenches have been created and left in an open state. Coordination with police and

fire service providers, regarding construction schedules and how emergency service providers will serve the area during periods of construction, must be made prior to and during construction.

4.2.1 Police Service Areas

The Regional Connector Transit Corridor project would be located in downtown Los Angeles. The LAPD has primary policing responsibility for this area. The LACSD's Transit Services Bureau, the second largest transit services bureau in the country, already provides exclusive contract police services to Metro, which operates the public transit system serving Los Angeles County, one of the country's largest, most populous counties. Deputies provide police services for both the light rail and bus transportation systems throughout 1,433 square miles. The contract with LACSD would be extended to cover the Regional Connector.

Both the LAPD and LACSD are active members of the Regional Transit Security Working Group. Through this working group these agencies coordinate activities and police functions, such as the April 2007 multi-agency security exercise around Union Station.

4.2.1.1 Los Angeles County Sheriff Department

The LACSD currently employs approximately 9,474 sworn peace officers and 7,738 professional staff. The LACSD is comprised of 11 divisions, which provide law enforcement services to 40 contract cities, 90 unincorporated communities, 9 community colleges, Metro, and 48 superior courts (Metro 2009).

In addition to the safety and security measures established by Metro to improve passenger and public safety, Metro contracts with the LACSD to provide law enforcement across the entire Metro system. The Metro system encompasses three LRT systems (the Blue Line, the Gold Line, and the Green Line), two subways (the Red Line and the Purple Line), four dedicated bus transitways (the Orange Line, the Harbor Transitway, the Wilshire Rapid Express, and the Hawthorne Rapid Express), and 191 bus routes over a 1,433 square-mile service area.

Table 4-1. Summary of Part 1 Crimes Reported for Metro System

Type of Part I Crime	Year			
	2003	2004	2005	2006
Criminal Homicide	1	0	0	0
Forcible Rape	1	6	3	7
Robbery	189	341	351	344
Aggravated Assault	91	145	215	199

Burglary	8	35	26	29
Larceny Theft	283	524	602	498
Grand Theft Auto	113	221	208	150
Arson	3	3	3	4
Total Part I Offenses	*689*	*1,275*	*1,408*	*1,231*

Source: Metro 2009

LACSD security personnel and deputies patrol the transit system routes and stations. LACSD security personnel work primarily on fare evasion and passenger complaints. While these officers cover the entire Metro system, they focus on specific patrol routes that experience more fare evasion and customer complaints.

Sheriff's deputies, both uniformed and undercover, patrol all vehicles of the Metro-operated LRT systems, as well as all Metro-operated buses, bus transitways, and subway systems. Deputies respond to fare evasion and minor complaints, but also respond to serious crimes.

While exact deployment numbers are not available, Sheriff's deputies are on patrol 24 hours a day, 7 days a week. The evening shift, which lasts until 2:00 a.m., has a larger deployment of uniformed and undercover officers than the morning shift (Metro 2009).

On October 27, 2002, the LACSD established the Office of Homeland Security to better protect county residents. This department works on a local level to protect citizens from terrorist attacks. The Transit Services Bureau falls within this department and oversees all security personnel and deputies that patrol the Metro transit system.

The Transit Services Bureau also tracks all criminal activities that occur on Metro buses, subways, and light-rail trains, and in all transit stations. This same department provides law enforcement across the entire 1,433-square-mile service area of the Metro system.

Table 4-1 lists Part I crime statistics occurring within the Transit Services Bureau jurisdiction from 2003 to 2006. Part I crimes can be defined as the most violent forms of crime, including criminal homicide, forcible rape, robbery, aggravated assault (involving deadly weapons), burglary, larceny theft, grand theft auto, and arson.

The LACSD reported that 1,231 Part I crimes occurred either on a Metro-operated LRVs, subways, or buses or within a station stop during 2006. Sheriff's deputies arrested approximately 5,300 adults and 400 juveniles within the transit system during 2006 (Metro 2009).

While there were 1,230 Part I crimes reported by the Transit Services Bureau for 2006, there were 4,504 Part II crimes, which include offenses like vandalism, non-aggravated assault, and

disorderly conduct. The most common incident was vandalism, with 1,906 reported incidents in 2006. Additionally, there were 2,188 non-criminal incidents reported by the Transit Services Bureau, including missing or found persons, transit accidents, and miscellaneous noncriminal activity.

Overall, of the 7,923 incidents reported by the Transit Services Bureau, Part I crimes made up 16 percent of the total incidents that were reported for Metro transit; Part II crimes made up 57 percent of the total incidents; and non-criminal incidents made up 27 percent of the total incidents reported.

4.2.1.2 City of Los Angeles - Central City

The LAPD provides police protection services in the City of Los Angeles, which is an area of approximately 483 square miles, with 21 communities representing approximately four million residents (LAPD 2007). In addition to administrative and special investigative units, the City of Los Angeles is divided into four smaller operational units or bureaus: the Central Bureau, the South Bureau, the West Bureau, and the Valley Bureau.

To facilitate response times, the LAPD has approximately 21 individual police stations located throughout the bureaus. The LAPD employs approximately 9,600 sworn and 2,900 civilian personnel, providing an average of approximately 2.4 sworn officers per 1,000 people (LAPD 2007). The LAPD Headquarters is located within 0.25 mile of the proposed project. The Central Bureau Station also services the area, with the Central Community Police Station located at 251 east 6th Street approximately 0.50 mile from the project.

4.2.1.3 City of Los Angeles - Central City North Community Plan Area

Police protection services are provided by the LAPD (refer to the Section 4.2.1.2 for detailed LAPD personnel and services information). One police station, the Chinatown Substation, serves the area and is located at 823 north Hill Street approximately 0.60 mile from the project.

4.2.1.4 Metro Transit Policing

By contract, the LACSD provides full police services for stations, rail vehicles, and property of Metro. These services include patrols of stations, platforms, and rail cars. Quality of life enforcement and fare evasion are two key responsibilities that LACSD Transit Services Bureau focuses on in the Metro system.

Metro security officers, under the direction of the LACSD Transit Services Bureau, have specific duties which primarily include guarding Metro facilities and closing Metro Rail stations late at night.

4.2.2 Fire Service Areas

The Metro Fire/Life Safety Committee meets regularly with area Los Angeles Fire Department and area ambulance service personnel to discuss past incidents and how to best coordinate

future responses. There are communications systems established between Metro Operations and adjoining fire agencies.

4.2.2.1 Los Angeles County

The Los Angeles County Fire Department (LACFD) provides fire and safety services to the unincorporated areas of Los Angeles County, to contracted cities, and to cities that are under an agreement for the cooperative response and management of fires and other emergency incidents, including the City of Los Angeles. The LACFD currently employs over 4,500 personnel, ranging from firefighters and paramedics to lifeguards and pilots. The LACFD operates 165 fire stations and several fire prevention offices (County of Los Angeles 2007). There are no LACFD fire stations within 0.25 mile of the proposed alternatives.

4.2.2.2 City of Los Angeles – Central City Community Plan Area

The LAFD provides fire suppression, emergency medical care, technical rescue, hazardous materials handling, disaster response, and community services to the City of Los Angeles. The LAFD has 3,594 uniformed personnel and 346 non-sworn support personnel located at 106 neighborhood fire stations and serving a 471-square-mile jurisdiction (LAFD 2008). There are 1,101 uniformed firefighters, including 226 firefighter/ paramedics, who are always on duty throughout the City.

The location and number of stations that would be called in the event of a fire or other emergency depend on a number of factors, including the type of emergency, the severity of the emergency, and the availability of the nearest fire station. In actuality, the resources of the entire LAFD force could be available collectively. There are three fire stations within the Central City Community Plan area, one of which is within 0.25 mile of the proposed alternatives.

4.2.2.3 City of Los Angeles - Central City North Community Plan Area

Fire services are provided by the LAFD (See Section 4.2.2.2 for detailed LAFD personnel and services information). Two fire stations, one of which is within 0.25 mile of the proposed project alignments, provide fire protection in the Central City North Community Plan area.

4.2.3 Homeland Security Concerns

Metro and LACSD coordinate regularly with the Department of Homeland Security (DHS) at several levels. They both work through the Regional Transit Security Working Group, are members of the local Joint Terrorist Task Force, and both coordinate with the area Federal Security Director for the Transportation Security Administration (TSA). Metro is currently in compliance with all TSA directives as well as 49 CFR1580, which requires designating a rail security coordinator and reporting significant security concerns to TSA.

The LACSD Transit Services Bureau represents Metro at FTA/TSA sponsored Security Round Table meetings where transit security chiefs discuss best practices and lessons learned, and coordinate with TSA and FTA leaders from those agencies' headquarters. Metro also follows

the FTA's "Transit Agency Security and Emergency Management Protective Measures," which were developed in consultation with TSA.

As is the case with the safety and security concerns described in section 4.1, Homeland Security should be assessed and considered during construction activities for the LRT infrastructure. Coordination with police and fire service providers must be made prior to and during construction to understand the daily construction schedules, and how emergency services will serve the area during periods of construction. Evacuation plans should be in place for those areas that are temporarily affected by constructions activities, such as the overnight closure of a roadway and/or other temporary detours that may affect evacuation plans. Additionally, public events such as "May Day Parades" or civic protests must be taken into consideration when construction activities occur to ensure safety of workers, participants, Metro patrons, and other members of the public.

5.0 IMPACTS

5.1 No Build Alternative

The No Build Alternative (Figure 5-1) is focused on preserving existing services and projects. Transit service under the No Build Alternative does not include any major service improvements or new transportation infrastructure beyond what is listed in Metro's 2009 Long Range Transportation Plan (LRTP).

By the projection year of 2035, the Metro Expo Line and the Metro Gold Line to the San Gabriel Valley will have opened, and a number of bus services will have been reorganized and expanded to provide connections with these new rail lines. The transit network within the project area would otherwise be largely the same as it is now.

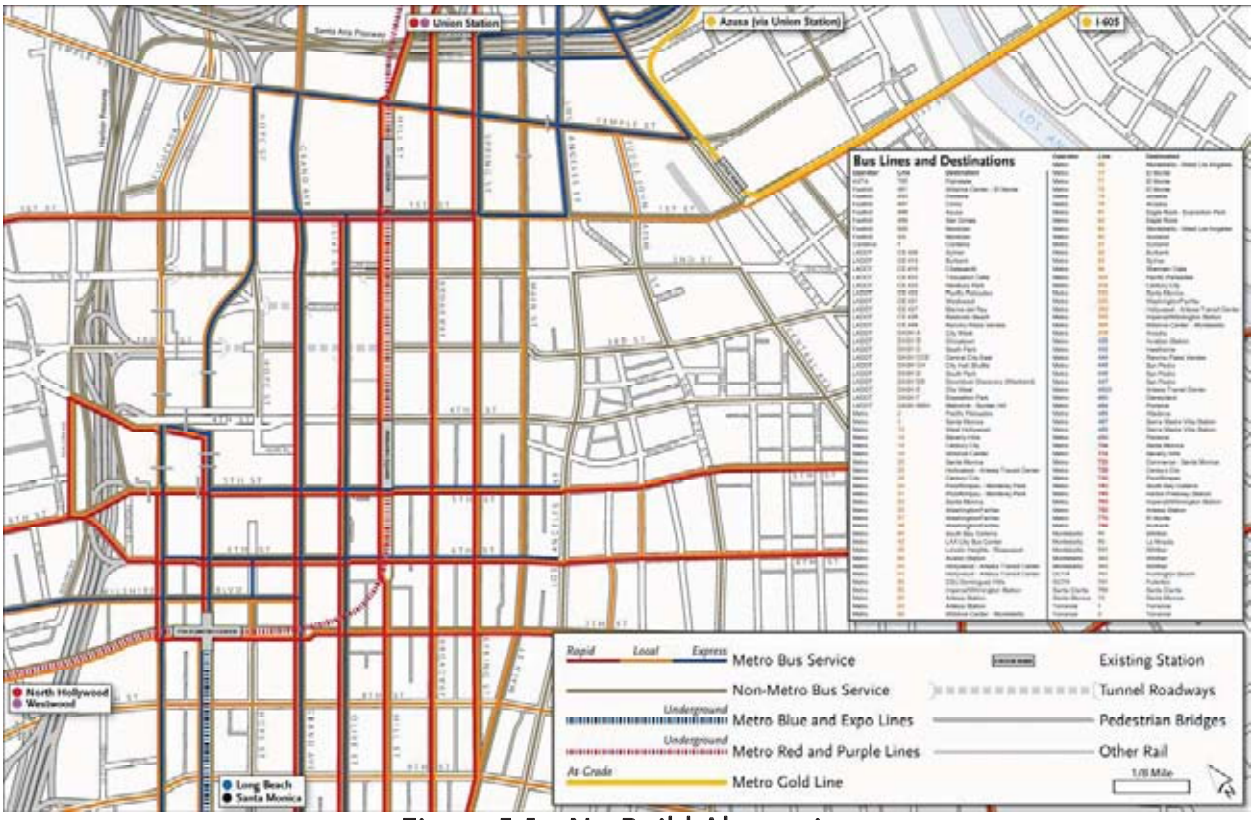

Figure 5-1. No Build Alternative

5.1.1 Direct Impacts - Construction and Operation

The No Build Alternative would maintain the current level of transit service in the project corridor and, therefore, would not have an immediate impact on public safety or accidents.

There are no direct construction-related impacts from the No Build Alternative.

5.1.2 Indirect Impacts – Construction and Operation

The No Build Alternative would maintain the current level of transit service in the project corridor and, therefore, would not have an indirect or future impact on public safety or accidents.

There are no indirect construction-related impacts from the No Build Alternative.

5.1.3 Cumulative Impacts – Construction and Operations

The No Build Alternative would maintain the current level of transit service in the project corridor and, therefore, would not have a cumulative impact on public safety or accidents.

There are no cumulative construction-related impacts from the No Build Alternative.

5.2 Transportation System Management (TSM) Alternative

The Transportation System Management (TSM) Alternative (Figure 5-2) includes all of the provisions of the No-Build Alternative, plus two new express shuttle bus lines linking the 7th Street/Metro Center Station and Union Station. These buses would run frequently, perhaps just a few minutes apart, especially during peak hours.

The buses may also have traffic signal priority similar to the Metro Rapid system, where the traffic signal control system grants longer green lights to oncoming transit vehicles. Enhanced bus stops would be located every two to three blocks to maximize coverage of the area surrounding the proposed routes.

