
IV. ENVIRONMENTAL IMPACT ANALYSIS

D. TRANSPORTATION SAFETY

This section describes the existing transportation setting of the proposed Project and evaluates the potential for transportation safety impacts to occur due to development of the proposed Project. The transportation safety analysis focuses on the potential for the proposed Project to result in driver distraction that compromises the safety of motorists and pedestrians within the Central Terminal Area (CTA), and the potential for Air Traffic Control (ATC) or pilot distraction to occur to a degree that compromises aviation safety.

1. ENVIRONMENTAL SETTING

a. Existing Street System

The Los Angeles International Airport (LAX) is located in the western portion of Los Angeles County. This area of the county is mostly built out, and very little land remains undeveloped. As the largest airport in the Los Angeles region, LAX receives traffic from throughout the entire region. However, its location in the heart of an urban area and the lack of any direct freeway connection to the CTA requires that LAX be served by many local and arterial roads, with direct CTA access solely provided from Century Boulevard and Sepulveda Boulevard. These roads are in turn served by two freeways (Interstates 105 and 405 [I-105 and I-405]). LAX presently has one primary access system serving the CTA, which requires the use of local and arterial streets from the east for access. Refer to Figure IV.D-1, Project Site and Surrounding Roadways.

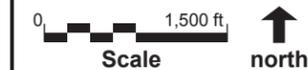
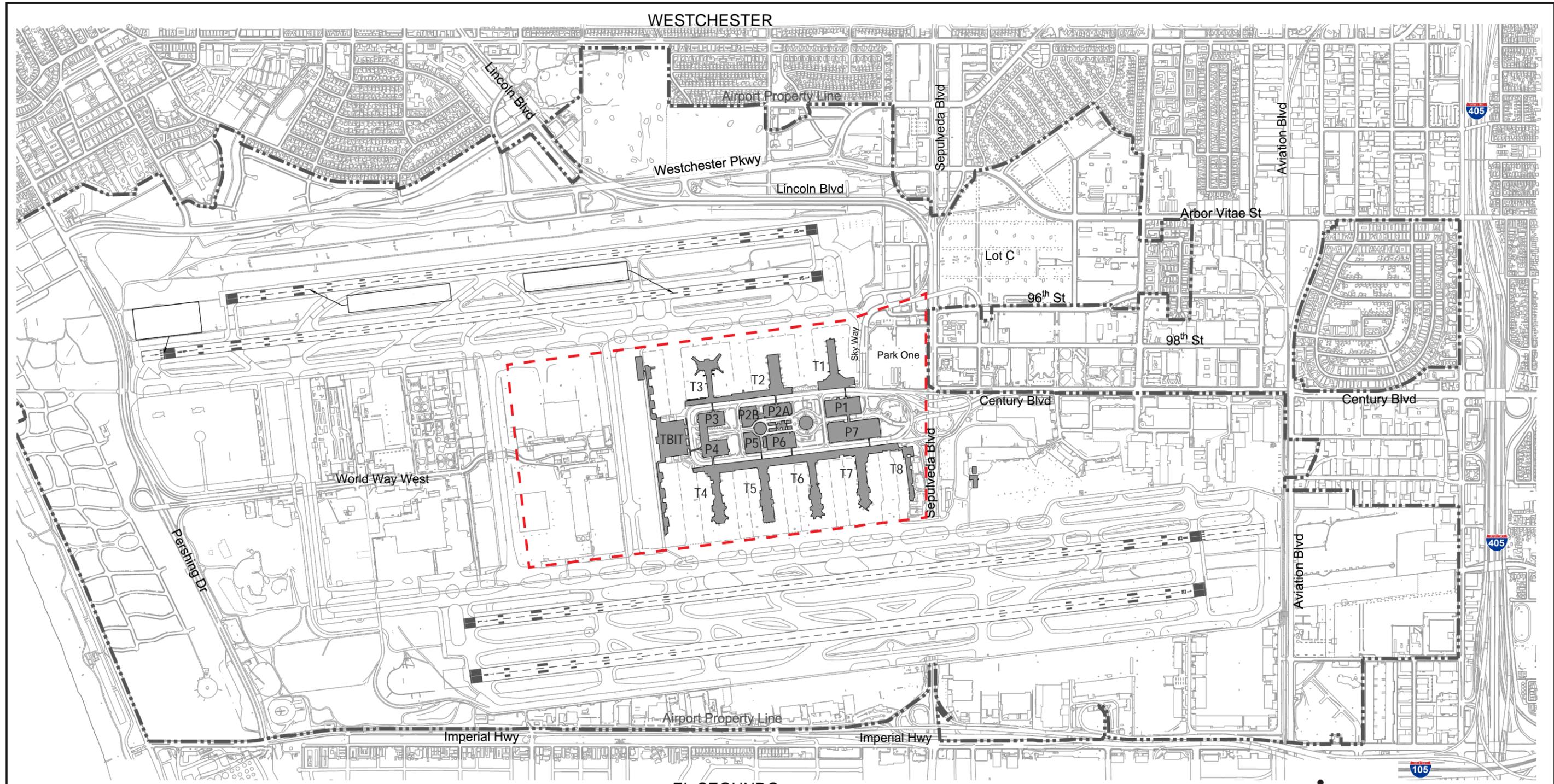
i. On-Airport Roadways

(1) Landside Sub-Area

The CTA accommodates all of the origin/destination passenger traffic using LAX. Passengers accessing the CTA use many modes of travel; however, the overwhelming majority of vehicles in the CTA are private vehicles. Other notable modes of travel include taxicabs, rental car shuttles, hotel/parking shuttles, shared ride vans, limousines, and FlyAway buses. All passenger vehicles to and from the south or east pass through the Century Boulevard/Sepulveda Boulevard interchange, while vehicles to and from the north are directed either through the Century Boulevard/Sepulveda Boulevard interchange, or through the 96th Street interchange with Sepulveda Boulevard.

The curbside and roadway system within the CTA is busy and highly controlled and consists of a two-level U-shaped roadway; the departures (upper) level is dedicated to departing passenger activities, and the arrivals (lower) level is primarily dedicated to arriving passenger activities. On-airport access from the departures level to the arrivals level is provided via a recirculation ramp located at the eastern end of the CTA and a ramp at the western end of Center Way, connecting to West Way. Access from the arrivals level to the departures level is provided via the ramp at the western end of Center Way, connecting to West Way (upper level). The departures level and arrivals level outer roadways both have a speed limit of 25 miles per hour (MPH) (Oldham, 2002). There are six signalized intersections and 18 signalized pedestrian crosswalks within the CTA. Existing wayfinding and parking/gate signage facilitate traffic movement and guide passenger vehicles to their desired terminal destination.

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--- LAX Sign District Boundary - - - Airport Boundary

Source: Los Angeles World Airports 2012, CDM Smith, 2012.
Prepared by: CDM Smith, 2012.

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Refer to Figures IV.D-2 and IV.D-3, CTA Roadway Links and Key Intersections, Departure and Arrival Levels, respectively.

East Way and West Way provide north-south circulation links between World Way North and World Way South on the upper and lower levels. These internal recirculation roads allow some vehicles to by-pass the westernmost terminals. Upper-level East Way provides a northbound lane and two southbound lanes; one southbound lane is used only to access Public Parking Structure 1 (P1) and Public Parking Structure 7 (P7). Upper level West Way is a one-way roadway providing two southbound lanes (including a lane-drop to access Public Parking Structure 2 [P2] and Public Parking Structure 5 [P5]). On the lower level, East Way provides two northbound and two southbound lanes, and West Way provides two southbound lanes and one northbound lane.

Center Way, an eastbound only roadway parallel to and located midway between World Way North and World Way South, serves as the main outbound roadway for all parking facilities in the CTA. Exit lanes from Public Parking Structure 3 (P3) and Public Parking Structure 4 (P4) join the three-lane Center Way to the west of West Way. Center Way bypasses the Theme Building by dividing into separate two-lane roads, Center Way North and Center Way South, which are joined by existing lanes from adjacent parking structures, P2, P5, and Parking Structure 6 (P6). At the intersection with East Way, the north and south links of Center Way combine to become a four-lane roadway.

From January 2010 to April 2012, the LAX Airport Police Division investigated 214 traffic collisions within the CTA. Of those 214 accidents, 10 (approximately 5 percent) were due to inattentiveness. The other 204 traffic collisions involved actions such as unsafe lane change, failure to take caution when merging into a lane, unsafe speed, insufficient clearance, lane straddling, unsafe backing, etc.

