6. Pedestrian System Analysis

Introduction

This section presents an analysis of the pedestrian system serving the Los Angeles Sports and Entertainment District. The capacity of the sidewalk system is evaluated under two conditions:

a. Average Day – a condition that occurs when most of the project parking can be accommodated on-site.

b. Peak Day – representing the busiest weekend days of the year when up to 2,000 project vehicles park off-site.

In both cases, the conditions are measured on a Saturday evening peak hour during the one-hour time period before a STAPLES Center event (time period of the highest pedestrian activity). The analysis is described in Appendix C, and summarized in the following discussion.

Methodology

This analysis is based on the methodology presented in the *Highway Capacity Manual,* Chapter 13 – Pedestrians. The expected number of pedestrians in the peak hour is compared to the effective width of the sidewalk available to accommodate that pedestrian volume. The effective width of the sidewalk is calculated by reducing the actual width of the sidewalk by the effects of landscaping, utility poles, fences, adjacent buildings, etc.

The Pedestrian Flow Rate (number of pedestrians per minute per foot of effective sidewalk) is calculated and compared in Table 19 to determine the Level of Service of the sidewalk.

Table 19

Pedestrian Level of Service

Level of Service	Pedestrian Flow Rate (peds/min/ft)
A	≥ 2
B	≥ 7
C	≥ 10
D	≥ 15
E	≥ 25
F	> 25

This calculation measures the quality of the pedestrian flow along the sidewalk system. The *Highway Capacity Manual* also suggests that the effects of pedestrian platoons be calculated to

measure this effect on pedestrian Level of Service. The platoon measurement takes into account the effects of traffic signals, transit facilities and other short-term fluctuations in the flow of pedestrians. Thus the analysis addressed both Peak Day and Average Day conditions.

The City of Los Angeles has not established a performance standard for sidewalk operation nor has it adopted a definition of "significant impact" in the event that a project effects the performance of a sidewalk. If the City had a sidewalk performance standard similar to its standards for street and intersection performance, the sidewalk should operate in the Level of Service C to D range to be considered acceptable operation.

Existing Conditions

Table 20 presents a summary of the key components of the sidewalk system serving the project. Shown is the actual width of the sidewalks along with the adjustments suggested by the *Highway Capacity Manual*. By subtracting the adjustment factors from the actual width, the effective width of the sidewalk is calculated.

The sidewalk widths shown in Table 20 reflect the sidewalk widenings that were installed as part of the STAPLES Center mitigation program. While the City of Los Angeles code requirements call for a 10-foot wide sidewalk to be provided adjacent to downtown streets, as can be seen in Table 20, most sidewalks adjacent to the project blocks provide 15-foot walks.

Pedestrian Flow Assumptions

Background Conditions

An estimate was made of the number of pedestrians that would be using the sidewalk system adjacent to the project blocks under "Background Conditions". "Background Conditions" for the purpose of this analysis represent approximately 6:30 – 7:30 PM on a summer Saturday evening with no event underway at the Los Angeles Convention Center or at STAPLES Center.

Los Angeles Convention Center/STAPLES Center

It is unlikely that the LACC would produce pedestrian volumes during the Saturday evening peak hour that would be comparable to the pedestrian flows to/from STAPLES Center during the pre-event hour. Therefore, STAPLES Center pedestrian flows will dictate the peak conditions generated by the LACC/STAPLES Center block.

For this analysis, a sold-out sporting event was used as the design condition. A total of 20,000 visitors to STAPLES Center was assumed and it was assumed that 90% of the crowd would arrive in the one hour prior to the event. The *Highway Capacity Manual* requires that an estimate be made to determine the peak 15 minute pedestrian flow within the peak hour. This analysis assumes that 35% of the peak hour pedestrian flow would occur within the peak 15 minutes.