5.2.1 Direct Impacts – Construction and Operation

The TSM Alternative would maintain the current level of transit service in the project corridor and also increase cross-station opportunities by adding two new express shuttle buses. The TSM Alternative would not have a detrimental and/or increased impact on public safety or accidents. Buses would operate on existing streets, so there would be no changes to the existing environment.

There are no direct construction-related impacts from the TSM Alternative related to safety and security.

5.2.2 Indirect Impacts – Construction and Operation

The TSM Alternative would not have a detrimental and/or increased impact on public safety or accidents. A potential indirect impact would be the "induced demand" created by better and more frequent service for the overall LRT system by providing the express shuttle buses. This induced demand can be viewed as both positive and negative: positive in that this type of transportation improvement may result in appropriate transit-oriented land use changes, and negative in that more people could be brought into a defined geographic area, possibly resulting in potential new conflicts between transit and pedestrians and motorists.

There are no indirect construction-related impacts from the TSM Alternative to safety or security.

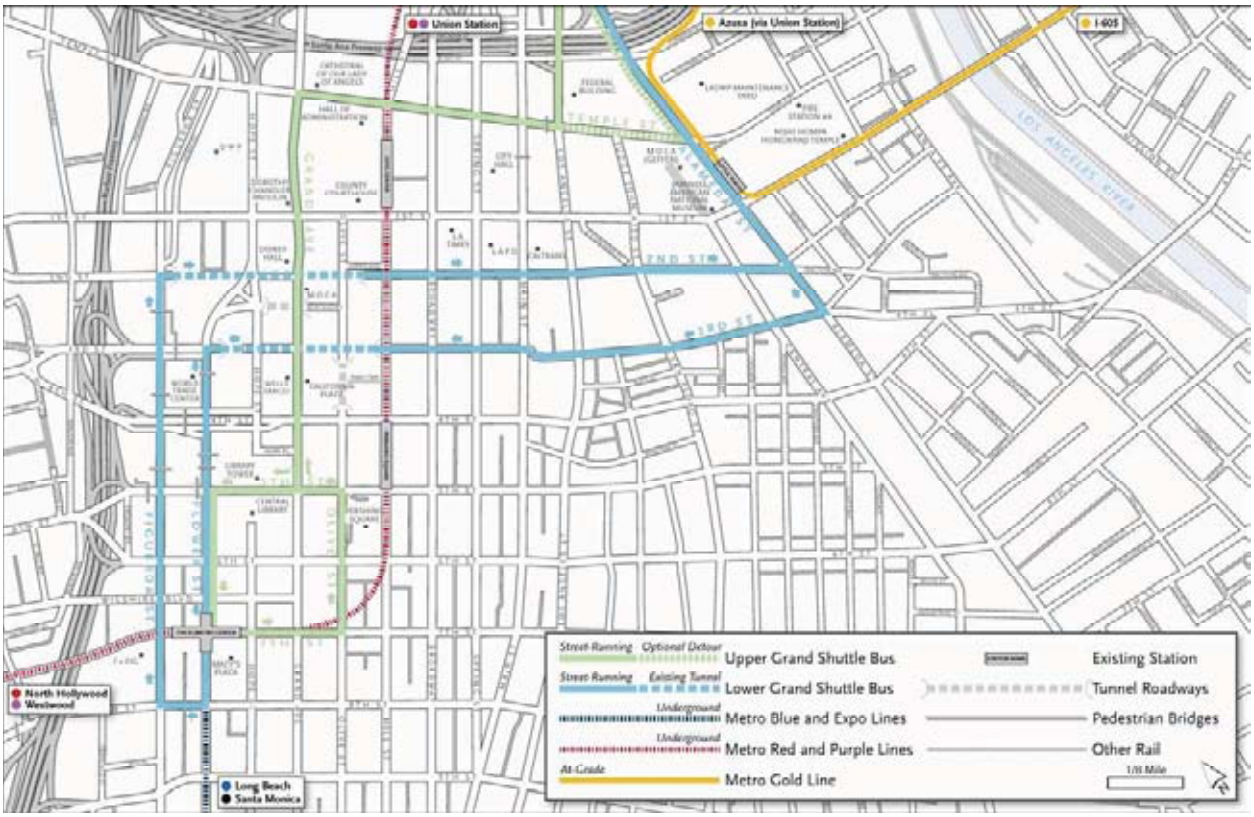

Figure 5-2. Transportation System Management (TSM) Alternative

5.2.3 Cumulative Impacts – Construction and Operation

When considered in combination with other reasonably foreseeable projects in the project area, the TSM Alternative would not have either a construction-related or operational cumulative effect because there would be no direct or indirect effects. .

5.3 At-Grade Emphasis LRT Alternative

The At-Grade Emphasis LRT Alternative (Figure 5-3) extends from the underground 7th Street/Metro Center Station, heads north under Flower Street, resurfaces to at-grade north of 4th Street, crosses 3rd Street at-grade, enters Bunker Hill, and turns northeast through a new entrance to the existing 2nd Street tunnel. The alignment continues along 2nd Street and splits into an at-grade couplet configuration traveling north on Main and Los Angeles Streets (one track on each roadway). It then heads east on Temple Street, realigns into a dual-track configuration just east of Los Angeles Street, and connects to the Metro Gold Line in a three-way junction north of the Little Tokyo/Arts District Station on Alameda Street. An automobile underpass and proposed pedestrian overpass would be constructed at the intersection of

Temple and Alameda Streets due to the high volume of trains that would traverse the Regional Connector. This would eliminate potential pedestrian/train and automobile/train conflicts.

This alignment includes both underground and at-grade configurations (46 percent of the route is underground) and serves the Financial District, Grand Avenue, and the Civic Center. Conversion of 2nd Street to a pedestrian-friendly transit mall is assumed. To implement this alternative, the number of traffic lanes and on-street parking on 2nd Street would be reduced. As a result, traffic would likely divert to adjacent parallel streets such as 1st Street and 3rd Street, but the roadway capacity along these streets would remain unchanged, as with the No Build Alternative.

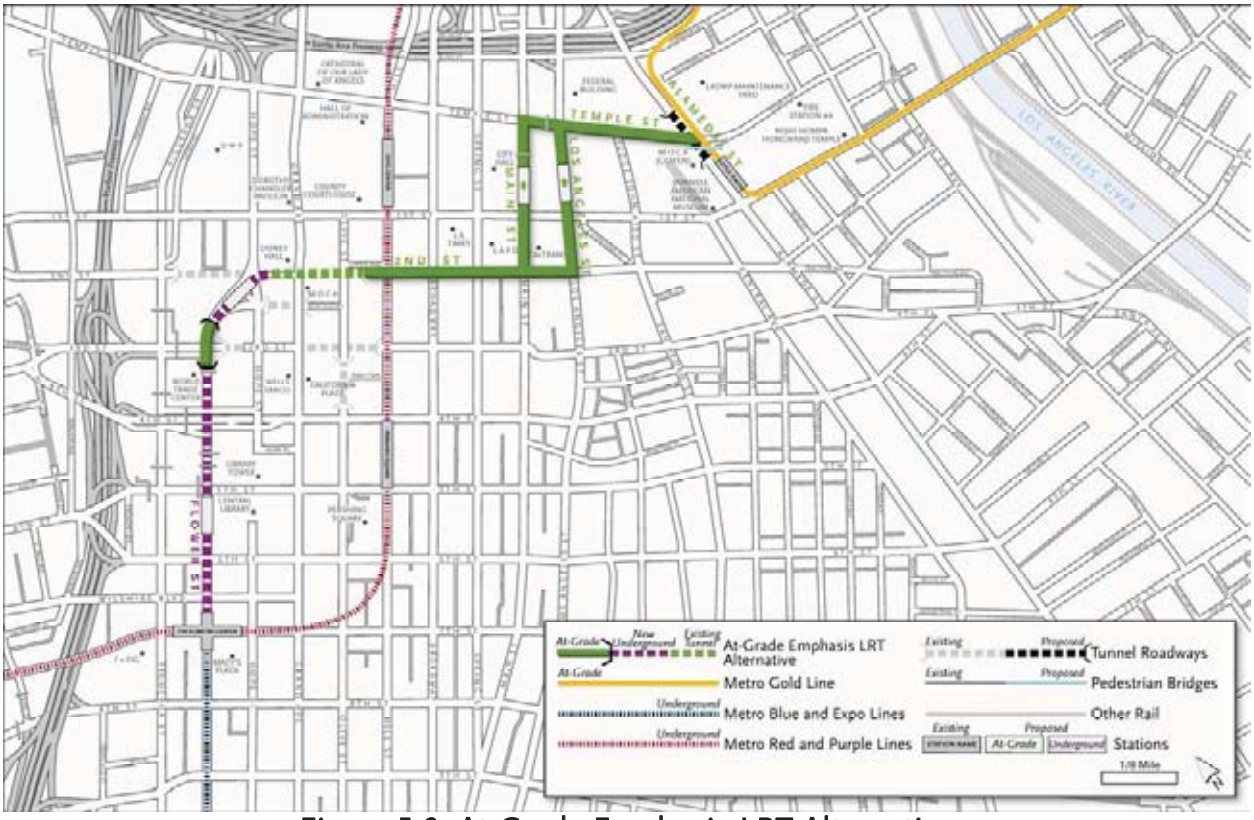

Figure 5-3. At-Grade Emphasis LRT Alternative

5.3.1 Direct Impacts – Construction and Operation

The At-Grade Emphasis LRT Alternative could affect the pedestrian environment, motorist safety, and emergency response times for emergency service providers during both construction and LRT operation. Identified concerns from Section 4 have been reviewed within the context of this alternative, and key potential issues related to pedestrian and motorist safety have been identified. Table 5-1 lists these potential effects. CEQA guidelines

on safety and security regarding pedestrian safety, station accidents and collisions, police and fire response, and criminal activity are addressed in the following sections.

5.3.1.1 Pedestrian Safety and Station Accidents

The pedestrian safety assessment along the proposed LRT corridor focused on three separate categories, including:

- Pedestrian safety at station locations
- Pedestrian safety near the trackway
- Pedestrian safety at designated grade crossings

These safety considerations would apply primarily to proposed at-grade stations. These concerns either do not arise with underground LRT facilities (there are no corridor crossings for pedestrians or vehicles) or the stations can be designed to avoid these concerns (e.g., a design that avoids the need for pedestrians to cross tracks and the potential for collisions with light rail vehicles). The At-Grade Emphasis LRT Alternative includes both underground and at-grade stations, so these safety considerations would apply to the evaluation of this alternative.

Passenger Safety at Proposed Station Locations

The presence of at-grade 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 headways of the LRVs. 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 from the transit stations, thus creating a potential hazard of collision between pedestrians and LRVs.

Anticipated passenger loads and pedestrian counts would be used to determine the most appropriate pedestrian treatments to control and channel pedestrian/passenger movements during design. Additionally, stations would be appropriately sized to accommodate the anticipated number of passengers. These design solutions would reduce this potential impact to a less than significant level.

Pedestrian Safety near the Trackway

Adding light rail vehicles would be the primary new safety hazard for pedestrian traffic along the proposed alignment. The speed of the vehicles would be similar to or slower than adjacent automobile traffic. The LRV would be electrically powered and, therefore, quieter than most automobile traffic and may not be easily heard. This hazard includes crossings at intersections where pedestrians cross over the light rail tracks, and human intrusion on the ROW (jaywalking).

Channelization techniques would be used to direct pedestrians to designated pedestrian crossings and minimize inappropriate crossing behaviors. LRVs are equipped with audible warning bells and horns, which would be used as appropriate to alert pedestrians to the approach of a train. This safety consideration is only relevant to the at-grade portions of the alignment because there would be no opportunity for pedestrians to cross tracks that run in an underground tunnel. The design solutions and operating guidelines would reduce this potential impact to a less than significant level.

Pedestrian Safety at Designated Grade Crossings

Pedestrian safety at designated grade crossings is a key factor to be considered in the design of LRT systems. This safety consideration is relevant only to the at-grade portions of the alignment because there would be no opportunity for pedestrians to cross tracks that run in an underground tunnel.

Multiple designated pedestrian grade crossings would be created by the proposed At-Grade Emphasis LRT Alternative. A vast majority of these pedestrian crossings would be located at motorist crossings of the tracks.

A potential safety hazard could occur if the distance between designated crossings tempts pedestrians to cross the tracks at locations other than designated pedestrian crossings. In addition, potential riders who see a train approaching may attempt to cross streets and tracks illegally in order to avoid missing a train in much the same way as these violations currently occur at bus stops. Furthermore, departing passengers may be tempted to take shortcuts from station areas to access nearby destinations instead of crossing at designated crossings.

Pedestrian traffic control and channelization techniques would be used to control pedestrian movements at intersections and encourage the use of designated pedestrian crossings. In addition, Metro would prepare grade crossing applications in coordination with the CPUC and local public agencies, such as LADOT, Bureau of Engineering, and the City and County Fire departments. Based on review of grade crossing applications, additional safety and security design features may be incorporated if necessary. Applications would be available for review by the public prior to approval. These design solutions and grade crossing application process would reduce this potential impact to a less than significant level.

5.3.1.2 Motorist Safety and Collisions

In the downtown area, LRVs would operate within the existing streets at street level for approximately half of the At-Grade Emphasis LRT Alternative alignment length. LRVs would be required to observe all traffic laws just as a car or bus would, including stopping for red lights. LRVs would also be required to yield to emergency vehicles at intersections.

It would be possible for automobiles to stray into the rail right-of-way at some locations because LRVs would share the same right-of-way with automobiles, and accidents between the LRT vehicle and motor vehicles would be possible. However, studies have shown that light rail vehicle accidents with motor vehicles at non-intersection locations are extremely rare.

Studies that have demonstrated this include Korve Engineering, Inc, *Transit Cooperative Research Program (TCRP) Report 17 – Integration of Light Rail Transit into City Streets (1996)*; PB Americas, Inc. and Science Applications International Corporation (SAIC), *Transit Cooperative Research Program (TCRP) Report 79 – Light Rail Vehicle Collisions with Vehicles at Signalized Intersections (2009)*; and Texas Transportation Institute, *METRO Rail Traffic Safety Assessment (2004)*.

The single-most frequent cause for motor vehicle/light rail accidents at intersections is when motorists turn left in front of a light rail vehicle (with the LRV traveling in the same direction). To reduce this risk, it is assumed that a left turn from 2nd Street or from the side streets to 2nd Street 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. Furthermore, the low operating speeds of both LRVs and motor vehicles reduce the possibility of serious injury or damage. As previously discussed, Metro would prepare grade crossing applications in coordination with the CPUC and local public agencies, such as LADOT, Bureau of Engineering, and the City and County Fire departments. All of these design and operating characteristics and the grade crossing application process would reduce this potential safety concern to a less than significant level.

