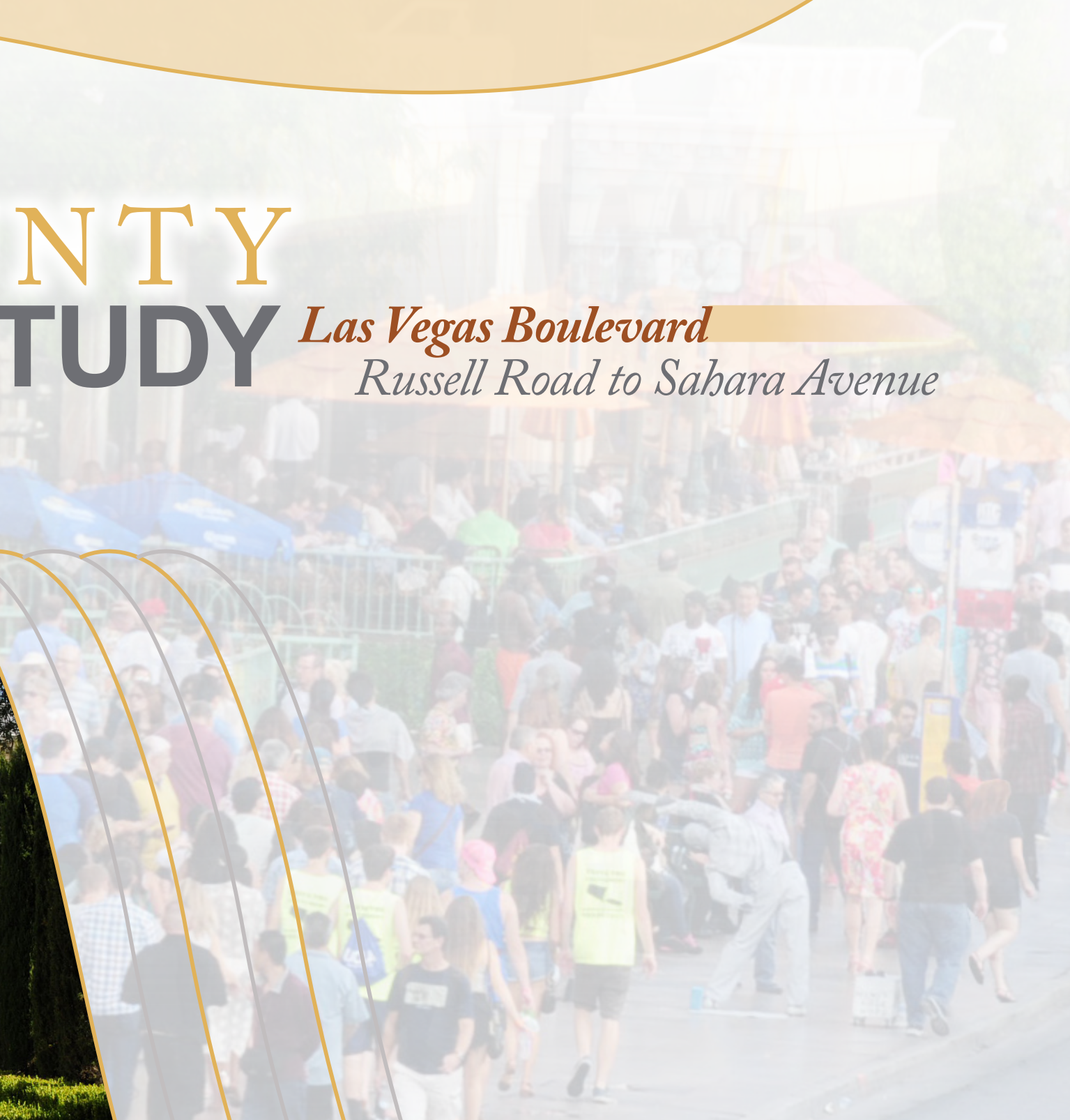
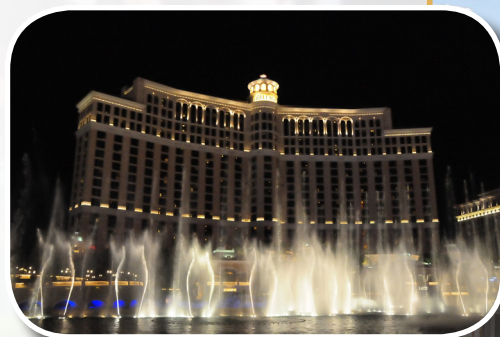




CLARK COUNTY PEDESTRIAN STUDY

*Las Vegas Boulevard
Russell Road to Sahara Avenue*

2015 UPDATE



PEDESTRIAN STUDY

LAS VEGAS BOULEVARD

RUSSELL ROAD TO SAHARA AVENUE

2015 UPDATE

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December 2015



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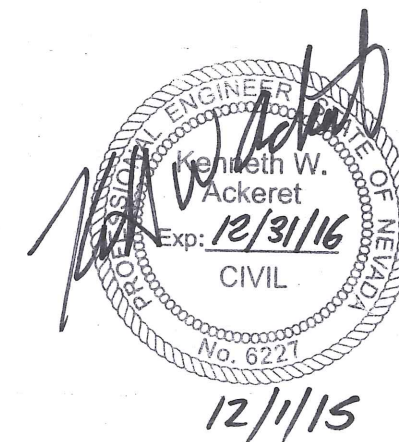


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Exhibit B – Right-of-Way/Pedestrian Easement Exhibits

Exhibit C – Newsrack Medallion Locations

Exhibit D – Clark County Municipal Code Chapter 16.11 – Obstructive Uses of Public Sidewalk

Exhibit E – Pedestrian Volume Raw Data (Provided on disk in the back of this report)

Exhibit F – Transportation Element of Clark County Master Plan – Pedestrian Crossing Map

1 INTRODUCTION

In 2012, a comprehensive study of Las Vegas Boulevard was conducted by Kimley-Horn entitled "Clark County Pedestrian Study, Las Vegas Boulevard: Russell Road to Sahara Avenue" for the Clark County (County) Department of Public Works (**Picture 1.1**). In an effort to improve the pedestrian experience, the 2012 Pedestrian Study expanded upon the findings and recommendations of the 1994 Lee Engineering report *Las Vegas Boulevard South Pedestrian Walkway Study*. One of the key findings of the 2012 report was the identification of 17 segments of pedestrian walkway that were found to exceed level of service (LOS) "C" (segments with LOS D, E, or F). Since the completion of the 2012 study, the County has undertaken measures and completed important projects to improve and enhance the walkway conditions within the Resort Corridor and within the 17 identified walkway segments with poor LOS.

For this restudy, pedestrian volume data was collected on similar days to the 2012 study: over Memorial Day weekend (May 23, 2015), one of the busiest Saturdays on Las Vegas Boulevard, and on a typical summer Saturday (June 20, 2015) to capture and evaluate updated peak and typical pedestrian conditions. Current walkway widths and pedestrian volumes were documented for comparison calculations of walkway capacity. As with the 2012 study, non-permanent obstructions were located, quantified, and classified to identify possible impediments to pedestrian movement in comparison with previous observations.

1.1 Study Purpose

The unobstructed movement of pedestrians along Las Vegas Boulevard is important in maintaining the economic vitality and visitor experience of Las Vegas. The purpose of the restudy is to reevaluate walkway segments and time periods of pedestrian congestion along Las Vegas Boulevard (the "Strip"), particularly within 17 walkway segments previously identified in 2012 with a LOS of less than "C" (seen in **Figure 2.1**). The updated findings can be used to aid in the enforcement of the County's Obstructive Use Ordinance.

1.2 Study Goals

The goals of the update are to reevaluate locations of pedestrian walkway congestion by time of day and day of week (including holidays) for use in the enforcement of and/or revisions to County Code 16.11-Obstructive Uses of Public Sidewalks. The restudy is to also provide updated recommendations to further improve the pedestrian experience within the Resort Corridor.

1.3 Study Corridor

The study corridor includes 4.2 miles of Las Vegas Boulevard from Russell Road to Sahara Avenue within the Las Vegas Valley. The corridor is located east of Interstate 15 (I-15), south of US Highway 95, and north of Interstate 215 (I-215) in Clark County, Nevada. Pedestrian volume data collection for this update was focused in the inner portion of the study corridor with emphasis on the 17 segments previously identified as having poor pedestrian LOS. **Figure 1.1** and **Figure 1.2** illustrate the study corridor and the observed walkway areas identified to experience conditions of less than LOS C in 2012

and 2015. Approximately 7,500 linear feet (LF) of the walkways within the Resort Corridor fell below LOS C in 2012 meaning that about 17% of the walkways within the corridor were below LOS C. With the implementation of the recommended improvements from the 2012 study, the LF of these walkways has been reduced to approximately 12.5% and 5,500 LF in 2015.

The pedestrian activity within the study corridor of Las Vegas Boulevard is primarily driven by the gaming and related tourist industry which is a major source of revenue for Clark County. Since the 2012 Pedestrian Study, the latest reported gaming revenue (2014) has increased by \$270 million to total \$6.37 billion, according to the Las Vegas Convention and Visitors Authority (LVCVA).

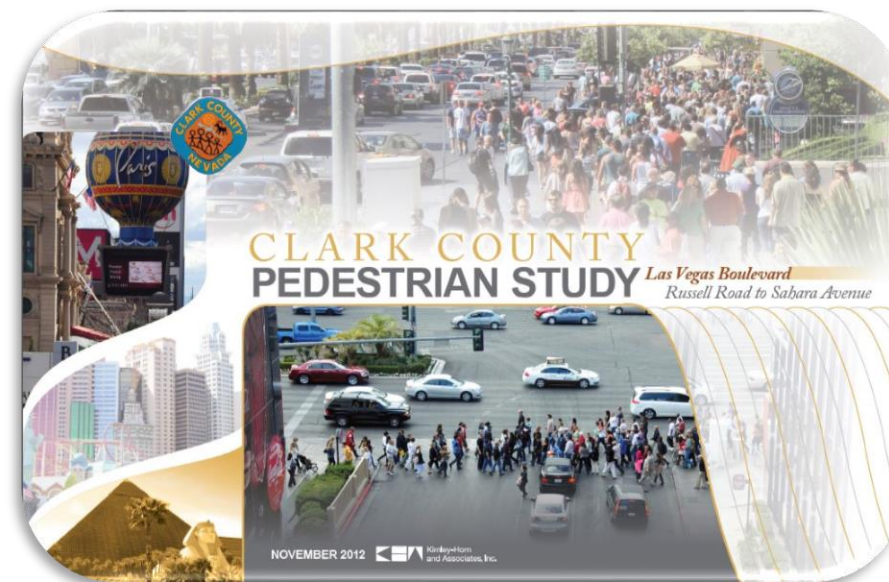
Increases in Las Vegas Boulevard pedestrian activity can also be associated with steady growth in the number of hotel rooms and the number of visitors to Las Vegas. In 2012, the number of hotel rooms in Clark County totaled 150,161 and the annual number of visitors was estimated at 38,928,708 (in 2011).

After three years, by 2015, the number of rooms in Clark County increased by 383 to total 150,544 (the highest inventory of hotel rooms of any city in the United States). The number of annual visitors (in 2014) also increased, by 2,197,804 to 41,126,512. The room inventory and number of visitors are expected to continue to increase with casino/resort expansions, new resort construction, and event center/arena construction.

Conventions, trade shows, and meetings are expected to continue to contribute to pedestrian activity along the Las Vegas Boulevard. These functions draw nearly five million attendees annually to Las Vegas, or about 12.6% of all visitors during 2014. They have contributed billions of dollars in non-gaming revenue to the economy. The LVCVA continues to move forward with the Las Vegas Global Business District and plans a new 1.8 million-square-foot conference facility along Las Vegas Boulevard in conjunction with the May 4, 2015 closure and razing of the Riviera Hotel and Casino shown in **Picture 1.2**.



Picture 1.2 – Riviera Hotel/Casino – April 2015.



Picture 1.1 – 2012 Pedestrian Study Cover.

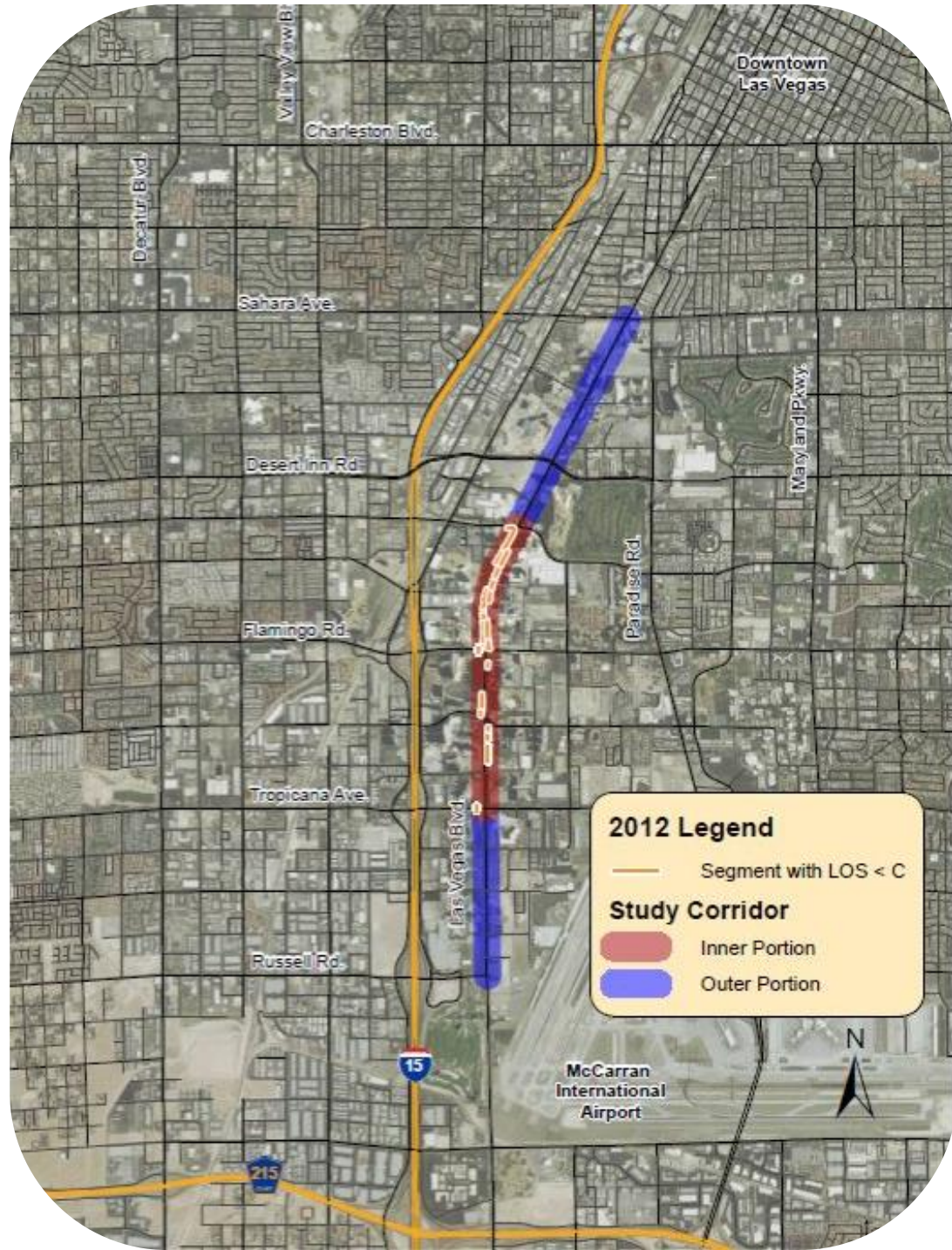


Figure 1.1 – 2012 Study Corridor

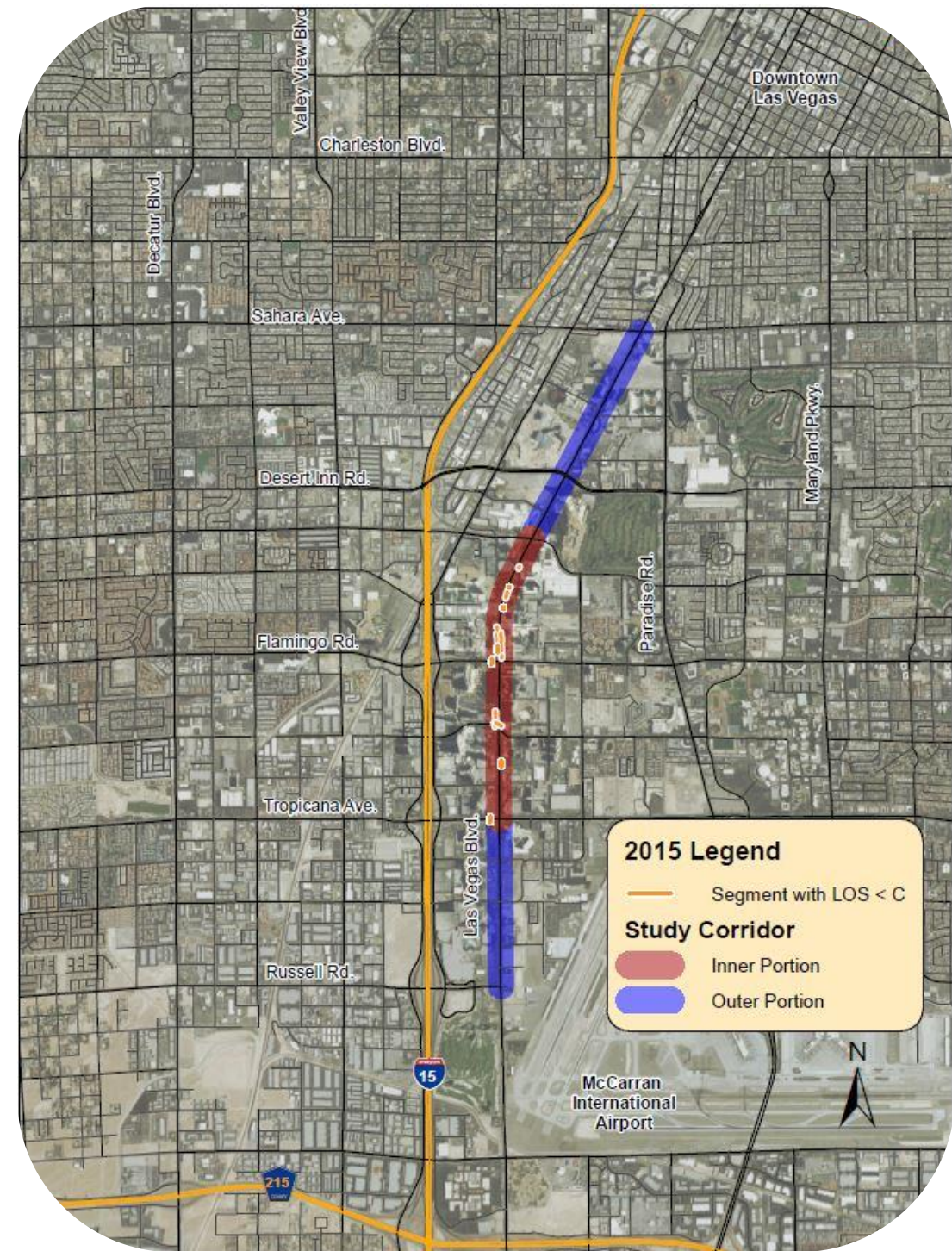


Figure 1.2 – 2015 Study Corridor

2 EXISTING CONDITIONS (2015)

This section of the report describes in detail the 2015 existing conditions of the Las Vegas Resort Corridor from Russell Road to Sahara Avenue as compared to the original 2012 Clark County Pedestrian Study. Development throughout the Resort Corridor has taken place since the completion of the 2012 Pedestrian Study. These construction activities, as they relate to the pedestrian walkways, are documented in this report section. Existing construction zones within the Resort Corridor at the time of the restudy are also discussed.