TABLE 20. SIDEWALK WIDTHS

STREET	SECTION		SIDEWALK SIDE	SIDEWALK			
	FROM	TO		FULL WIDTH (ft)	CURB SIDE ADJUST	BLDG SIDE ADJUST	EFFECTIVE WIDTH (ft)
Cherry	Olympic	11th	East	10	1.5	0	8.5
			West	NO SIDEWALK			
Georgia	Olympic	11th	East	10	1.5	0	8.5
			West	10	1.5	0	8.5
Figueroa	9th	Olympic	East	12	2	1.5	8.5
			West	12	2	0	10
Figueroa	Olympic	11th	East	12	2	1.5	8.5
			West	15	2	0	13
Figueroa	11th	12th	East	15	2	0	13
			West	30	2	1.5	26.5
Figueroa	12th	Pico	East	15	2	0	13
			West	17	1.5	0	15.5
Figueroa	Pico	Venice	East	16	2	1.5	12.5
			West	10	1.5	0	8.5
Flower	9th	Olympic	East	13	2	1.5	9.5
			West	12	2	1.5	8.5
Flower	Olympic	11th	East	15	2	1.5	11.5
			West	22	2	1.5	18.5
Flower	11th	12th	East	12	1.5	1.5	9
			West	10	2	1.5	6.5
Flower	12th	Pico	East	9.5	1.5	1.5	6.5
			West	10	2	0	8
Flower	Pico	Venice	East	9	1.5	1.5	6
			West	10	2	1.5	6.5
Olympic	Georgia	Figueroa	North	15	2	1.5	11.5
			South	15	2	0	13
Olympic	Figueroa	Flower	North	15	2	0	13
			South	13	2	1.5	9.5
11th	Cherry	Georgia	North	15	2	0	13
			South	10	2	0	8
11th	Georgia	Figueroa	North	15	2	0	13
			South	20	2	1.5	16.5
11th	Figueroa	Flower	North	10	2	0	8
			South	10	2	1.5	6.5
12th	Figueroa	Flower	North	15	2	0	13
			South	10	1.5	0	8.5
Pico	Figueroa	Flower	North	19.5	2	0	17.5
			South	11.5	2	1.5	8

CURB SIDE ADJUSTMENT

TRAFFIC	1.5
LIGHT POLES	1.5
LANDSCAPING	2.0

BUILDING SIDE ADJUSTMENT

OPEN	0.0
FENCE	1.5
BUILDING	1.5

The geographic distribution of the pedestrian flow to/from STAPLES Center is based on the distribution of off-site parking serving STAPLES Center visitors and the locations of the doors to the venue.

Proposed (LAS & ED) Project

Pedestrian volumes for the project were broken into two segments. The first involves the project visitors who park off-site and then walk to the venue. During Peak Day conditions, it was assumed that approximately 2,000 vehicles would park off-site. This estimate is consistent with the Parking Analysis presented in this EIR. At an average auto occupancy of 2.5 persons per vehicle, a total of 5,000 people would be travelling on the sidewalk system between the project and the off-site parking areas. The trip generation assumptions for the project suggest that the peak turnover of the parking supply would be 50% (i.e. no more than 50% of the parking supply would enter or leave the site during one hour). Therefore the peak pedestrian flow would be 2,500 pedestrians from the project to the off-site parking spaces and another 2,500 people from the parking to the project.

The second component of the LAS & ED pedestrian flow involves those project visitors who park on one of the study blocks and then visit the land uses on another of the project blocks. As a conservative estimate, it was assumed that 50% of the project visitors would visit land uses on more than one block and that these 50% would be moving on the sidewalk system during the peak hour. This would mean that approximately 4,500 project pedestrians would be moving from block to block within the project. The geographic distribution of the intra-project pedestrian flow was based on the amount of parking and the amount of activity on each block of the project.

Pedestrian Flow Analysis

The details of the analysis are shown in Appendix C, and the results are summarized here. Table 21 summarizes Peak Hour Conditions and Table 22 summarizes Average Day Conditions.

Background Conditions

As shown in Table 21, the existing sidewalk system accommodates the Background pedestrian volumes at Level of Service A (the Background pedestrian volumes are identical for both Peak and Average Day Conditions) This ability of the sidewalk system to accommodate Background Condition pedestrian levels is not surprising since the sidewalk system was designed to handle crowds from the LACC and the STAPLES Center, and the Background Conditions assume that both of these venues are dark (no events).