5.3.1.3 Security

Security issues may be related to police and fire response, emergency evacuation, and addressing criminal and terrorist activity. To mitigate potential safety and security concerns, a complete Threat and Vulnerability Assessment in compliance with FTA regulations would be conducted for the locally preferred alternative when one is selected.

Police and Fire Response

Standard specifications and traffic work plans would be developed to reduce potential construction impacts on emergency service provider emergency response times. The project would include coordination with police and fire services to develop construction and operation plans and provide appropriate public safety and security for the Metro system, employees, and surrounding communities. The LACSD policing contract with Metro would be extended to include the Regional Connector project, and the project would be coordinated and compliant with TSA/DHS. Potential impacts would be reduced to a less than significant level through these measures.

LAFD Station #3 is located at the corner of 1st Street and Fremont Avenue, about 0.25 miles away from an underground portion of the At-Grade Emphasis LRT Alternative alignment. This portion of the alignment is not expected to affect fire response times because it is underground. LAFD Station #4 is located at Temple and Garey Streets, less than 0.25 mile away from the proposed underpass and three-way rail junction at Temple and Alameda Streets. Further coordination with LAFD will be conducted to determine whether construction and operation of the new underpass and frontage roads would restrict fire truck turning movements, and whether any needed detours would lengthen response times.

Fire safety in particular is addressed through design considerations. Metro's *Fire/Life Safety Design Criteria* outline specific requirements for fire protection at stations, along the alignment, and within LRVs. Requirements include providing fire alarm control systems at each enclosed station facility and a public address system at each station.

All LRVs would be equipped with fire extinguishers, and fans to ventilate the LRV in case of fire. The LRVs would also experience reduced hazards from fire by specifying materials with minimum burning rates, smoke generation, and toxicity characteristics.

Additional design criteria address emergency responder access, passenger egress standards, standards for sprinkler systems, and standpipe connections for fire response. Adherence to these standards and federal, state, and local regulations, in conjunction with the low risk of fires at stations, would result in less than significant potential impacts to safety and security.

Crime and Terrorist Activity

Depending on the type of construction, and also the construction sequencing, temporary barricades and fencing would be used to prevent unauthorized personnel from entering construction areas, especially after hours and/or when construction is dormant. This is especially important when construction activities expose underground utilities and/or when excavated trenches have been created and left in an open state.

There is the potential for security issues associated with the proposed project to occur such as assault or robbery. These concerns would be addressed both through design considerations and by providing law enforcement personnel on the transit system during hours of operation.

Every station would be well lit to provide visibility around the entire station day and night, as specified by City requirements and Metro *Design Criteria*. The stations and the LRVs would be equipped with closed circuit TV systems and monitored by Metro personnel. Additionally, emergency call boxes would be available in all stations for passenger use in case of emergency, and each LRV would have an operator that could be contacted by passengers via an intercom system.

An at-grade system is vulnerable to both public demonstrations and vehicle-borne or other improvised explosive devices. Public demonstrations and large-scale disturbances can negatively impact an LRT system built at grade level, potentially disrupting service and leaving

stations and equipment vulnerable to damage. Terrorist groups have been increasing their use of vehicle-borne improvised explosive devices, which can damage equipment and injure or kill passengers.

The underground portions of the alignment are less vulnerable to these types of security concerns; however, in recent years terrorist groups have struck at underground rail systems in some of the major capitols of the world, such as London and Tokyo. In addition, underground systems have a greater potential for safety issues related to evacuation needs. A complete Threat and Vulnerability Assessment in compliance with FTA regulations would be conducted for the locally preferred alternative when one is selected. For the At-Grade Emphasis LRT Alternative this would include a complete evacuation plan that would mitigate any potential safety concerns.

5.3.2 Indirect Impacts – Construction and Operation

Given project design features, the grade crossing application process, and the Threat and Vulnerability Assessment, potential indirect impacts associated with the At-Grade Emphasis LRT Alternative would not have a detrimental and/or increased impact on public safety or accidents during both construction and LRT operation. A potential indirect impact would be increased ridership created by increased public transportation service for the overall LRT system through the system-wide connections provided by the Regional Connector project. This increased demand could have both beneficial and adverse effects. Transit-oriented developments could create more pedestrian appropriate and safe environments and/or cause an increase in the number of people in a defined geographic area, potentially resulting in new conflicts between pedestrians and motorists.

Table 5-1. Safety Analysis for the At-Grade Emphasis LRT Alternative			
Evaluation Factor (per Section 3.0)	**6th Street**	**5th Street**	**4th Street**
Traffic Queuing	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location
Motorist Approach Sight Distance (North Leg[1])	OK	OK	Proximity of overpass piers to curbside may cause sight distance concerns for motorists
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	OK	Proximity of overpass piers to curbside may cause sight distance concerns for motorists
Motorist Approach Sight Distance (East Leg[1])	OK	OK	Compromised – access to parking garage
Pedestrian Sight Distance	OK	OK	Somewhat compromised due to overpass shading & overpass structural support (abutments and piers)
Crash History	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location

Table 5-1. Safety Analysis for the At-Grade Emphasis LRT Alternative			
Evaluation Factor (per Section 3.0)	**6th Street**	**5th Street**	**4th Street**
Crossing Delineation/Signage	Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian overpass provided on west leg of intersection; Also two pedestrian overpasses present just north of intersection on Flower Street; Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian overpass provided on west leg of intersection; Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings on three legs & east leg just marked with white lines
Traffic Control Compliance Issues	West leg (6th Street) is an off-ramp from SR 110. Field observations noted speeds higher than predicted because of this	West leg (5th Street) is an on-ramp to SR 110. Field observations noted speeds higher than predicted because of this	Vehicles exiting parking garage access (east leg) must encroach into crosswalk to see oncoming traffic on Flower Street
Special Generators	City National Plaza (office complex)	Bonaventure Hotel Complex CitiCorp Plaza	World Trade Center
Presence of Adequate Lighting	OK – standard luminaires located on three quadrants of intersection & decorative luminary on remaining quadrant	OK – standard luminaires located on all four quadrants of intersection	Dark location due to shading of bridge overpass; standard luminaires located on all four quadrants of intersection

Table 5-1. Safety Analysis for the At-Grade Emphasis LRT Alternative (cont.)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Traffic Queuing	Pre-signal would be provided At-grade intersection with LRT	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location
Motorist Approach Sight Distance (North Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	OK	OK	Eastbound vehicle sight distance slightly limited due to grade of east leg (2nd Street)	OK
Motorist Approach Sight Distance (East Leg[1])	OK	OK	OK	Westbound vehicle sight distance slightly limited due to grade of east leg (2nd Street)	Westbound vehicle sight distance slightly limited due to grade of east leg (2nd Street); one-way leg in westbound direction only (2nd Street)
Pedestrian Sight Distance	OK	Slightly compromised due to vegetation on southwest corner of intersection	Slightly compromised due to vegetation on southwest corner of intersection	Intersection is elevated and on top of crest; excellent sight distance for pedestrians on all legs of intersection	OK
Crash History	Not evaluated	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location
Crossing Delineation/Signage	Pedestrian overpass provided on south leg of intersection near World Trade Center; Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings on three legs & east leg just marked with white lines	No pedestrian crossings allowed on north leg and west leg of intersection – prohibited by signage and lack of marked crosswalk	No pedestrian crossings allowed on north leg and west leg of intersection – prohibited by signage and lack of marked crosswalk	All crosswalks are well marked and signing is appropriate; fairly new intersection construction	No pedestrian crossing allowed on north leg of intersection – prohibited by signage and lack of marked crosswalk
Traffic Control Compliance Issues	None observed	None observed; triple left turns off of north leg of Kosciuszko	None observed; triple left turns off of north leg of Kosciuszko	None observed; designated left turn arrows present for heavy left-turn movements	None observed; designated left turn arrows present for heavy left-turn movements from 2nd Street to S. Olive Street
Special Generators	World Trade Center	Walt Disney Concert Hall	Walt Disney Concert Hall	Walt Disney Concert Hall	None noted

Table 5-1. Safety Analysis for the At-Grade Emphasis LRT Alternative (cont.)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Presence of Adequate Lighting	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection
Traffic Queuing	Pre-signal would be provided At-grade intersection with LRT; tunnel transitions to grade at west leg of intersection; also one-way up grade on west leg for westbound movement up 2nd Street	Pre-signal would be provided At-grade intersection with LRT; slight grade on east leg of 2nd Street	Pre-signal would be provided At-grade intersection with LRT	Pre-signal would be provided At-grade intersection with LRT	Pre-signal would be provided At-grade intersection with LRT
Motorist Approach Sight Distance (North Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	Minor concern for EB vehicle traffic due to existing building on west corner of intersection	OK	OK	Boulevard trees cause minor sight distance concerns for motorists
Motorist Approach Sight Distance (East Leg[1])	OK	Minor concern for WB vehicle traffic due to existing building on east corner of intersection	OK	OK	OK
Pedestrian Sight Distance	Poor on west leg due to tunnel exit and one-way hill on west leg of 2nd Street	OK	OK	LRT would split at this location; pedestrians would have essentially have two LRT routes to observe	One-way LRT operation through intersection
Crash History	Not reviewed	Not reviewed	Not reviewed	Not reviewed	Not reviewed
Crossing Delineation/Signage	Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings; poor median refuge area on west leg separating tunnel exit from one-way grade on hill	Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian crossings allowed on all four legs; marked with white crosswalk markings only	Pedestrian crossings allowed on all four legs; marked with white crosswalk markings only	Pedestrian crossings allowed on all four legs; marked with white crosswalk markings only
Traffic Control Compliance Issues	None observed	None observed	None observed	None observed	
Special Generators	None noted	LA Times	LAPD	Caltrans Building	Caltrans Building

Table 5-1. Safety Analysis for the At-Grade Emphasis LRT Alternative (cont.)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Presence of Adequate Lighting	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on three quadrants of intersection & decorative luminary on remaining quadrant	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection
Traffic Queuing	Pre-signal would be provided At-grade intersection with LRT	Pre-signal would be provided At-grade intersection with LRT	Pre-signal would be provided At-grade intersection with LRT	Pre-signal would be provided At-grade intersection with LRT	Pre-signal would be provided At-grade intersection with LRT
Motorist Approach Sight Distance (North Leg[1])	OK; some boulevard tree sight distance conflicts throughout	OK	OK	OK	Not applicable (no vehicular leg present)
Motorist Approach Sight Distance (South Leg[1])	OK; some boulevard tree sight distance conflicts throughout	Minor concern due to existing building (Caltrans) on west corner of intersection	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK; some boulevard tree sight distance conflicts throughout	Minor concern due to existing building (Caltrans) on west corner of intersection	OK	OK	OK
Motorist Approach Sight Distance (East Leg[1])	OK; some boulevard tree sight distance conflicts throughout	OK	OK	OK	OK
Pedestrian Sight Distance	OK; One-way LRT operation through intersection	Minor concern due to existing building (Caltrans) on west corner of intersection; One-way LRT operation through intersection	OK; One-way LRT operation through intersection	OK; One-way LRT operation through intersection	Compromised on west leg due to bus drop-off along north side of temple; also excessive vehicle queuing during peak hours of vehicles backed into adjacent intersection and through crosswalks (for west leg)
Crash History	Not reviewed	Not reviewed	Not reviewed	Not reviewed	Not reviewed
Crossing Delineation/Signage	Pedestrian crossings allowed on all four legs; marked with white markings	Pedestrian crossings allowed on all four legs; marked with white markings	Pedestrian overpass on east leg of intersection (over Temple Street); Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian overpass on west leg of intersection (over Temple Street); Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian crossings allowed on all three; marked with white markings
Traffic Control Compliance Issues	None observed	None observed	Excessive vehicle queuing during peak hours of vehicles backed into adjacent intersections and through crosswalks	Excessive vehicle queuing during peak hours of vehicles backed into adjacent intersections and through crosswalks	Excessive vehicle queuing during peak hours of vehicles backed into adjacent intersections and through crosswalks

Table 5-1. Safety Analysis for the At-Grade Emphasis LRT Alternative (cont.)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Special Generators	City Hall; LAPD	City Hall	City Hall	Federal Building	Federal Building
Presence of Adequate Lighting	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all three quadrants of intersection

[1] *A leg of an intersection is the street segment that forms one part of the intersection. For example, the north leg would be the street that forms the northern portion of an intersection.*

5.3.3 Cumulative Impacts – Construction and Operation

Potential cumulative impacts of the At-Grade Emphasis LRT Alternative are qualitatively assessed in parallel to other known projects out to the baseline year (year 2035). Within the area of influence of this proposed alternative, there are a variety of major renovations to existing buildings, new facility construction, transportation projects, and mixed use developments under consideration. However, each of these projects would address safety and security of pedestrians and motorists accessing the developments. From a cumulative perspective, potential impacts associated with the At-Grade Emphasis LRT Alternative would be mitigated to a less than significant level and not have a cumulative effect on the safety and security environment in the project area during both construction and LRT operation.

5.4 Underground Emphasis LRT Alternative

The Underground Emphasis LRT Alternative (Figure 5-4) would connect directly to the Metro 7th Street/Metro Center Station, continue north underneath Flower Street to 3rd Street, and then proceed northeast to 2nd and Hope Streets. Tracks would be constructed east underneath the 2nd Street tunnel and 2nd Street to Central Avenue. The tracks would then veer north into a new portal on the private property bounded by 1st Street, Alameda Street, 2nd Street, and Central Avenue. It is expected that a portion of this block would need to be acquired in order to construct the portal and stage construction of the tunnels beneath 2nd Street. The tracks would then enter the intersection of 1st and Alameda Streets in the same type of three-way junction planned for the At-Grade Emphasis LRT Alternative, with a potential pedestrian overpass and vehicular underpass for through traffic on Alameda Street.

5.4.1 Direct Impacts – Construction and Operation

The Underground Emphasis LRT Alternative could affect the pedestrian environment, motorist safety, and emergency response times for emergency service providers during both construction and LRT operation. Identified concerns from Section 4 have been reviewed within the context of this alternative, and key potential issues related to pedestrian and motorist safety have been identified.

Table 5-2 lists these potential effects. CEQA guidelines on safety and security regarding pedestrian safety, station accidents and collisions, police and fire response, and criminal activity are addressed in the following sections.