2.1 Properties in Construction during the 2012 Pedestrian Study

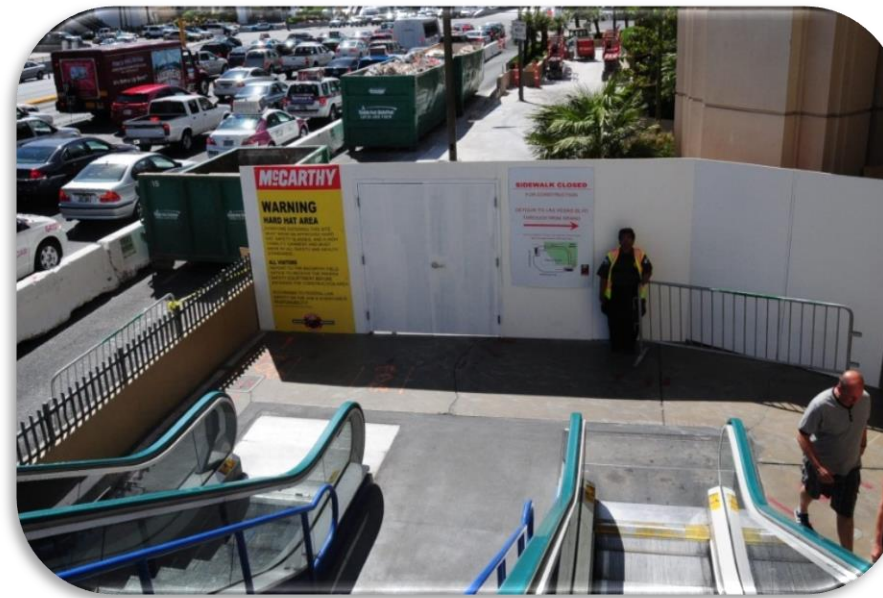
With nearly 100 individual parcels with frontage along Las Vegas Boulevard within the study area, there is almost constant construction activity within the Resort Corridor. When the Pedestrian Study was conducted in 2012, the following properties were experiencing construction activity impacting their Las Vegas Boulevard frontage pedestrian walkways:

- MGM Grand
- Harmon Center
- Flamingo
- LINQ/Imperial Palace
- Harrah's
- Echelon/Resorts World
- Fontainebleau (inactive)
- SLS (former Sahara Hotel)

Each of the above listed properties have subsequently completed their construction activities except for the economically halted Echelon and Fontainebleau projects. The construction fencing surrounding the Fontainebleau project near Riviera Boulevard has recently been moved back from Las Vegas Boulevard. The Echelon Project from 2012 is now under construction as a newly redesigned resort development named Resorts World Las Vegas.

The Resorts World construction fencing has maintained a walkway width of 12 feet. This walkway width was found to be adequate for the existing walkway conditions of the 2012 study.

Picture 2.1 through **Picture 2.4** show examples of construction activity as observed during the 2012 study.



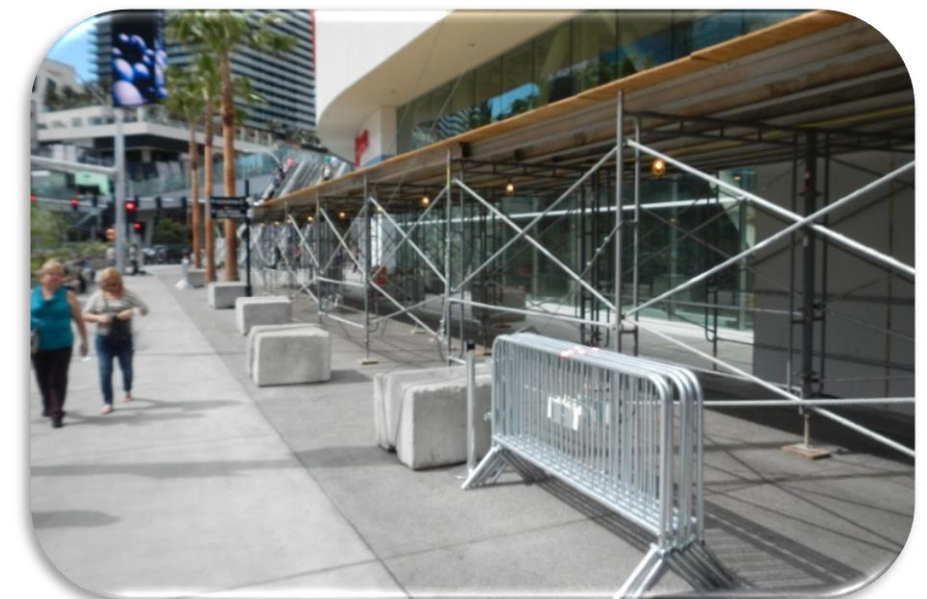
Picture 2.1 – MGM Grand Hotel/Casino Renovation Detour – 2012.



Picture 2.3 – Bus Turnout Construction at Harrah's - 2012.



Picture 2.2 – Caesars LINQ Construction – 2012.



Picture 2.4 – Signage Modifications at Harmon Center – 2012.

2.2 Properties with Construction since 2012

In 2012, effective walkway widths along the entire length of the study corridor were grouped into segments with similar effective walkway widths. Analysis resulted in 17 walkway segments that were found to exceed LOS C on the holiday and/or typical Saturday (May 26 and/or June 16, 2012) labeled R1 to R17 from south to north (see **Figure 2.1** for segment location).

Since the completion of the 2012 Pedestrian Study, the following properties along Las Vegas Boulevard have had construction projects along Las Vegas Boulevard within the study area:

- New York-New York
- Monte Carlo
- Harley Davidson*
- Harmon Tower
- Paris
- Bally's Bazaar
- Flamingo
- Caesars Colosseum Frontage*
- Casino Royale*
- TI Bus Stop (at North Mirage)*
- Treasure Island*
- McDonald's
- North MGM Festival Grounds

**Construction location within walkway segment of LOS < C in 2012. At the time of the restudy, the construction activities at these properties have been completed.*

2.3 Completed Improvements from 2012 Pedestrian Study Recommendations

Various recommended improvements to remove permanent walkway obstructions, improve walkways widths, and pedestrian safety along Las Vegas Boulevard as identified with the 2012 Pedestrian Study have been implemented. Under the direction of Clark County Public Works \$5 million has been spent for the design and construction of these recommended improvements:

- Walkways were widened at various locations for a total of approximately **1,700** additional linear footage.
- Approximately **14,000** linear feet of "white line" delineating the No Obstructive Use Zones was refreshed or added (see **Exhibit A**).
- **Twenty-four (24)** crosswalk ramps were reconstructed to improve walkway conditions to be Americans with Disabilities Act (ADA) compliant.

- **Six (6)** fire hydrants have been moved from the pedestrian walkway to the Las Vegas Boulevard median and **eleven (11)** fire hydrants have been removed from the walking path. A total of **seventeen (17)** hydrant obstructions have been removed or relocated out of the pedestrian walkway.
- Trash enclosures were removed from the pedestrian walkways.
- **Eighteen (18)** "NO PARKING" signs were removed from the curb lines along the pedestrian walkway.
- **One hundred and seven (107)** signs were relocated/replaced away from the pedestrian walkway.
- **Fifty-six (56)** time, place, and manner signs were installed along the pedestrian walkway.
- Areas of localized walkway width restrictions were addressed by removing obstructions and widening walkways.

Clark County, in cooperation with Resort Corridor property owners, developed public-private partnerships to address walkway concerns along Las Vegas Boulevard. Twenty-four (24) parcels took part in this property owner coordination leading to the following improvements:

- Harley Davidson Café (increasing walkway from 6 feet to 13 feet of effective walkway width)
- Metro Flag Food Court
- CVS at Bally's
- Caesars Palace Colosseum frontage (increasing walkway from 4 feet to 15 feet of effective walkway width)
- Mirage (increasing walkway at TI bus stop from 3 feet to 12.8 feet of effective walkway width)

With the acceptance of the 2012 Pedestrian Study, Clark County Planning began requesting new developments to provide a minimum of 15 feet of clear walkway width with appropriate shy distances along Las Vegas Boulevard walkways within the Resort Corridor. The typical shy distances are 1.5 feet on each side of the walkway (or 3 feet of shy distance) for a total clear width (W) of 18 feet. This development condition provides an effective walkway (W_E) width of 15 feet to accommodate existing and future pedestrian volumes. The Clark County development conditions require developers to maintain proposed and reconstructed walkways clear of obstructions such as existing fire hydrants and other utility obstructions, which are to be located outside of the pedestrian walkway.

Picture 2.7 through **Picture 2.18** show before-and-after views of examples of pedestrian walkway improvements that have been implemented along Las Vegas Boulevard since 2012.

Clark County has made additional improvements along the Resort Corridor aimed at improving the visitor experience. Lighting upgrades along the Strip installed light-emitting diode (LED) street lights from Russel Road to Sahara Avenue. The new lights are energy saving and produce a stronger light output. A photo of the replaced lighting is shown in **Picture 2.5** with the new LED lighting shown in **Picture 2.6**.



Picture 2.5 – Replaced Pedestrian Lighting - 2012.



Picture 2.6 – New LED Pedestrian Lighting - 2015.



Legend

- LOS < C
- R# Segment Reference Number

WALKWAY SEGMENTS THAT EXCEED LEVEL OF SERVICE (LOS) C IN 2012

*Reprint of Figure 3.73 from 2012 Study

FIGURE 2.1 * 5



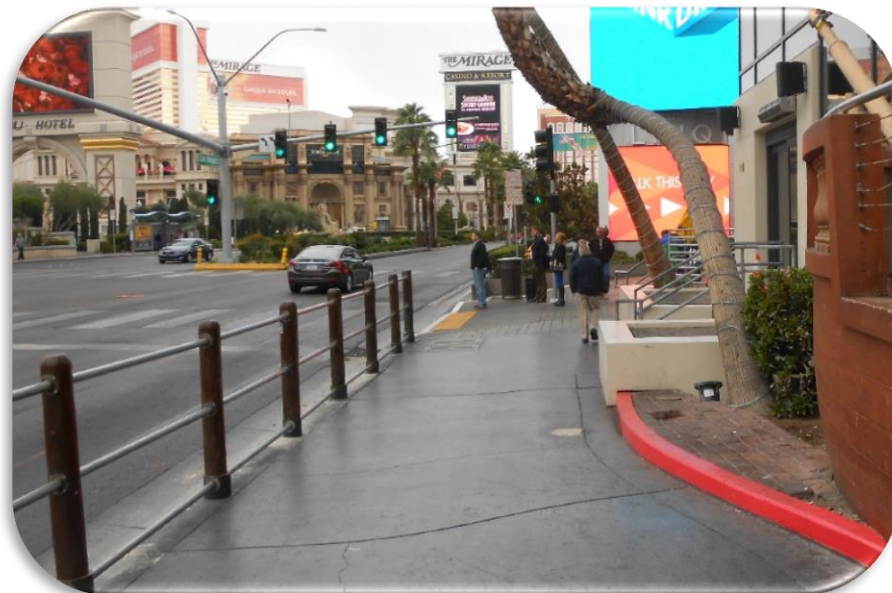
Picture 2.7 – Typical Fire Hydrant at Margaritaville - 2012.



Picture 2.9 – Walkway at Harley Davidson Café - 2012.



Picture 2.11 – Walkway at Caesars Colosseum - 2012.



Picture 2.8 – Typical Fire Hydrant Relocation at Margaritaville - 2015.



Picture 2.10 – Walkway at Harley Davidson Café - 2015.



Picture 2.12 – Walkway at Caesars Colosseum - 2015.

Removal of fire hydrant obstructions, by relocating them to either the street median (if no other non-obstructive location was available) or to adjacent landscape areas, improved walkway capacity by eliminating the permanent obstruction. The relocations increased effective walkway width (W_E) by a minimum of three feet as well as eliminating a walkway hazard. An example of a removal is shown by comparing **Picture 2.7** and **Picture 2.8** above.

Harley Davidson Café, in cooperation with Clark County, provided easements to widen the existing walkway by reducing landscaping. The sidewalk has increased in width through this area from 8 feet to 16 feet of total walkway. Newsracks were relocated to the north into a plaza area as shown. The Right Turn Only sign was relocated to the south, away from the constrained walkway area, the Stop Ahead Sign relocated to pedestrian barrier, and a Monorail directional sign was relocated adjacent to the Harley Davidson Café fencing.

The pedestrian walkway was widened by Clark County, increasing width by 7 feet to a total of 18 feet (15 feet W_E). The widening improved the walkway pedestrian LOS to LOS C or above.



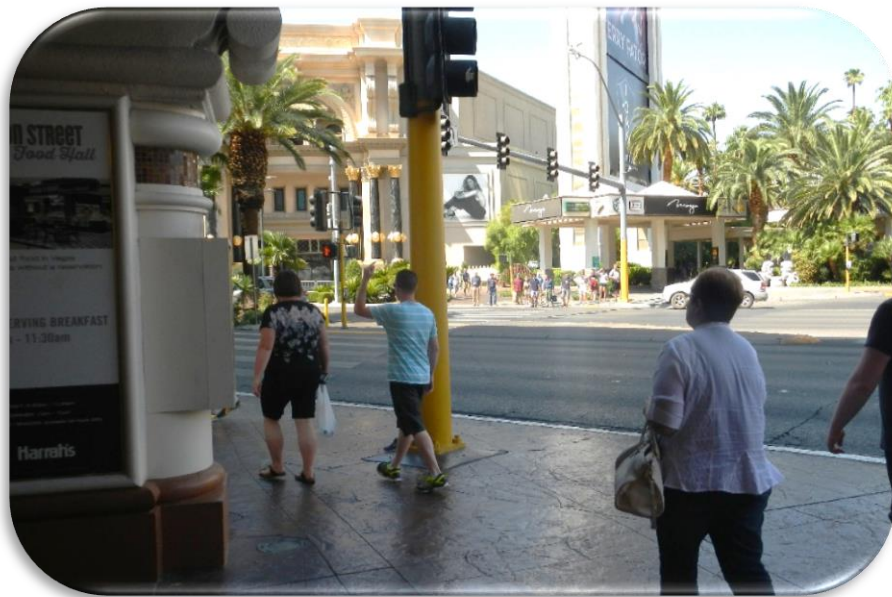
Picture 2.13 – Walkway at Harrah’s - 2012.



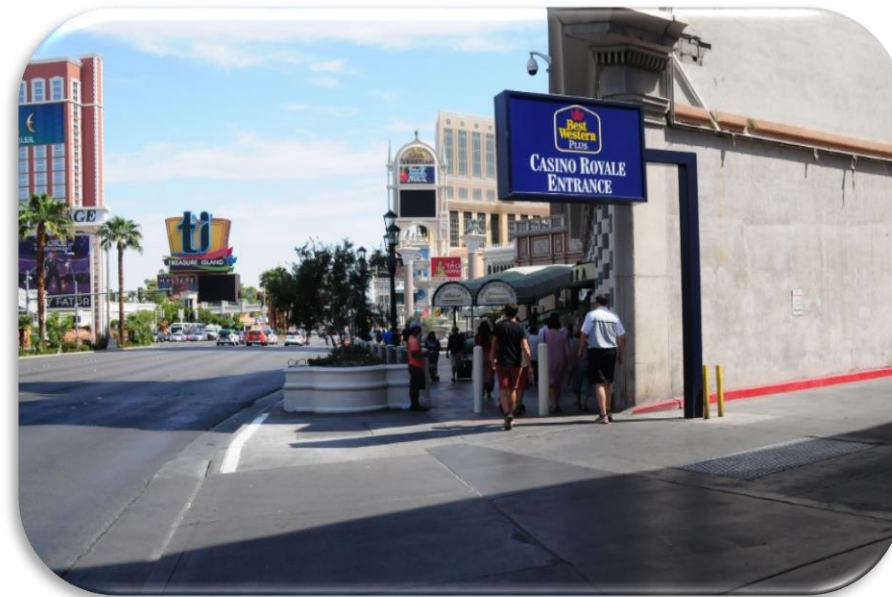
Picture 2.15 – Walkway at Casino Royale/Venetian - 2012.