(a) Departures Level Curbsides and Roadways

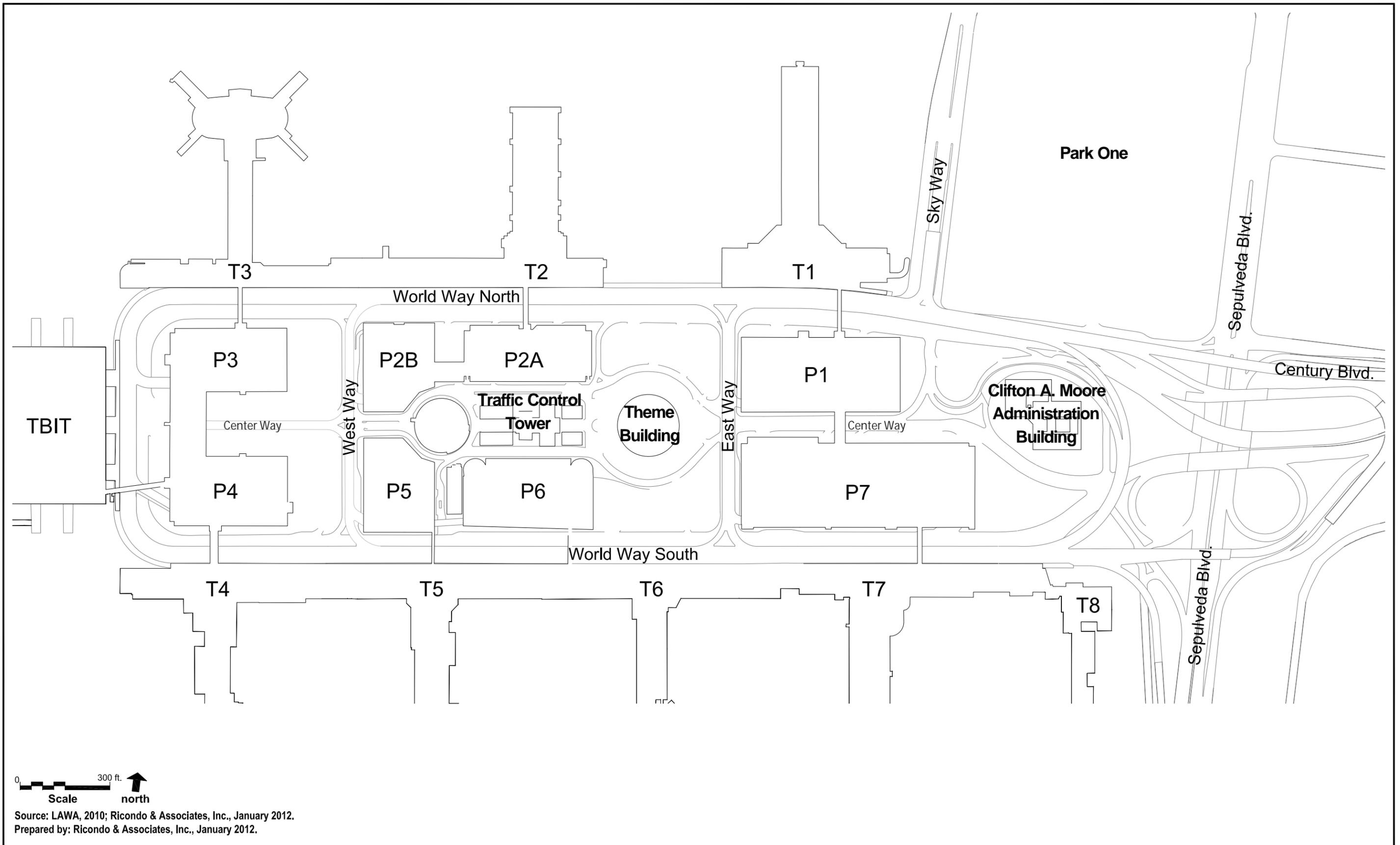
The departures level roadway curbside consists of a striped 22-foot-wide stopping lane for vehicles dropping off passengers, three 10- to 12-foot-wide travel lanes for bypass vehicles, and one left-turn only lane to access East Way. In 2006, over three-fourths of all passengers who arrived at LAX in a private vehicle were dropped off curbside (76 percent) (Los Angeles World Airports [LAWA], 2007). The Tom Bradley International Terminal (TBIT) is the only terminal at LAX where pedestrians are allowed to walk between the terminal building and the public parking facilities on the upper level. At all other airport terminals, overhead walkways provide a grade-separated travel path between the terminals and the respective parking structures.

Direct access to the departures level of the CTA roadway network from the off-airport roadway network is provided by northbound Sepulveda Boulevard, southbound Sepulveda Boulevard (via Sky Way/96th Street), and Century Boulevard. Direct access from the departures level roadway to southbound Sepulveda Boulevard and eastbound Century Boulevard is available, but northbound Sepulveda Boulevard traffic must use the ramp to Center Way and exit the airport with arrivals level traffic to access the northbound Sepulveda Boulevard ramp.

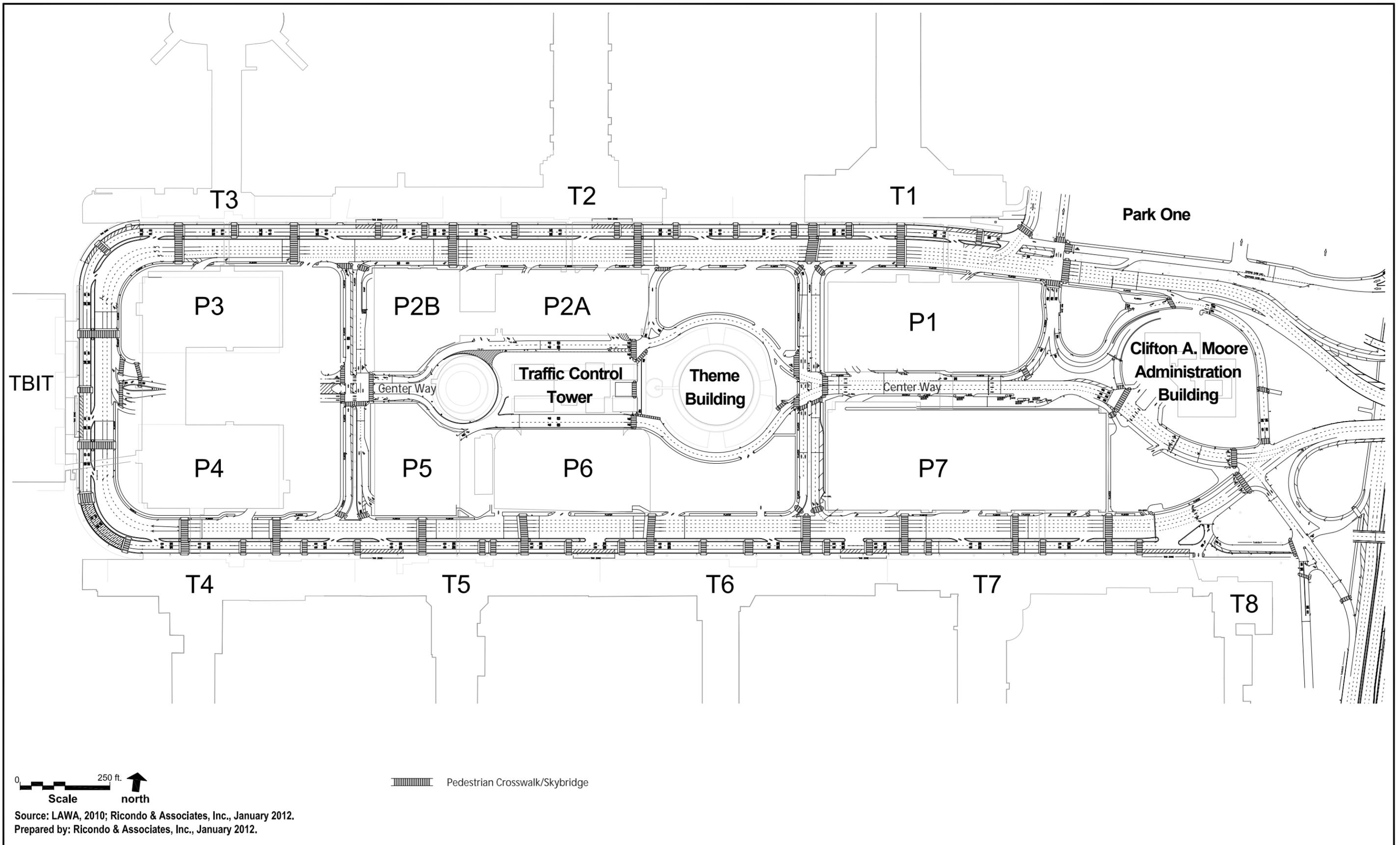
(b) Arrivals Level Curbsides and Roadways

The arrivals level is served by two curbside and roadway systems (i.e., inner and outer roadway), separated by a 10-foot-wide concrete pedestrian median. The inner curbside and roadway are reserved for private vehicle and taxicab pick-up, and the outer curbside and roadway are reserved for commercial vehicle passenger pick up and for use by other vehicles bypassing a terminal.

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Direct access to the arrivals level of the CTA roadway network from the off-airport roadway network is provided by northbound and southbound Sepulveda Boulevard, and westbound Century Boulevard. Direct access from the arrivals level roadway to northbound and southbound Sepulveda Boulevard, as well as eastbound Century Boulevard, is also provided.

(2) Airside Sub-Area

Airside areas include all areas accessible to aircraft, including gates/concourses, runways, taxiways, ramps, and aircraft parking aprons. Circulation along marked-service roads enables aircrew to accomplish airside aircraft operations, such as, securing tie downs, towing or taxiing aircraft into terminal gates or to runway/taxiway, accessing hangar areas, escorting tug to remove aircraft, and transferring passengers to remote terminals using shuttles, and transporting equipment and passenger baggage. Paved areas are also used to access airfield areas, cargo areas, runways, taxilanes and taxiways.