5.4.1.1 Pedestrian and Motorist Safety, Station Accidents, and Collisions

The pedestrian safety assessment along the proposed LRT corridor focused on three separate categories, including:

- Pedestrian safety at station locations
- Pedestrian safety near the trackway
- Pedestrian safety at designated grade crossings

These safety considerations would apply primarily to proposed at-grade segments. These concerns do not arise with underground LRT facilities (there are no trackway crossings for pedestrians or vehicles) and, where applicable, stations could be designed to avoid these concerns (e.g., a design that avoids the need for pedestrians to cross tracks and the potential for collisions with light rail vehicles). Underground stations would be designed to avoid this potential safety hazard by designing stations to prevent or avoid the need for pedestrians to cross trackways as they enter or depart the station.

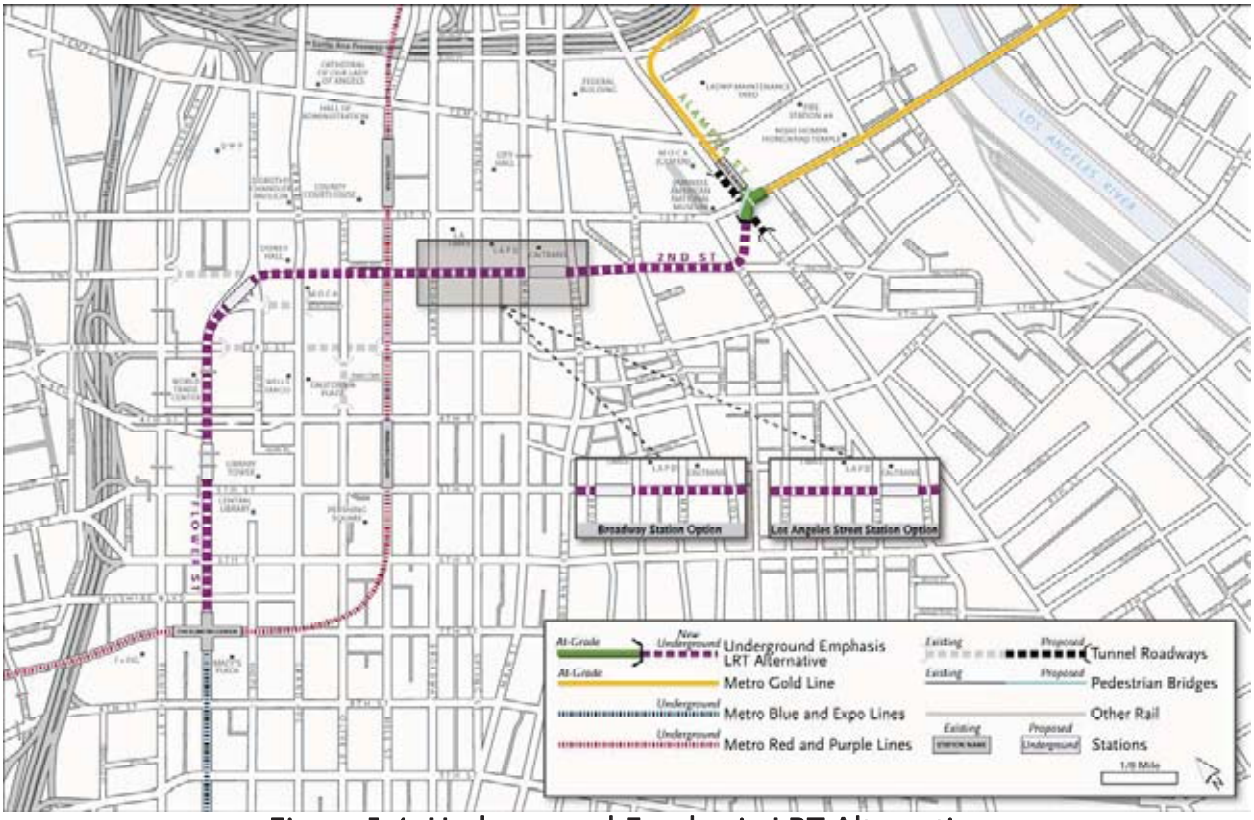

Figure 5-4. Underground Emphasis LRT Alternative

The only at-grade crossing proposed for the Underground Emphasis LRT Alternative is located at 1st and Alameda Streets. At this location, most vehicles and pedestrians would be grade-separated from the LRT tracks. A proposed pedestrian bridge structure over the intersection would allow pedestrians to cross the intersection without crossing paths with auto traffic or trains. For motor vehicles and LRVs operating at-grade at this intersection, Metro would prepare grade crossing applications in coordination with the CPUC and local public agencies, such as LADOT, Bureau of Engineering, and the City and County Fire departments. Based on review of grade crossing applications, additional safety and security design features may be incorporated if necessary. Applications would be available for review by the public prior to approval. The grade crossing application process would reduce potential safety concerns between motor vehicles and LRVs to a less than significant level.

A new underpass would allow traffic on Alameda Street to travel below 1st Street and the LRT tracks. Only auto traffic on 1st Street would cross the new LRT tracks at-grade. This proposed design would avoid potential safety effects at pedestrian and motorist crossings. The grade-separated nature of the Underground Emphasis LRT Alternative would avoid these potential effects and result in no impact.

5.4.1.2 Security

Security issues may be related to police and fire response, emergency evacuation and responses, and addressing criminal and terrorist activity. A complete Threat and Vulnerability Assessment in compliance with FTA regulations would be conducted for the locally preferred alternative when one is selected to mitigate potential safety and security concerns.

Police and Fire Response

Standard specifications and traffic work plans would be developed to reduce potential construction impacts on emergency service providers by reducing potential impacts on emergency response times. The project would include coordination with police and fire services to develop construction and operation plans that support appropriate safety and security of the public using the Metro system, employees, and the surrounding communities. The LACSD policing contract with Metro would be extended to include the Regional Connector project, and the project would be coordinated and compliant with TSA/DHS. Potential impacts would be reduced to a less than significant level through these measures.

LAFD Station #3 is located at the corner of 1st Street and Fremont Avenue, about 0.25 mile away from an underground portion of the Underground Emphasis LRT Alternative alignment. This portion of the alignment is not expected to affect fire response times because it would be underground.

LAFD Station #4 is located at Temple and Garey Streets, less that 0.25 mile away from the proposed underpass and three-way rail junction at 1st and Alameda Streets. The new underpass would likely improve response times for emergency vehicles travelling south on Alameda Street because they would no longer encounter cross traffic at 1st Street. Further coordination with LAFD will be conducted to determine whether construction or operation of the new underpass and frontage roads would affect response times.

Fire safety in particular is addressed through design considerations. Metro's *Fire/Life Safety Design Criteria* outline specific requirements for fire protection at stations, along the alignment, and within LRVs. Some of the identified requirements include fire alarm control systems at each enclosed station facility and a public address system at each station. All LRVs would be equipped with fire extinguishers, and fans to ventilate the LRV in case of fire.

Hazards to LRVs from fire would be reduced by specifying LRV materials with minimum burning rates, smoke generation, and toxicity characteristics. Additional design criteria address emergency responder access, passenger egress standards, and standards for sprinkler systems and standpipe connections for fire response. Adherence to these standards

and federal, state, and local regulations, and the low risk of fires at stations would result in a less than significant potential impact to safety and security.

Crime and Terrorist Activity

Depending on the type of construction, and also the construction sequencing, temporary barricades and fencing would be used to prevent unauthorized personnel from entering construction areas, especially after hours and/or when construction is dormant. This is especially important when construction activities expose underground utilities and/or when excavated trenches have been created and left in an open state.

There is the potential for security issues to occur such as assault or robbery on the proposed project. These concerns would be addressed by applying design considerations and providing law enforcement personnel on the transit system during hours of operation. Every station would be well lit to provide visibility around the entire station day and night, as specified by City requirements and Metro *Design Criteria*.

The stations and the LRVs would be equipped with closed circuit TV systems monitored by Metro personnel. Additionally, emergency call boxes would be available in all stations for passenger use in case of emergency, and each LRV would have an operator that could be contacted by passengers via an intercom system.

The Underground Emphasis LRT Alternative presents a different set of conditions than the At-grade Emphasis LRT Alternative because there are more underground stations and longer underground tunnels. Some of these altered conditions might include:

- Activity in underground stations and tunnels would be out of the general public view, and less observable by routine neighborhood security/police patrols in the general area, as compared to street level facilities.
- Tunnels may 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.
- Limited access to stations and the LRT system results in greater control and ability to monitor activities in an underground system.
- Underground system operation may be more reliable.

The Underground Emphasis LRT Alternative would be less vulnerable to disruptions from public demonstrations and to impacts from vehicle-borne improvised explosive devices. By controlling entries, an underground system may continue to function during public demonstrations and large-scale disturbances at grade level. However, terrorist groups have

recently struck at underground rail systems in some of the major capitols of the world, including London and Tokyo.

In addition, underground systems have a greater potential for safety issues related to evacuation needs. A complete Threat and Vulnerability Assessment in compliance with FTA regulations would be conducted for the locally preferred alternative when one is selected. For the Underground Emphasis LRT Alternative, this would include a complete evacuation plan to mitigate any potential safety concerns.

5.4.2 Indirect Impacts – Construction and Operation

Potential indirect impacts associated with the Underground Emphasis LRT Alternative would not have a detrimental or increased effect on public safety or accidents during both construction and LRT operation. A potential indirect impact could be the increased ridership created by increased public transportation service for the overall LRT system through the system-wide connections provided by the Regional Connector project.

Increased demand could have both beneficial and adverse effects. Transit-oriented developments could create more pedestrian appropriate and safe environments and/or cause an increase in the number of people in a defined geographic area, potentially resulting in new conflicts between pedestrians and motorists.

5.4.3 Cumulative Impacts – Construction and Operation

Potential cumulative impacts of the Underground Emphasis LRT Alternative are qualitatively assessed in parallel to other known projects out to the baseline year (year 2035). Within the area of influence of this proposed alternative, there are a variety of major renovations to existing buildings, new facility construction, transportation projects, and mixed-use developments under consideration. Each of these projects would address safety and security of pedestrians and motorists accessing the developments. From a cumulative perspective, potential impacts associated with the Underground Emphasis LRT Alternative would be mitigated to a less than significant level and they would not have a cumulative effect on the safety and security environment in the project area during both construction and LRT operation.

Table 5-2. Safety Analysis for the Underground Emphasis LRT Alternative			
Evaluation Factor (per Section 3.0)	**6th Street**	**5th Street**	**4th Street**
Traffic Queuing	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location
Motorist Approach Sight Distance (North Leg[1])	OK	OK	Proximity of overpass piers to curbside may cause sight distance concerns for motorists
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	OK	Proximity of overpass piers to curbside may cause sight distance concerns for motorists
Motorist Approach Sight Distance (East Leg[1])	OK	OK	Compromised – access to parking garage
Pedestrian Sight Distance	Not applicable	Not applicable	Somewhat compromised due to overpass shading & overpass structural support (abutments and piers)
Crash History	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location

Table 5-2. Safety Analysis for the Underground Emphasis LRT Alternative			
Evaluation Factor (per Section 3.0)	**6th Street**	**5th Street**	**4th Street**
Crossing Delineation/Signage	Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian overpass provided on west leg of intersection. Also two pedestrian overpasses present just north of intersection on Flower Street; Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian overpass provided on west leg of intersection; Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings on three legs & east leg just marked with white lines
Traffic Control Compliance Issues	West leg (6th Street) is an off-ramp from SR 110. Field observations noted speeds higher than predicted because of this	West leg (5th Street) is an on-ramp to SR 110. Field observations noted speeds higher than predicted because of this	Vehicles exiting parking garage access (east leg) must encroach into crosswalk to see oncoming traffic on Flower Street
Special Generators	City National Plaza (office complex)	Bonaventure Hotel Complex CitiCorp Plaza	World Trade Center
Presence of Adequate Lighting	OK – standard luminaires located on three quadrants of intersection & decorative luminary on remaining quadrant	OK – standard luminaires located on all four quadrants of intersection	Dark location due to shading of bridge overpass; standard luminaires located on all four quadrants of intersection

Table 5-2. Safety Analysis for the Underground Emphasis LRT Alternative (cont)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Traffic Queuing	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location
Motorist Approach Sight Distance (North Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	OK	OK	Eastbound vehicle sight distance slightly limited due to grade of east leg (2nd Street)	OK
Motorist Approach Sight Distance (East Leg[1])	OK	OK	OK	Westbound vehicle sight distance slightly limited due to grade of east leg (2nd Street)	Westbound vehicle sight distance slightly limited due to grade of east leg (2nd Street); one-way leg in westbound direction only (2nd Street)
Pedestrian Sight Distance	OK	Slightly compromised due to vegetation on southwest corner of intersection	Slightly compromised due to vegetation on southwest corner of intersection	Intersection is elevated and on top of crest; excellent sight distance for pedestrians on all legs of intersection	OK
Crash History	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location
Crossing Delineation/Signage	Pedestrian overpass provided on south leg of intersection near World Trade Center; Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings on three legs & east leg just marked with white lines	No pedestrian crossings allowed on north leg and west leg of intersection – prohibited by signage and lack of marked crosswalk	No pedestrian crossings allowed on north leg and west leg of intersection – prohibited by signage and lack of marked crosswalk	All crosswalks are well marked and signing is appropriate; fairly new intersection construction	No pedestrian crossing allowed on north leg of intersection – prohibited by signage and lack of marked crosswalk
Traffic Control Compliance Issues	None observed	None observed; triple left turns off of north leg of Kosciuszko	None observed; triple left turns off of north leg of Kosciuszko	None observed; designated left turn arrows present for heavy left-turn movements	None observed; designated left turn arrows present for heavy left-turn movements from 2nd Street to S. Olive Street

Table 5-2. Safety Analysis for the Underground Emphasis LRT Alternative (cont)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Special Generators	World Trade Center	Walt Disney Concert Hall	Walt Disney Concert Hall	Walt Disney Concert Hall	None noted
Presence of Adequate Lighting	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection
Traffic Queuing	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location
Motorist Approach Sight Distance (North Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	Minor concern for EB vehicle traffic due to existing building on west corner of intersection	OK	OK	Boulevard trees cause minor sight distance concerns for motorists
Motorist Approach Sight Distance (East Leg[1])	OK	Minor concern for WB vehicle traffic due to existing building on east corner of intersection	OK	OK	OK
Pedestrian Sight Distance	Poor on west leg due to tunnel exit and one-way hill on west leg of 2nd Street	OK	OK	Not applicable	Not applicable
Crash History	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location
Crossing Delineation/Signage	Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings; poor median refuge area on west leg separating tunnel exit from one-way grade on hill	Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian crossings allowed on all four legs; marked with white crosswalk markings only	Pedestrian crossings allowed on all four legs; marked with white crosswalk markings only	Pedestrian crossings allowed on all four legs; marked with white crosswalk markings only