Picture 2.17 – Walkway at Treasure Island Bus Stop - 2012.



Picture 2.14 – Walkway at Harrah’s - 2015.



Picture 2.16 – Walkway at Casino Royale/Venetian - 2015.



Picture 2.18 – Walkway at Treasure Island Bus Stop - 2015.

Various obstructions were removed including a fire hydrant, trash containers, and landscaping to provide increased walkway capacity for north/south travel as well as improved queuing area to cross Las Vegas Boulevard at Harrah's/Mirage at-grade crosswalk.

The pedestrian directional fence and Casino Royale sign were redesigned and relocated to eliminate permanent obstructions within the pedestrian walkway.

A bypass walkway was constructed behind the existing bus shelter, improving both walkway capacity and queuing space for bus patrons to LOS C and better conditions.

2.4 Properties/Areas Currently under Construction during the 2015 Update

At the time of this study there were various properties or areas that were undergoing construction within the Resort Corridor. The following properties had some level of construction:

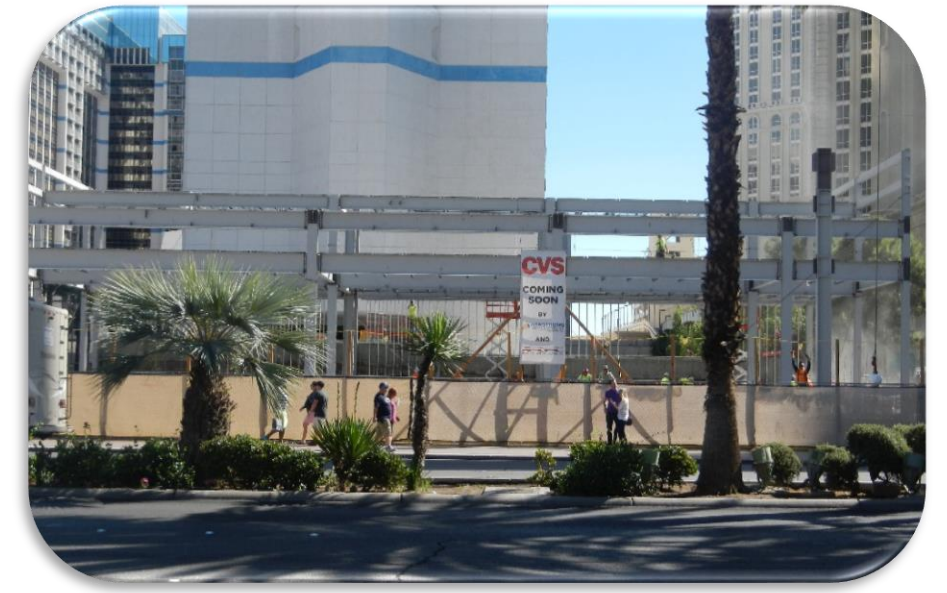
- The Park and The Las Vegas Arena
- Resorts World Las Vegas (former Echelon Resort)
- Riviera (to be razed for new LVCVA Convention Center Expansion)
- Fontainebleau (inactive construction)
- All Net Arena (status unknown)
- Mandalay Bay Convention Center (opened 2015)
- Bally's CVS Store
- MGM Arena
- Metro Flag – Food Court (proposed construction)
- Harmon Tower at City Center (deconstruction)

Each of the above properties are currently under construction with differing completion dates. The Park and The Las Vegas Arena located south of Monte Carlo are anticipated to be completed Spring 2016. Completion dates for the other properties are unknown.

Picture 2.19 through **Picture 2.23** show examples of construction activity as observed during the 2015 study.



Picture 2.20 – Riviera Construction.



Picture 2.22 – Bally's CVS Store.



Picture 2.21 – Mandalay Bay Convention Center.



Picture 2.23 – Harmon Tower Deconstruction.



Picture 2.19 – Resorts World Construction (former Echelon Resort).

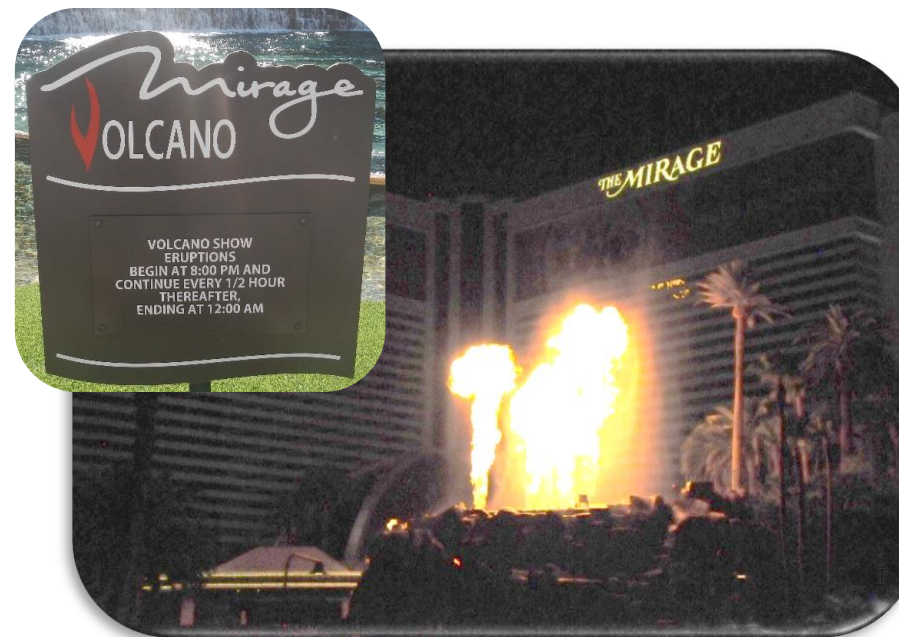
2.5 Attractions

There are two recurring outdoor attractions within the study corridor on the "Strip". They are located on the west side of Las Vegas Boulevard and are free to the public. These attractions draw the attention of passers-by and are also destinations for pedestrians intending on watching the free shows. The attractions include the Bellagio Fountains and the Mirage Volcano. The Sirens of Treasure Island show previously discussed in the 2012 report has been closed and is no longer a recurring attraction. The removal of this attraction drastically reduced the pedestrian volumes around the attraction location.

The Bellagio Fountain shown in **Picture 2.24** has an approximate five-minute duration playing every 30 minutes from 12:00 PM to 7:00 PM and every 15 minutes from 7:00 PM to 12:00 AM. Due to the number of daily fountain shows and the sidewalk widths along the Bellagio frontage, the fountain show was not found to significantly impact the flow of pedestrians along Las Vegas Boulevard. The Mirage Volcano shown in **Picture 2.25** has an approximate five-minute duration and plays every half hour from 8:00 PM to 12:00 AM. The Mirage Volcano attraction was observed to impact pedestrian traffic. Pedestrians slow their walking speeds during the attractions to move through the crowds and to also catch a glimpse of the show. Walking speeds are also significantly slower immediately following the end of the show, as in many cases there is a significant crowd of pedestrians exiting the show area. **Figure 4.23** (Saturday May 23, 2015 - Memorial Day weekend) shows the impact to pedestrian volumes in front of the Mirage due to the volcano attraction. Pedestrian volume is significantly higher during the hours of the show as illustrated by the peaks in volume around show times.



Picture 2.24 – Bellagio Fountains – Daily Attraction.



Picture 2.25 – Mirage Volcano – Daily Attraction.

2.6 Restudy Daily Conditions

2.6.1 Temperature

Kimley-Horn staff noted high temperatures in the field during the data collection time periods. Consequently, an analysis of temperature was done to determine if temperature potentially affected the number of people on the “Strip”.

Temperature data for May 26th, 2012; June 16th, 2012; May 23rd, 2015; and June 20th, 2015 was collected from wunderground.com. The website records temperature readings from the closest airport to the location chosen. In this case, readings were taken at McCarran International Airport. The mean, maximum, and minimum temperature for each of the days as well as the historical average mean, maximum, and minimum temperatures for those days are summarized in degrees Fahrenheit in **Table 2.1**. Both the 2012 and 2015 study dates in May were cooler than the average temperatures. However, June 16, 2012 was marginally warmer than the historical temperatures for the day. Most importantly, June 20, 2015 was significantly warmer than the historical temperatures for the day. The maximum temperature on the day was the same as the record for the date at 113°F.

Table 2.1 – Temperature Data

	Date			
	Holiday Weekend Saturday		Typical Weekend Saturday	
	5/26/12	5/23/15	6/16/12	6/20/15
Mean Temp (Actual)	64	71	89	97
Max Temp (Actual)	75	82	103	113
Min Temp (Actual)	52	59	75	80
Avg. Mean Temp	80	80	87	88
Avg. Max Temp	92	91	99	100
Avg. Min Temp	69	68	75	76
Record Max	109	107	114	113
Record Min	50	48	53	53

2.6.2 Occupancy

Memorial Day weekend provided congested pedestrian conditions for Las Vegas Boulevard. Information compiled by the Las Vegas Convention and Visitors Authority (LVCVA) determined the citywide hotel occupancy for the 2015 Memorial Day weekend as 98.1% (96.0% in 2012). This total includes some hotels stretching from North Las Vegas to Primm and Boulder City. A number of large events were scheduled at numerous venues along the study corridor including concerts, comedians, and an Ultimate Fighting Championship (UFC) event. **Picture 2.26** illustrates the pedestrian activity level observed on Saturday, May 23, 2015.

The Electric Daisy Carnival (EDC) took place the weekend of the June 20, 2015 counts at the Las Vegas Motor Speedway. The event attracted more than 130,000 people each day, according to the event’s website. The event opened at 5 PM and ended at 5:30 AM. The LVCVA reported the citywide hotel occupancy for the 2015 weekend of June 20 as 96.7% (94.7% in 2012).



Picture 2.26 – Activity Level on Memorial Day Weekend - 2015.

2.6.3 Escalators

During the restudy data collection periods, escalators within the study corridor were observed for their working conditions. Non-working escalators and elevators were recorded. The total number of instances that escalators were observed out of service can be seen in **Table 2.2** below. However, as Clark County is not responsible for the maintenance of all of these facilities, the latter part of **Table 2.2** provides the data for the number of non-working escalators that are the responsibility of the County. Only one elevator was noted not working throughout the study.

From observations and overheard visitor comments, it is important that escalators are operating whenever possible in the upwards direction when maintenance is being performed. As discussed in the original pedestrian study, the pedestrians on the Strip move at a leisurely pace. It is important therefore to maintain an atmosphere focused on the visitor experience. If one side of an escalator is not functional, it is desirable that the working side is set to move pedestrians upward. This further discourages pedestrians from illegally crossing the street to avoid climbing stairs as well as preventing a queue from forming at the bottom of the stairs. It is important to recognize that for the current escalator equipment, Clark County does not have the option to reverse travel directions without causing damage to the escalator equipment.

Table 2.2 – Out of Order Escalators

Time Period	Observed Out of Order (Up)		Observed Out of Order (Down)	
	5/23/15	6/20/15	5/23/15	6/20/15
1 PM – 4 PM	3	6	7	3
5 PM – 8 PM	3	3	4	5
9 PM – 12 AM	1	4	3	3
Time Period	County Out of Order (Up)		County Out of Order (Down)	
	5/23/15	6/20/15	5/23/15	6/20/15
1 PM – 4 PM	3	3	5	0
5 PM – 8 PM	2	1	1	3
9 PM – 12 AM	0	3	0	2

The American Society of Mechanical Engineers Safety Code for Elevators and Escalators specifies a safety zone surrounding the entrances and exits of an escalator. The standard 6.1.3.6.4 reads:

“The entry and exit zone shall be kept clear of all obstacles. The width of the zone shall be not less than the width between the centerlines of the handrails plus 200 mm (8in). The length of the zone, measured from the end of the newel, shall be not less than twice the distance between the centerlines of the handrails. Space shall be provided to accommodate all traffic in the safety zone.” (pg. 180, 2004 ASME A17.1).”

These dimensions are considered absolute minimums. **Figure 2.2** provides a diagram of a safety zone and **Picture 2.27** gives an example. A typical escalator measures 4 feet wide on the “Strip”. Therefore, a typical escalator clearance zone would measure 8 feet by 4 feet.

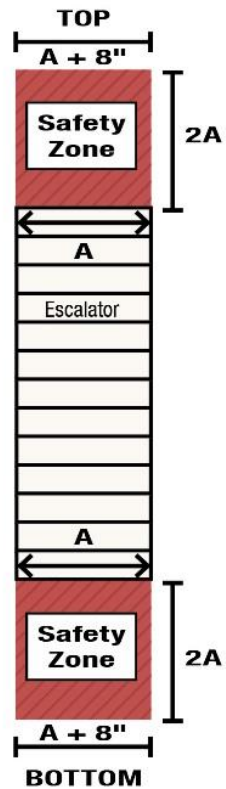


Figure 2.2 – Escalator Clear Zone Diagram.



Picture 2.27 – Non-Permanent Obstruction in Escalator Clearance Zone.

Similarly, the International Building Code states the following about a clear zone for stairs. The standard 1009.8 reads:

“There shall be a floor or landing at the top and bottom of each stairway. The width of landings shall not be less than the width of stairways they serve. Every landing shall have minimum width measured perpendicular to the direction of travel equal to the width of the stairway. Where the stairway has a straight run the depth need not exceed 48 inches (1219 mm).”

The minimum size (width and depth) of all landings in a stairway is determined by the actual width of the stairway. If Section 1009.4 requires a stairway to have a width of at least 44 inches (1118 mm) and the stairway is constructed with that minimum width, then all landings serving that stairway must be at least 44 inches (1118 mm) wide and 44 inches (1118 mm) deep. If a stairway is constructed wider than required, landings must increase accordingly so as to not create a bottleneck situation in the egress travel.”

Figure 2.3 illustrates an example of a safety zone. A typical stairway width on the “Strip” is 4 feet wide. Therefore, a typical stairway clear zone would measure 4 feet by 4 feet **Picture 2.28** shows a handbiller standing in a stairway clearance zone.

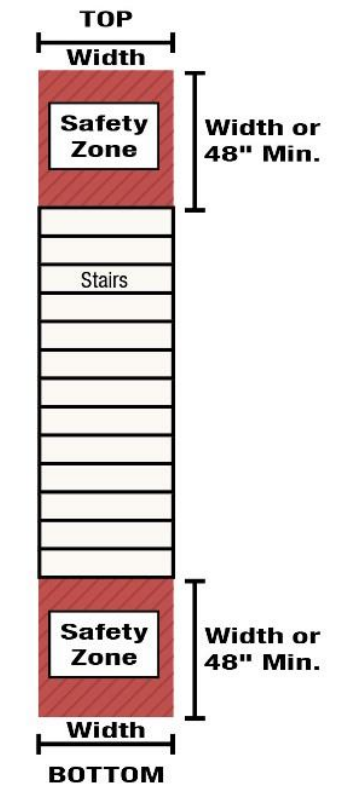


Figure 2.3 – Stair Clear Zone Diagram.



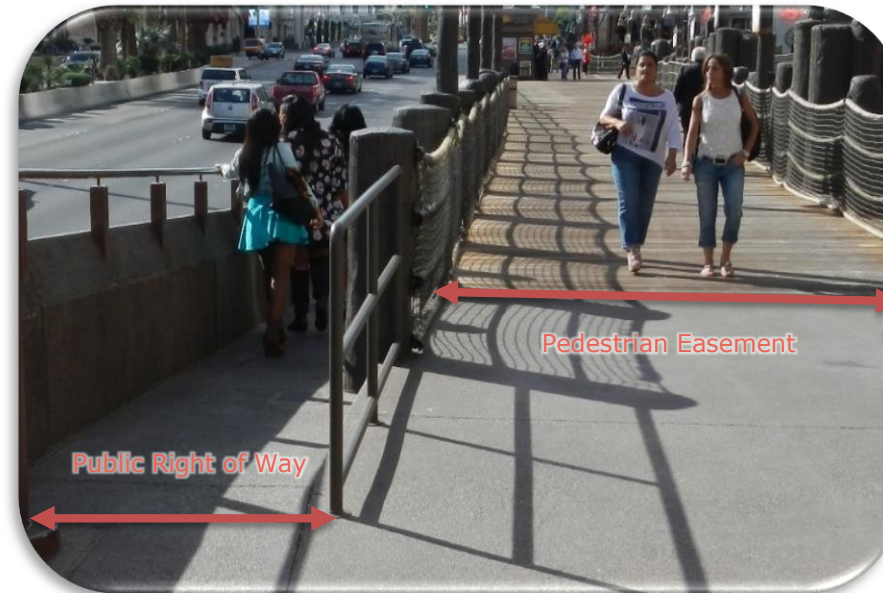
Picture 2.28 – Non-Permanent Obstruction in Stairway Clearance Zone.