There are two sets of east-west parallel runways at LAX for a total of four runways; two runways are in the south airfield (i.e., south of the CTA) and two are in the north airfield (i.e., north of the CTA). ATC closely monitors the takeoff, landing, ground movement of aircraft, and support activities to reduce delays and maintain a safe and expeditious traffic flow on the airside roadway system of the airside sub-area. The controllers also give aircrews instructions to operate on the airport movement area, air traffic clearances, and advice based on their own observations and information received from the automated weather system, radar systems, pilots, and other sources. Vehicular access from landside areas to airside areas is tightly controlled at LAX.

ii. Off-Airport Roadways

(1) Freeway System

The I-105 (Century Freeway) is an east-west freeway that extends from LAX east to the City of Norwalk. The median of the I-105 Freeway services the Metro Green Line. I-105 is approximately 0.5 mile south of the Project site

The I-405 (San Diego Freeway) is a major north-south freeway that connects the San Fernando Valley to West Los Angeles, the South Bay area, and Orange County. It provides regional access to LAX and the surrounding area. The I-405 Freeway is approximately 1.5 miles to the east of the Project site.

(2) Arterial Streets

Sepulveda Boulevard is a major north-south six-lane arterial roadway that provides direct access to LAX via the I-405 Freeway and Westchester Parkway on the north and via the I-105 Freeway to the south. Sepulveda Boulevard between the I-105 Freeway and Century Boulevard is located in a tunnel section beneath the south airfield runways. Sepulveda Boulevard is designated as State Route 1 south of its intersection with Lincoln Boulevard.

Century Boulevard also serves as a primary entry to LAX. It runs east-west and has three to four lanes in each direction plus left-turn channelization at major intersections. Parking is not allowed along Century Boulevard, and the posted speed limit is 35 MPH.

The CTA is accessed primarily from the east and requires the use of these arterial streets for access. To a lesser degree, access to the CTA is also provided from the north via Sky Way, which connects to Sepulveda Boulevard and to West 96th Street.

b. Existing Traffic Volumes and Operating Conditions

LAX is the world’s sixth busiest airport. In 2011, LAX served a total of 61.9 million passengers, which represented a 4.7 percent increase compared to the previous year (Crowe, 2012). Passenger traffic by terminal coincides with the vehicular traffic activity associated with each terminal. Terminal 1, Terminal 4, and TBIT are the busiest terminals in terms of passenger traffic in 2011 (LAWA, 2011).

The total number of trips into and out of the CTA on each of the Fridays in August¹ 2011, along with their averages, is summarized in Table IV.D-1. Table IV.D-2 lists the total traffic volumes at the CTA for each peak hour period.

Table IV.D-1

CTA Traffic Volumes by Direction

Date	Inbound (Departures Level)			Outbound (Arrivals Level)		
	8-9 AM	11AM-Noon	5-6 PM	8-9 AM	11AM-Noon	5-6 PM
8/05/2011	3,217	4,175	3,024	3,140	4,811	4,210
8/12/2011	3,181	4,120	3,144	3,049	4,905	4,561
8/19/2011	3,114	4,127	3,031	3,147	5,415	4,166
8/26/2011	3,123	3,873	3,117	3,208	4,574	4,658
Average	3,159	4,074	3,079	3,136	4,926	4,399

Source: Traffic Generation Report, Los Angeles International Airport/August 2011. Prepared by Facilities Planning Division of Facilities management Group. December 2011.

Table IV.D-2

CTA Total Traffic Volumes

Date	8-9 AM	11AM-Noon	5-6 PM
8/05/2011	6,357	8,986	7,234
8/12/2011	6,230	9,025	7,705
8/19/2011	6,261	9,542	7,197
8/26/2011	6,331	8,447	7,775
Average	6,295	9,000	7,478

Source: Traffic Generation Report, Los Angeles International Airport/August 2011. Prepared by Facilities Planning Division of Facilities management Group. December 2011.

¹ The month of August is the warmest of the year and constitutes for peak season travel at LAX, as described in the LAX Specific Plan.

The CTA consists of a very busy and highly controlled roadway system. There are six traffic signals and 18 signalized pedestrian crosswalks within the CTA, which is higher a concentration than a typical public roadway.² While these signals are necessary to assist safe traffic and pedestrian circulation, they introduce significant delay and backup of circulating traffic. As such, it is difficult for drivers to travel at significant speeds on the CTA roadway system due to the traffic control systems and enforcement of the speed limit.

Passengers may arrive via one of several modes: private automobile, public transit, taxi, limousine, FlyAway buses, hotel/motel shuttles, door-to-door vans, etc. The private vehicle continues to be the most common form of ground transportation used by air passengers, accounting for more than half of all trips to LAX (55 percent) (LAWA, 2007). A typical path may consist of a vehicle entering the CTA roadway system, followed by a stop at one of the terminal curbsides to drop off a passenger, and then proceeding to that terminal's parking garage. A total of 53 percent of passengers traveled alone to LAX in 2006 via various modes of transportation. Conversely, the proportion of passengers traveling in parties of two or more has increased compared to 2001. The percentages of mode of access choice to LAX in 2006 are provided in Table IV.D-3. The estimated mode percentages developed as part of the 2006 Air Passenger Survey are similar to the preliminary results of the 2011 Air Passenger Survey currently under draft review.

Table IV.D-3

Mode of Transportation

Mode	Annual
Private transportation:	
Private vehicle	55%
Rental vehicle	11%
Taxi	9%
Shuttle/ van (private)	10%
Limousine/ town car	2%
Shared/ scheduled:	
Share shuttle	
Hotel courtesy van	5%
Scheduled airport/ bus/ van/ Flyaway	3%
Chartered bus or van	3%
Public transportation:	
Public bus or train	1%
Source: 2006 Air Passenger Survey Final Report – Los Angeles International Airport, Submitted to Los Angeles World Airports by Applied Management & Planning Group, December 2007.	

c. Public Transit System

Public transit services providing access to and from the LAX area include the Los Angeles County Metropolitan Transportation Authority (Metro), City of Los Angeles Department of Transportation (LADOT), Torrance Transit, Santa Monica’s Big Blue Bus, Culver City Bus, and a variety of privately contracted and entrepreneurial shuttle transit services. These five public transit providers serve the LAX Transit Center located on 96th Street, between Sepulveda Boulevard and Airport Boulevard. The Metro Green Line Aviation Station is located at the

² For example, the roadway length of World Way West from Sky Way to the end of Terminal 3 is approximately 0.5 mile and has five signalized pedestrian crosswalks spaced an average of 400 feet. In comparison, the approximately 1.5 mile segment of Century Boulevard from Sepulveda Boulevard to the I-405 Freeway has seven traffic signals spaced an average of approximately 0.2 mile (1,130 feet).

southeast corner of Aviation Boulevard and Imperial Highway. The Aviation Station serves as a destination for airport bound passengers with free shuttle service to and from the airport. In addition, LAWA's FlyAway Bus offers non-stop, round-trip shuttle bus service to LAX from four locations (Union Station, Van Nuys, Westwood, and Irvine). Taxis and shuttles stop outside the terminals on both the lower/arrivals level and the upper/departures level.

d. Pedestrian Facilities

Pedestrian facilities include sidewalks, walkways, pedestrian bridges or sky bridges, crosswalks, signals, and benches. These pedestrian facilities enhance the safety of passengers and airport support staff within the CTA. As mentioned earlier, the lower/arrivals level is served by two curbsides and roadways, separated by a 10-foot wide concrete pedestrian median. There are six traffic signals and 18 pedestrian crossing signals on the outer roadway connecting the check-in terminal buildings with the parking facilities. Traffic signals are provided at pedestrian crosswalks and sidewalks are wide to accommodate high volumes of pedestrian traffic. Landscaping fronting the parking structures create a buffer between the passengers on the sidewalk and vehicles on the road. In addition, the upper/departures level does not provide pedestrian crosswalks. However, pedestrians can access the terminals from the parking structures via the sky bridges. Sky bridges are pedestrian crosswalks over roadway traffic. The following sky bridges are provided within the CTA: P1 to Terminal 1, P2 to Terminal 2, P3 to Terminal 3, P4 to TBIT, P4 to Terminal 4, P5 to Terminal 5, P6 to Terminal 5, and P7 to Terminal 7.

e. Parking

LAX provides both close-in and remote parking facilities for short-term and long-term parking customers. Parking structures serve each curbfront directly adjacent and clearly visible, with convenient parking entrances for vehicles directly from the curb lanes. Approximately 8,577 parking stalls are provided interior to the CTA, with eight close-in parking structures. Both upper and lower level left lane curbs provide inbound access to CTA parking structures and egress from these structures is provided via Center Way. The parking structures do not all connect with another. Traffic exiting the parking lots is exclusively directed to the lower level roadway. Outside the CTA, Lot C and Park One provide approximately 10,028 parking spaces. Thus, LAX currently provides a total of 18,605 public parking spaces (LAWA, 2011). The LAX parking system simultaneously operates with excess capacity, primarily in Lot C and Park One; however, several of the close-in parking garages within the CTA regularly fill to capacity during peak periods. There are also numerous private parking facilities outside the CTA within the LAX area that provide thousands of additional parking spaces.

f. Regulatory Framework

Federal Highway Beautification Act

The Federal Highway Beautification Act of 1965 (23 United States Code 131), enforced by the Federal Highway Administration (FHWA), provides for control of outdoor advertising, including restriction and removal of certain types of signs, along the interstate highway system. Outdoor advertising controls apply to the National Highway System (NHS) including the Interstate and designated intermodal NHS connectors and those roads that were on the Federal-aid Primary System as it existed on June 1, 1991, but are not part of the designated NHS.