Table 5-2. Safety Analysis for the Underground Emphasis LRT Alternative (cont)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Traffic Control Compliance Issues	None observed	None observed	None observed	None observed	
Special Generators	None noted	LA Times	LAPD	Caltrans Building	Caltrans Building
Presence of Adequate Lighting	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on three quadrants of intersection & decorative luminary on remaining quadrant	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection
Traffic Queuing	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; Alameda is routed underneath 1st Street at new station location		
Motorist Approach Sight Distance (North Leg[1])	OK	OK	OK		
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK		
Motorist Approach Sight Distance (West Leg[1])	OK	OK	OK		
Motorist Approach Sight Distance (East Leg[1])	OK	OK	OK		
Pedestrian Sight Distance	OK	OK	OK		
Crash History	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated		
Crossing Delineation/Signage	Pedestrian crossings allowed on all four legs; marked with colored asphalt and decorative imprinted crosswalk markings	Pedestrian crossings allowed on all four legs; marked with colored asphalt and decorative imprinted crosswalk markings	Pedestrian overpass will be provided across Alameda Street: Currently has pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings		

Table 5-2. Safety Analysis for the Underground Emphasis LRT Alternative (cont)					
Evaluation Factor (per Section 3.0)	**3rd Street**	**Kosciuszko Street**	**Hope Street**	**S. Grand Avenue**	**S. Olive Street**
Traffic Control Compliance Issues	None observed	None observed	Excessive vehicle queuing during peak hours of vehicles backed into adjacent intersections and through crosswalks		
Special Generators	Little Tokyo Neighborhood	Little Tokyo Neighborhood	Station for existing Metro Gold Line		
Presence of Adequate Lighting	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection		

[1] *A leg of an intersection is the street segment that forms one part of the intersection. For example, the north leg would be the street that forms the northern portion of an intersection.*

5.5 Fully Underground LRT Alternative – Little Tokyo Variation 1

The Fully Underground LRT Alternative - Little Tokyo Variation 1 (Figure 5-5) would provide four new stations and a direct connection from 7th Street/Metro Center Station to the existing Metro Gold Line tracks north and east of 1st and Alameda Streets. The alignment would extend underground from the 7th Street/Metro Center Station under Flower Street to 2nd Street. The tracks would then proceed east underneath the 2nd Street tunnel and 2nd Street to Central Avenue.

At 2nd Street and Central the tracks continue underground, heading northeast under 1st and Alameda Streets. A three-way (wye) junction would be constructed underground beneath the 1st and Alameda intersection. To the north and east of the junction, trains would rise to the surface through two new portals to connect to the Metro Gold Line heading north to Azusa and east to I-605.

One portal would be located northeast of the existing Little Tokyo/Arts District Station and tracks. This portal would rise to the north within the Los Angeles Department of Water and Power (LADWP) Maintenance Yard and connect to the existing LRT bridge over US-101, allowing a connection to the Metro Gold Line to Azusa. The portal would be connected to the 1st and Alameda junction by a new tunnel crossing beneath Temple Street and the property proposed for the Nikkei Center (on the northeast corner of 1st and Alameda Streets) and running immediately east of the existing Little Tokyo/Arts District station and tracks.

The second portal would be located within 1st Street between Alameda and Vignes Streets. Tracks would rise to the east within this second portal and connect at-grade to the existing Metro Gold Line tracks toward I-605. 1st Street would be widened to the north to accommodate the portal. Widening the street would initiate at Alameda and continue east, tapering down significantly as it crosses Hewitt Street to join the existing 1st Street LRT tracks about one and half blocks west of the 1st Street Bridge.

Additional property would need to be acquired to stage construction of both portals, connect to the Gold Line LRT Bridge, and construct the tunnels beneath 2nd Street and the Nikkei Center property. The Fully Underground Alternative – Little Tokyo Variation 1 would be located entirely underground from east of the intersection of 1st and Alameda Streets to the 7th Street/Metro Center Station. There would be four proposed underground stations located at Flower/5th/6th Streets, 2nd/Hope Streets, 2nd Street/Broadway, and 2nd Street/Central Avenue.

5.5.1 Direct Impacts – Construction and Operation

The Fully Underground LRT Alternative – Little Tokyo Variation 1 could affect the pedestrian environment, motorist safety, and emergency response times for emergency service providers during both construction and LRT operation. Identified concerns from Section 4 have been reviewed within the context of this alternative, and key potential issues related to pedestrian and motorist safety have been identified. Table 5-3 lists these potential effects. CEQA guidelines on safety and security regarding pedestrian safety, station accidents and collisions, police and fire response, and criminal activity are addressed in the following sections.

5.5.1.1 Pedestrian and Motorist Safety, Station Accidents, and Collisions

The pedestrian safety assessment along the proposed LRT corridor focused on three separate categories, including:

- Pedestrian safety at station locations
- Pedestrian safety near the trackway
- Pedestrian safety at designated grade crossings

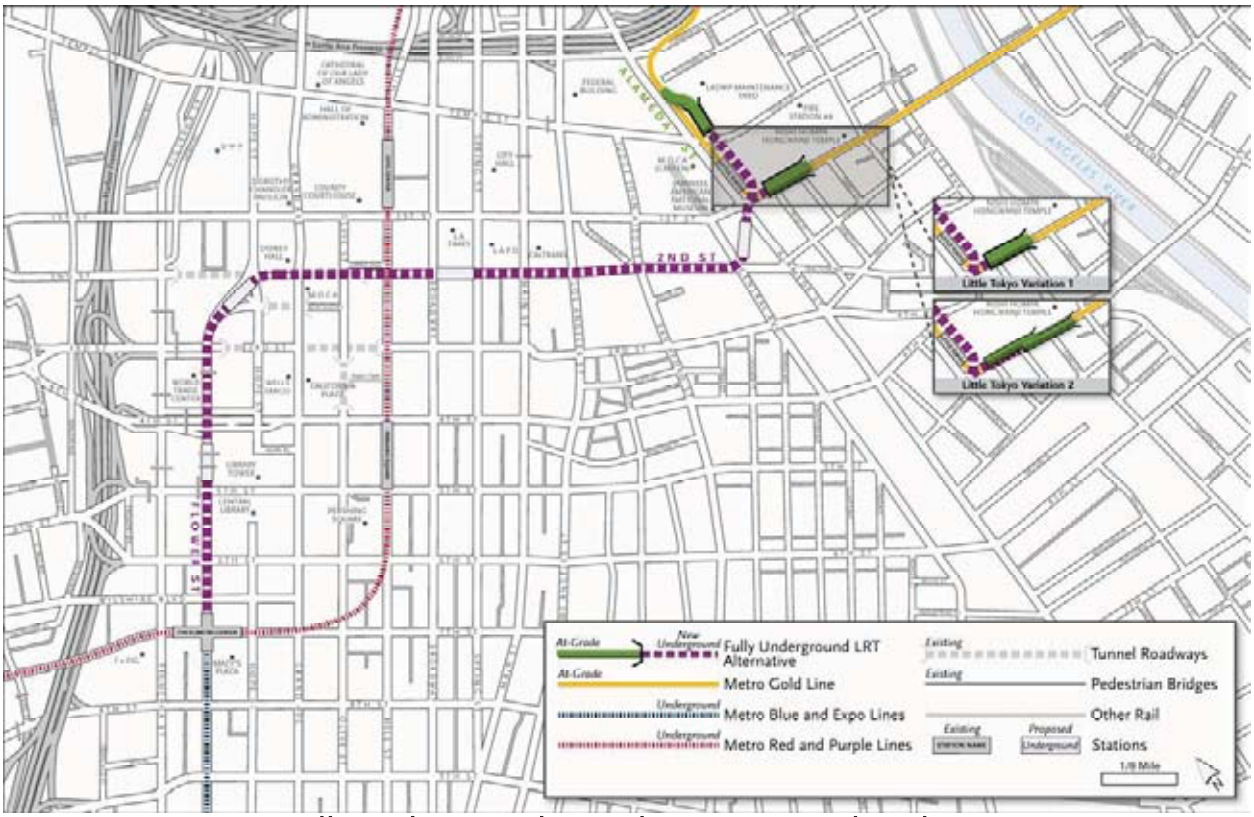

Figure 5-5. Fully Underground LRT Alternative – Little Tokyo Variation 1

The safety considerations identified previously would apply primarily to proposed at-grade locations. These concerns do not arise with underground LRT facilities (there are no trackway crossings for pedestrians or vehicles); for at-grade locations the stations can be designed to avoid these concerns (e.g., a design that avoids the need for pedestrians to cross tracks and the potential for collisions with light rail vehicles). Since the Fully Underground LRT Alternative – Little Tokyo Variation 1 includes four underground stations along the planned route, the stations would be designed to avoid potential safety hazards and prevent or avoid the need for pedestrians to cross trackways as they enter or depart the station. Stations would also be appropriately sized to accommodate the anticipated number of passengers. These design solutions would reduce this potential impact to less than significant level.

The Fully Underground LRT Alternative – Little Tokyo Variation 1 results in the entire LRT facility being placed underground, eliminating all potential conflicts with at-grade roadway and pedestrian infrastructure. In that regard, the proposed alternative and associated design would avoid potential safety effects related to both pedestrian and motorist crossings. The grade-separated nature of the Fully Underground LRT Alternative – Little Tokyo Variation 1 would avoid these potential effects and no impact would occur.

5.5.1.2 Security

Security issues may be related to police and fire response, emergency evacuation and responses, and addressing criminal and terrorist activity. To mitigate potential safety and security concerns, a complete Threat and Vulnerability Assessment in compliance with FTA regulations would be conducted for the locally preferred alternative when one is selected.,

Police and Fire Response

Standard specifications and traffic work plans would be developed to minimize potential construction impacts on emergency service providers by reducing potential impacts on emergency response times. The project would include coordination with police and fire services to develop construction and operation plans that would provide appropriate safety and security of the public using the Metro system, employees, and the surrounding communities. The LACSD policing contract with Metro would be extended to include the Regional Connector project, and the project would be coordinated and compliant with TSA/DHS. Potential impacts would be reduced to a less than significant level by implementing these measures.

LAFD Station #3 is located at the corner of 1st Street and Fremont Avenue, about 0.25 mile away from a section of the Fully Underground LRT Alternative – Little Tokyo Variation 1 alignment. This portion of the alignment is not expected to affect fire response times because it would be underground. LAFD Station #4 is located at Temple and Garey Streets, less that 0.25 mile away from the proposed underground station at 2nd Street/Central Avenue. Emergency response times will neither improve nor degrade over existing conditions because: 1) at-grade roadway conditions will essentially remain unchanged from an operational perspective and 2) the LRT alignment is fully underground as it passes underneath the congested intersection of 1st and Alameda Streets.

Fire safety in particular is addressed through design considerations. Metro's *Fire/Life Safety Design Criteria* outline specific requirements for fire protection at stations, along the alignment, and within LRVs. Identified requirements include providing fire alarm control systems at each enclosed station facility and a public address system at each station. All LRVs would be equipped with fire extinguishers, and fans to ventilate the LRV in case of fire.

LRV fire hazards would be minimized by specifying construction materials with minimum burning rates, smoke generation, and toxicity characteristics. Additional design criteria address emergency responder access, passenger egress standards, and standards for sprinkler systems and standpipe connections for fire response. Adherence to these standards

and federal, state, and local regulations, in conjunction with the low risk of fires at stations, would result in a less than significant impact to safety and security.

Crime and Terrorist Activity

Depending on the type of construction, and also the construction sequencing, temporary barricades and fencing would be used to prevent unauthorized personnel from entering construction areas, especially after hours and/or when construction is dormant. This is especially important when construction activities expose underground utilities and/or when excavated trenches have been created and left in an open state.

There is the potential for security issues to occur such as assault or robbery on the proposed project. These concerns would be addressed by applying design considerations and providing law enforcement personnel on the transit system during hours of operation. Every station would be well lit to provide visibility around the entire station day and night, as specified by City requirements and Metro *Design Criteria*.

The stations and LRVs would be equipped with closed-circuit TV systems monitored by Metro personnel. Additionally, emergency call boxes would be available in all stations for passenger use in case of emergency, and LRVs would have an operator that could be contacted by passengers via an intercom system.

The Fully Underground LRT Alternative – Little Tokyo Variation 1 presents a different set of conditions than both the At-Grade Emphasis LRT Alternative and the Underground Emphasis LRT Alternative because there are four underground stations and the entire alignment is below grade. Some of these altered conditions might include:

- Activity in underground stations and tunnels would be out of the general public view, and less observable by routine neighborhood security/police patrols in the general area, as compared to street level facilities.
- Tunnels may 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.
- Limited access to stations and the LRT system results in greater control and ability to monitor activities in an underground system.
- Underground system operation may be more reliable.

The Fully Underground LRT Alternative – Little Tokyo Variation 1 would be less vulnerable to disruptions from public demonstrations and impacts from vehicle-borne improvised explosive devices. By controlling entries, an underground system may continue to function during

public demonstrations and large-scale disturbances at grade level. However, terrorist groups have recently struck at underground rail systems in some of the major capitols of the world, including London and Tokyo.

In addition, underground systems have a greater potential for safety issues related to evacuation needs. A complete Threat and Vulnerability Assessment in compliance with FTA regulations would be conducted for the locally preferred alternative when one is selected. For the Fully Underground LRT Alternative – Little Tokyo Variation 1 this would include a complete evacuation plan to mitigate potential safety concerns.

5.5.2 Indirect Impacts – Construction and Operation

Potential indirect impacts associated with the Fully Underground LRT Alternative – Little Tokyo Variation 1 would not have a detrimental or increased impact on public safety or accidents during both construction and LRT operation. A potential indirect impact could be increased ridership created by increased public transportation service for the overall LRT system through the system-wide connections provided by the Regional Connector project. This increased demand could have both beneficial and adverse effects. Transit-oriented developments could create more pedestrian-appropriate and safe environments and/or could cause an increase in the number of people in a defined geographic area, potentially resulting in new conflicts between pedestrians and motorists.