2.7 Public Right-of-Way and Pedestrian Easements

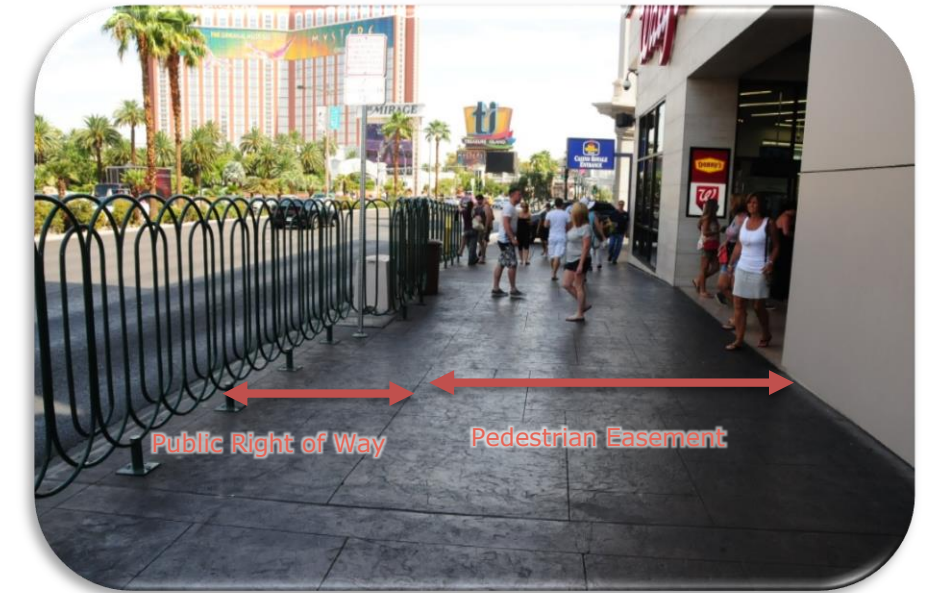
Research conducted in close coordination with Clark County Public Works staff yielded an updated comprehensive exhibit of the existing public walkways and the privately owned and maintained pedestrian walkways that are available to the public for pedestrian access. **Exhibit B** displays the existing public right-of-ways and pedestrian easements along Las Vegas Boulevard from Russell Road to Sahara Avenue. It should be noted that this exhibit is the summation of the best available information for this study. **Picture 2.29** illustrates a location with both public- and privately-maintained walkways with a public pedestrian easement that has been reconstructed since the 2012 Pedestrian Study. Additional locations of pedestrian easement modifications include:

- New York-New York
- Caesars Palace
- Harley Davidson
- Harrah's
- CVS at Bally's
- Bazaar at Bally's
- LINQ
- Miracle Mile Shops at Planet Hollywood
- Casino Royale
- Treasure Island Bus Stop
- CVS at Treasure Island
- Fashion Show Mall
- MGM North Festival Grounds
- SLS (Former Sahara Hotel/Casino)

Examples are shown in **Picture 2.29** through **Picture 2.31**.



Picture 2.29 – Treasure Island Walkway with Public Right-of-way, Pedestrian Easement, and Private Walkway.



Picture 2.31 – Casino Royale Walkway with Public Right-of-way and Pedestrian Easement.



Picture 2.30 – New York-New York Walkway with Public Right-of-way, Pedestrian Easement, and Private Walkway.

2.8 Existing Walkway Widths (W)

To update the 2012 Pedestrian Study for current pedestrian LOS along Las Vegas Boulevard, the total walkway width (W) and effective walkway width (W_E) were verified and reestablished. Through field measurements and records research, walkway widths were documented within the previously identified 17 walkway segments of less than LOS C as well as where construction activity since 2012 has modified walkway widths. The walkway widths (W and W_E) were documented at each of the pedestrian volume data count locations within this restudy and at various locations throughout the study corridor that were representative of the defined walkway segments. At these locations, the effective walkway widths were calculated using the 2010 HCM methodology, the same methodology as used in the 2012 study. Shy distances were applied to permanent obstructions (i.e. fences, landscaping, trash enclosures, utility poles, bus shelters, fire hydrants, etc.) to determine the current effective walkway widths.

With the completion of the 2012 Pedestrian Study, the previous long-standing development requirement within the Resort Corridor of providing 10 feet of effective walkway width or a LOS C or better was revised. The 2012 Pedestrian Study recommended:

“Based on the pedestrian volumes observed in this study, some future sidewalks within the central or inner portions of the study corridor will require walkway widths over 15 feet (W). A walkway with 15 feet of effective width (W_E) can serve up to 2,250 pedestrians in 15 minutes while maintaining a LOS of C.”

The above recommendation has been applied for the entire Resort Corridor for pedestrian walkway planning to accommodate existing and future pedestrian volumes. Current project entitlements within the Resort Corridor now require developments to provide a minimum clear walkway of 15 feet with appropriate shy distances, or a clear sidewalk width of 18 feet considering a typical shy distance of 1.5 feet on each side of the walk (3 feet total). Sidewalk width exceptions are recognized to accommodate existing conditions with engineering judgement.

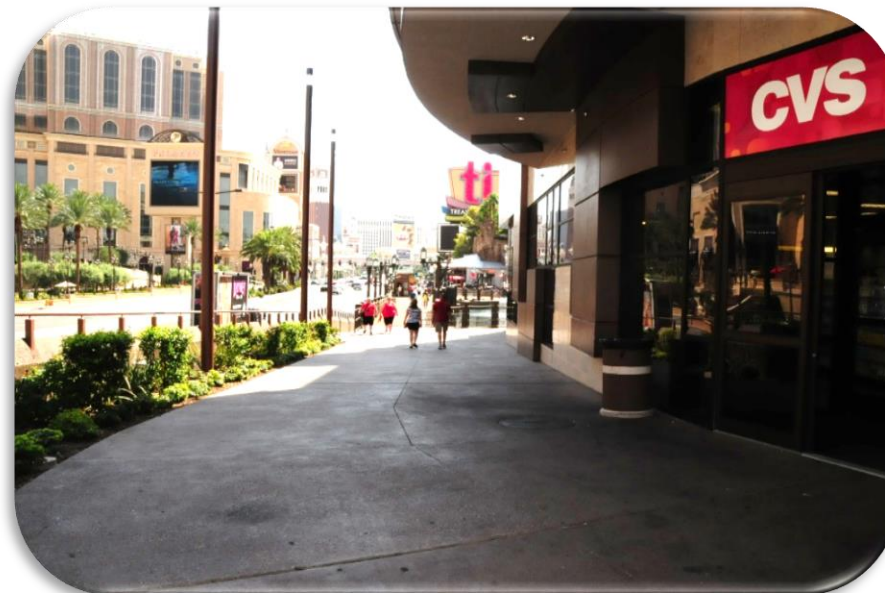
Picture 2.32 and **Picture 2.33** show examples of recently constructed 18 foot clear walkways providing 15 feet of effective walkway width. **Picture 2.34** and **Picture 2.35** show examples of recently constructed walkways with greater than 18 feet clear width.



Picture 2.32 – 18 foot Clear Walkway, Caesars Colosseum.



Picture 2.34 – Greater than 18 foot Clear Walkway, North Festival Lot.



Picture 2.33 – 18 foot Clear Walkway, Treasure Island North.



Picture 2.35 – Greater than 18 foot Clear Walkway, Bally's Bazaar.

2.9 Newsracks

In the 2012 Pedestrian Study, newsracks were documented as permitted permanent obstructions within the Resort Corridor. Since that time, some newsracks have been removed or relocated so as not to obstruct the pedestrian walking path. The random-sized, multi-color, and various shaped newsracks seen in **Picture 2.36** have been replaced by the County. The replacement newsracks are owned and maintained by the County and provide a uniform color and appearance within the Resort Corridor. **Picture 2.37** shows the new uniform County newsracks. The peaked roof design discourages the use of the news racks as makeshift tables for trash collection, stacking of handbilling materials, or other activities.

Newsrack medallion locations are shown in **Exhibit C**.



Picture 2.36 – Mismatched Newsracks – 2015.



Picture 2.37 – Replacement Newsrack – 2015.

2.10 Bus Stops

The 2012 Pedestrian Study identified twenty-nine (29) bus stops located along Las Vegas Boulevard between Russell Road and Sahara Avenue. For the existing 2015 conditions, twenty-eight (28) bus stops are provided within the Resort Corridor between Russell Road and Sahara Avenue. Some stops have been removed and/or relocated along the roadway since 2012. **Figure 2.4** displays the bus stops locations labeled by the type of bus stop installation per the 2012 study descriptions. Descriptions and examples of each type have been provided in **Figure 2.5** through **Figure 2.7**.

The following section details the modification and improvements to the Resort Corridor bus stops since 2012, recognizing the need for improved, unobstructed pedestrian walkways within the Resort Corridor. Bus stop identification signs were relocated in coordination with the Regional Transportation Commission (RTC) to better provide a clear pedestrian walkway as well. Changes are shown in **Picture 2.38** through **Picture 2.48**.



Picture 2.39 – Monte Carlo Bus Stop - 2012.

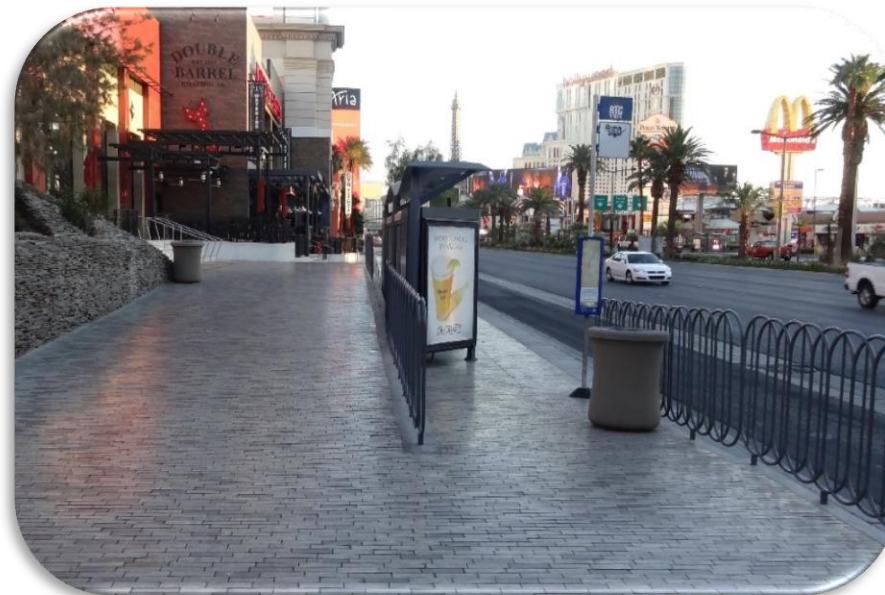


Picture 2.41 – Paris Bus Stop - 2012.



Picture 2.38 – Sky Condominium Bus Stop - 2012 - Removed.

The bus stop at the Sky Condominiums has been removed.



Picture 2.40 – Monte Carlo Bus Stop - 2015.

The Monte Carlo Hotel/Casino bus stop was reconstructed as an isolated bus stop (the bus stop type recommended within the Resort Corridor in the 2012 Pedestrian Study), with the pedestrian walking path behind the shelter.



Picture 2.42 – Paris Bus Stop - 2015.

The bus shelter and surrounding trees and planters at the Paris Hotel and Casino have been removed, increasing the clear walkway width. The bus stop and benches have been moved northward along the walkway since the 2012 Pedestrian Study. In addition, the bus ticket vending machines were relocated out of the pedestrian walkway adjacent to planters on Paris property and trash enclosures have been relocated in-between and in-line with the bus stop benches to further reduce obstructions to the pedestrian walkway.



Picture 2.43 – Flamingo Bus Stop – 2012.



Picture 2.45 – Hilton Grand Vacations South Bus Stop - 2012.



Picture 2.47 – Sahara South Bus Stop - 2012.



Picture 2.44 – Harrah's (Relocated Flamingo) Bus Stop – 2015.



Picture 2.46 – Hilton Grand Vacations South Bus Stop - 2015.



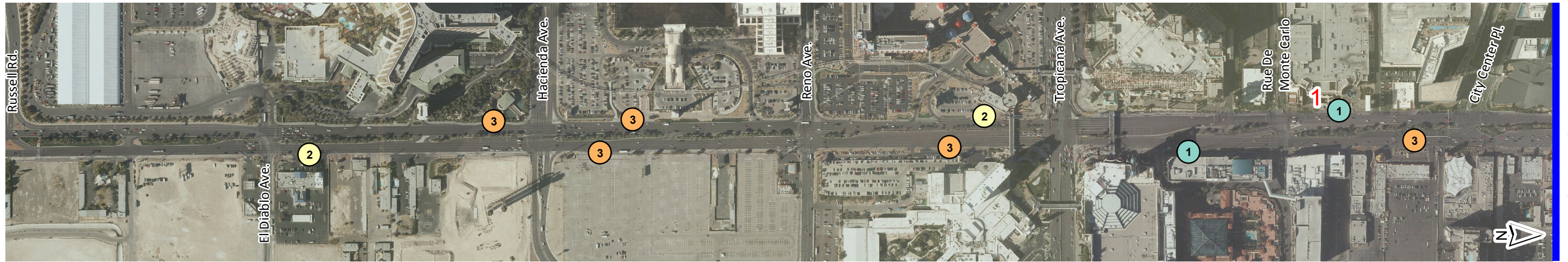
Picture 2.48 – Sahara South Bus Stop - 2015.

During the 2012 Pedestrian Study, an isolated bus stop (the bus stop type recommended within the Resort Corridor in the 2012 Pedestrian Study), was being constructed at the Harrah's Hotel/Casino. Today the pedestrian walkway is located behind the bus stop, separated by landscaping. The current bus stop replaced the stop previously located at the front of the pedestrian walkway at the Flamingo Hotel/Casino.

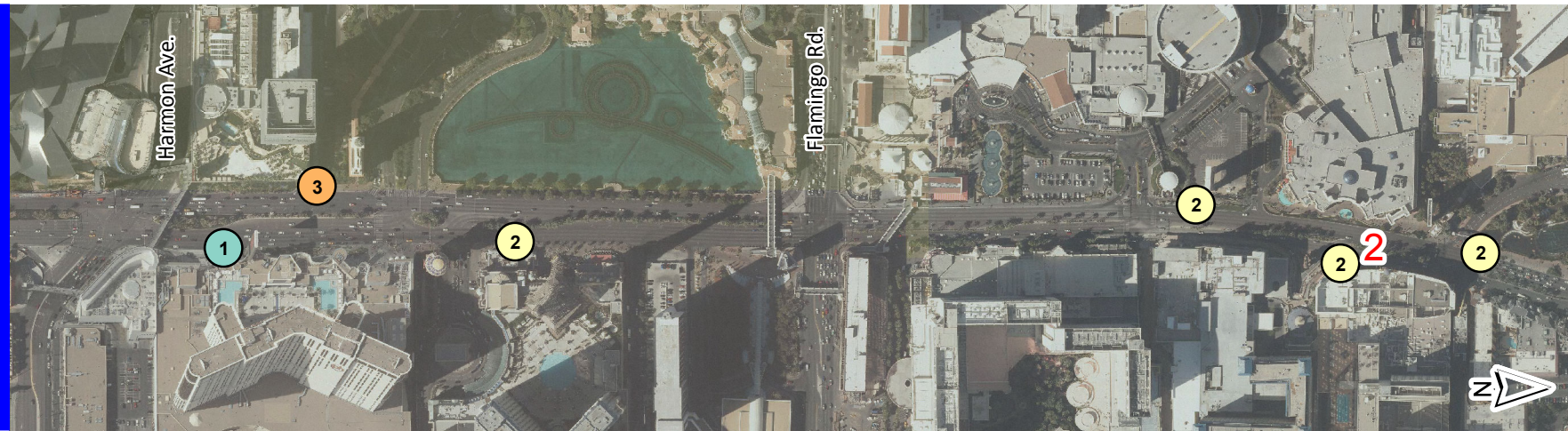
The bus stop at Hilton Grand Vacations South was moved.

With the construction of the North Festival Lot (home to Rock-in-Rio), a new bus turnout was constructed south of the Sahara Avenue/Las Vegas Boulevard intersection. The bus stop is now located at the front of the walkway, providing 40 feet of walkway width behind the shelters.

2015



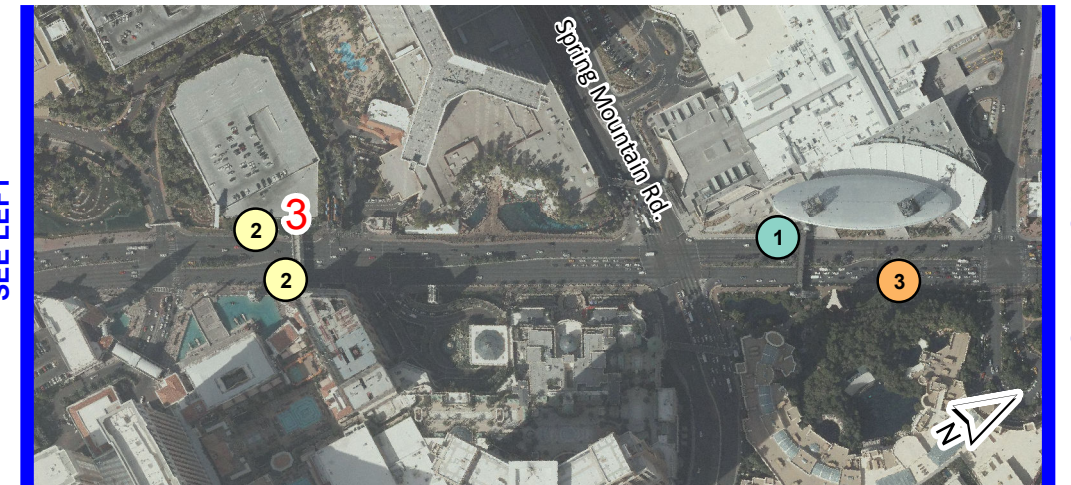
SEE BELOW LEFT



SEE ABOVE RIGHT

SEE RIGHT

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SEE BELOW LEFT



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BUS STOP TYPE AND LOCATION IN 2015

- Notes:**
- 1. Previously Type 2
 - 2. Previous location at Flamingo
 - 3. Previously Type 2
 - 4. Sky Condominiums stop removed
 - 5. Hilton Grand Vacations S. new location
 - 6. Sahara S. new location

Legend

Bus Stop

- 1 Isolated
- 2 In Front of Walk
- 3 Behind Walk

FIGURE 2.4

Type 1 – (Isolated) – These bus stops are separate from the main pedestrian walkway; typically, a separate walkway is provided from the main walkway to access the bus stop and shelter.