On September 25, 2007, the FHWA issued a memorandum on off-premises changeable electronic variable message signs (CEVMS), which stated that proposed laws, regulations and procedures that allowed CEVMS subject to acceptable criteria. The memorandum identified "ranges of acceptability" relating to such signage, as well as other standards that have been found helpful to ensure driver safety, such as requirements that a display contain static messages without movement such as animation, flashing, scrolling, intermittent or full-motion video.

The nearest interstate to the Project site is I-105, which is approximately 0.5 mile south of the Project site. The proposed Project would not place digital signage along the interstate highway system; therefore, the Federal Highway Beautification Act is not applicable.

California Vehicle Code

The California Vehicle Code Section 21466.5 includes specific criteria for limiting the potential of impairing drivers' vision due to bright artificial light sources upon the highway within a driver's field of view. A highway is defined in Section 360 of the California Vehicle Code as a way or place of whatever nature, publicly maintained and open to the use of the public for purposes of vehicular travel. In other words, highways include street roadways. Section 21467 provides that each prohibited sign, signal, device or light is a public nuisance and may be removed without notice. The restrictions may be enforced by Caltrans, the California Highway Patrol or local authorities. The proposed Project would place lighted signage in view of Sepulveda Boulevard, which is a State Highway (State Route 1); therefore, the California Vehicle Code Section 21466.5 is applicable.

The eastern boundary of the proposed Project is adjacent to Sepulveda Boulevard. The nearest signage within the Project site to Sepulveda Boulevard is three existing off-site billboards within the Park One Property. Although within the boundary of the proposed Project, no new signs are proposed at the Park One Property, or along Sepulveda Boulevard. The nearest proposed sign location is approximately 1,000 feet west of Sepulveda Boulevard. As part of the proposed Project (i.e., Project Design Features), digital signage would be equipped with sensors that modify the brightness of the sign in response to ambient lighting conditions to ensure that such brilliance would not impair the vision of drivers upon the highway (see discussion under Section IV.C, Artificial Light and Glare). Thus, the California Vehicle Code Section 21466.5 is not discussed further.

California Outdoor Advertising Act

The Outdoor Advertising Act (California Business and Professions Code, Sections 5200 et seq.) and the California Code of Regulations, Title 4, Division 6 (Sections 2240 et seq.) regulate the placement of off-premise advertising displays as visible from California Highways by outlining specific qualitative criteria that aim to eliminate the potential for distractions. Provisions relevant to content and placement of displays include the following:

- Advertising displays may not be placed that are so illuminated that they interfere with the effectiveness of, or obscure any official traffic sign, device, or signal; nor shall any advertising display include or be illuminated by flashing, intermittent, or moving lights (except that part necessary to give public service information such as time, date, temperature, weather, or similar information); nor shall any advertising display cause beams or rays of light to be directed at the traveled ways if the light is of an intensity or brilliance as to cause glare or to impair the vision of any driver, or to interfere with any driver's operation of a motor vehicle.
- Advertising displays may not be placed to obstruct, or otherwise physically interfere with, an official traffic sign, signal, or device or to obstruct, or physically interfere with, the vision of drivers in approaching, merging, or intersecting traffic.
- No advertising display shall be placed within 500 feet from another advertising display on the same side of any portion of an interstate highway or a primary highway that is a freeway. No advertising display shall be placed within 500 feet of an interchange, or an intersection at grade, or a safety roadside rest area on any portion of an interstate highway or a primary highway that is a freeway and if the interstate or primary highway is located outside the limits of an incorporated city and outside the limits of an urban area. No advertising display shall be placed within 300 feet from another advertising display on the same side of any portion of a primary highway that is not a freeway if that portion of the primary highway is

located outside the limits of an incorporated city and outside the limits of an urban area. No advertising display shall be placed within 100 feet from another advertising display on the same side of any portion of a primary highway that is not a freeway if that portion of the primary highway is located inside the limits of an incorporated city or inside the limits of an urban area.

The eastern boundary of the proposed Project site is parallel to Sepulveda Boulevard, which is designated as a State Highway (State Route 1). As it relates to the proposed Project, the three existing off-site billboards within the Park One Property, along Sepulveda Boulevard, are subject to the California Outdoor Advertising Act. However, no new off-site signage would be placed along Sepulveda Boulevard. The nearest proposed sign is located approximately 1,000 feet west of Sepulveda Boulevard. Thus, the California Outdoor Advertising Act is not discussed further.

City of Los Angeles Sign Ordinance

The City of Los Angeles regulates signs to promote public safety and welfare. The City of Los Angeles does this by controlling the size, height, and spacing of signs to protect the visual environment and regulating the design, construction, and maintenance of outdoor advertising signs to ensure that signs do not create visual blight or interfere with transportation safety or otherwise endanger public safety. Signs deemed by the Department of Building and Safety to have a potential for hazard are sent to the LADOT for review. If LADOT determines that the sign or sign support structure will constitute a hazard, the Department of Building and Safety will deny the permit application.

The City of Los Angeles permits the following signs subject to area, height, location, projection, and other requirements: monument signs, information signs, projecting signs, wall signs, pole signs, illuminated architectural canopy signs, roof signs, window signs, marquee signs, temporary signs, and mural signs. Signs containing obscene content and flashing, mechanical, and strobe lights are prohibited, as are supergraphic and off-site signs, unless such signs are specifically permitted pursuant to an adopted Specific Plan, Sign District, or Development Agreement.

Los Angeles Municipal Code (LAMC)

The LAMC, Section 12.50, Airport Approach Zoning Regulations, establishes special airport zoning regulations for land uses within the approach zones of LAX (specifically within the areas mapped in the Airport Hazards Area Maps referenced in the Code) in order to prevent the creation or establishment of airports hazards. These zoning regulations are primarily directed toward height limits but also address light emissions to avoid potential hazards to aircraft resulting from illuminated signs and structures within airport hazard areas. These regulations are applicable to uses immediately east and west of the LAX north and south runways. Use restrictions within the airport hazard area include no illuminated or flashing advertising or business signs, or billboards that would make it difficult for pilots to distinguish between those lights and the aeronautical lights of the airport, or which would result in glare in the eyes of pilots and impairment of visibility that could endanger the landing, taking off or maneuvering of aircraft). Although the proposed Project does not include placement of new off-site signage within the Airport Hazards Area, the intent of the Project is to be mindful of placement of the proposed signage related to hazards (obstruction and light emissions) in the airport.

City of Los Angeles General Plan

Section D(4)(a) and (b) of Chapter VI of the City of Los Angeles General Plan Transportation Element expressly prohibits advertising on and along Scenic Highways and rights-of-way. Specifically, (1) "Only traffic, information, and identification signs shall be permitted within the public right-of-way of a Scenic Highway;" and (2) "Off-site outdoor advertising is prohibited in the public right-of-way of, and on public-owned land within five

hundred feet of the center line of, a Scenic Highway.” The proposed Project is not located within five hundred feet of a Scenic Highway; therefore, Sections D(4)(a) and (b) of the City of Los Angeles General Plan are not applicable.

LAX Specific Plan

As detailed under Section IV.A, Land Use and Planning, Section 14 of the LAX Specific Plan addresses sign regulations. The LAX Specific Plan specifically contemplates the establishment of a sign district under Section 14(D). The following policies and programs are established under the LAX Specific Plan:

- Section 6, Safety of Airport Operations. Notwithstanding any other provision of this Specific Plan, no use, development or activity within the Specific Plan Area may compromise the safety of airport flight operations in any way. Final authority for determining whether airport flight operation safety is compromised rests solely with the U.S. Department of Transportation and Federal Aviation Administration (FAA).
- Section 14, Sign Regulations. The Department of Building and Safety shall issue sign permits for any signs otherwise requiring a permit under the LAMC that are regulated by this Specific Plan. All signs and sign support structures that are erected and maintained on property owned or controlled, in whole or in part, by LAWA shall be reviewed by the Department of Building and Safety pursuant to the LAMC.

g. Methodology

The proposed Project involves construction and operation of new off-site signage within designated Landside and Airside areas of LAX. Within the Landside Sub-Area, the proposed signage would be visible from the roadway network and pedestrian pathways of the CTA, and within the Airside Sub-Area, the proposed signage would be visible by LAWA airfield employees near the gates and to pilots and passengers when approaching or departing the passenger gates. As discussed further in Section IV.C, Artificial Light and Glare, no digital signage or other signage illumination would be used in the Airside Sub-Area.

Placement of signage would be required to undergo a review to ensure that no transportation safety impacts would result as related to sign placement and size (i.e., no obstruction of views or obstruction of wayfinding signs) as required under the LAMC and LAX Specific Plan. Therefore, the following analysis is focused on the potential of new off-site signage to result in a visual distraction that could result in unsafe conditions relative to motor vehicle use and aviation. The potential visual distraction is focused on the use of digital or other lighted signage.

