ATTACHMENT 2

Construction Traffic Analysis

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CONSTRUCTION TRAFFIC

Construction associated with the proposed Terminal 4 Modernization Project (Proposed Project) would generate traffic associated with workers traveling to and from the construction employee parking areas and staging areas, truck haul/delivery trips, and miscellaneous construction-related travel. This section qualitatively addresses the anticipated construction traffic impacts specific to the Proposed Project.

This construction traffic analysis builds upon relevant analysis and assumptions from previous LAX EIRs, which were updated as appropriate for the Proposed Project's impact analysis. It was assumed that construction employee parking and material staging associated with the Proposed Project would be located along Westchester Parkway, near the intersection of Westchester Parkway and La Tijera Boulevard. Material delivery to the airfield would be provided via Post 23, located near the Westchester Parkway and Pershing Drive intersection. Additionally, secondary airfield access would be provided via Post 236B located near the intersection of Aviation Boulevard and 111th Street. It was assumed that material delivery from the staging lot to the airfield would occur during off-peak time periods. Additionally, any Terminal 4 curbside material deliveries would occur during off-peak time periods (between the hours of 12:00 a.m. and 6:00 a.m.). The subcontractor shall coordinate with the LAWA Construction and Logistics Management (CALM) team prior to all curbside deliveries.

REGULATORY CONTEXT

The City of Los Angeles Department of Transportation (LADOT) Transportation Impact Study Guidelines[1] requires that a Traffic Study be prepared if the following operational criteria are met:

- A project is likely to add 500 or more daily operational trips
- A project is likely to add 43 or more a.m. or p.m. peak hour operational trips

In addition, the 2010 Congestion Management Program (CMP) for Los Angeles County[2] provides CMP Guidelines to assist local agencies in evaluating impacts of land use projects on the CMP system through the preparation of a regional transportation impact analysis (TIA). A CMP TIA is necessary for all projects that include, at a minimum, the following operational trips:

- 50 or more trips added to a CMP arterial intersection during either the weekday a.m. or p.m. peak hours
- 150 or more trips added to the mainline freeway monitoring locations during either the weekday a.m. or p.m. peak hours

During the scoping of the South Airfield Improvement Project EIR traffic study in 2004, LADOT indicated that no traffic study was required because there was "no requirement to assess the temporary traffic impacts of a project resulting from construction activities. So, the proposal to prepare a traffic study is voluntary."[3] Additionally, LADOT

[1] City of Los Angeles Department of Transportation, *Transportation Impact Study Guidelines*, December 2016. Available: http://ladot.lacity.org/sites/g/files/wph266/f/COLA-TISGuidelines-010517.pdf.

[2] Los Angeles County Metropolitan Transportation Authority, *2010 Congestion Management Program*, October 2010.

[3] Carranza, Tomas, City of Los Angeles Department of Transportation, email to Pat Tomcheck, Los Angeles World Airports, *Subject: Re: FW: LAX Traffic Methodology Memo*, July 29, 2004.

reiterated in January 2017 that it does not require traffic impact studies for traffic construction-related impacts.[4] However, Los Angeles World Airports (LAWA) has determined that the preparation of a traffic study is still useful in order to provide a full assessment and documentation of the impacts generated by the construction of proposed projects.

The Proposed Project would be subject to LAWA's Design and Construction Handbook, which requires that site logistics plans be prepared and submitted to LAWA for review and approval. The site logistics plan is required to identify points of entrance locations and traffic routes for equipment, trucks, and worker vehicles; construction worker parking; staging/laydown areas; emergency vehicle access; and other information relating to project construction logistics. The Design and Construction Handbook also includes provisions relating to construction work hours and bulk material deliveries.[5] Specifically, the Handbook requires bulk material deliveries (e.g., aggregate, bulk cement) to be scheduled during off-peak hours unless prior written approval is provided by the Coordination and Logistics Management (CALM) Team. In addition, the Handbook specifies that construction work hours should avoid peak commuter traffic periods to the extent possible.