Figure 2.5 graphically illustrates a Type 1 bus stop. **Picture 2.49** gives an example of a Type 1 bus stop on the Resort Corridor. A total of five (5) Type 1 bus stops were found within the study corridor, with their locations shown on **Figure 2.4**. This type of bus stop minimized conflicts between bus patron queues and passing pedestrians.

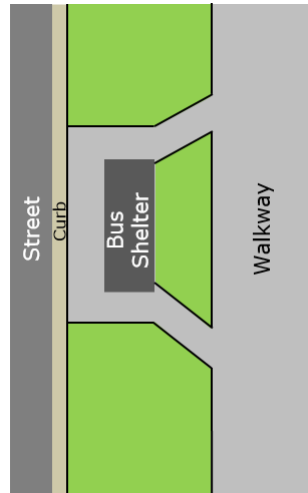


Figure 2.5 – Type 1 (Isolated) Bus Stop Example

Type 2 – (Front of Walk) – Bus stops were classified as Type 2 if the pedestrian walkway was located behind the bus shelter.

Figure 2.6 graphically illustrates a Type 2 bus stop. **Picture 2.50** gives an example of a Type 2 bus stop on the Resort Corridor. A total of ten (10) Type 2 bus stops were found within the study corridor, with their locations shown on **Figure 2.4**. The benefits of the Type 2 bus stop are similar to those of the isolated Type 1 except large pedestrian queues can spill back onto the adjacent through walkway.

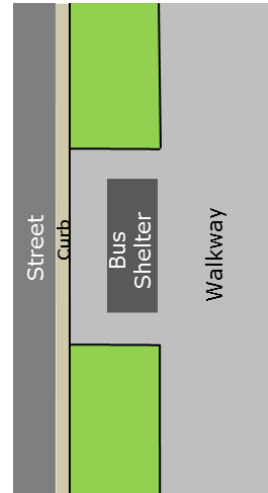


Figure 2.6 – Type 2 (Front of Walk) Bus Stop Example

Type 3 – (Behind Walk) – This classification was applied to bus shelters and 2 bus benches that are located behind the pedestrian walkway. Type 3 bus stops route pedestrian traffic between the bus shelter or bus benches and the street.

Figure 2.7 graphically illustrates a Type 3 bus stop. **Picture 2.51** gives an example of a Type 3 bus stop on the Resort Corridor. A total of thirteen (13) Type 3 bus stops were found within the study corridor, with their locations shown on **Figure 2.4**. This is the least desirable type of bus stop for the Resort Corridor. As pedestrian volumes and bus patrons increase, conflicts occur on the walkway between the bus patrons and pedestrians walking by the stop.

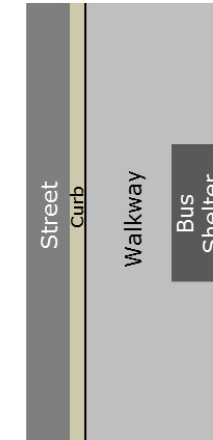
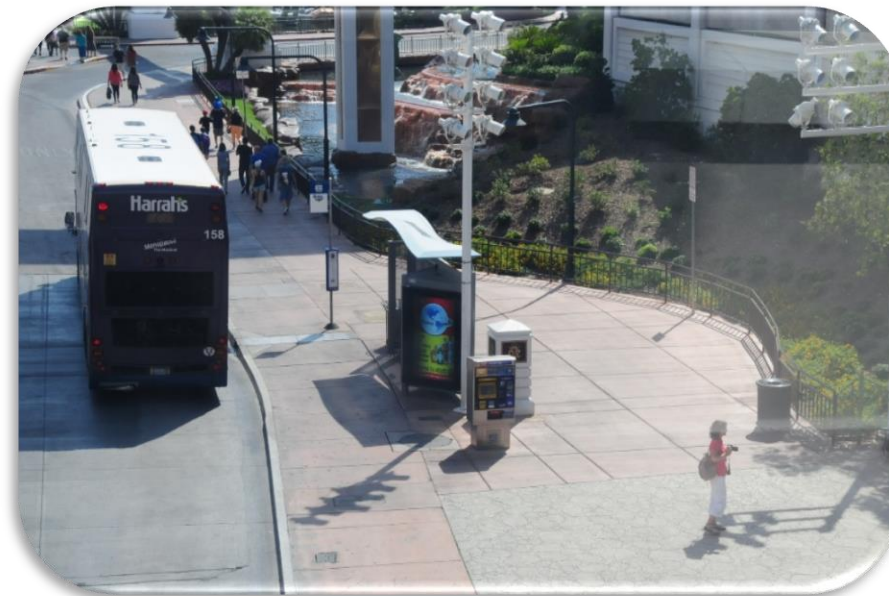


Figure 2.7 – Type 3 (Behind Walk) Bus Stop Example



Picture 2.49 – Type 1 Bus Stop Example – Monte Carlo North.



Picture 2.50 – Type 2 Bus Stop Example – Treasure Island South.



Picture 2.51 – Type 3 Bus Stop Example – Bellagio South.

2.11 Pedestrian Containment

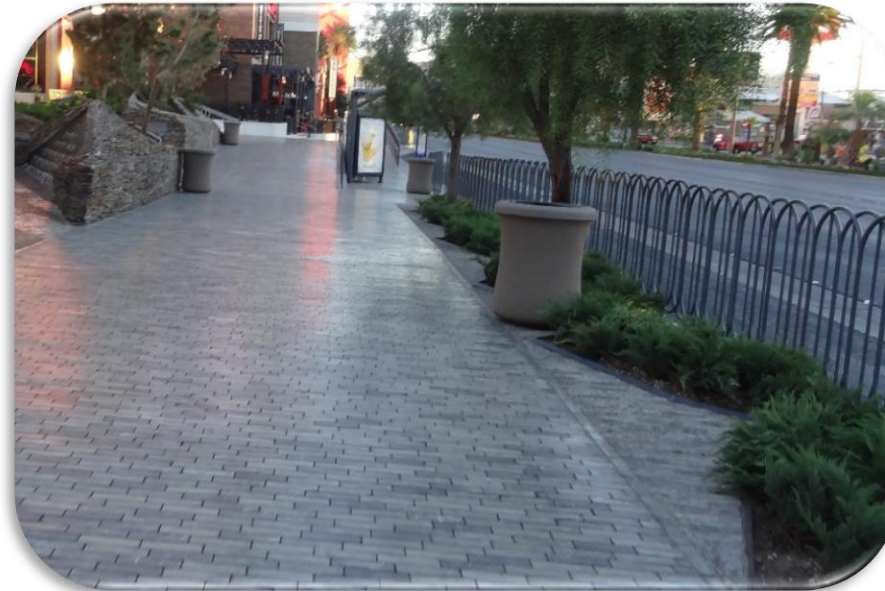
Pedestrian containment barriers have continued to be installed and improved from those reported in the 2012 Pedestrian Study along Las Vegas Boulevard. This section describes the modified and recently constructed pedestrian containment within the Resort Corridor. Public entities and private properties have installed containment within the Resort Corridor as well. Since 2012, Clark County has installed new fencing within the median of Las Vegas Boulevard to serve as a deterrent for pedestrians crossing Las Vegas Boulevard at unmarked locations and where containment is not provided along both sides of the roadway.

Approximately 4,840 LF of new pedestrian walkway containment has been added to Las Vegas Boulevard between Russell Road and Sahara Avenue (3,200 LF within the median and 1,640 LF along the curb). A total of 21,300 LF of containment fencing exists within the Resort Corridor at the time of this study.

New or replacement pedestrian containment fencing since 2012 has been installed at the following locations along Las Vegas Boulevard:

- New York–New York
- Monte Carlo
- LINQ
- Treasure Island
- MGM North Festival Grounds

Picture 2.52 through **Picture 2.55** examples of the new pedestrian containment since the 2012 Pedestrian Study. **Figure 2.8** through **Figure 2.10** compares a summary of pedestrian containment throughout the Resort Corridor in 2012 to the pedestrian containment that exists at the time this report was prepared in 2015.



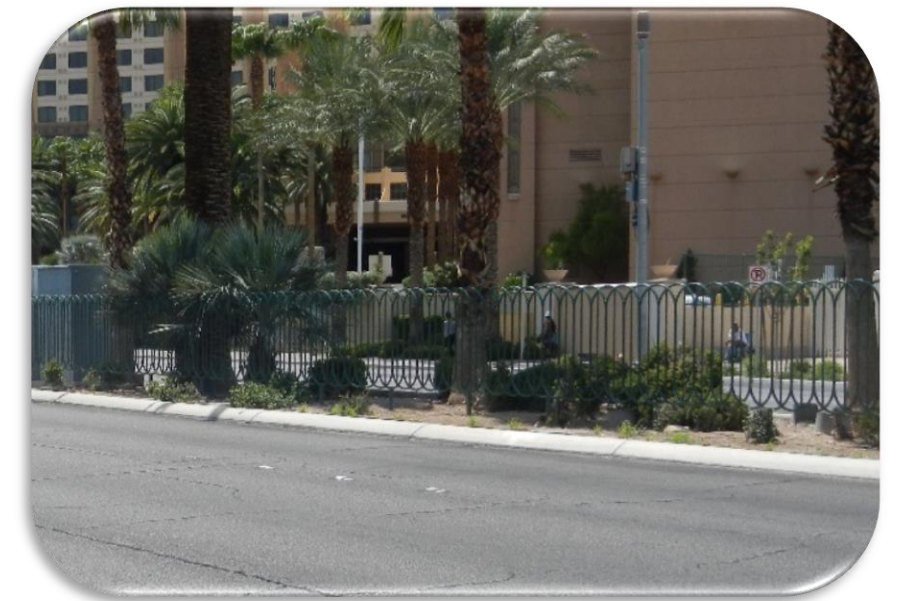
Picture 2.52 – New Pedestrian Containment at Monte Carlo.



Picture 2.54 – New Pedestrian Containment at LINQ.



Picture 2.53 – Reconstructed Containment along New CVS Store at Treasure Island.



Picture 2.55 – New Pedestrian Containment at MGM North Festival Grounds.