A driver must focus attention to the task of driving, and sufficient distraction from the task could be associated with a higher risk of a crash. A driver’s eye glances should be concentrated on the roadway, and frequent or long eye glances away from the roadway toward other objects external or internal to the vehicle could result in a safety impact. Driver distraction can be attributed to many factors including inattention (i.e., fatigue, daydreaming, or worrying about personal problems), internal distraction (vehicle systems, electronic devices, other occupants in the vehicle, eating or drinking) and external distraction (glancing away from the roadway at activities or objects outside of the vehicle such as looking at scenery, buildings, previous crash site, signage, or searching for building address). In regard to external distractions from signage, the following four major factors may affect the perception of a sign (LDA, 2012):

- Size – size and shape of a signage visible to approaching automobile traffic;
- Location – location of a sign in the field of view of drivers;

- Motion – stationary objects versus the direction of movement of the object relative to the driver’s direction of travel; and,
- Contrast – the contrast of the object and its background.

Measuring driver distraction is difficult and imprecise and studies may derive different results and conclusions due to differences in methodology and definitions of distraction.

A review of literature and studies related to the issue of traffic safety and driver distraction over the past decade as related to the use of digital signage (i.e., CEVMS) was conducted. This review indicated that studies have mixed, and often inconclusive results as discussed further below. Depending on which study is consulted, evidence can be found that a) CEVMS have virtually no impact on safety, or b) distraction and aesthetic degradation occurs with CEVMS that suggest that use be restricted or even eliminated. Many of the studies have focused on digital and conventional billboards. While the proposed Sign District would not allow billboards, studies that include billboards are discussed below as indications of potential distractions due to the presence of signage.

Industry Sponsored Studies

Several studies have determined that billboards, and specifically digital billboards, are not a source of distraction that increases the risk of highway accidents. A study prepared by Tantala Associates, published July 2007, assessed the statistical relationship between digital billboards and traffic safety in Cuyahoga County, Ohio. The study concluded that there is no statistical relationship between digital billboards and occurrence of accidents. This supports the conclusion of another study released in March 2007 by the Center for Automotive Safety Research at Virginia Tech's Transportation Institute (VTTI). The VTTI study determined while digital billboards do seem to attract more attention than conventional billboards, in the form of longer, as opposed to more frequent glances, the mean glance length for digital billboards recorded in the study was less than one second. Changes in driver performance occurring in the presence of digital billboards, such as eye glance patterns, speed maintenance, and lane-keeping, are comparable with driver performance associated with items encountered in everyday driving such as on-premises signs, logo placards, landmark buildings, and murals. The VTTI study concluded that digital billboards were safety-neutral.

Both efforts were conducted in association with a foundation affiliated with the Outdoor Advertising Association of America (OAAA). The primary conclusion of both efforts was that there is conclusive evidence that traffic accidents are not more likely to occur with the presence of such signs. In addition, industry studies indicate that CEVMS can offer a positive benefit to society by broadcasting critical safety and public information, such as Amber Alerts, severe weather warnings, and incident/emergency condition information.

Government and Other Studies and Surveys

In 1980, the FHWA published “Safety and Environmental Design Considerations in the Use of Commercial Electronic Variable Message Signage,” which stated that no credible statistical evidence existed to support the conclusion that CEVMS negatively impacted road safety. However, incident studies reported both positive and negative relationships between accidents, high driving task demand, and the presence of roadside advertisements. The evidence was statistically insufficient to support the relationship between electronic billboards and traffic incidents. The study was based on a critical review of reported research, operational experience, and legislative history relating to electronic billboards and outdoor advertising. The study was intended to provide background information for the development of standards for electronic billboards used for public information and business advertisements adjacent to roadways. The study pointed out various factors to be considered in any development of standards for the design of electronic billboards and suggested more studies be done in this field.

In 2001, the FHWA published “Research Review of Potential Safety Effects of Electronic Billboards on Driver Attention and Distraction,” which reviewed the literature published after the 1980 study. Although the results of studies after 1980 were mixed and inconclusive, the report noted that studies identified that an increase in distraction, a decrease in brightness, or a decrease in legibility may cause an increase in crash rate (Farbry, 2001:8).

In September 2007, FHWA released a memorandum which discussed that CEVMS do not violate a prohibition against “intermittent” or “flashing” or “moving” lights, and that FHWA Divisions should work with states in reviewing Federal/State Agreements (FSAs) regarding CEVMS. The memo called for consideration of requirements associated with duration of message, transition time, brightness, spacing, and location that “...evidence reasonable and safe standards to regulate such signs are in place for the protection of the motoring public.”

In February 2009, the FHWA published “The Effects of Commercial Electronic Variable Message Signs (CEVMS) on Driver Attention and Distraction: An Update,” which addressed the basic research question of whether operation of a CEVMS along a roadway is associated with a reduction of driving safety for the public. The report identified three fundamental methods for answering this question: (1) whether there is an increase in crash rates in the vicinity of CEVMS, (2) whether there is an increase in near-crashes, sudden braking, sharp swerving and other such behaviors in the vicinity of CEVMS, and (3) whether there are excessive eye glances away from the roadway in the vicinity of CEVMS.

Based on the literature review, FHWA also proposed a long-term program of research, which includes determination of distraction and basis for possible regulation of electronic billboards. They called for an on-road instrumented vehicle study, which would identify changes in driving behavior at and around billboard sites with on-board measurement devices in the vehicles of volunteer drivers.

The FHWA has performed studies to identify a relationship between electronic signs and their risk to drivers and to determine as objectively as possible what safety issues relate to CEVMS, with an aim towards promulgating nationwide standards or at least guidelines that other levels of government across the country could use. Its review of previous literature has found that the results to gauge driver distraction have been mixed and inconclusive. This complex issue has not been drawn into clearer focus by recent FHWA-funded research because it requires subtle and sophisticated techniques that may not be easily completed. The report does recommend a long-term program that consists of three stages: determination of distraction, basis for possible regulation, and relationship of distraction to crashes.

Other Communities/Agencies

In 2001, the University of North Carolina Highway Safety Research Center prepared “The Role of Driver Distraction in Traffic Crashes” and assessed the major sources of distraction to drivers and potential for the distractions to cause crashes. Research conducted for the study suggested that billboards are not a significant distraction that contributes to crashes.

Summary

Elements have been identified in various reports that affect the potential for driver distraction to occur from CEVMS. These relate to brightness, message duration and message change interval,³ and signage location with regard to official traffic control devices, roadway geometry, and vehicle maneuver requirements at interchanges.

³ *A frequently changing CEVMS can be a greater source of distraction as drivers continue to glance at the CEVMS from a distance, even before it can be read, to observe the changing content.*

Regulations of operations could include, for example, the time any single message may be displayed, the time of message transition, brightness of the sign and controls that adjust brightness based on the ambient light environment, and design and placement that ensure that the sign does not confuse drivers (i.e., CEVMS should not resemble traffic signs in pattern or color) or create dangerous glare.

2. ENVIRONMENTAL IMPACTS

a. Thresholds of Significance

There are no established California Environmental Quality Act (CEQA) thresholds for transportation safety as it relates to signage, nor are there established regulatory thresholds appropriate to the proposed Project that pertains specifically to digital signage as a potential transportation safety hazard. As described in Section IV.D.2 above, the federal and state regulatory programs addressing digital signage are specific to signage along or visible from federal and state highways respectively. As the proposed Project would not establish signage in view of federal or state highways, these regulations are not applicable to the proposed Project and, therefore, are not an appropriate threshold of significance.

The City of Los Angeles has established a requirement in Section 14.4.5(A) of the LAMC Sign Ordinance that prohibits the use of signage that would be a traffic hazard, as follows:

Section 14.4.5(A), Hazard to Traffic, prohibits erecting, constructing, painting, or maintaining any sign and issuing any sign permit “if the sign or sign support structure, because of its location, size, nature or type, constitutes a hazard to the safe and efficient operation of vehicles upon a street or a freeway, or which creates a condition that endangers the safety of persons or property.”

Appendix G to the State CEQA Guidelines includes the following checklist question related to transportation safety:

- Would a project increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Under the *L.A. CEQA Thresholds Guide*, the Appendix G checklist question on transportation safety listed above is referenced in Section L.5, Project Access. The determination of significance under *L.A. CEQA Thresholds Guide* Section L.5 is focused on intersection capacity at the nearest intersection to the project and vehicle/vehicle, vehicle/bicycle, and vehicle/pedestrian safety impacts related to physical conditions of the site such as access points, internal circulation, parking access (for example turning radii, driveway queuing, and, and line-of-sight for turns into and out of project driveways) and the potential for vehicular/pedestrian and vehicular/bicycle conflicts.

The proposed Project would not affect local intersection capacity or change site design features such as access points and internal circulation. Therefore, a threshold that addresses the uniqueness of the proposed Project is being used to determine if the proposed Project would have a significant impact relative to transportation safety. The following threshold is based on Section 14.4.5(A) of the LAMC Sign Ordinance which prohibits signage that would result in a transportation safety impact.