STUDY AREA AND BASELINE TRAFFIC CONDITIONS

Consistent with LAX Master Plan Commitment ST-14 (Construction Employee Shift Hours), and described further below, employees are estimated to be on-site prior to the a.m. commuter peak period of 7:00 a.m. to 9:00 a.m. and off-site prior to the p.m. commuter peak period of 4:30 p.m. to 6:30 p.m. Additionally, consistent with LAX Master Plan Commitment ST-22 (Designated Truck Routes), truck deliveries will be on designated routes only (freeways and non-residential streets). Considering the LAX Master Plan Commitments, as well as the location of the material staging area (located near the intersection of Westchester Parkway and La Tijera Boulevard, the traffic study area for the construction traffic analysis includes the following intersections:

- Imperial Highway and Main Street
- Imperial Highway and Pershing Drive
- Pershing Drive and Westchester Parkway

Baseline conditions used in the analysis of project-related construction traffic impacts are defined as 2018 traffic conditions within the traffic study area. Intersection turning movement traffic volume data were collected at several intersections surrounding LAX over a two-year period (2014 to 2015). Due to ongoing construction of the Metro Crenshaw/LAX Transit Corridor project along Aviation Boulevard, traffic counts in the area were not updated as they are not considered representative of typical baseline conditions; therefore, the intersection turning movement counts conducted previously were used as the basis for the construction traffic analysis.

LAWA conducts annual driveway volume counts at various locations throughout the Airport including those adjacent to public parking lots, employee parking lots, cargo facilities, rental car facilities, and off-Airport parking facilities. LAWA also conducts annual traffic volume counts each August along the Central Terminal Area (CTA) roadways to

[4] Ayala, Pedro, City of Los Angeles Department of Transportation, email to Pat Tomcheck, Los Angeles World Airports, *Subject: Re: Traffic Impact Studies for Construction-Related Impacts*, January 19, 2017.

[5] City of Los Angeles, Los Angeles World Airports, *Los Angeles World Airports Design and Construction Handbook: Design Standards and Guide Specifications, Division I – General Requirements*, July 2017. Available: https://www.lawa.org/en/lawa-businesses/lawa-documents-and-guidelines/lawa-design-and-construction-handbook/design-standards-and-guide-specifications.

estimate annual Airport traffic volumes. Considering the location of the study area intersections, it was determined that each intersection contains a mix of both Airport-related traffic and non-Airport-related traffic. Consequently, both the driveway count data and CTA data were used to establish a growth rate to adjust the 2015 traffic volumes to 2018 levels. Using available driveway count data and CTA data through 2017, the a.m. traffic volumes were estimated to be 15.7 percent greater in 2017 when compared to 2015, while the p.m. traffic volumes were estimated to be 15.5 percent greater.[6] It was then assumed that growth would continue at approximately 5.0 percent from 2017 to baseline 2018. This results in an increase of 20.7 percent for the a.m. traffic volumes and 20.5 percent for the p.m. traffic volumes from 2015 to 2018. These volumes were used as the baseline traffic volumes for use in the construction traffic analysis and to assess potential project-related construction traffic impacts. The baseline 2018 volumes and corresponding intersection levels of service (LOS) are shown below in **Table 1**. As shown in the table, each intersection was estimated to operate at LOS C or better under baseline 2018 conditions.

TABLE 1 INTERSECTION TURNING MOVEMENT VOLUMES – BASELINE 2018

INTERSECTION	PEAK HOUR	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			LOS [1]
		L	T	R	L	T	R	L	T	R	L	T	R	
Imperial Highway/Main Street	AM	514	0	613	0	0	5	0	920	228	555	1,429	0	B
Imperial Highway/Main Street	PM	249	0	488	5	0	1	0	1,156	428	636	810	0	A
Imperial Highway/Pershing Drive	AM	0	0	4	799	0	93	211	346	0	8	410	1,497	A
Imperial Highway/Pershing Drive	PM	0	4	7	991	0	224	166	469	0	0	460	619	A
Pershing Drive/Westchester Parkway	AM	0	1,197	450	71	509	0	0	0	0	296	0	62	A
Pershing Drive/Westchester Parkway	PM	0	630	346	83	699	0	0	0	0	208	0	121	A

NOTES:
The a.m. commuter peak period is identified as 7:00 a.m. to 9:00 a.m., while the p.m. commuter peak period is identified as 4:30 p.m. to 6:30 p.m.
L= Left-turn movements, T = through movements, and R = right-turn movements
LOS = Level of Service
1 Level of Service range: A (excellent) to F (failure).
SOURCE: Ricondo and Associates, Inc., October 2019.