Los Angeles Convention Center/STAPLES Center

On an event day, Table 21 shows that the sidewalk system serving the venue operates at good levels of service. The north-south streets all operate at Levels of Service A or B. Most sections of the east-west sidewalk system operate at similar levels. Only the sections of 11th Street and

TABLE 21. PEDESTRIAN PLATOON LEVEL OF SERVICE RESULTS -- PEAK DAY CONDITIONS

STREET	SECTION		SIDEWALK	BACKGROUND		STAPLES/LACC EVENT		LAS & ED TOTAL		COMBINED VENUES	
	FROM	TO	SIDE	PED FLOW RATE (ped/min/ft)	LEVEL OF SERVICE	PED FLOW RATE (ped/min/ft)	LEVEL OF SERVICE	FLOW RATE (ped/min/ft)	LEVEL OF SERVICE	PED FLOW RATE (ped/min/ft)	LEVEL OF SERVICE
Cherry	Olympic	11th	East	4.02	A	6.49	B	4.28	A	6.78	B
			West								
Georgia	Olympic	11th	East	4.03	A	5.51	A	5.06	A	6.57	B
			West	4.03	A	5.02	A	5.06	A	6.08	B
Figueroa	9th	Olympic	East	4.12	A	9.06	B	5.49	A	10.55	B
			West	4.10	A	10.40	B	7.60	B	14.00	C
Figueroa	Olympic	11th	East	4.12	A	9.06	B	5.05	A	10.11	B
			West	4.08	A	10.54	B	5.78	A	12.32	C
Figueroa	11th	12th	East	4.08	A	5.69	A	5.65	A	7.34	B
			West	4.04	A	5.62	A	5.27	A	6.89	B
Figueroa	12th	Pico	East	4.08	A	4.72	A	5.92	A	6.64	B
			West	4.06	A	6.77	B	5.46	A	8.23	B
Figueroa	Pico	Venice	East	4.08	A	4.42	A	4.45	A	4.87	A
			West	4.12	A	6.59	B	4.25	A	6.84	B
Flower	9th	Olympic	East	4.05	A	4.94	A	4.30	A	5.24	A
			West	4.06	A	5.54	A	5.55	A	7.10	B
Flower	Olympic	11th	East	4.04	A	4.77	A	4.14	A	4.92	A
			West	4.03	A	4.71	A	4.27	A	4.98	A
Flower	11th	12th	East	4.06	A	6.39	B	5.07	A	7.46	B
			West	4.08	A	7.31	B	7.15	B	10.45	B
Flower	12th	Pico	East	4.08	A	10.54	B	6.73	B	13.27	C
			West	4.06	A	6.69	B	5.70	A	8.38	B
Flower	Pico	Venice	East	4.08	A	4.78	A	4.47	A	5.26	A
			West	4.08	A	5.37	A	4.44	A	5.81	A
Olympic	Georgia	Figueroa	North	4.04	A	5.87	A	5.51	A	7.38	B
			South	4.04	A	7.27	B	5.91	A	9.17	B
Olympic	Figueroa	Flower	North	4.08	A	4.72	A	4.42	A	5.14	A
			South	4.11	A	8.53	B	4.82	A	9.34	B
11th	Cherry	Georgia	North	4.04	A	5.33	A	4.21	A	5.54	A
			South	4.06	A	4.59	A	4.34	A	4.93	A
11th	Georgia	Figueroa	North	4.08	A	7.31	B	6.63	B	9.94	B
			South	4.06	A	9.15	B	4.73	A	9.88	B
11th	Figueroa	Flower	North	4.13	A	8.33	B	6.34	B	10.67	B
			South	4.15	A	11.91	C	6.54	B	14.45	D
12th	Figueroa	Flower	North	4.04	A	5.65	A	5.29	A	6.95	B
			South	4.06	A	11.47	C	5.98	A	13.45	C
Pico	Figueroa	Flower	North	4.06	A	5.02	A	4.89	A	5.91	A
			South	4.13	A	4.65	A	4.42	A	5.07	A