Stations would be appropriately sized to accommodate the anticipated number of passengers. The Fully Underground LRT Alternative – Little Tokyo Variation 1 would result in the entire LRT facility being placed underground, which would eliminate all conflicts with at-grade roadway and pedestrian infrastructure. In that regard, the proposed alternative and associated design would avoid potential safety effects related to both pedestrian and motorist crossings.

5.5.3 Cumulative Impacts – Construction and Operation

Potential cumulative impacts of the Fully Underground LRT Alternative – Little Tokyo Variation 1 are qualitatively assessed in parallel to other known projects out to the baseline year (year 2035). Within the area of influence of this proposed alternative, there are a variety of major renovations to existing buildings, new facility construction, transportation projects, and mixed-use developments under consideration. Each of these projects would address safety and security of pedestrians and motorists accessing the developments. From a cumulative perspective, potential impacts associated with the Fully Underground LRT Alternative – Little Tokyo Variation 1 would be mitigated to a less than significant level and would not have a cumulative effect on the safety and security environment in the project area during both construction and LRT operation.

Table 5-3. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 1			
Evaluation Factor (per Section 3.0)	**6th Street**	**5th Street**	**4th Street**
Traffic Queuing	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location
Motorist Approach Sight Distance (North Leg[1])	OK	OK	Proximity of overpass piers to curbside may cause sight distance concerns for motorists
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	OK	Proximity of overpass piers to curbside may cause sight distance concerns for motorists
Motorist Approach Sight Distance (East Leg[1])	OK	OK	Compromised – access to parking garage
Pedestrian Sight Distance	Not applicable	Not applicable	Somewhat compromised due to overpass shading & overpass structural support (abutments and piers)
Crash History	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location

Table 5-3. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 1			
Evaluation Factor (per Section 3.0)	**6th Street**	**5th Street**	**4th Street**
Crossing Delineation/Signage	Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian overpass provided on west leg of intersection. Also two pedestrian overpasses present just north of intersection on Flower Street; pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian overpass provided on west leg of intersection. Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings on three legs & east leg just marked with white lines
Traffic Control Compliance Issues	West leg (6th Street) is an off-ramp from SR 110. Field observations noted speeds higher than predicted because of this	West leg (5th Street) is an on-ramp to SR 110. Field observations noted speeds higher than predicted because of this	Vehicles exiting parking garage access (east leg) must encroach into crosswalk to see oncoming traffic on Flower Street
Special Generators	City National Plaza (office complex)	Bonaventure Hotel Complex CitiCorp Plaza	World Trade Center
Presence of Adequate Lighting	OK – standard luminaires located on three quadrants of intersection & decorative luminary on remaining quadrant	OK – standard luminaires located on all four quadrants of intersection	Dark location due to shading of bridge overpass; standard luminaires located on all four quadrants of intersection

Table 5-3. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 1 (cont)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Traffic Queuing	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location
Motorist Approach Sight Distance (North Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	OK	OK	Eastbound vehicle sight distance slightly limited due to grade of east leg (2nd Street)	OK
Motorist Approach Sight Distance (East Leg[1])	OK	OK	OK	Westbound vehicle sight distance slightly limited due to grade of east leg (2nd Street)	Westbound vehicle sight distance slightly limited due to grade of east leg (2nd Street); one-way leg in westbound direction only (2nd Street)
Pedestrian Sight Distance	OK	Slightly compromised due to vegetation on southwest corner of intersection	Slightly compromised due to vegetation on southwest corner of intersection	Intersection is elevated and on top of crest; excellent sight distance for pedestrians on all legs of intersection	OK
Crash History	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location
Crossing Delineation/Signage	Pedestrian overpass provided on south leg of intersection near World Trade Center; Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings on three legs & east leg just marked with white lines	No pedestrian crossings allowed on north leg and west leg of intersection – prohibited by signage and lack of marked crosswalk	No pedestrian crossings allowed on north leg and west leg of intersection – prohibited by signage and lack of marked crosswalk	All crosswalks are well marked and signing is appropriate; fairly new intersection construction	No pedestrian crossing allowed on north leg of intersection – prohibited by signage and lack of marked crosswalk
Traffic Control Compliance Issues	None observed	None observed; triple left turns off of north leg of Kosciuszko	None observed; triple left turns off of north leg of Kosciuszko	None observed; designated left turn arrows present for heavy left-turn movements	None observed; designated left turn arrows present for heavy left-turn movements from 2nd Street to S. Olive Street

Table 5-3. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 1 (cont)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Special Generators	World Trade Center	Walt Disney Concert Hall	Walt Disney Concert Hall	Walt Disney Concert Hall	None noted
Presence of Adequate Lighting	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection
Traffic Queuing	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location
Motorist Approach Sight Distance (North Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	Minor concern for EB vehicle traffic due to existing building on west corner of intersection	OK	OK	Boulevard trees cause minor sight distance concerns for motorists
Motorist Approach Sight Distance (East Leg[1])	OK	Minor concern for WB vehicle traffic due to existing building on east corner of intersection	OK	OK	OK
Pedestrian Sight Distance	Poor on west leg due to tunnel exit and one-way hill on west leg of 2nd Street	OK	OK	Not applicable	Not applicable
Crash History	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location
Crossing Delineation/Signage	Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings; poor median refuge area on west leg separating tunnel exit from one-way grade on hill	Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian crossings allowed on all four legs; marked with white crosswalk markings only	Pedestrian crossings allowed on all four legs; marked with white crosswalk markings only	Pedestrian crossings allowed on all four legs; marked with white crosswalk markings only

Table 5-3. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 1 (cont)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Traffic Control Compliance Issues	None observed	None observed	None observed	None observed	
Special Generators	None noted	LA Times	LAPD	Caltrans Building	Caltrans Building
Presence of Adequate Lighting	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on three quadrants of intersection & decorative luminary on remaining quadrant	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection
Traffic Queuing	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	LRT is transitioning through portal at this location	LRT is transitioning through portal at this location
Motorist Approach Sight Distance (North Leg[1])	OK	OK	OK	N/A – No north leg to intersection ("T" intersection")	OK
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (East Leg[1])	OK	OK	OK	OK	OK
Pedestrian Sight Distance	OK	OK	OK	OK	OK
Crash History	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground / portal area at this location	Not evaluated due to LRT being underground / portal area at this location
Crossing Delineation/Signage	Pedestrian crossings allowed on all four legs; marked with colored asphalt and decorative imprinted crosswalk markings	Pedestrian crossings allowed on all four legs; marked with colored asphalt and decorative imprinted crosswalk markings	Pedestrian crossings allowed on all four legs; marked with colored asphalt and decorative imprinted crosswalk markings	T-intersection; pedestrian crossings allowed on south leg of intersection	Pedestrian crossings allowed on all four legs; marked with single marked white lines on all legs

Table 5-3. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 1 (cont)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Traffic Control Compliance Issues	None observed	None observed	Excessive vehicle queuing during peak hours of vehicles backed into adjacent intersections and through crosswalks	None observed – Metro Gold Line track protected by raised curb median island	None observed – intersection is signalized
Special Generators	Little Tokyo Neighborhood	Little Tokyo Neighborhood	Station for existing Metro Gold Line	Station for existing Metro Gold Line	Station for existing Metro Gold Line
Presence of Adequate Lighting	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on both southwest and southeast corners	OK – standard luminaires located on all corners of intersection
Traffic Queuing	Existing Metro Gold Line at location - no change from this alternative	Existing Metro Gold Line at location - no change from this alternative	No impact to vehicular traffic; LRT is underground at this location		
Motorist Approach Sight Distance (North Leg[1])	N/A – No north leg to intersection ("T" intersection")	OK	OK		
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK		
Motorist Approach Sight Distance (West Leg[1])	OK	OK	OK		
Motorist Approach Sight Distance (East Leg[1])	OK	OK	OK		
Pedestrian Sight Distance	OK	OK	OK		
Crash History	Not evaluated due to existing Metro Gold Line alignment in place	Not evaluated due to existing Metro Gold Line alignment in place	Not evaluated due to LRT being underground at this location		
Crossing Delineation/Signage	T-intersection; pedestrian crossings allowed on south leg of intersection	Pedestrian crossings allowed on three legs; pedestrian crossing is prohibited along east leg	Pedestrian crossings allowed on all four legs of the intersection ; marked with color stamped concrete		

Table 5-3. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 1 (cont)					
Evaluation Factor (per Section 3.0)	**3rd Street**	**Kosciuszko Street**	**Hope Street**	**S. Grand Avenue**	**S. Olive Street**
Traffic Control Compliance Issues	None observed – Metro Gold Line track protected by raised curb median island	None observed – intersection is signalized	None observed		
Special Generators	Nishi Hompa Hongwanji Temple; Fire Station #4; Station for existing Metro Gold Line	Nishi Hompa Hongwanji Temple; Fire Station #4; Station for existing Metro Gold Line	LADWP Maintenance Yard; Fire Station #4; Station for existing Metro Gold Line		
Presence of Adequate Lighting	None observed	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection		

[1] *A leg of an intersection is the street segment that forms one part of the intersection. For example, the north leg would be the street that forms the northern portion of an intersection.*

5.6 Fully Underground LRT Alternative – Little Tokyo Variation 2

The Fully Underground LRT Alternative - Little Tokyo Variation 2 (Figure 5-6) would provide four new stations and a direct connection from 7th Street/Metro Center Station to the Metro Gold Line tracks north and east of 1st and Alameda Streets. The alignment would extend underground from the 7th Street/Metro Center Station under Flower Street to 2nd Street. The tracks would then proceed east underneath the 2nd Street tunnel and 2nd Street to Central Avenue. At 2nd and Central, the tracks would continue underground heading northeast under 1st and Alameda Streets.

A new two-level junction would be constructed underground beneath the 1st and Alameda Street intersection. Trains would rise to the surface north and east of the junction through new portals to connect to the Metro Gold Line heading north to Azusa and east to I-605. One portal containing the northbound and southbound tracks to Azusa would be located northeast of the existing Little Tokyo/Arts District Station and tracks. This portal would rise to the north within the LADWP Maintenance Yard and connect to the existing LRT bridge over US-101, allowing a connection to the Metro Gold Line to Azusa.

The portal would be connected to the 1st and Alameda Street junction by a new cut-and-cover tunnel crossing beneath Temple Street and the property proposed for the Nikkei Center on the northeast corner of 1st and Alameda Streets, and run immediately east of the existing Little Tokyo/Arts District station and tracks.

Two portals, each containing one track, would rise to the east within the widened median of 1st Street to allow a connection to the Metro Gold Line to the San Gabriel Valley. The portal containing the westbound track would be located between Alameda and Garey Streets. The portal containing the eastbound track would be located adjacent to the westbound track between Hewitt and Vignes Streets.

1st Street would be widened to the north to accommodate the westbound portal. Widening would be initiated at Alameda and continue east, tapering down significantly as it crosses Hewitt Street; there the new tracks would feed into the existing 1st Street LRT tracks, about a half block west of the 1st Street Bridge.

1st Street would also be widened to the south between Hewitt and Vignes Streets to accommodate the eastbound track portal. Street widening would taper down as it approaches Vignes Street. No modification to the 1st Street Bridge would be necessary. Additional property would need to be acquired to stage construction of both portals, connect to the Gold Line LRT bridge, and construct the tunnels beneath 2nd Street and the Nikkei Center property. The Fully Underground Alternative – Little Tokyo Variation 2 would be located entirely underground from east of the intersection of 1st and Alameda Streets to the 7th Street/Metro Center Station.

5.6.1 Direct Impacts – Construction and Operation

The Fully Underground LRT Alternative – Little Tokyo Variation 2 could affect the pedestrian environment, motorist safety, and emergency response times for emergency service providers during both construction and LRT operation. Concerns identified in Section 4 have been reviewed within the context of this alternative, and key potential issues related to pedestrian and motorist safety have been identified. Table 5-4 lists these potential effects. CEQA guidelines on safety and security regarding pedestrian safety, station accidents and collisions, police and fire response, and criminal activity are addressed in the following sections.

5.6.1.1 Pedestrian and Motorist Safety, Station Accidents, and Collisions

The pedestrian safety assessment along the proposed LRT corridor focused on three separate categories, including:

- Pedestrian safety at station locations
- Pedestrian safety near the trackway
- Pedestrian safety at designated grade crossings

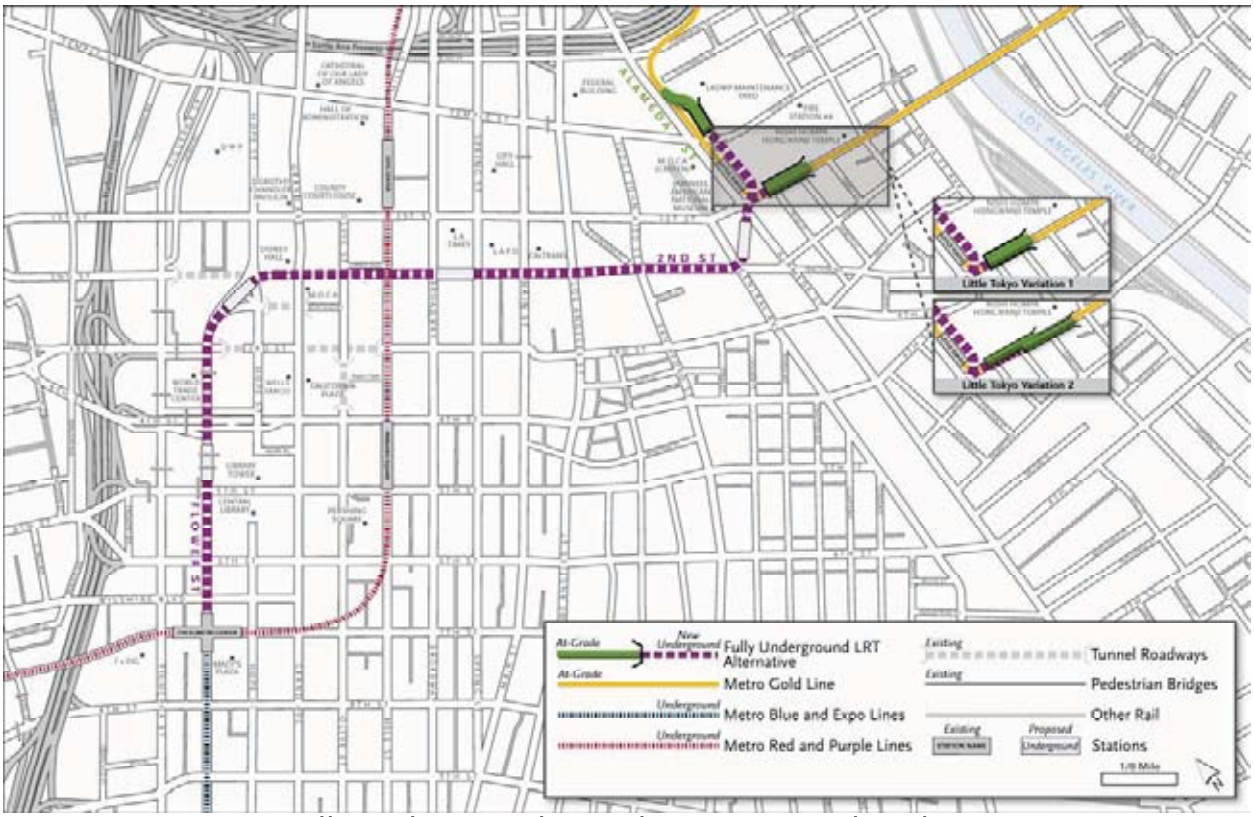

Figure 5-6. Fully Underground LRT Alternative – Little Tokyo Variation 2

The safety considerations identified previously apply primarily to proposed at-grade locations. These concerns do not arise with underground LRT facilities (there are no trackway crossings for pedestrians or vehicles) and the stations can be designed to avoid these concerns (e.g., a design that avoids the need for pedestrians to cross tracks and the potential for collisions with light rail vehicles).