2012



SEE FIGURE 2.9

2015



SEE FIGURE 2.9

**PEDESTRIAN CONTAINMENT - PUBLIC AND PRIVATE LOCATIONS
RUSSELL RD. TO CITY CENTER PL.**

FIGURE 2.8 20

2012



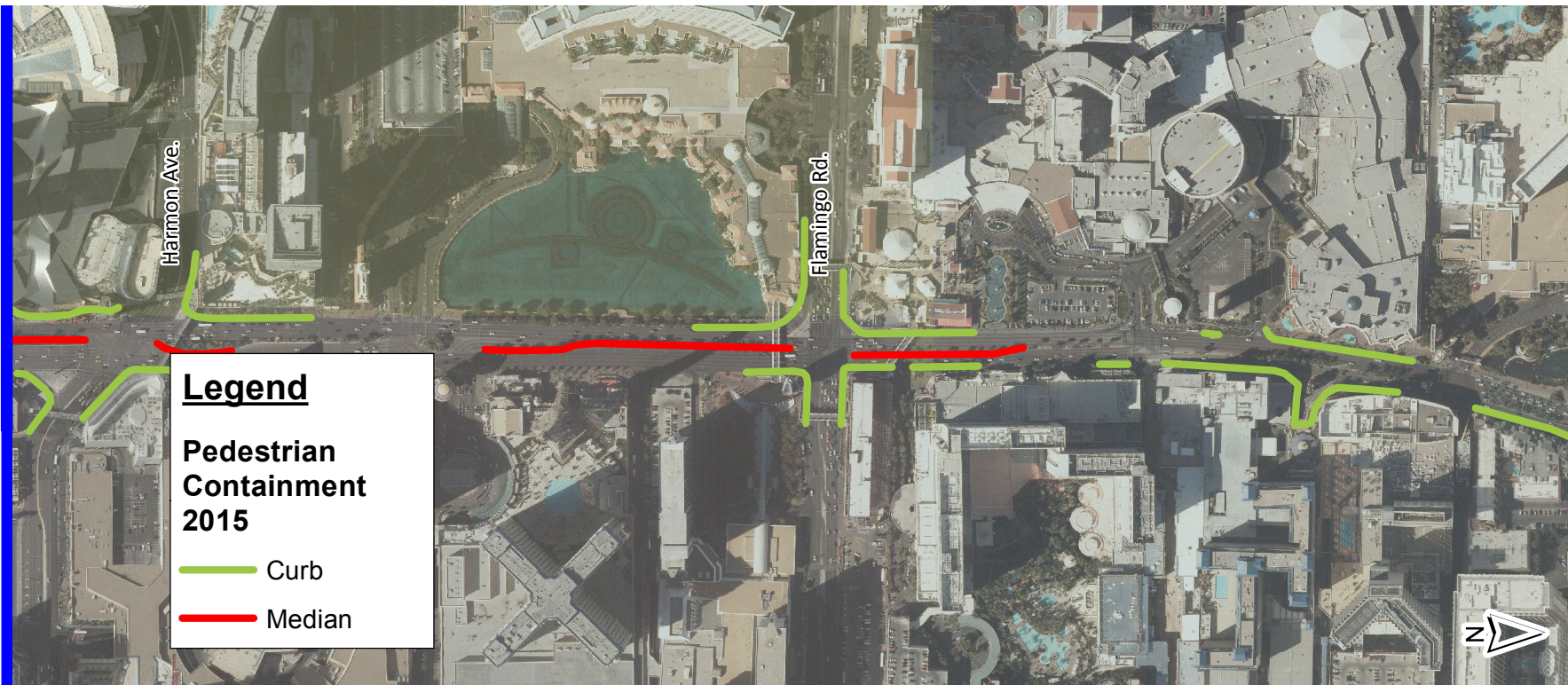
SEE FIGURE 2.8

SEE RIGHT
SEE LEFT



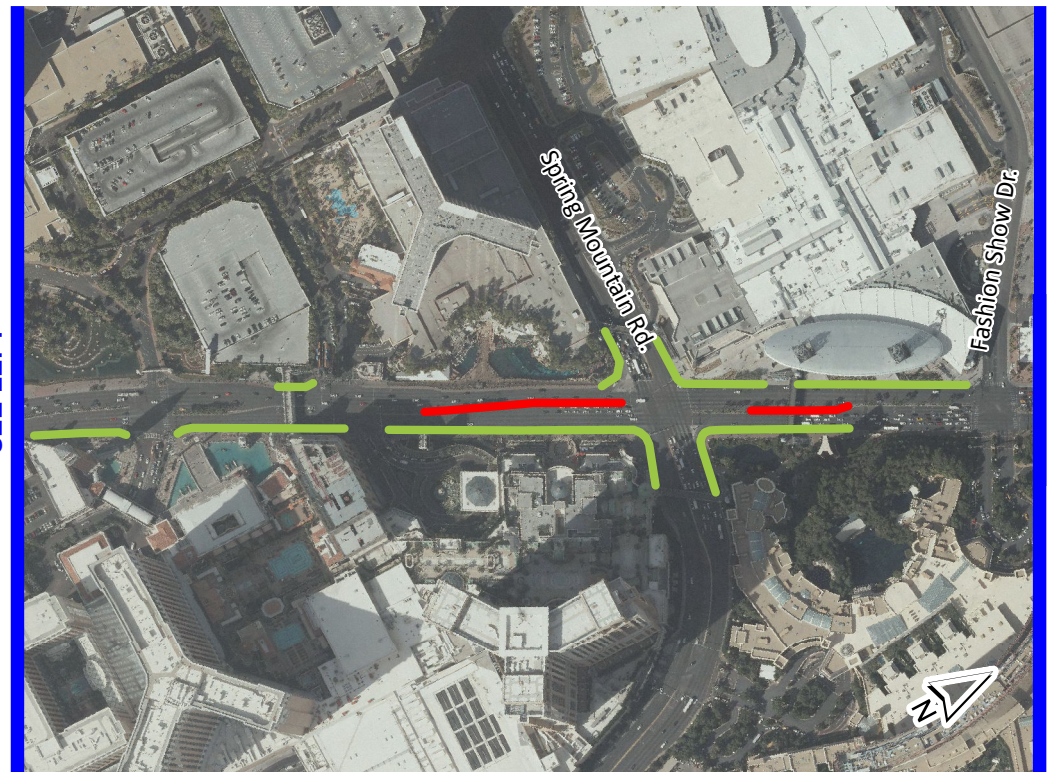
SEE FIGURE 2.10

2015



SEE FIGURE 2.8

SEE RIGHT
SEE LEFT



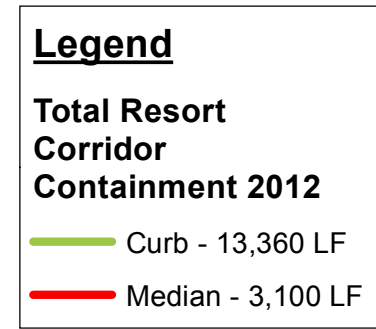
SEE FIGURE 2.10

**PEDESTRIAN CONTAINMENT - PUBLIC AND PRIVATE LOCATIONS
HARMON AVE. TO FASHION SHOW DR.**

FIGURE 2.9 21

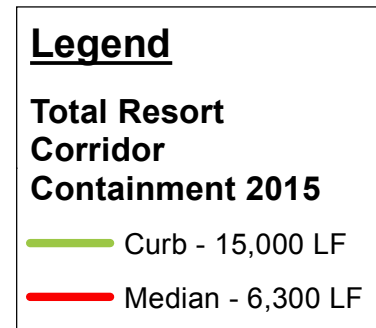
SEE FIGURE 2.9

2012



SEE FIGURE 2.9

2015



**PEDESTRIAN CONTAINMENT - PUBLIC AND PRIVATE LOCATIONS
FASHION SHOW DR. TO SAHARA AVE.**

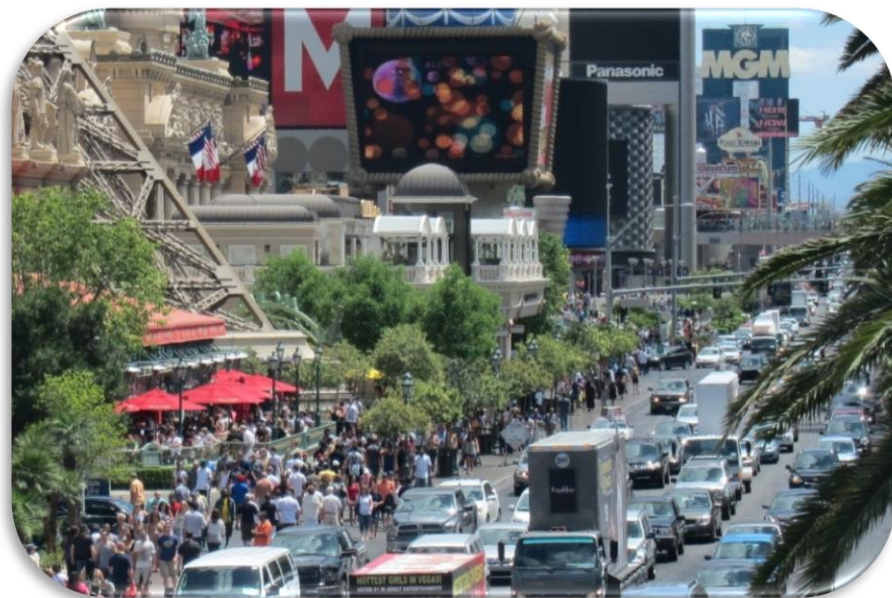
FIGURE 2.10 22

3 DATA COLLECTION

The data collection methodology established for the 2012 study was repeated with minor variations to capture the variations in pedestrian activity and the pedestrian environment along Las Vegas Boulevard from Russell Road to Sahara Avenue, and to compare and update the 2012 Pedestrian Study. During the data collection phase of the study, pedestrian volumes and non-permanent obstructions were observed. Similar to the 2012 study, the term “non-permanent obstruction,” for the purposes of the data collection phase of the study and for this report, is defined as an individual who could obstruct the pedestrian walkway while engaging in any of the following activities within the walkway: handbilling, performing, soliciting, or selling.

With the study focus on the segments of the “Strip” with LOS lower than C, the count locations in the 2015 study were selected within the inner portion of the corridor (Tropicana Avenue to Spring Mountain Road). In order to obtain observations that could directly compare to the findings of the 2012 study, the previous data collection periods were maintained for this update. In consultation with the County and for consistency with the previous pedestrian study, the pedestrian volume data collection times for this restudy were identified to be the Saturday of the Memorial Day holiday weekend and on a typical summer Saturday. Based upon the study schedule, May 23, 2015, the Saturday of Memorial Day weekend, and June 20, 2015 were selected.

Memorial Day Weekend continues to be one of the most active periods within the Resort Corridor. **Picture 3.1** illustrates the activity level observed on Saturday, May 26, 2012 and for comparison, **Picture 3.2** shows the activity level on Saturday, May 23, 2015.



Picture 3.1 – Activity Level on Memorial Day Weekend - 2012.



Picture 3.2 – Activity Level on Memorial Day Weekend - 2015.

Two video cameras were used to observe pedestrian activities for seven consecutive days each with 24-hour recordings from Friday 6 AM to Friday 6 AM before and after the Saturday count days. The video cameras were installed by Clark County for the study and used for the data collection. The seven-day observations were programmed to occur between May 22 to May 29 and June 19 to June 26 (including the two primary study days). Due to technical issues, data from only one 24-hour video location was able to be reduced.

The pedestrian observation sites for the Saturday data collection program were selected based upon the identified 17 segments which experienced less than LOS C in the 2012 Pedestrian Study. Count locations were chosen to be within the identified 17 segments. In addition, seven (7) new count locations were added to the study in 2015 recognizing the changes in land use and shifts in construction areas. The twenty-one (21) count locations are listed in **Table 3.1**.

An effort was made to recount at the same locations as the 2012 study where possible for direct comparison. Eleven locations were identified on the west side of Las Vegas Boulevard, nine were identified on the east side, as well as one east/west pedestrian bridge. Twenty-one (21) locations were used for data collection in 2015. Where video observation coverage was not available for the restudy, manual counts were conducted. The pedestrian count locations identified for the update are summarized in **Figure 3.1**.

Figure 3.1 shows the location of each of the count locations numbered from south to north. For consistency, count locations that were manual counts in the 2012 study are labeled with “M,” Clark County cameras are labeled with “CC,” and video counts provided by cameras from the Metropolitan Police Department are labeled “Metro.” New count locations are labeled with their

respective count type descriptions and numbered starting from the last count location of that type in 2012.

Table 3.1 – Count Locations

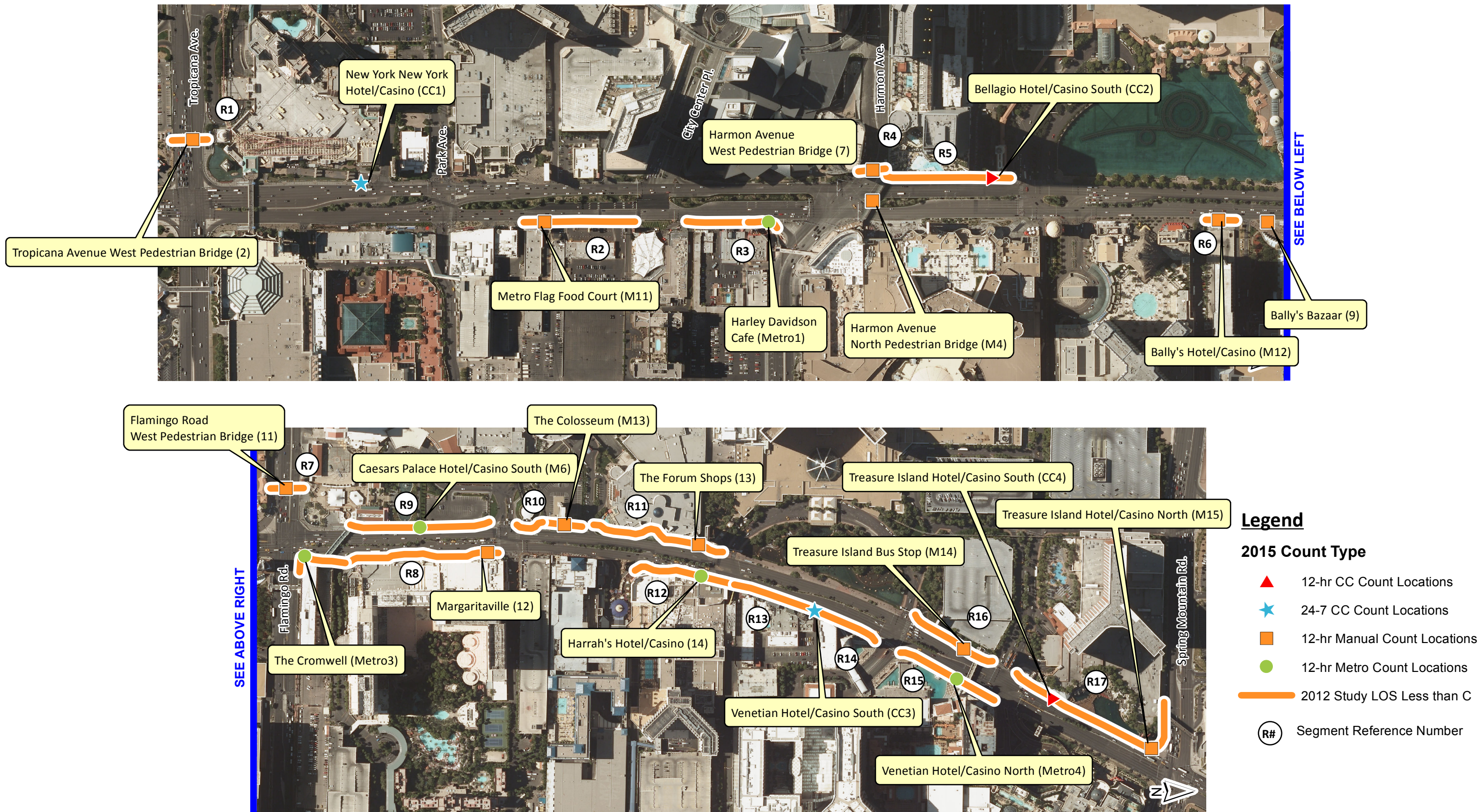
Count Location ID	Location	Segment
2	Tropicana W. Bridge	R1
CC1	New York-New York	-
M11	Food Court*	R2
Metro1	Harley Davidson	R3
7	Harmon W. Bridge	R4
M4	Harmon N. Bridge	-
CC2	Bellagio South	R5
M12	Bally’s South*	R6
9	Bally’s Bazaar	-
11	Flamingo W. Bridge	R7
Metro3	Cromwell*	R8
12	Margaritaville	R8
M6	Caesars Palace S.	R9
M13	Colosseum*	R10
13	Forum Shops	R11
14	Harrah’s	R12
CC3	Venetian South	R14
M14	Venetian North*	R15
Metro4	TI Bus Stop*	R16
CC4	TI South	R17
M15	TI North*	R17

*New count location in 2015.

The pedestrian volume data used in this study is the result of a total of 288 hours of manual counts and 840 hours of recorded video at 21 unique locations within the study corridor. These 21 locations included four pedestrian bridges (manual) and 17 walkway locations (nine video and eight manual). This report and its conclusions are based upon approximately 2,650,000 observed pedestrians within the study corridor as counted between May 22 and June 26, 2015.

The following sections provide additional details on the data collection effort. The raw data from the data collection effort is provided on a disk located on the back cover of this study.

2015



PEDESTRIAN VOLUME COUNT LOCATIONS IN 2015

FIGURE 3.1

3.1.1 Pedestrian Counts - Video

Through close coordination with Metropolitan Police Department (Metro), and Clark County Public Works, seven (7) surveillance cameras were made available for the study.

Metro provided five (5) surveillance cameras for the study. The Metro cameras were used to observe 12 hours of sidewalk pedestrian activity throughout the study area for each Saturday count. A typical metro camera installation can be seen in **Picture 3.3** as installed along Las Vegas Boulevard. Camera observation views for each location were selected by Kimley-Horn staff to ensure that all video footage would provide suitable data for collecting pedestrian volume counts. It should be noted that as data was analyzed there were segments of time that were not available for pedestrian counting. Clark County deployed two (2) additional cameras for video data collection. Kimley-Horn coordinated with the County to install the cameras in similar locations for video coverage as in the 2012 Pedestrian Study (see **Picture 3.5**). Each camera was manually adjusted to the desired location before each week-long study period. The cameras were removed following each data collection session and the video data was subsequently downloaded from the cameras. A typical County camera installation is shown for the Treasure Island Hotel/Casino north of Siren’s Cove Boulevard and south of Spring Mountain Road in **Picture 3.4**.

Once the video data was collected by Kimley-Horn in cooperation with Clark County and Metro, the videos were viewed and pedestrian volumes were documented in 15-minute increments by trained counting staff.

The video data collection effort for the study is summarized below by date and total hours observed for the study.

▪ **12-hr Camera Locations**

7 locations	5/23/2015	=	84 hours
7 locations	6/20/2015	=	84 hours

▪ **24-hr Camera Locations**

2 locations	5/22-5/29/2015	=	336 hours
2 locations	6/19-6/26/2015	=	<u>336 hours</u>
			840 hours*

*Due to technical difficulties, some video data was not recovered.



Picture 3.3 – Typical Las Vegas Boulevard Metro Camera.



Picture 3.5 – Camera Installation – Treasure Island.



Picture 3.4 – Clark County Camera - Treasure Island Hotel/Casino.

3.1.2 Pedestrian Counts - Manual

Manual pedestrian counts were collected at various locations on Las Vegas Boulevard from Tropicana Avenue to Spring Mountain Road to supplement the video data. The manual counts were conducted from 12:00 PM to 12:00 AM (noon to midnight) on both Saturday, May 23 and Saturday, June 20, 2015.

The 12-hour count period allowed the capture of pedestrian volume peaks in both the early afternoon and evening when pedestrian volumes have historically been the highest. In addition, during the May 23 count period when a high pedestrian volume location was identified, the counting staff was increased to ensure an accurate count was obtained.

The manual data collection effort for the study is summarized below by date and total hours observed for the study.

▪ **12-hr Manual Pedestrian Volume Counts**

12 locations	5/23/2015	=	144 hours
12 locations	6/20/2015	=	<u>144 hours</u>
			288 hours

3.1.3 Non-Permanent Obstructions

As collected in the 2012 Pedestrian Study, during the peak data collection periods, non-permanent obstructions were observed by three unique data collection agents. Non-permanent obstructions (obstructive uses) are defined as individuals who could obstruct the pedestrian walkway while handbilling, performing, soliciting, or selling. Under County Ordinance 16.11 (**Exhibit D**), an “obstructive use” means “obstructing, delaying, hindering, blocking, hampering or interfering with pedestrian passage, including passage to or from private property” (Obstructive Uses of Public Sidewalks - 16.11.020 – General Definitions, Clark County). On May 23 and June 20, the data collection agents were tasked with documenting the quantity, classification, and location of non-permanent obstructions in the pedestrian walkway during each of their three data collection walks. To maintain consistency with the previous 2012 study, non-permanent obstructions were classified into four categories with the following definitions for uniformity in data collection:

- Handbillers – any person within the pedestrian walkway attempting to give away literature of any kind. No financial transaction occurs and the handbiller does not expect anything in return for the literature that is given.
- Performers – any person within the pedestrian walkway attempting to entertain with the expectation of receiving a tip. Performers may include anyone dressed in a costume expecting tips for photographs, or any display of talent for a tip.
- Solicitors – any person within the pedestrian walkway soliciting donations. The solicitor provides nothing to those who donate.
- Vendors – any person within the pedestrian walkway with the intent of selling some item. There is a financial transaction that takes place and some item is exchanged for money.

The non-permanent obstruction field data, as observed by each agent for the study, were compiled in the office and summarized in a spreadsheet format. Non-permanent obstructions were summarized similar to the 2012 study by observation period, side of street, and by location within the corridor into the following categories:

- Within 50 feet of an intersection, driveway, or crosswalk
- On pedestrian bridges
- Within 15 feet of a pedestrian bridge landing
- Within 15 feet of a bus stop
- Other

A significant amount of the research portrayed in the 1985 Highway Capacity Manual (HCM) and its most recent 2010 edition in regards to pedestrians and walkway LOS originated in the work of Dr. Fruin. The concept of the body ellipse defines the average male human body as an 18” depth and a 24” shoulder breadth, necessitating 3.0 square feet when standing still (i.e., in a queue for a bus). The 2010 HCM also defined the pedestrian body ellipse which is shown in **Figure 3.2** as adapted from the 2010 HCM.

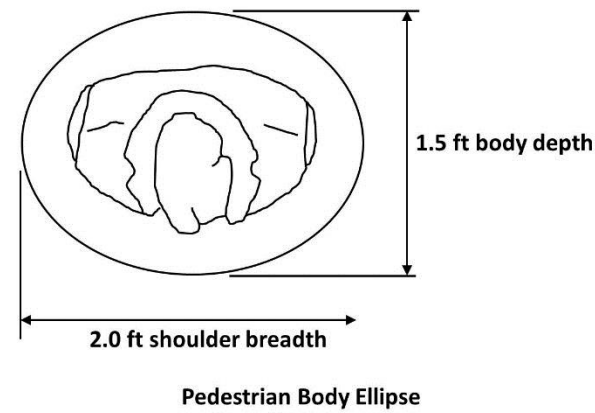


Figure 3.2 – 2010 Highway Capacity Manual Standards for Pedestrian Geometry

Based on information contained in the HCM, obstructions along edges of the walkways were considered to take up an area 2.25 feet by 10 feet (22.5 square feet) and obstructions in the center of walkways were considered to take up 3.5 feet by 7.5 feet (26.25 square feet). **Figure 3.3** illustrates the pedestrian obstruction sizes utilized in the analysis. See **Section 4.1** for methodology behind calculating effective length and width.