PROJECT-GENERATED TRAFFIC AND TRIP DISTRIBUTION

A construction schedule[7] was developed specifically for the Proposed Project and was reviewed to determine the specific construction elements occurring during each month of the proposed construction schedule, and the number of employees estimated for each element. The number of employee vehicle trips were then determined, factoring in assumptions on employee ridesharing. According to a study published by the Southern California Association of Governments (SCAG), the average vehicle occupancy on several regional roadways in the Los Angeles region ranged from approximately 1.15 to 1.30.[8] Provided the temporary nature of construction employment and the lower likelihood of rideshare opportunities, a conservative estimate of vehicle occupancy of 1.15 employees per vehicle was assumed. Additionally, for purposes of this analysis, the peak daily employee vehicle trips were assumed to occur during the same month as the peak haul/delivery. It was also assumed that one 8-hour shift would be established for construction activities. For purposes of the analyses, all vehicle trips were converted to "passenger car equivalents" (PCEs) to account for the additional impact that large vehicles, such as haul trucks, would have on

6 Ricondo and Associates, LAX UAL Traffic Volume Adjustment, December 2017.

7 LAX T4 Vehicle Trips.xlsx, October 2019.

8 Southern California Association of Governments, *Regional High-Occupancy Vehicle Lane System Performance Study*, November 4, 2004.

roadway traffic operations. As such, the number of construction-related vehicle trips was multiplied by a PCE factor, consistent with the assumptions for previous LAX construction projects. The PCE for employee vehicles was assumed to be 1.0; while the PCE for haul/delivery trucks was assumed to be 2.5. **Table 2** below summarizes the construction peak day activity.

TABLE 2 PEAK CONSTRUCTION TRIPS

HOUR	EMPLOYEE VEHICLES (PCE TRIPS IN)	EMPLOYEE VEHICLES (PCE TRIPS OUT)	HAUL/DELIVERY TRUCKS (PCE TRIPS IN)	HAUL/DELIVERY TRUCKS (PCE TRIPS OUT)	TOTAL VEHICLE TRIPS (PCE)
0:00 – 1:00	-	-	-	-	-
1:00 – 2:00	-	-	-	-	-
2:00 – 3:00	-	-	-	-	-
3:00 – 4:00	-	-	-	-	-
4:00 – 5:00	-	-	-	-	-
5:00 – 6:00	-	-	-	-	-
6:00 – 7:00	84	-	-	-	84
7:00 – 8:00	**-**	**-**	**13**	**13**	**26**
8:00 – 9:00	**-**	**-**	**13**	**13**	**26**
9:00 – 10:00	-	-	13	13	26
10:00 – 11:00	-	-	13	13	26
11:00 – 12:00	-	-	13	13	26
12:00 – 13:00	-	-	13	13	26
13:00 – 14:00	-	-	13	13	26
14:00 – 15:00	-	-	13	13	26
15:00 – 16:00	-	84	13	13	110
16:00 – 17:00	**-**	**-**	**13**	**13**	**26**
17:00 – 18:00	**-**	**-**	**-**	**-**	**-**
18:00 – 19:00	**-**	**-**	**-**	**-**	**-**
19:00 – 20:00	-	-	-	-	-
20:00 – 21:00	-	-	-	-	-
21:00 – 22:00	-	-	-	-	-
22:00 – 23:00	-	-	-	-	-
23:00 – 24:00	-	-	-	-	-
DAILY TOTAL	**84**	**84**	**130**	**130**	**428**

NOTES:
PCE = Passenger Car Equivalents (1.0 for employee vehicles, 2.5 for haul/delivery trucks)
The a.m. commuter peak period is identified as 7:00 a.m. to 9:00 a.m., while the p.m. commuter peak period is identified as 4:30 p.m. to 6:30 p.m.
SOURCE: Ricondo & Associates, Inc., October 2019.

Consistent with LAX Master Plan Commitment ST-14 (Construction Employee Shift Hours), employees are estimated to be on-site prior to the a.m. commuter peak period of 7:00 a.m. to 9:00 a.m. and off-site prior to the p.m. commuter peak period of 4:30 p.m. to 6:30 p.m. It was conservatively assumed for this analysis that haul/delivery trucks would

operate consistently throughout the day, including during the a.m. and p.m. commuter peak period; therefore, the construction-related vehicles assumed in the analysis were restricted to haul/delivery trucks. Construction staging area access Haul/delivery truck trips were assumed to be limited to Imperial Highway, Pershing Drive and Westchester Parkway in accordance with LAX Master Plan Commitment ST-22 (Designated Truck Routes), which stipulates that deliveries for dirt, aggregate, and other materials will use designated freeways and non-residential streets.