The Fully Underground LRT Alternative – Little Tokyo Variation 2 includes four underground stations along the planned route. These stations would be designed to avoid potential safety hazards and prevent or avoid the need for pedestrians to cross trackways as they enter or depart the station. Additionally, stations would be appropriately sized to accommodate the anticipated number of passengers. These design solutions would reduce this potential impact to a less than significant level.

The Fully Underground LRT Alternative – Little Tokyo Variation 2 would result in the entire LRT facility being placed underground, eliminating conflicts with at-grade roadway and pedestrian infrastructure. In that regard, the proposed alternative and associated design would avoid potential safety effects related to both pedestrian and motorist crossings. The grade-separated nature of the Fully Underground LRT Alternative – Little Tokyo Variation 2 would avoid these potential effects and no impact would occur.

5.6.1.2 Security

Security issues may be related to police and fire response, emergency evacuation and responses, and addressing criminal and terrorist activity. A complete Threat and Vulnerability Assessment in compliance with FTA regulations to mitigate potential safety and security concerns would be conducted for the locally preferred alternative when one is selected.

Police and Fire Response

Standard specifications and traffic work plans would be developed to minimize potential construction impacts on emergency service providers by reducing potential impacts on emergency response times. The project would include coordination with police and fire services during development of construction and operation plans to provide appropriate safety and security of the public using the Metro system, employees, and the surrounding communities.

The LACSD policing contract with Metro would be extended to include the Regional Connector project, and the project would be coordinated and compliant with TSA/DHS. Potential impacts would be reduced to a less than significant level by implementing these measures.

LAFD Station #3 is located at the corner of 1st Street and Fremont Avenue, about 0.25 mile away from a section of the Fully Underground LRT Alternative – Little Tokyo Variation 2 alignment. This portion of the alignment is not anticipated to affect fire response times because it would be underground.

LAFD Station #4 is located at Temple and Garey Streets, less that 0.25 mile away from the proposed 2nd Street/Central Avenue stations. Emergency response times will neither improve nor degrade over existing conditions because: 1) at-grade roadway conditions will essentially remain unchanged from an operational perspective, and 2) the LRT alignment would be fully underground as it passes underneath the congested intersection of 1st and Alameda Streets..

Fire safety in particular is addressed through design considerations. Metro's *Fire/Life Safety Design Criteria* outline specific requirements for fire protection at stations, along the alignment, and within LRVs. Requirements include providing fire alarm control systems at each enclosed station facility and and a public address system at each station.

All LRVs would be equipped with fire extinguishers, and fans to ventilate the LRV in case of fire. LRV fire hazards would be reduced by specifying construction materials with minimum burning rates, smoke generation, and toxicity characteristics.

Additional design criteria address emergency responder access, passenger egress standards, and standards for sprinkler systems and standpipe connections for fire response. Adherence to these standards and federal, state, and local regulations in conjunction with the low risk of fires at stations would result in a less than significant impact to safety and security.

Crime and Terrorist Activity

Depending on the type of construction, and also the construction sequencing, temporary barricades and fencing would be used to prevent unauthorized personnel from entering construction areas, especially after hours and/or when construction is dormant. This is especially important when construction activities expose underground utilities and/or when excavated trenches have been created and left in an open state.

There is a potential for security issues to occur such as assault or robbery on the proposed project. These concerns would be addressed by design considerations and providing law enforcement personnel on the transit system during hours of operation.

Every station would be well lit to provide visibility around the entire station day and night, as specified by City requirements and Metro *Design Criteria*. The stations and the LRVs would be equipped with closed-circuit TV systems monitored by Metro personnel. Additionally, emergency call boxes would be available in all stations for passenger use in case of emergency, and each LRV would have an operator that could be contacted by passengers via an intercom system.

The Fully Underground LRT Alternative – Little Tokyo Variation 2 presents a different set of conditions than both the At-Grade Emphasis LRT Alternative and the Underground Emphasis LRT Alternative because there are four underground stations and the entire alignment is below grade. Some of these altered conditions might include:

- Activity in underground stations and tunnels would be out of the general public view, and less observable by routine neighborhood security/police patrols in the general area, compared to street level facilities.
- Tunnels may 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.
- Limited access to stations and the LRT system results in greater control and ability to monitor activities in an underground system.
- Underground system operation may be more reliable.

The Fully Underground LRT Alternative – Little Tokyo Variation 2 would be less vulnerable to disruptions from public demonstrations and to impacts from vehicle-borne improvised explosive devices. By controlling entries, an underground system may continue to function during public demonstrations and large-scale disturbances at grade level. However, terrorist groups have recently struck at underground rail systems in some of the major capitols of the world, including London and Tokyo.

In addition, underground systems have a greater potential for safety issues related to evacuation needs. A complete Threat and Vulnerability Assessment in compliance with FTA regulations would be conducted for the locally preferred alternative when one is selected. For the Fully Underground LRT Alternative – Little Tokyo Variation 2 this would include a complete evacuation plan to mitigate potential safety concerns.

5.6.2 Indirect Impacts – Construction and Operation

Potential indirect impacts that may be associated with the Fully Underground LRT Alternative – Little Tokyo Variation 2 would not have a detrimental or increased effect on public safety or accidents during both construction and LRT operation. A potential indirect impact could be increased ridership created by increased public transportation service for the overall LRT system through the system-wide connections provided by the Regional Connector project. This increased demand could have both beneficial and adverse effects. Transit-oriented developments could create more pedestrian appropriate and safe environments and/or cause an increase in the number of people in a defined geographic area, potentially resulting in new conflicts between pedestrians and motorists.

As indicated previously, stations would be appropriately sized to accommodate the anticipated number of passengers. In addition, the Fully Underground LRT Alternative – Little Tokyo Variation 2 results in the entire LRT facility being placed underground, eliminating conflicts with at-grade roadway and pedestrian infrastructure. In that regard, the proposed

alternative and associated design would avoid potential safety effects related to both pedestrian and motorist crossings.

5.6.3 Cumulative Impacts – Construction and Operation

Potential cumulative impacts of the Fully Underground LRT Alternative – Little Tokyo Variation 2 are qualitatively assessed in parallel to other known projects out to the baseline year (year 2035). Within the area of influence of this proposed alternative there are a variety of major renovations to existing buildings, new facility construction, transportation projects, and mixed-use developments under consideration. Each of these projects would address safety and security of pedestrians and motorists accessing the developments.

From a cumulative perspective, potential impacts associated with the Fully Underground LRT Alternative – Little Tokyo Variation 2 would be mitigated to a less than significant level and would not have a cumulative effect on the safety and security environment in the project area during both construction and LRT operation.

Table 5-4. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 2			
Evaluation Factor (per Section 3.0)	**6th Street**	**5th Street**	**4th Street**
Traffic Queuing	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location
Motorist Approach Sight Distance (North Leg[1])	OK	OK	Proximity of overpass piers to curbside may cause sight distance concerns for motorists
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	OK	Proximity of overpass piers to curbside may cause sight distance concerns for motorists
Motorist Approach Sight Distance (East Leg[1])	OK	OK	Compromised – access to parking garage
Pedestrian Sight Distance	Not applicable	Not applicable	Somewhat compromised due to overpass shading & overpass structural support (abutments and piers)
Crash History	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location

Table 5-4. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 2

Evaluation Factor (per Section 3.0)	6th Street	5th Street	4th Street
Crossing Delineation/Signage	Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian overpass provided on west leg of intersection; Also two pedestrian overpasses present just north of intersection on Flower Street; Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian overpass provided on west leg of intersection; Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings on three legs & east leg just marked with white lines
Traffic Control Compliance Issues	West leg (6th Street) is an off-ramp from SR 110. Field observations noted speeds higher than predicted because of this	West leg (5th Street) is an on-ramp to SR 110. Field observations noted speeds higher than predicted because of this	Vehicles exiting parking garage access (east leg) must encroach into crosswalk to see oncoming traffic on Flower Street
Special Generators	City National Plaza (office complex)	Bonaventure Hotel Complex CitiCorp Plaza	World Trade Center
Presence of Adequate Lighting	OK – standard luminaires located on three quadrants of intersection & decorative luminary on remaining quadrant	OK – standard luminaires located on all four quadrants of intersection	Dark location due to shading of bridge overpass; standard luminaires located on all four quadrants of intersection

Table 5-4. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 2 (cont)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Traffic Queuing	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location
Motorist Approach Sight Distance (North Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	OK	OK	Eastbound vehicle sight distance slightly limited due to grade of east leg (2nd Street)	OK
Motorist Approach Sight Distance (East Leg[1])	OK	OK	OK	Westbound vehicle sight distance slightly limited due to grade of east leg (2nd Street)	Westbound vehicle sight distance slightly limited due to grade of east leg (2nd Street); one-way leg in westbound direction only (2nd Street)
Pedestrian Sight Distance	OK	Slightly compromised due to vegetation on southwest corner of intersection	Slightly compromised due to vegetation on southwest corner of intersection	Intersection is elevated and on top of crest; excellent sight distance for pedestrians on all legs of intersection	OK
Crash History	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location
Crossing Delineation/Signage	Pedestrian overpass provided on south leg of intersection near World Trade Center; Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings on three legs & east leg just marked with white lines	No pedestrian crossings allowed on north leg and west leg of intersection – prohibited by signage and lack of marked crosswalk	No pedestrian crossings allowed on north leg and west leg of intersection – prohibited by signage and lack of marked crosswalk	All crosswalks are well marked and signing is appropriate; fairly new intersection construction	No pedestrian crossing allowed on north leg of intersection – prohibited by signage and lack of marked crosswalk
Traffic Control Compliance Issues	None observed	None observed; triple left turns off of north leg of Kosciuszko	None observed; triple left turns off of north leg of Kosciuszko	None observed; designated left turn arrows present for heavy left-turn movements	None observed; designated left turn arrows present for heavy left-turn movements from 2nd Street to S. Olive Street

Table 5-4. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 2 (cont)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Special Generators	World Trade Center	Walt Disney Concert Hall	Walt Disney Concert Hall	Walt Disney Concert Hall	None noted
Presence of Adequate Lighting	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection
Traffic Queuing	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location
Motorist Approach Sight Distance (North Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	Minor concern for EB vehicle traffic due to existing building on west corner of intersection	OK	OK	Boulevard trees cause minor sight distance concerns for motorists
Motorist Approach Sight Distance (East Leg[1])	OK	Minor concern for WB vehicle traffic due to existing building on east corner of intersection	OK	OK	OK
Pedestrian Sight Distance	Poor on west leg due to tunnel exit and one-way hill on west leg of 2nd Street	OK	OK	Not applicable	Not applicable
Crash History	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location
Crossing Delineation/Signage	Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings; poor median refuge area on west leg separating tunnel exit from one-way grade on hill	Pedestrian crossings allowed on all four legs; marked with color stamped concrete & white markings	Pedestrian crossings allowed on all four legs; marked with white crosswalk markings only	Pedestrian crossings allowed on all four legs; marked with white crosswalk markings only	Pedestrian crossings allowed on all four legs; marked with white crosswalk markings only

Table 5-4. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 2 (cont)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Traffic Control Compliance Issues	None observed	None observed	None observed	None observed	
Special Generators	None noted	LA Times	LAPD	Caltrans Building	Caltrans Building
Presence of Adequate Lighting	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on three quadrants of intersection & decorative luminary on remaining quadrant	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection
Traffic Queuing	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	No impact to vehicular traffic; LRT is underground at this location	LRT is transitioning through portal at this location	LRT is transitioning through portal at this location
Motorist Approach Sight Distance (North Leg[1])	OK	OK	OK	N/A – No north leg to intersection ("T" intersection")	OK
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (West Leg[1])	OK	OK	OK	OK	OK
Motorist Approach Sight Distance (East Leg[1])	OK	OK	OK	OK	OK
Pedestrian Sight Distance	OK	OK	OK	OK	OK
Crash History	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground at this location	Not evaluated due to LRT being underground / portal area at this location	Not evaluated due to LRT being underground / portal area at this location
Crossing Delineation/Signage	Pedestrian crossings allowed on all four legs; marked with colored asphalt and decorative imprinted crosswalk markings	Pedestrian crossings allowed on all four legs; marked with colored asphalt and decorative imprinted crosswalk markings	Pedestrian crossings allowed on all four legs; marked with colored asphalt and decorative imprinted crosswalk markings	T-intersection; pedestrian crossings allowed on south leg of intersection	Pedestrian crossings allowed on all four legs; marked with single marked white lines on all legs

Table 5-4. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 2 (cont)