The proposed Project would potentially result in a significant impact if:

- The project would constitute a hazard to the safe and efficient operation of vehicles upon a street or a freeway or the safe and efficient operation of aircraft during takeoff and landing or ground maneuvers, or which creates a condition that endangers the safety of persons or property.

b. Project Design Features

Following is a list of all the Project Design Features and applicable LAX Master Plan (LAWA adopted) commitments that would be included with implementation of the proposed Project:

Project Design Features

- The allowable locations and sizes of signs have been designed to limit visibility from off-airport locations (i.e., surrounding communities) and to not visually or otherwise negatively affect airport operations or affect or alter historical buildings within LAX.
- No new off-site signage would be placed along the Project boundary, and no electronic or light enhanced signage would be visible from the adjacent residential areas (i.e., community of Westchester to the north and City of El Segundo to the south).
- No electronic or light enhanced signage would be installed within or be visible from the Airside Sub-Area.
- Off-site signs would not be permitted on a number of buildings within the Project site, including the Theme Building, the Airport Traffic Control Tower, and the Clifton A. Moore Administration Building (including the former Airport Traffic Control Tower [1961]).
- Limit illuminance contribution of signage to 0.3 footcandle (fc) at 350 feet from face of sign.
- The proposed signage locations and their placement would be in a manner that would prevent automobile headlight-related glare. For example, signage would be placed at a higher level than the roadway or perpendicular to headlights (i.e., signage placed on sky bridges).
- The proposed Project would include a plan to remove a number of billboards in LAWA's control and comply with other applicable requirements from the Department of City Planning.
- Digital displays signs would display static images only (i.e., restriction for any type of sign that contains images, text, parts, or illumination which flash, change, move, blink, or otherwise refresh in whole or in part).
- The digital displays would have the light emitting diodes (LEDs) aimed horizontally towards the street view using a cubic louvering system to help to limit light trespass, direct the visual impact of the display to the appropriate audience, and direct light away from flight paths and highly focused driving tasks. Refer to Figure IV.C-2 (in Section IV.C, Artificial Light and Glare) for a typical light emitting diode beam spread and plan view of the layout for the directionality of the LEDs associated with the digital display signs.
- The proposed location of the two types of digital display signs - Controlled Refresh (CR) I and CR III - have been chosen being mindful of driver, pedestrian, ATC personnel and pilot safety.
- Digital display signs shall be limited in their refresh events. CR I images would refresh (change) no more than one event every eight seconds (with the exception being Parking Structure 1 which would refresh every 14 seconds). CR III images would refresh no more than one event every 12 hours. In addition, the CR III images on the sky bridges would refresh simultaneously no more than one event every 12 hours.
- Digital signage would be subject to limits on brightness levels (i.e., 4,500 candelas per meters squared [cd/m²] during the daytime and 300 cd/m² during the nighttime) and equipped with sensors that modify the brightness of the sign in response to ambient lighting conditions.

- Dim lights of digital displays slowly at dusk over a 45 minute fade rate, controlled by an astronomical time clock. The transition from day to nighttime brightness would be required to occur gradually, to prevent a sudden change in perceptible brightness levels by pedestrians and motorists.
- Digital displays would not include large areas of reflective elements and have a contrast ratio of less than 30:1 to eliminate glare.
- Supergraphic signage over 20-feet tall at parking structure locations would be illuminated with LED or metal halide floodlights consisting of adjustable floodlight fixtures mounted at the top of the signage element with a locking knuckle precisely aimed at the signage to eliminate any chance of throwing light into the flight path. Cantilever arms, louvers, barn doors and/or glare shields would be used to allow the fixture to be aimed towards the supergraphic to illuminate the signage element exclusively.
- Supergraphic signage over 20-feet tall on terminal facades above canopy locations would be illuminated with LED or metal halide floodlights mounted to the adjacent canopy. Adjustable floodlight fixtures would be mounted above the canopy with a locking knuckle to precisely aim at the signage and eliminate any chance of throwing light into the flight path. Cantilever arms, louvers, barn doors, and/or glare shields would be used to allow the fixture to be aimed towards the supergraphic to illuminate the signage element exclusively.
- Maximum vertical luminance of illuminated supergraphic signage would be 5 to 7 fc during nighttime.
- Supergraphics/wall signs/column wraps would have matte finishes, which would prevent glare from the light fixtures.

Applicable LAX Master Plan Commitments

LU-4. Neighborhood Compatibility Program. Ongoing coordination and planning will be undertaken by LAWA to ensure that the airport is as compatible as possible with surrounding properties and neighborhoods. Measures to enforce this policy will include: 1) Along the northerly and southerly boundary areas of the airport, LAWA will provide and maintain landscaped buffer areas that will include setbacks, landscaping, screening or other appropriate view-sensitive uses with the goal of avoiding land use conflicts, shielding lighting, enhancing privacy and better screening views of airport facilities from adjacent residential uses. Use of existing facilities in buffer areas may continue as required until LAWA can develop alternative facilities. 2) Locate airport uses and activities with the potential to adversely affect nearby residential land uses through noise, light spill-over, odor, vibration and other consequences of airport operations and development as far from adjacent residential neighborhoods as feasible. 3) Provide community outreach efforts to property owners and occupants when new development on airport property is in proximity to and could potentially affect nearby residential uses.

DA-1. Provide and Maintain Airport Buffer Areas. Along the northerly and southerly boundary areas of the airport, LAWA will provide and maintain landscaped buffer areas that will include setbacks, landscaping, screening or other appropriate view-sensitive improvements with the goals of avoiding land use conflicts, shielding lighting, enhancing privacy and better screening views of airport facilities from adjacent residential uses. Use of existing facilities in buffer areas may continue as required until LAWA can develop alternative facilities.

LI-2. Use of Non-Glare Generating Building Materials. Prior to approval of final plans, LAWA will ensure that proposed LAX facilities will be constructed to maximize use of non-reflective materials and minimize use of undifferentiated expanses of glass.

LI-3. Lighting Controls. Prior to final approval of plans for new lighting, LAWA will conduct reviews of lighting type and placement to ensure that lighting will not interfere with aeronautical lights or otherwise impair

Airport Traffic Control Tower or pilot operations. Plan reviews will also ensure, where feasible, that lighting is shielded and focused to avoid glare or unnecessary light spill-over. In addition, LAWA or its designee will undertake consultation in selection of appropriate lighting type and placement, where feasible, to ensure that new lights or changes in lighting will not have an adverse effect on the natural behavior of sensitive flora and fauna within the Habitat Restoration Area.

c. Project Impacts

i. Project Activities

The proposed Project entails the development and implementation of a Supplemental Use District for signage (i.e., Sign District) to permit new commercial off-site signage within the Landside Sub-Area and Airside Sub-Area of LAX subject to certain restrictions. The signage would be subject to a new LAX-specific sign ordinance that would differ from and supersede LAMC signage regulations. The signage allowed under the proposed LAX Sign District would include a range of new off-site signage, including supergraphics, wall signs, digital display signs, signs on passenger boarding bridges, signs on columns, and hanging signs. As part of the proposed Project, the LAX Sign District would allow flexibility to provide either a digital display or supergraphic at the locations where a digital display has been proposed. Table II-1 in Chapter II, Project Description, presents the types of signs and their proposed location throughout LAX.

The proposed Project has been designed to limit visibility from off-airport locations. The new off-site signage would be located internally within LAX and no new off-site signage would be placed along the Project boundary. Electronic or light enhanced signage would be placed within the Landside Sub-Area, and would not be placed in or be visible from the Airside Sub-Area. In addition, digital display signs would be available as use for emergency communication, as necessary.

Construction-related activities associated with the proposed Project would be relatively minor and involve securing framework for digital displays, welding of signage supports (i.e., hooks and/or railing systems), and sign installation.

With the exception of digital display signs (which are remotely changed), operational activities to replace the advertising material would occur periodically, which could require temporary lane closures while sign/removal installation is occurring.

In addition, the proposed Project would include a plan to remove a number of billboards in LAWA's control and compliance with other applicable requirements from the Department of City Planning.

ii. Potential Impacts

(1) Construction

Depending on the type of sign, the duration of construction for signage installation would range from six hours for column and hanging signs to approximately one week for a supergraphic sign and would require two to six workers. Digital display signs would take approximately two days to construct and require four workers. Depending on the type of sign installed, construction equipment could include one to two cranes, lifts, utility truck, flatbed truck, and hand-held drilling equipment. Installation of most signage (i.e., signage on terminal walls, columns and parking structures) would generally occur within sidewalks and setbacks, and thereby not affect the roadways. Temporary sidewalk detours may be required; however, this would only occur in the immediate location where signage construction and/or replacement is occurring, and would be a short duration (i.e., six hours to one week for initial installation). During temporary sidewalk closures, detour signs and routes

would be posted to ensure safe movement of pedestrians. Some temporary lane closures may be required for sign installation, primarily installation of signs on sky bridges. Lane closures would be of short duration and occur only at limited points at any one time, without closing the entire roadway. Other areas of the CTA would be kept clear and unobstructed at all times during sign installation in accordance with FAA, State Fire Marshal, and Los Angeles Fire Code regulations. Given the short duration of construction for each sign and the limited amount of time that lane closures could be required, impacts to the transportation safety of the site during construction would be less than significant.

(2) *Operation*

(a) On-Airport Transportation

Landside Sub-Area

The proposed Project includes a maximum of approximately 81,522 square feet (sq ft) of proposed new off-site signage within the CTA in the Landside Sub-Area. As detailed in Table II-1 in Chapter II, Project Description, the proposed signage within the Landside Sub-Area includes a range of new off-site signage, including supergraphics, wall signs, digital display signs, signs on columns, and hanging signs. The proposed signs would, and are intended to, be visible to motorists and pedestrians within the CTA, and not to the surrounding communities.