TABLE 22. PEDESTRIAN PLATOON LEVEL OF SERVICE RESULTS – AVERAGE DAY CONDITIONS

STREET	SECTION		SIDEWALK	BACKGROUND		STAPLES/LACC EVENT		LAS & ED TOTAL		COMBINED VENUES	
	FROM	TO	SIDE	PED FLOW RATE (ped/min/ft)	LEVEL OF SERVICE	PED FLOW RATE (ped/min/ft)	LEVEL OF SERVICE	FLOW RATE (ped/min/ft)	LEVEL OF SERVICE	PED FLOW RATE (ped/min/ft)	LEVEL OF SERVICE
Cherry	Olympic	11th	East	4.02	A	6.49	B	4.16	A	6.65	B
			West								
Georgia	Olympic	11th	East	4.03	A	5.51	A	4.69	A	6.20	B
			West	4.03	A	5.02	A	4.69	A	5.71	A
Figueroa	9th	Olympic	East	4.12	A	9.06	B	4.25	A	9.31	B
			West	4.10	A	10.40	B	4.45	A	10.85	B
Figueroa	Olympic	11th	East	4.12	A	9.06	B	4.43	A	9.49	B
			West	4.08	A	10.54	B	4.97	A	11.51	C
Figueroa	11th	12th	East	4.08	A	5.69	A	5.32	A	7.02	B
			West	4.04	A	5.62	A	4.87	A	6.50	B
Figueroa	12th	Pico	East	4.08	A	4.72	A	5.35	A	6.07	B
			West	4.06	A	6.77	B	5.12	A	7.89	B
				4.00		4.00		4.00		4.00	
Figueroa	Pico	Venice	East	4.08	A	4.42	A	4.12	A	4.53	A
			West	4.12	A	6.59	B	4.13	A	6.72	B
Flower	9th	Olympic	East	4.05	A	4.94	A	4.08	A	5.01	A
			West	4.06	A	5.54	A	4.32	A	5.86	A
Flower	Olympic	11th	East	4.04	A	4.77	A	4.05	A	4.83	A
			West	4.03	A	4.71	A	4.10	A	4.81	A
Flower	11th	12th	East	4.06	A	6.39	B	4.37	A	6.76	B
			West	4.08	A	7.31	B	5.69	A	9.00	B
Flower	12th	Pico	East	4.08	A	10.54	B	4.63	A	11.17	C
			West	4.06	A	6.69	B	5.17	A	7.86	B
Flower	Pico	Venice	East	4.08	A	4.78	A	4.12	A	4.91	A
			West	4.08	A	5.37	A	4.11	A	5.48	A
Olympic	Georgia	Figueroa	North	4.04	A	5.87	A	4.60	A	6.47	B
			South	4.04	A	7.27	B	5.10	A	8.37	B
Olympic	Figueroa	Flower	North	4.08	A	4.72	A	4.26	A	4.98	A
			South	4.11	A	8.53	B	4.38	A	8.90	B
11th	Cherry	Georgia	North	4.04	A	5.33	A	4.13	A	5.46	A
			South	4.06	A	4.59	A	4.21	A	4.80	A
11th	Georgia	Figueroa	North	4.08	A	7.31	B	5.42	A	8.73	B
			South	4.06	A	9.15	B	4.41	A	9.57	B
11th	Figueroa	Flower	North	4.13	A	8.33	B	5.29	A	9.62	B
			South	4.15	A	11.91	C	5.41	A	13.32	C
12th	Figueroa	Flower	North	4.04	A	5.65	A	4.89	A	6.54	B
			South	4.06	A	11.47	C	5.36	A	12.83	C
Pico	Figueroa	Flower	North	4.06	A	5.02	A	4.41	A	5.43	A
			South	4.13	A	4.65	A	4.15	A	4.80	A

12th Street between Figueroa and Flower Streets operate at LOS C during the one hour before an event, which is still an acceptable and good operating condition.

Average Day conditions for the purposes of this analysis also assume a sold-out event at the STAPLES Center, so the results presented in Table 22 are identical to those in Table 21 in the STAPLES/LACC Event column.