Evaluation Factor (per Section 3.0)	3rd Street	Kosciuszko Street	Hope Street	S. Grand Avenue	S. Olive Street
Traffic Control Compliance Issues	None observed	None observed	Excessive vehicle queuing during peak hours of vehicles backed into adjacent intersections and through crosswalks	None observed – Metro Gold Line track protected by raised curb median island	None observed – intersection is signalized
Special Generators	Little Tokyo Neighborhood	Little Tokyo Neighborhood	Station for existing Metro Gold Line	Station for existing Metro Gold Line	Station for existing Metro Gold Line
Presence of Adequate Lighting	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on both southwest and southeast corners	OK – standard luminaires located on all corners of intersection
Traffic Queuing	Existing Metro Gold Line at location - LRT in transition through portal at this location	Existing Metro Gold Line at location - no change from this alternative	No impact to vehicular traffic; LRT is underground at this location		
Motorist Approach Sight Distance (North Leg[1])	N/A – No north leg to intersection ("T" intersection")	OK	OK		
Motorist Approach Sight Distance (South Leg[1])	OK	OK	OK		
Motorist Approach Sight Distance (West Leg[1])	OK	OK	OK		
Motorist Approach Sight Distance (East Leg[1])	OK	OK	OK		
Pedestrian Sight Distance	OK	OK	OK		
Crash History	Not evaluated due to existing Metro Gold Line alignment in place	Not evaluated due to existing Metro Gold Line alignment in place	Not evaluated due to LRT being underground at this location		
Crossing Delineation/Signage	T-intersection; pedestrian crossings allowed on south leg of intersection	Pedestrian crossings allowed on three legs; pedestrian crossing is prohibited along the east leg	Pedestrian crossings allowed on all four legs of the intersection ; marked with color stamped concrete		

Table 5-4. Safety Analysis for the Fully Underground LRT Alternative – Little Tokyo Variation 2 (cont)					
Evaluation Factor (per Section 3.0)	**3rd Street**	**Kosciuszko Street**	**Hope Street**	**S. Grand Avenue**	**S. Olive Street**
Traffic Control Compliance Issues	None observed – Metro Gold Line track protected by raised curb median island	None observed – intersection is signalized	None observed		
Special Generators	Nishi Hompa Hongwanji Temple; Fire Station #4; Station for existing Metro Gold Line	Nishi Hompa Hongwanji Temple; Fire Station #4; Station for existing Metro Gold Line	LADWP Maintenance Yard; Fire Station #4; Station for existing Metro Gold Line		
Presence of Adequate Lighting	None observed	OK – standard luminaires located on all four quadrants of intersection	OK – standard luminaires located on all four quadrants of intersection		

[1] *A leg of an intersection is the street segment that forms one part of the intersection. For example, the north leg would be the street that forms the northern portion of an intersection.*

6.0 POTENTIAL MITIGATION MEASURES

All proposed mitigation measures regarding safety and security would be developed in conformance with Metro's *Rail Transit Design Criteria and Standards, Fire/Life Safety Criteria, Volume IX*. The criteria specifically address fire protection requirements for the design and construction of LRT systems. The criteria identify and discuss fire safety as it corresponds to the following specific design criteria: station and guideway facilities, passenger vehicles, vehicle yard and maintenance facilities, system fire/life safety procedures, communications, rail operations control, and inspection, maintenance and training. The criteria establish minimum requirements that would provide for the protection of life and property from the effects of fire. Proposed safety and security mitigation recommendations would be based on the results of and part of the Threat and Vulnerability Assessment that will be conducted for the locally preferred alternative when one is selected. These security measures may include:

- A closed circuit TV system
- Emergency push-button call system for patrons
- Intrusion detection system
- Dedicated security patrol protocols and procedures
- Employing "Crime Prevention through Environmental Design" principles during design phase

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 underground systems, resulting in fewer offenses committed in the transit system than in the neighborhoods they traverse.

The potential mitigation measures discussed in the following sections are grouped by those that would apply to construction-related effects and by those that would apply to operation of at-grade facilities or underground portions of a proposed alignment.

6.1 Potential Construction Mitigation Measures

- Provide alternate walkways for pedestrians around construction staging sites in accordance with American with Disability Act (ADA) requirements.
- Sign and properly mark all pedestrian detour locations around staging sites in accordance with the Manual on Uniform Traffic Control Devices "work zone" guidance, and other applicable local and state requirements.
- Coordinate work plans and traffic control measures with emergency responders to prevent effects to emergency response times.

- Metro would develop a Construction Mitigation Program during final design and implement during construction. The Program would guide Metro in communicating to the community and obtaining input from residents and businesses affected during construction. This would included communicating traffic control measures, schedule of activities and duration of operations.

6.2 Potential Operational Mitigation Measures

6.2.1 Specific to At-Grade Conditions

- To reduce potential risk of collisions between LRVs and automobiles on the street portion of the proposed At-Grade Emphasis LRT Alternative, Metro would coordinate with the CPUC, City of Los Angeles and the Los Angeles County traffic control departments, Bureau of Engineering, and the City and County Fire departments, and also comply with the Federal Highway Administration's Manual on Uniform Traffic Control Devices for signing and pavement marking treatments.

- All stations would be lighted to avoid shadows and all pedestrian pathways leading to/from sidewalks and parking facilities would be well illuminated. In addition, lighting would provide excellent visibility for train operators to be able to react to possible conflicts, especially to pedestrians crossing the track.

- Proposed station designs would not include design elements that obstruct visibility or observation nor provide discrete locations favorable to crime; pedestrian access to at-grade stations would be at ground-level with clear sight lines.

- Sidewalk widths and placements would be designed appropriately to accommodate a wide variety of users. In areas directly adjacent to the rail stations: 1) sidewalk widths would be designed with the widest dimensions feasible in conformance with the Los Angeles/Metro's adopted "Land Use/Transportation Policy," and with widths exceeding 10 feet; 2) minimum widths would not be less than those allowed by the State of California Title 24 access requirements, or the Americans with Disability Act design recommendations; 3) accommodating pedestrian movements and flows would take priority over other transportation improvements, including automobile access; and 4) physical improvements would ensure that all stations are fully accessible as defined in the Americans with Disabilities Act.

- A grade-separated pedestrian bridge across Alameda Street, just north of the existing Little Tokyo/Arts District Station, would be constructed to separate pedestrian movements from LRT vehicles and motorized vehicle movements under the At-Grade Emphasis LRT Alternative.

- A grade-separated pedestrian bridge across Alameda Street, just south of the existing Little Tokyo/Arts District Station, would be constructed to separate pedestrian movements from LRT and motorized vehicle movements under the Underground Emphasis LRT Alternative. Also a grade-separated pedestrian bridge across the

Metro Gold Line tracks, just south of the existing Little Tokyo/Arts District Station and east of Alameda Street, would be constructed to separate pedestrian movements from LRT and motorized vehicle movements for the Underground Emphasis LRT Alternative.

- A grade-separated pedestrian bridge across Kosciuszko Street near the proposed 2nd/Hope Street station would be constructed. The proposed pedestrian bridge would reduce potential pedestrian/LRT/vehicle conflicts by providing a separated facility for pedestrians trying to reach the station, especially from the high pedestrian generator Walt Disney Concert Hall (mitigation measure would apply to both the At-Grade Emphasis LRT Alternative and the Underground Emphasis LRT Alternative).

- Adequate pedestrian queuing and refuge areas and wide crosswalks would be provided in areas immediately around proposed stations to facilitate pedestrian mobility.

6.2.2 Specific to Underground Conditions

- The Metro Fire/Life Safety Committee has developed standard safety-related design criteria to ensure safe and adequate LRT operations in and around LRT underground stations. These include: 1) fire alarm protection within the station area, 2) a minimum of two fire emergency routes from each proposed station, 3) emergency ventilation and lighting, 4) communication systems between adjoining fire agencies, and 5) a methane detection system for each proposed station.

- Building construction for underground stations would not be less than Type I Construction as defined in the Uniform Building Code (UBC). Type I Construction is a category of building construction that sets forth design requirements that provides for safety features such as ventilation, additional egress routes, lighting, etc. Proposed stations having more than two levels below-grade or more than 80 feet to the lowest occupied level from grade would require protected level separation or other protection features to provide safe egress to the exits.

6.2.3 Applicable to both At-Grade and Underground Conditions

- For portions of the alignment where pedestrians and/or motor vehicles must cross the tracks, Metro would prepare grade crossing applications in coordination with the CPUC and local public agencies, such as LADOT, Bureau of Engineering, and the City and County Fire departments.

- All proposed LRT stations and related parking facilities would be equipped with monitoring equipment, which would primarily consist of video surveillance equipment to monitor strategic areas of the LRT stations and walkways, and/or be monitored by Metro security personnel on a regular basis.

- Metro would implement a security plan for LRT operations. The plan would include both in-car and station surveillance by Metro security or other local jurisdiction security personnel.
- Metro would coordinate and consult with the LAFD, LAPD, and LACSD to develop safety and security plans for the proposed alignment, parking facilities, and station areas.
- Light rail vehicles would be provided with front and rear safety fenders to increase light rail vehicle safety and minimize or prevent the potential for pedestrians to contact the vehicle coupler and/or fall under the LRV.
- Fire separations would be provided and maintained in public occupancy areas. Station public occupancy would be separated from station ancillary occupancy by a minimum 2-hour fire-rated wall. The only exception is that a maximum of two station agents, supervisors, or information booths may be located within station public occupancy areas when constructed of approved noncombustible materials and limited in floor area to 100 square feet.
- The diverse needs of different types of traveling public including senior citizens, disabled citizens, low income citizens, would be addressed through a formal educational and outreach campaign. The campaign would target these diverse community members to educate them on proper system use and benefits of LRT ridership.

7.0 CONCLUSIONS

A significant adverse safety and security impact for both construction and future LRT operation would occur under CEQA if an alternative would: 1) create substantial adverse safety conditions, including station accidents, boarding and disembarking accidents, right-of-way accidents, collisions, fires, and major structural failures; 2) substantially limit delivery of community safety services—including police, fire, or emergency services—to locations along the proposed alignment; 3) create the potential for increased pedestrian and/or bicycle safety risks; and/or 4) create the potential for adverse security conditions, including incidents, offenses, and crimes. There are no specific thresholds identified under NEPA.

7.1 No Build Alternative

7.1.1 NEPA Findings

There would be no safety or security impacts related to the No Build Alternative

7.1.2 CEQA Determinations

The No Build Alternative would not result in safety or security impacts.

7.2 TSM Alternative

7.2.1 NEPA Findings

There would be no safety or security impacts related to the TSM Alternative.

7.2.2 CEQA Determinations

The TSM Alternative would not result in safety or security impacts.

7.3 At-Grade Emphasis LRT Alternative

7.3.1 NEPA Findings

Potential safety and security impacts related to construction and operation of the At-Grade Emphasis LRT Alternative would be reduced to a less than significant level through the implementation of mitigation measures. This finding is described more fully in Section 7.3.2.

7.3.2 CEQA Determinations

The At-Grade Emphasis LRT Alternative would likely result in potential impacts to pedestrian safety and overall security issues during both construction and LRT operation; however, these would be mitigated by applying appropriate design criteria and implementing appropriate standards. For example, grade crossings would be equipped with warning devices based on a comprehensive hazard analysis and additional field reviews as part of the legally required CPUC grade crossing application process.

Design considerations that mitigate potential adverse impacts would be identified and incorporated into the project. The Threat and Vulnerability Assessment conducted for the locally preferred alternative when one is selected would also identify specific design features and mitigation measures that would be implemented to avoid potential safety and security concerns. Through comprehensive hazard identification, safety-oriented project design features, and the toolkit of mitigation measures indentified in Section 6.0, the proposed alternative would not result in significant adverse safety or security impacts.

7.4 Underground Emphasis LRT Alternative

7.4.1 NEPA Findings

Potential safety and security impacts related to construction and operation of the Underground Emphasis LRT Alternative would be reduced to a less than significant level through the implementation of mitigation measures. This finding is described more fully in Section 7.4.2.

7.4.2 CEQA Determinations

The Underground Emphasis LRT Alternative would likely result in potential impacts to pedestrian safety and overall security concerns during both construction and LRT operation; however, these would be much less intense than potential impacts from the At-Grade Emphasis LRT Alternative. Any potential impacts would be mitigated by applying appropriate design criteria and implementing appropriate standards.

For example, the design would include development of a comprehensive evacuation plan. Design considerations that mitigate potential adverse impacts would be identified and incorporated into the project. The Threat and Vulnerability Assessment conducted for the locally preferred alternative when one is selected would also identify specific design features and mitigation measures that would be implemented to avoid potential safety and security concerns. Through comprehensive hazard identification, safety-oriented project design features, and the toolkit of mitigation measures indentified in Section 6.0, the proposed alternative would not result in significant adverse safety and security impacts.

7.5 Fully Underground LRT Alternative – Little Tokyo Variation 1

7.5.1 NEPA Findings

Potential safety and security impacts related to construction and operation of the Fully Underground LRT Alternative – Little Tokyo Variation 1 would be reduced to a less than significant level through the implementation of mitigation measures. This finding is described more fully in Section 7.5.2.

7.5.2 CEQA Determinations

The Fully Underground LRT Alternative – Little Tokyo Variation 1 would likely result in potential impacts to pedestrian safety and overall security concerns during both construction and LRT operation; however, these would be less intense than potential impacts from either

the At-Grade Emphasis LRT or Underground Emphasis LRT Alternatives. Any potential impacts would be mitigated by applying appropriate design criteria and implementing appropriate standards.

For example, design would include development of a comprehensive evacuation plan. Design considerations that mitigate potential adverse impacts would be identified and incorporated into the project. The Threat and Vulnerability Assessment conducted for the locally preferred alternative when one is selected would also identify specific design features and mitigation measures that would be implemented to avoid potential safety and security concerns. Through comprehensive hazard identification, safety-oriented project design features, and the toolkit of mitigation measures indentified in Section 6.0, the proposed alternative would not result in significant adverse safety and security impacts.

7.6 Fully Underground LRT Alternative – Little Tokyo Variation 2

7.6.1 NEPA Findings

Potential safety and security impacts related to construction and operation of the Fully Underground LRT Alternative – Little Tokyo Variation 2 would be reduced to a less than significant level through the implementation of mitigation measures. This finding is described more fully in Section 7.6.2.

7.6.2 CEQA Determinations

The Fully Underground LRT Alternative – Little Tokyo Variation 2 would likely result in potential impacts to pedestrian safety and overall security concerns during both construction and LRT operation; however, these would be less intense than potential impacts from either the At-Grade Emphasis LRT or Underground Emphasis LRT Alternatives. Any potential impacts would be mitigated by applying appropriate design criteria and implementing appropriate standards.

For example, design would include development of a comprehensive evacuation plan. Design considerations that mitigate potential adverse impacts would be identified and incorporated into the project. The Threat and Vulnerability Assessment conducted for the locally preferred alternative when one is selected would also identify specific design features and mitigation measures that would be implemented to avoid potential safety and security concerns. Through comprehensive hazard identification, safety-oriented project design features, and the toolkit of mitigation measures indentified in Section 6.0, the proposed alternative would not result in significant adverse safety and security impacts.

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