As described in Section IV.D.3, studies addressing the relationship between digital signage and the potential for driver distraction that leads to traffic accidents are inconclusive. However, there are various restrictions identified that reduce safety concerns. The proposed Project includes Project Design Features to minimize the potential for traffic hazards and would comply with regulations that are consistent with factors identified as reducing safety concerns. Such Project Design Features include regulating placement of the signs to minimize visibility from off-airport roadways, restricting allowable placement of signs, shielding of lights, and limiting illumination levels and the control refresh rates of digital signs to lessen the potential for driver distraction to occur. In areas within the Landside Sub-Area (i.e., CTA) where traffic is moving, CR III digital display signs are proposed because they would change or refresh simultaneously every 12 hours. In areas within the CTA not directly in the line-of-sight of moving traffic (such as on the surfaces of parking structures parallel to the roadway) CR I digital display signs are proposed, which have a controlled refresh of no more than one refresh event every eight seconds. The exception is the proposed location of the CR I digital display sign on the east elevation of parking structure P1 (refer to Figures II-5 to II-12 and II-14 in Chapter II, Project Description). This location is at the southwestern area of a traffic signal (a three-way stop associated with westbound traffic on World Way and northbound and southbound traffic on Sky Way/96th Street at the entrance to the CTA). Because the Parking Structure P1 digital is at an intersection that has a notable amount of oncoming traffic, the CR I at this location would be timed such that the controlled refresh event would occur every 14 seconds.

Due to the amount of traffic signals, pedestrian crossings, and vehicular activity, the speed of traffic on the CTA roadways is generally lower than the posted speed limit and much lower than on typical public streets. Additionally, Project Design Features associated with the proposed Project includes a requirement that digital signage would be equipped with sensors that modify the brightness of the sign in response to ambient lighting conditions, thus ensuring that brightness of the displays at various times of day and night would not present a traffic hazard.

Additionally, regulatory requirements would ensure that the proposed Project would not present a safety hazard. The Citywide Sign Ordinance establishes controls on the size, height, and spacing of signs to protect the visual environment and regulates the design, construction, and maintenance of outdoor advertising signs to ensure that signs do not interfere with transportation safety or otherwise endanger public safety. Any signs that are

determined by the Department of Building and Safety to have the potential of creating a safety risk are sent to LADOT for review. If LADOT determines that the signs would be a safety hazard, a permit will not be issued. Further, the LAX Specific Plan requires that prior to approving any sign the Executive Director must consult with LADOT to determine that the sign is not a hazard to traffic.

As discussed further in Section IV.C, Artificial Light and Glare, lighting at LAX is not allowed to interfere with the nighttime visibility of ATC operators and incoming pilots, or interfere with lighting used to guide aircraft such as approach lighting, runway/taxiway guidance lighting, runway end identifier lights, and ground lighting/markings. Existing laws and regulations, as well as Project Design Features, which regulate sign location and brightness, would ensure the digital displays and lighted signs would not be located in such a manner to create a hazard to ATC operators, pilots or motorists. One such Project Design Feature involves the layout of the digital displays to have the LEDs aimed horizontally towards the internal airport roadways and use a cubic louvering system to aim the light downward, which would limit any undesirable glare from other vantage points (refer to Figure IV.C-2 in Section IV.C, Artificial Light and Glare, for a typical LED beam spread and plan view of the layout for the directionality of the LEDs associated with the digital display signs).

Further, the LAX Sign District sign ordinance would include requirements such as restricting where signs could be located and limiting total square footage that would prevent visual clutter and help to ensure that roadway visibility would not be obstructed and that wayfinding signs would be visible to help motorists and pedestrians navigate within the CTA. Additionally, signage would not be allowed to resemble wayfinding or traffic signs in color/style or placement.

The proposed Project would not constitute a hazard to the safe and efficient operation of vehicles upon a street or a freeway, or the safe and efficient operation of aircraft during takeoff and landing or ground maneuvers, or create a condition that endangers the safety of persons or property; therefore, impacts would be less than significant.

Airside Sub-Area

The proposed Project includes a maximum of approximately 289,600 sq ft of proposed new off-site signage within the Airside Sub-Area. The LAX Airside Sub-Area (approximately 102 acres) includes terminal concourses, gates, passenger boarding bridges, runways, airport access ways, and equipment which allow for the safe and efficient operation of airport airfield activities. The Airside Sub-Area is primarily visible to passengers and employees who handle airfield operations, including drivers of vehicles and equipment, and pilots of aircraft entering and departing from the gates and ATC operations. As a Project Design Feature, signs within the Airside Sub-Area would be installed on existing facilities and would not be lit. The placement of the signs on existing facilities in compliance with regulations such the LAX sign ordinance that would limit signage type, size, placement, and prohibit lighted signs with the Airside Sub-Area, would ensure that visual clutter would not occur and that no distractions to pilots or ATC personnel within the Airside Sub-Area would occur.

The proposed Project would not constitute a hazard to the safe and efficient operation of vehicles upon a street or a freeway, or the safe and efficient operation of aircraft during takeoff and landing or ground maneuvers, or create a condition that endangers the safety of persons or property; therefore, impacts would be less than significant.

(b) Off-Airport Transportation

Northern Boundary

Westchester Parkway and other local area roadways are located to the north of LAX, approximately 1,900 feet at the nearest location from the Project site. An earthen berm and perimeter fence intervene between most of the LAX boundary and the roadways, thus blocking or obscuring direct views of the Project site from motorists.

Proposed signage within the Landside Sub-Area (i.e., CTA) would not be visible from the northern area. The only signage that would be on the Landside Sub-Area that is not interior to the CTA is the proposed digital display sign on Terminal 1. As a Project Design Feature, the location of the proposed digital display is on the eastern facade of the terminal; therefore, based on location of the signage, distance and intervening structures, the existing signage would not be readily visible to motorists on Westchester Parkway, and thereby not pose a distraction to drivers.

Within the Airside Sub-Area, Terminals 1 through 3 and the northern portion of the TBIT/future Bradley West Terminal would be the closest portions of the Project site to the community along the LAX northern boundary. Limited long-distance views are available of the Airside Sub-Area portion of the Project site. However, Airside Sub-Area signage (limited to the passenger boarding bridges) and other facilities within the Project site are indistinguishable and thus signage would blend into this distant background and not be a distraction to motorists. As a Project Design Feature, no lighted signage would be located within the Airside Sub-Area. The proposed Project would not constitute a hazard to the safe and efficient operation of vehicles upon a street or a freeway, or the safe and efficient operation of aircraft during takeoff and landing or ground maneuvers, or create a condition that endangers the safety of persons or property; therefore, impacts would be less than significant along the northern boundary of LAX.

Southern Boundary

Imperial Highway and I-105 are located to the south of LAX, approximately 2,500 feet at the nearest location to the Project site. Proposed signage within the Landside Sub-Area would not be visible from the southern area. Within the Airside Sub-Area, Terminals 4 through 8 and the southern portion of the TBIT/future Bradley West Terminal would be the closest portions of the Project site to the roadways. From the southern Project boundary, only limited long-distance views are available of the Airside Sub-Area portion of the Project site. Airside Sub-Area signage (limited to the passenger boarding bridges) and other facilities within the Project site are indistinguishable. Signage would blend into this distant background and not be a distraction to motorists on Imperial Highway and I-105. The proposed Project would not constitute a hazard to the safe and efficient operation of vehicles upon a street or a freeway, or the safe and efficient operation of aircraft during takeoff and landing or ground maneuvers, or create a condition that endangers the safety of persons or property; therefore, impacts would be less than significant along the southern boundary of LAX.

Eastern Boundary

The eastern boundary of the Project site is a highly developed area occupied by urban uses including multi-story buildings, heavily-traveled roadways (including raised roadways), surface parking lots, and existing signage, including billboards and wall signs. Sepulveda Boulevard is located along the eastern boundary of the eastern portion of the Project site. Digital display signs that are proposed on the east elevations of Terminal 1, the first CTA sky bridge, and P1 would be the closest proposed signs to Sepulveda Boulevard (approximately 730 feet from the closest proposed signage). The proposed Terminal 1 signage, and to a limited extent the proposed signage on the first sky bridge, would be visible to pedestrians and motorists from Sepulveda Boulevard north of Century Boulevard. Given the distance between the roadway and signage, as well as intervening development (including a LAWA office building and the elevated airport roadways for departures) and landscaping, the proposed signage visible to motorists from the eastern boundary would not be a prominent feature that is likely to attract a driver's attention from the CTA roadway and visual features located in closer proximity to the CTA roadway. In addition, the proposed digital display on P1 is not expected to be visible from Sepulveda Boulevard and none of the other proposed Landside Sub-Area signage is expected to be visible from Sepulveda Boulevard.

Depending on weather conditions, airplanes typically land at LAX from an easterly direction. As such, signage on the eastern elevations of the terminals, sky bridges, and parking structures could potentially be visible to

approaching pilots. The CTA is currently an area of high illumination. This lighting does not interfere with the nighttime visibility of ATC personnel and incoming pilots, or interfere with lighting used to guide aircraft such as approach lighting, runway/taxiway guidance lighting, runway end identifier lights, and ground lighting/markings. As discussed further in Section IV.C, Artificial Light and Glare, the proposed signage would not increase the brightness levels of the CTA. Additionally, as a Project Design Feature the LEDs associated with the digital displays would be pointed down and towards the airport roadways, and lighting associated with proposed signage would not add to the ambient glow of the CTA that would represent a substantial change in brightness levels. Therefore, the Project would not result in a distraction to pilots that could impair aviation safety.