LAS & ED Project Pedestrian Levels

On a Peak Day, all of the sidewalk system segments serving the project will operate at Levels of Service A or B. On an Average Day when most of the project parking can be accommodated on-site, all segments of the sidewalk system would operate at LOS A.

Combined Venues

During Peak Day conditions with a sold-out event at the STAPLES Center (or a major consumer show at the LACC) and major off-site parking occurring for LAS & ED project visitors, all of the north-south segments of the sidewalk system would operate at Level of Service C or better. All segments of the east-west system would operate at LOS A or B except the south sidewalk along 11th Street between Figueroa and Flower which would operate at LOS D and the same segment of 12th Street which would operate at LOS C.

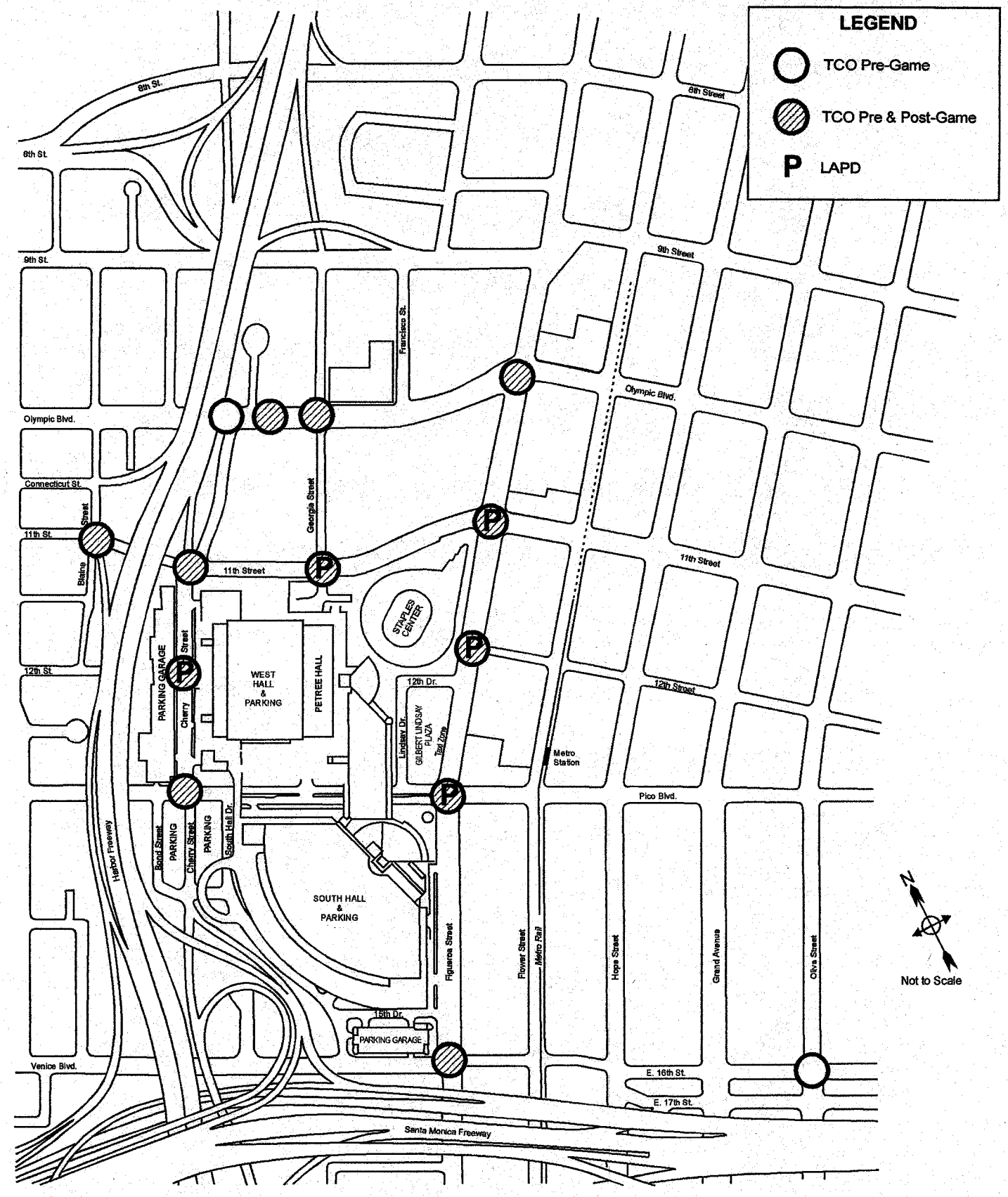
Average Day conditions would see the entire system operating at LOS C or better.