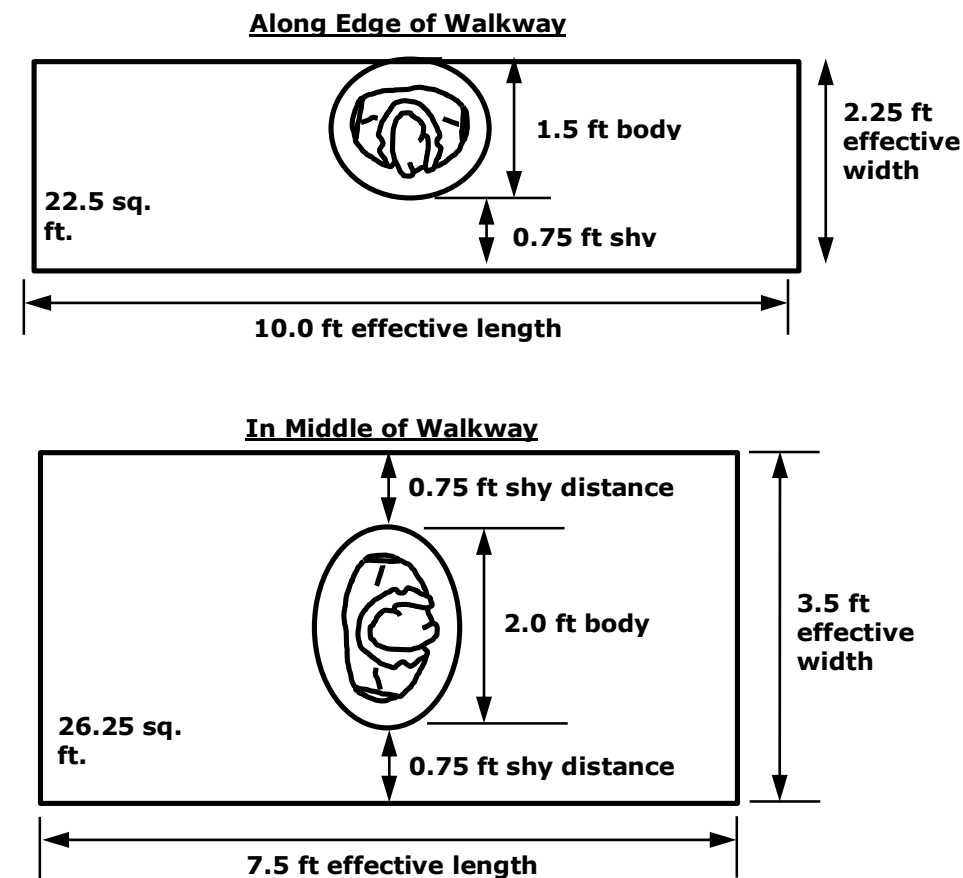


Figure 3.3 – Pedestrian Obstruction Sizes

3.2 RTC FAST Cam Stills

The Regional Transportation Commission (RTC) of Southern Nevada – Freeway and Arterial System of Transportation (FAST) provided additional snapshot views of the pedestrian activity from a FAST cam video camera. The following are the RTC FAST camera locations and views provided to visually capture the general pedestrian activity levels throughout the day:

- View 1:
 - Caesars
 - Fashion
 - Circus
 - Harrah’s
 - Wynn
 - SLS
 - Venetian
 - Treasure Island
 - Welcome
- View 2:
 - MGM
 - Harmon
 - Planet Hollywood
 - Monte Carlo
 - Harmon West
 - Paris
 - City Center East
 - City Center West
 - Bellagio

The RTC provided photos for the Saturday of Memorial Day weekend, May 23, 2015. Snapshots were taken every four seconds from midnight to 2 AM and from noon to midnight. In total, over 23,000 photographs from the cameras with each photograph showing nine (9) locations were provided. See video snapshots in **Figure 3.4** through **Figure 3.11**. These figures illustrate typical conditions at 2 AM, 12 PM (Noon), 6 PM, and 12 AM (midnight). Full photo data is provided in **Exhibit E**.

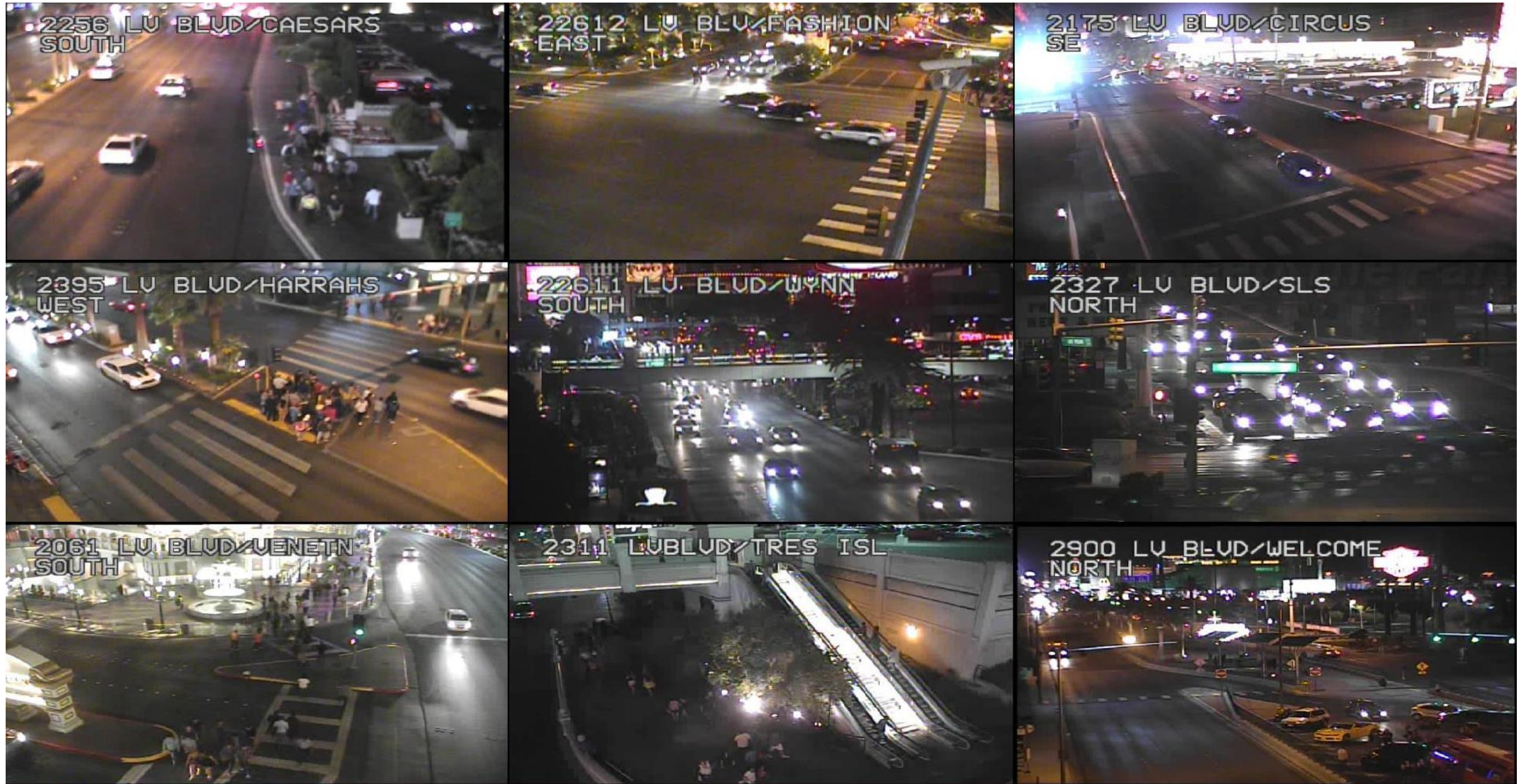


Figure 3.4 – RTC Photo Exhibit View 1 at 2 AM



Figure 3.5 – RTC Photo Exhibit View 1 at 12 PM (noon)



Figure 3.6 – RTC Photo Exhibit View 1 at 6 PM



Figure 3.7 – RTC Photo Exhibit View 1 at 12 AM (midnight)



Figure 3.8 – RTC Photo Exhibit View 2 at 2 AM



Figure 3.9 – RTC Photo Exhibit View 2 at 12 PM (noon)

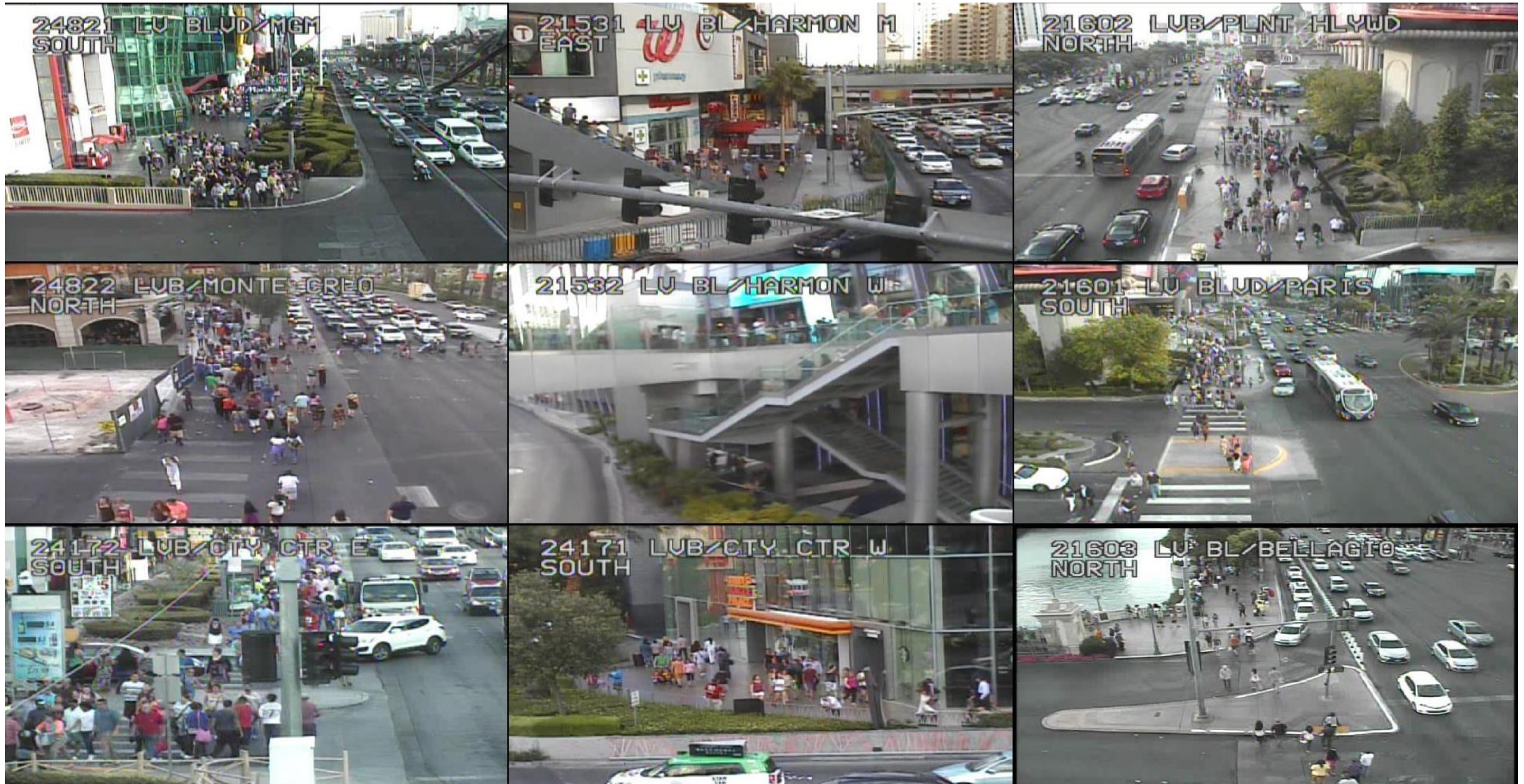


Figure 3.10 – RTC Photo Exhibit View 2 at 6 PM

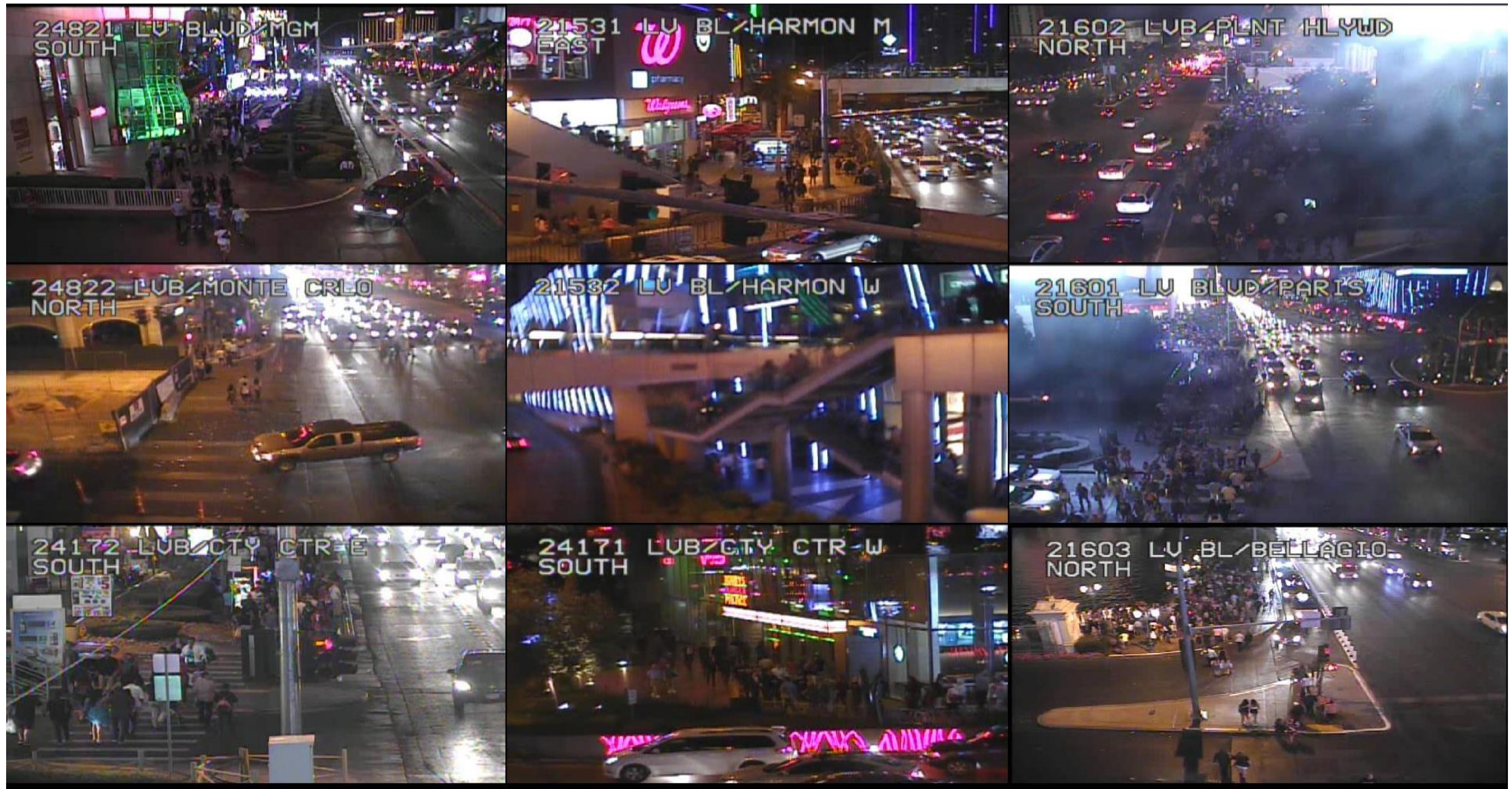


Figure 3.11 – RTC Photo Exhibit View 2 at 12 AM (midnight)

4 DATA EVALUATION

Quantitative and qualitative measures are important when addressing safety concerns and general experience enhancements. This section of the report presents both the numerical results from the data collection effort, as well as the qualitative assessments made by Kimley-Horn staff.

Numerical results are provided for the data collection and analysis with regard to pedestrian volumes from the video and manual counts and resulting LOS values along the inner study corridor from Tropicana Avenue to Spring Mountain Road. The results from the non-permanent obstructions data collection are also presented. In addition, bus stop queuing analysis results are summarized.

The 17 segments of LOS C from the 2012 study, as summarized in **Figure 2.1**, were analyzed based on the current 2015 conditions. Walkways segments that had improved to be at or above LOS C were removed from **Figure 2.1** and in many cases reduced in segment length. The remaining and new segments can be seen in **Figure 4.2** and **Figure 4.3**. The updated analysis found the East/West Harmon Avenue Bridge over Las Vegas Boulevard having short periods of time on Saturday of Memorial Day exceeding LOS C. The LOS less than C segments shown in **Figure 4.2** and **Figure 4.3** represent approximately 5,500 LF of walkway within the Resort Corridor.

4.1 Data Analysis Methodology

This section details the methodology used to analyze the collected pedestrian volume data to determine pedestrian LOS throughout the study corridor. Following the recommendations of the 2012 study, pedestrian LOS based upon walking speed was not used as a factor in the 2015 update.

4.1.1 Pedestrian Volume Analysis – Level of Service Calculations

The 2010 HCM methodology was used for calculating the pedestrian flowrate LOS as used to determine an overall pedestrian LOS along the “Strip”, as well as LOS at specific locations of walkway width restrictions along the study corridor. The analysis requires calculation of the following:

1. Determine the effective walkway width (W_E)
2. Calculate the pedestrian flow rate
3. Determine LOS

Determining effective length and effective walkway width (W_E)

The following equation is for the calculation of effective walkway width:

Equation 4.1 – Effective Walkway Width (W_E)

$$W_E = W - W_O$$

where:

W_E = effective walkway width (ft),

W or W_T = total walkway width at a given point along walkway (ft), and

W_O = sum of fixed-point object effective widths and linear-feature shy distances at a given point along walkway (ft).