The proposed Project would not constitute a hazard to the safe and efficient operation of vehicles upon a street or a freeway, or the safe and efficient operation of aircraft during takeoff and landing or ground maneuvers, or create a condition that endangers the safety of persons or property; therefore, impacts would be less than significant along the eastern boundary of LAX.

Western Boundary

Pershing Drive is located along the western boundary of LAX, approximately 6,700 feet at the nearest location to the Project site. Proposed signage within the Landside Sub-Area and Airside Sub-Area would not be visible from the western area given the distance (greater than one mile) and the presence of intervening structures. During certain weather conditions, airplanes land at LAX from a westerly direction. No lighted signage would be located within the Airside Sub-Area and therefore, no potential for pilot distraction would occur.

The proposed Project would not constitute a hazard to the safe and efficient operation of vehicles upon a street or a freeway, or the safe and efficient operation of aircraft during takeoff and landing or ground maneuvers, or create a condition that endangers the safety of persons or property; therefore, impacts would be less than significant along the western boundary of LAX.

3. CUMULATIVE IMPACTS

The Project site is characterized by a highly-urbanized environment with a highly developed transportation network. There is roadway and airfield vehicle and passenger movement activity within and adjacent to the Project site throughout the day and much of the night. The proposed LAX Sign District would codify specific regulations and standards regarding the location, type, and size of allowable signs associated with non-airport related advertising, and their placement within the CTA and on terminals and passenger boarding bridges visible from apron areas. As discussed above, the proposed signage would not be a source of driver/pilot/ATC distraction that could create unsafe conditions posing a hazard to roadway travel or aviation.

Construction and operation of cumulative projects within the CTA, including the Bradley West Project, the Midfield Satellite Concourse (MSC), the "New Face" of the CTA Improvements/Enhancements, the Central Utility Plant Replacement Project, and the LAX Specific Plan Amendment Study, have the potential to affect transportation safety. However, these projects would be required to comply with applicable federal, state, and local design guidelines and regulations, as well as with applicable LAX Master Plan commitments and LAX Master Plan and project-specific mitigation measures, to ensure transportation safety is not compromised during both construction and operation. Further, cumulative projects such as the Specific Plan Amendment Study, and the taxiway improvements associated with Bradley West, MSC, and Taxiway R are intended and designed to improve the safety and efficiency of large aircraft (i.e., Aircraft Design Group (ADG) V and VI) operations.

As such, compliance with regulatory requirements and applicable federal, state, and local design guidelines and regulations, and applicable LAX Master Plan commitments and LAX Master Plan and project-specific mitigation measures would ensure that cumulative projects would not constitute a hazard to the safe and efficient operation

of vehicles upon a street or a freeway, or the safe and efficient operation of aircraft during takeoff and landing or ground maneuvers, or create a condition that endangers the safety of persons or property. Therefore, cumulative projects, in combination with the proposed Project, would not be expected to result in significant cumulative transportation safety impacts.

4. PROJECT DESIGN FEATURES AND MITIGATION MEASURES

As listed in Section 4(b) above, the following Project Design Features, including applicable LAX Master Plan Commitments, would reduce or avoid potential transportation safety impacts associated with the proposed Project:

Project Design Features

- The allowable locations and sizes of signs have been designed to limit visibility from off-airport locations (i.e., surrounding communities) and to not visually or otherwise negatively affect airport operations or affect or alter historical buildings within LAX.
- No new off-site signage would be placed along the Project boundary, and no electronic or light enhanced signage would be visible from the adjacent residential areas (i.e., community of Westchester to the north and City of El Segundo to the south).
- No electronic or light enhanced signage would be installed within or be visible from the Airside Sub-Area.
- Off-site signs would not be permitted on a number of buildings within the Project site, including the Theme Building, the Airport Traffic Control Tower, and the Clifton A. Moore Administration Building (including the former Airport Traffic Control Tower [1961]).
- Limit illuminance contribution of signage to 0.3 fc at 350 feet from face of sign.
- The proposed signage locations and their placement would be in a manner that would prevent automobile headlight-related glare. For example, signage would be placed at a higher level than the roadway or perpendicular to headlights (i.e., signage placed on sky bridges).
- The proposed Project would include a plan to remove a number of billboards in LAWA's control and comply with other applicable requirements from the Department of City Planning.
- Digital displays signs would display static images only (i.e., restriction for any type of sign that contains images, text, parts, or illumination which flash, change, move, blink, or otherwise refresh in whole or in part).
- The digital displays would have the LEDs aimed horizontally towards the street view using a cubic louvering system to help to limit light trespass, direct the visual impact of the display to the appropriate audience, and direct light away from flight paths and highly focused driving tasks. Refer to Figure IV.C-2 for a typical light emitting diode beam spread and plan view of the layout for the directionality of the LEDs associated with the digital display signs.
- The proposed location of the two types of digital display signs - CR I and CR III - have been chosen being mindful of driver, pedestrian, ATC personnel and pilot safety.
- Digital display signs shall be limited in their refresh events. CR I images would refresh (change) no more than one event every eight seconds (with the exception being Parking Structure 1 which would refresh every 14 seconds). CR III images would refresh no more than one event every 12 hours. In addition, the CR III images on the sky bridges would refresh simultaneously no more than one event every 12 hours.

- Digital signage would be subject to limits on brightness levels (i.e., 4,500 cd/m² during the daytime and 300 cd/m² during the nighttime) and equipped with sensors that modify the brightness of the sign in response to ambient lighting conditions.
- Dim lights of digital displays slowly at dusk over a 45 minute fade rate, controlled by an astronomical time clock. The transition from day to nighttime brightness would be required to occur gradually, to prevent a sudden change in perceptible brightness levels by pedestrians and motorists.
- Digital displays would not include large areas of reflective elements and have a contrast ratio of less than 30:1 to eliminate glare.
- Supergraphic signage over 20-feet tall at parking structure locations would be illuminated with LED or metal halide floodlights consisting of adjustable floodlight fixtures mounted at the top of the signage element with a locking knuckle precisely aimed at the signage to eliminate any chance of throwing light into the flight path. Cantilever arms, louvers, barn doors and/or glare shields would be used to allow the fixture to be aimed towards the supergraphic to illuminate the signage element exclusively.
- Supergraphic signage over 20-feet tall on terminal facades above canopy locations would be illuminated with LED or metal halide floodlights mounted to the adjacent canopy. Adjustable floodlight fixtures would be mounted above the canopy with a locking knuckle to precisely aim at the signage and eliminate any chance of throwing light into the flight path. Cantilever arms, louvers, barn doors, and/or glare shields would be used to allow the fixture to be aimed towards the supergraphic to illuminate the signage element exclusively.
- Maximum vertical luminance of illuminated supergraphic signage would be 5 to 7 fc during nighttime.
- Supergraphics/wall signs/column wraps would have matte finishes, which would prevent glare from the light fixtures.

Applicable LAX Master Plan Commitments

LU-4. Neighborhood Compatibility Program. Ongoing coordination and planning will be undertaken by LAWA to ensure that the airport is as compatible as possible with surrounding properties and neighborhoods. Measures to enforce this policy will include: 1) Along the northerly and southerly boundary areas of the airport, LAWA will provide and maintain landscaped buffer areas that will include setbacks, landscaping, screening or other appropriate view-sensitive uses with the goal of avoiding land use conflicts, shielding lighting, enhancing privacy and better screening views of airport facilities from adjacent residential uses. Use of existing facilities in buffer areas may continue as required until LAWA can develop alternative facilities. 2) Locate airport uses and activities with the potential to adversely affect nearby residential land uses through noise, light spill-over, odor, vibration and other consequences of airport operations and development as far from adjacent residential neighborhoods as feasible. 3) Provide community outreach efforts to property owners and occupants when new development on airport property is in proximity to and could potentially affect nearby residential uses.

DA-1. Provide and Maintain Airport Buffer Areas. Along the northerly and southerly boundary areas of the airport, LAWA will provide and maintain landscaped buffer areas that will include setbacks, landscaping, screening or other appropriate view-sensitive improvements with the goals of avoiding land use conflicts, shielding lighting, enhancing privacy and better screening views of airport facilities from adjacent residential uses. Use of existing facilities in buffer areas may continue as required until LAWA can develop alternative facilities.

LI-2. Use of Non-Glare Generating Building Materials. Prior to approval of final plans, LAWA will ensure that proposed LAX facilities will be constructed to maximize use of non-reflective materials and minimize use of undifferentiated expanses of glass.

LI-3. Lighting Controls. Prior to final approval of plans for new lighting, LAWA will conduct reviews of lighting type and placement to ensure that lighting will not interfere with aeronautical lights or otherwise impair Airport Traffic Control Tower or pilot operations. Plan reviews will also ensure, where feasible, that lighting is shielded and focused to avoid glare or unnecessary light spill-over. In addition, LAWA or its designee will undertake consultation in selection of appropriate lighting type and placement, where feasible, to ensure that new lights or changes in lighting will not have an adverse effect on the natural behavior of sensitive flora and fauna within the Habitat Restoration Area.

With these Project Design Features and applicable LAX Master Plan Commitments, transportation safety impacts would be less than significant and no mitigation measures are required.

5. LEVEL OF SIGNIFICANCE AFTER MITIGATION

No significant impacts related to transportation safety would occur as a result of the proposed Project; therefore, no mitigation measures are required.