Pedestrian Safety

All of the major intersections along the key pedestrian routes serving the project are controlled by traffic signals. Given the good pedestrian Levels of Service described above, the pedestrian system should have no difficulty accommodating the pedestrian volumes safely through the traffic signals.

When the LAS & ED visitors are added to the STAPLES Center/LACC visitors, the pedestrian volumes increase and the pressure to "ignore the signal" may also increase. The most difficult auto/pedestrian conflict at a traffic signal occurs when right turning vehicles attempt to turn through a flow of pedestrians crossing on the "Walk" indication. During the peak event times at the STAPLES Center/LACC, the key intersections are controlled by Los Angeles Department of Transportation Traffic Control Officers and by City of Los Angeles Police Officers. Figure 22 shows the deployment of these personnel for larger events at either of the venues. While the actual deployment may vary by event or even by time period prior to or after the event, the presence of the Traffic Control Officers and the Police serve to increase the safety of the pedestrians moving to/from the venues. This traffic control will be available to the LAS & ED visitors during the busy hours before and after the events at the STAPLES Center/LACC.

The current operation of the STAPLES Center parking areas includes the provision of fences along the boundaries of the lots with openings in these fences directing people toward the



Source: South Park Event Parking and Circulation Management Plan, 1999

Figure 22
Traffic Control Officer and Police Deployment for STAPLES Center/LACC Events

Los Angeles Entertainment District

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signalized crosswalks. This strategy has been effective at reducing mid-block crossings, thus increasing pedestrian safety. As these parking lots are replaced by the buildings of the LAS & ED, the doors/entries to the buildings should replicate the effort to orient pedestrian flow toward the crosswalks.

The EIR for the STAPLES Center anticipated that the section of 11th Street from Georgia to Figueroa would be closed to traffic prior to and after an event at the STAPLES Center. This closing would occur primarily to enhance pedestrian safety in accommodating the large volumes of pedestrians moving to/from the parking spaces to the north of the venue. Actual experience at the STAPLES Center has shown that the street closure is needed only for about 20-30 minutes after the event. The flow of pedestrians prior to the event is spread out enough to allow the traffic signals to be able to adequately accommodate the pedestrian flow.

It is likely that the increase in pedestrian flow that will accompany the operation of the LAS & ED will result in the closure of the 11th Street section both prior to and after the events at the STAPLES Center. The orientation of the pedestrian flow (from the parking garage on the Olympic West lot to the STAPLES Center) and the increased pedestrian levels (LAS & ED visitors added to the STAPLES Center/LACC visitors) could result in the need to increase the frequency and the duration of the 11th Street closure outside of regular peak periods.

Conclusion

The pedestrian mitigation program implemented by the STAPLES Center has resulted in a pedestrian system that has enough capacity to accommodate the addition of the LAS & ED visitors at a good Level of Service. Even on nights when the LAS & ED visitors are added to the STAPLES Center visitors, the pedestrian system will have sufficient capacity to accommodate the expected pedestrian volumes.

From a safety standpoint, the signalized intersections controlling the key pedestrian corridors will provide safe intersection crossings. During the time periods prior to and after events at the STAPLES Center/LACC, Traffic Control Officers and Police Officers will control traffic and pedestrian flow to/from the event venues. LAS & ED visitors will be able to benefit from these traffic control personnel.

It is likely that the closure of 11th Street outside of the weekday peak periods will increase in frequency and duration as the pedestrian volumes in the vicinity grow.