CONSTRUCTION TRAFFIC ANALYSIS

As described above, no employee vehicle trips are estimated to occur in either the a.m. or p.m. peak hour periods; however, it was conservatively assumed that haul/delivery trucks would operate during these periods. Per LAX Master Plan Commitment ST-22 (Designated Truck Routes), haul/delivery trucks would be limited to the surrounding freeway system (I-105/I-405), Imperial Highway, Pershing Drive and Westchester Parkway while entering and egressing the construction staging area. Consequently, the following intersections would include construction-related traffic in the peak hour:

- Imperial Highway and Main Street (Westbound Through, Eastbound Through)
- Imperial Highway and Pershing Drive (Westbound Right, Southbound Left)
- Pershing Drive and Westchester Parkway (Northbound Right, Westbound Left)

In accordance with LADOT criteria defined in its Transportation Impact Study Guidelines, an impact is considered to be significant if one of the following thresholds is exceeded:

- The level of service (LOS) is C, its final volume/capacity ratio is 0.701 to 0.80, and the project-related increase in volume/capacity is 0.040 or greater, or
- The LOS is D, its final volume/capacity ratio is 0.801 to 0.90, and the project-related increase in volume/capacity is 0.020 or greater, or
- The LOS is E or F, its final volume/capacity ratio is 0.901 or greater, and the project-related increase in volume/capacity is 0.010 or greater.

The "final volume/capacity ratio" as defined by LADOT consists of the future volume/capacity ratio at an intersection that includes volume from the project, baseline, ambient background growth, and other cumulative development projects, but without proposed intersection traffic mitigation. For purposes of this analysis, the additional 13 PCE haul/delivery truck trips were added to the baseline 2018 traffic volumes (shown below in **Table 3**) to assess the percent traffic increase caused by construction-related traffic. The additional 13 PCE trips caused by haul/delivery truck trips would account for less than two percent of the total traffic in the westbound through and eastbound through movements of Imperial Highway and Main Street. Similarly, the additional construction-related trips would account for less than two percent of the total traffic in the southbound left movement of Imperial Highway and Pershing Drive. The additional construction-related trips would account for greater than two percent of the total traffic in the westbound right movement of Imperial Highway and Pershing Drive and the northbound right and westbound left movements of Pershing Drive and Westchester Parkway. However, each of these intersections were estimated to operate at LOS A; therefore, based on the criteria described above, it is estimated that no significant intersection impacts would occur as a result of the additional construction-related trips.

TABLE 3 CONSTRUCTION TRAFFIC ANALYSIS

INTERSECTION	PEAK HOUR	INTERSECTION MOVEMENT	BASELINE VOLUME	ADDITIONAL PCE TRIPS	TOTAL VOLUME	PERCENT INCREASE
Imperial Highway/Main Street	AM	Westbound Through	1,429	13	1,442	0.9%
Imperial Highway/Main Street	PM	Westbound Through	810	13	823	1.6%
Imperial Highway/Main Street	AM	Eastbound Through	920	13	933	1.4%
Imperial Highway/Main Street	PM	Eastbound Through	1,156	13	1,169	1.1%
Imperial Highway/Pershing Drive	AM	Westbound Right	1,497	13	1,510	0.8%
Imperial Highway/Pershing Drive	PM	Westbound Right	619	13	632	2.1%
Imperial Highway/Pershing Drive	AM	Southbound Left	799	13	812	1.6%
Imperial Highway/Pershing Drive	PM	Southbound Left	991	13	1,004	1.3%
Pershing Drive/Westchester Parkway	AM	Northbound Right	450	13	463	2.9%
Pershing Drive/Westchester Parkway	PM	Northbound Right	346	13	359	3.8%
Pershing Drive/Westchester Parkway	AM	Westbound Left	296	13	309	4.4%
Pershing Drive/Westchester Parkway	PM	Westbound Left	208	13	221	6.3%

NOTES:
PCE=Passenger Car Equivalents
The a.m. commuter peak period is identified as 7:00 a.m. to 9:00 a.m., while the p.m. commuter peak period is identified as 4:30 p.m. to 6:30 p.m.
SOURCE: Ricondo and Associates, Inc., October 2019.

LAX MASTER PLAN COMMITMENTS AND MITIGATION MEASURES

This analysis incorporates traffic-related mitigation and control measures identified in previous LAWA EIRs. A total of 13 applicable LAX Master Plan commitments and mitigation measures were identified to address traffic impacts, including:

- **C-1. Establishment of a Ground Transportation/Construction Coordination Office.** LAWA is to establish this office for the life of the construction projects to coordinate deliveries, monitor traffic conditions, advise motorists and those making deliveries about detours and congested areas, and monitor and enforce delivery times and routes. LAWA will periodically analyze traffic conditions on designated routes during construction to see whether there is a need to improve conditions through signage and other means.

  This office may undertake a variety of duties, including but not limited to:

  - Inform motorists about detours and congestion by use of static signs, changeable message signs, media announcements, Airport website, etc.;
  - Work with Airport police and the Los Angeles Police Department to enforce delivery times and routes;
  - Establish staging areas;
  - Coordinate with police and fire personnel regarding maintenance of emergency access and response times;
  - Coordinate roadway projects of Caltrans, City of Los Angeles, and other jurisdictions with those of the Airport construction projects;
  - Monitor and coordinate deliveries;
  - Establish detour routes;

  - Work with residential and commercial neighbors to address their concerns regarding construction activity; and
  - Analyze traffic conditions to determine the need for additional traffic controls, lane restriping, signal modifications, etc.

- **C-2. Construction Personnel Airport Orientation.** All construction personnel will be required to attend an Airport project-specific orientation (preconstruction meeting) that includes where to park, where staging areas are located, information regarding construction policies, etc.
- **ST-9. Construction Deliveries.** Construction deliveries requiring lane closures shall receive prior approval from the Construction Coordination Office. Notification of deliveries shall be made with sufficient time to allow for any modifications of approved traffic detour plans.
- **ST-12. Designated Truck Delivery Hours.** Truck deliveries shall be encouraged to use nighttime hours and shall avoid the peak periods of 7:00 a.m. to 9:00 a.m. and 4:30 p.m. to 6:30 p.m.
- **ST-14. Construction Employee Shift Hours.** Shift hours that do not coincide with the heaviest commuter traffic periods (7:00 a.m. to 9:00 a.m., 4:30 p.m. to 6:30 p.m.) will be established. Work periods will be extended to include weekends and multiple work shifts, to the extent possible and necessary.
- **ST-16. Designated Haul Routes.** Every effort will be made to ensure that haul routes are located away from sensitive noise receptors.
- **ST-17. Maintenance of Haul Routes.** Haul routes on off-Airport roadways will be maintained periodically and will comply with City of Los Angeles or other appropriate jurisdictional requirements for maintenance. Minor striping, lane configurations, and signal phasing modifications will be provided as needed.
- **ST-18. Construction Traffic Management Plan.** A complete construction traffic plan will be developed to designate detour and/or haul routes, variable message and other sign locations, communication methods with Airport passengers, construction deliveries, construction employee shift hours, construction employee parking locations, and other relevant factors.
- **ST-22. Designated Truck Routes.** For dirt and aggregate and all other materials and equipment, truck deliveries will be on designated routes only (freeways and non-residential streets). Every effort will be made for routes to avoid residential frontages. The designated routes on City of Los Angeles streets are subject to approval by LADOT's Bureau of Traffic Management and may include, but will not necessarily be limited to:
  - Pershing Drive (Westchester Parkway to Imperial Highway)
  - Florence Avenue (Aviation Boulevard to I-405)
  - Manchester Boulevard (Aviation Boulevard to I-405)
  - Aviation Boulevard (Manchester Avenue to Imperial Highway)
  - Westchester Parkway/Arbor Vitae Street (Pershing Drive to I-405)
  - Century Boulevard (Sepulveda Boulevard to I-405)
  - Imperial Highway (Pershing Drive to I-405)
  - La Cienega Boulevard (north of Imperial Highway)
  - Airport Boulevard (Arbor Vitae Street to Century Boulevard)

- Sepulveda Boulevard (Westchester Parkway to Imperial Highway)
- I-405
- I-105