The total walkway widths (W or W_T) for **Equation 4.1** and the factors that influence the determination of the effective walkway widths (W_E) in **Equation 4.1** were found using a combination of aerial imagery, available topographic surveys, and field measurements. The 2010 HCM defines effective walkway width (W_E) as:

“the portion of a walkway that can be used effectively by pedestrians. Various types of obstructions and linear features... reduce the walkway area that can be effectively used by pedestrians... Linear features such as the street curb, [a] low wall, [or a] building face each have associated shy distances. The shy distance is the buffer that pedestrians give themselves to avoid accidentally stepping off the curb, brushing against a building face, or getting too close to other pedestrians standing under awnings or window shopping. Fixed objects, such as [a] tree, have effective widths associated with them. The fixed-object effective width includes the object’s physical width, any functionally unusable space (e.g., the space between a parking meter and the curb of the space in front of a bench occupied by people’s legs and belongings), and the buffer given the object by pedestrians” (pg. 23-9, 2010 HCM).

The 2010 HCM recommends that walkway operational analysis evaluate “the portion of the walkway with the narrowest effective width (W_E), since this section forms the constraint on pedestrian flow” (pg. 23-10, 2010 HCM). **Figure 4.1** shows graphically how effective walkway width (W_E) is calculated (adapted from the 2010 HCM). **Table 4.1** from the 2010 HCM shows the LOS threshold criteria for pedestrian flowrates per unit width (v_p).

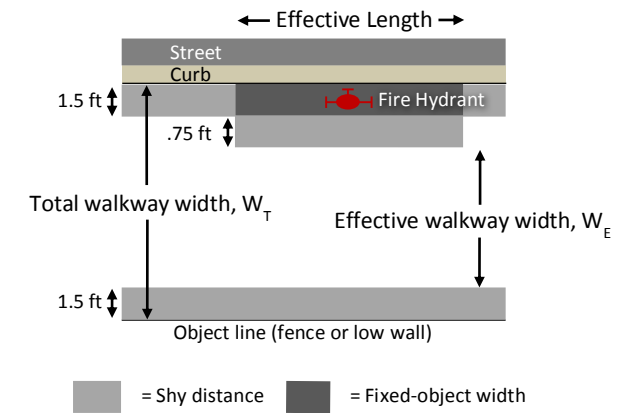


Figure 4.1 – Effective Walkway Width (W_E) Diagram

Figure 4.1 also illustrates the effective length of a fixed object. As described by the 2010 HCM:

“the effective width of a fixed object extends over an effective length that is considerably longer than the object’s physical length. The effective length represents the portion of the walkway that is functionally unusable because pedestrians need to move to one side ahead of time to get around a fixed object. The effective length of a fixed object is assumed to be five times the object’s effective width.

“Typically, a walkway operational analysis evaluates the portion of the walkway with the narrowest effective width, since this section forms the constraint on pedestrian flow. A design analysis identifies the minimum effective walkway width that must be maintained along the length of the walkway to avoid pedestrian queuing or spillover” (pg. 23-10, 2010 HCM).

The effective walkway widths (W_E) for the study corridor were calculated at each pedestrian volume count location and for restricted sidewalk locations as identified during the field inventory of the study corridor. Using **Equation 4.2** the walkway characteristics for the observed pedestrian volumes can be used to determine the walkway LOS.

Equation 4.2 – Pedestrian Flow Rate per Unit Width of Walkway

$$v_p = \frac{v_{15}}{15 \times W_E}$$

where: v_p = pedestrian flow per unit width (p/ft/min),
 v_{15} = pedestrian flow rate during peak 15 min (p/h),
 and
 W_E = effective sidewalk width (ft).

Table 4.1 – Pedestrian LOS

LOS	Flow Rate (p/min/ft)	Comments
A	≤5	Ability to move in desired path, no need to alter movements
B	>5 - 7	Occasional need to adjust path to avoid conflicts
C	>7 - 10	Frequent need to adjust path to avoid conflicts
D	>10 - 15	Speed and ability to pass slower pedestrians restricted
E	>15 - 23	Speed restricted, very limited ability to pass slower pedestrians
F	Variable	Speeds severely restricted, frequent contact with other users

4.2 Pedestrian Volumes

The pedestrian volume data from each count location was evaluated and plotted graphically to show peak periods of pedestrian traffic and identify maximum volumes. (The pedestrian volume data in PDF and Excel formats as collected for this study is included as **Exhibit E** on a CD at the back of the report.)

In 2012, effective walkway widths along the entire length of the study corridor were grouped into segments with similar effective walkway widths. Analysis resulted in 17 walkway segments that were found to exceed LOS C on the holiday and/or typical Saturday (May 26 and/or June 16, 2012) labeled R1 to R17 from south to north (see **Figure 2.1** for segment location). For the update, count locations were chosen based off the 17 segments created in 2012 and locations observed to be problematic.

Count locations in the outer study area, (Russell Road to Flamingo Road and Spring Mountain Road to Sahara Avenue) were not considered in this portion of the restudy. **Figure 4.4** through **Figure 4.7** provide a visual summary of the maximum 15-minute pedestrian volume at each count for each count day in 2015 compared to the equivalent count location in 2012 for a holiday and typical Saturday.

The 15-minute pedestrian volume data was paired with the field verified effective walkway widths and a LOS value calculated and assigned for every 15-minute data collection increment. The 2010 HCM LOS values are calculated as a numerical threshold based on effective walkway width (W_E); for example, a 10-foot effective walkway width ($W_E=10'$) operating at LOS A can accommodate up to 750 pedestrians in 15 minutes and the same walkway can accommodate up to 1,500 pedestrians with a LOS C. It is important to note that the LOS threshold values change depending on the effective walkway width (W_E) provided.

The maximum number of pedestrians observed in a 15-minute period was 2,472 on the northeast corner of Flamingo Road at the Cromwell Hotel/Casino during the time of 11:15 PM and 11:30 PM on Saturday, May 23, 2015 of Memorial Day weekend (**Picture 4.1**). A total of 15 of the 21 count locations were observed with more than 1,500 pedestrians in 15 minutes on May 23, 2015. This is compared to one (1) location observed with more than 1,500 pedestrians in 15 minutes during June 20, 2015. A maximum volume of 1,500 pedestrians in 15 minutes represents a pedestrian LOS C on an effective width walkway of 10 feet. In comparison, one (1) location was observed with more than 2,250 pedestrians in 15 minutes on May 23, 2015. No locations were observed with more than 2,250 pedestrians in 15 minutes during June 20, 2015. A maximum volume of 2,250 pedestrians in 15 minutes represents a pedestrian LOS C on an effective width walkway of 15 feet (the recommended width for new construction).



Picture 4.1 – Memorial Day Weekend Pedestrian Activity – Cromwell - 2015.

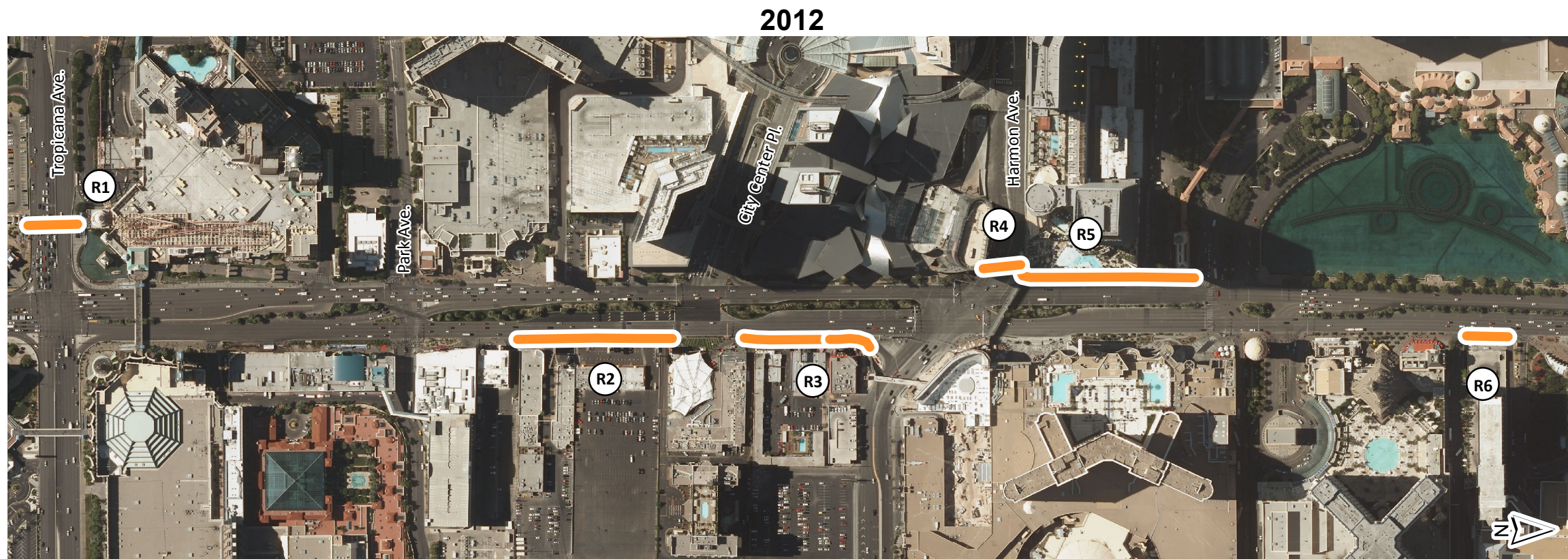
4.2.1 Evaluation Results Summary

The following results presented in **Table 4.2** are from an evaluation based solely on the pedestrian volume at each count location and the associated walkway widths at those locations.

Table 4.2 – LOS Summary

Count Location ID	Location	W_E 2012	W_E 2015	LOS Holiday 2012	LOS Holiday 2015	LOS Typical 2012	LOS Typical 2015
2	Tropicana West Bridge	11.8	11.8	D	D	C	B
CC1	NYNY	8.3	12.8	C	B	C	A
M11	Food Court	6.5	13	D	C	C	B
Metro1	Harley Davidson	5	13	E	C	E	A
7	Harmon West Bridge	12.5	12.5	D	D	C	C
M4	Harmon North Bridge	12.3	12.3	B	D	A	A
CC2	Bellagio South	21.5	21.5	C	B	A	A
M12	Bally's South	11	16	D	C	C	B
9	Bally's Bazaar	28	14.5	A	C	A	B
11	Flamingo West Bridge	12	12	D	D	C	D
Metro3	Cromwell	11.5	11.5	C	D	A	C
12	Margaritaville	8.5	8.5	D	E	C	D
M6	Caesars South	6.8	6.8	D	E	C	C
M13	Colosseum	4	15	F	C	F	A
13	Forum Shops	12	12	D	C	C	A
14	Harrah's	6.7	12.5	D	C	D	A
CC3	Venetian South	6.3	6.3	D	E	E	D
M14	TI Bus Stop	7	12.8	D	B	C	A
Metro4	Venetian North	3	7	F	D	F	C
CC4	TI South	1.7	1.7	F	A	D	A
M15	TI North	5.5	15	D	A	C	A

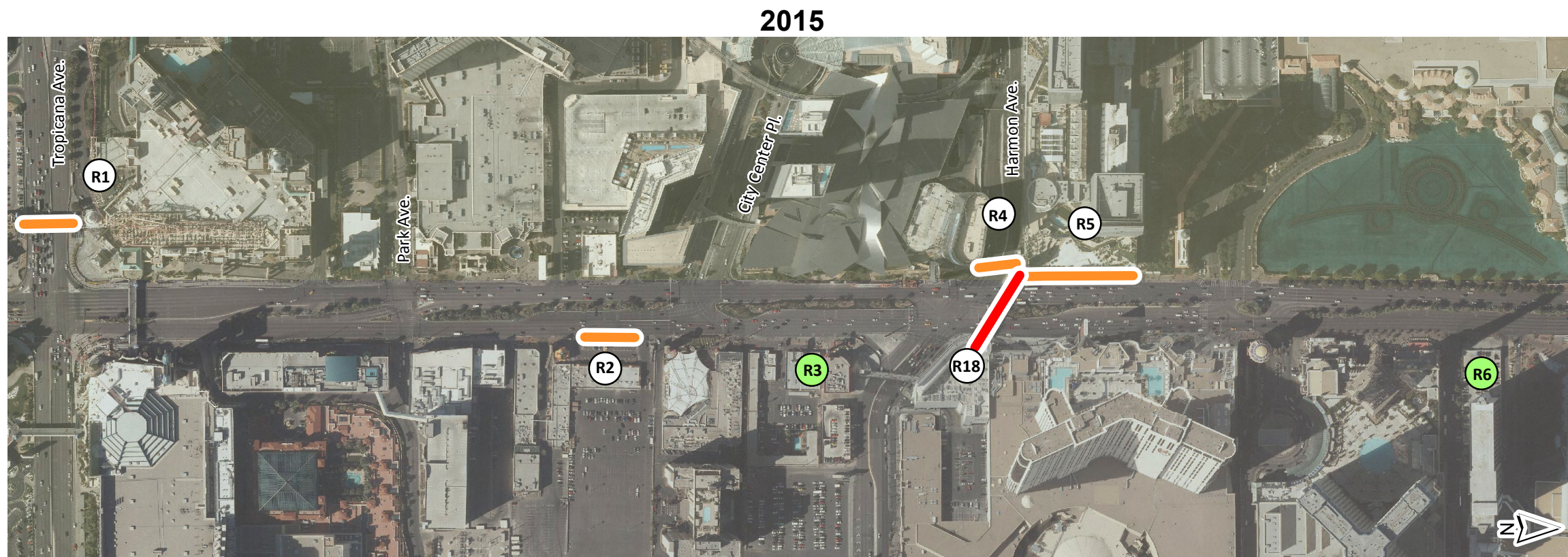
Count locations with LOS less than C are shown in red. Data collected on the typical Saturday (June 20, 2015) showed similar characteristics as the data collected on the holiday Saturday (May 23, 2015). The main distinction between the two days was that the total pedestrian volumes on the typical Saturday were generally lower than those of the holiday Saturday. The pedestrian volume peaking hourly trends were generally the same and in many cases the maximum peak 15-minute period at a count location was observed at the same time of day.



SEE FIGURE 4.3

Legend (2012)

- LOS < C
- Segment Reference Number



SEE FIGURE 4.3

Legend (2015)

- New Segment, LOS < C in 2015
- LOS < C
- Segment Reference Number
- Segment No Longer Less than LOS C in 2015

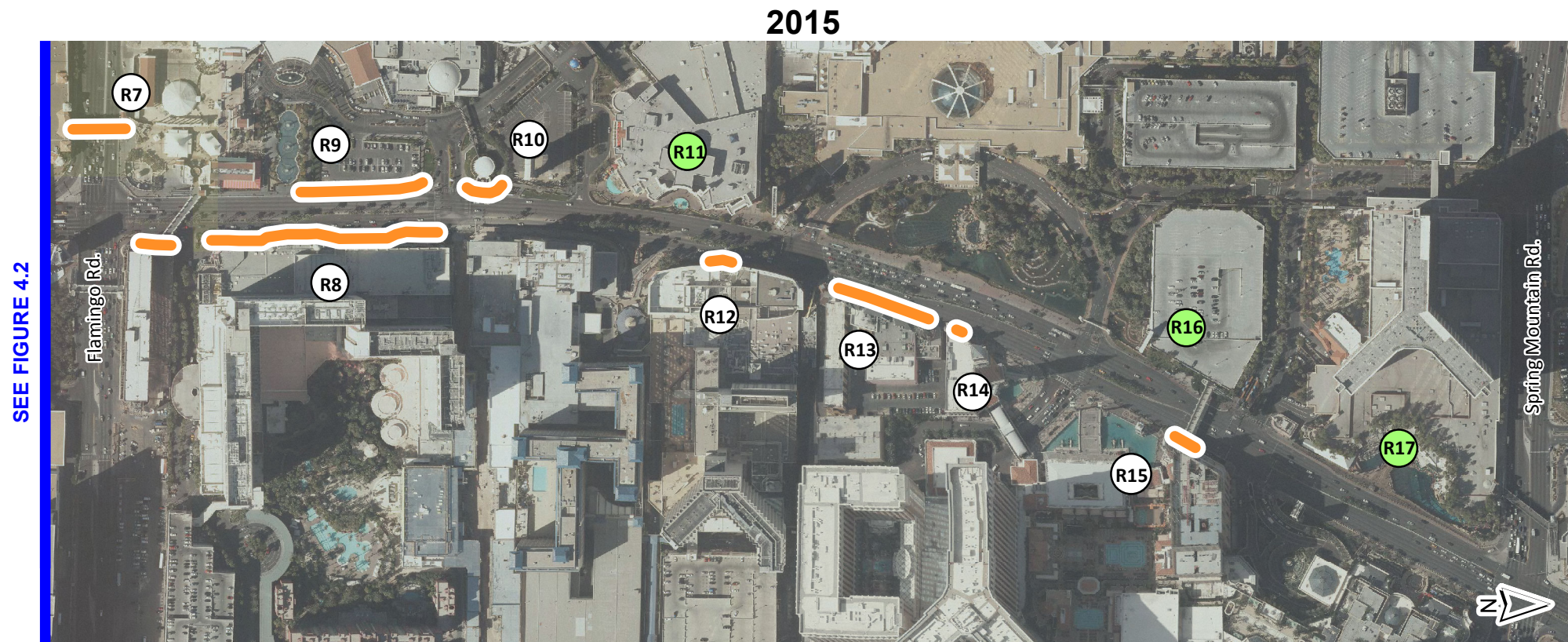
**WALKWAY SEGMENTS THAT EXCEED LEVEL OF SERVICE (LOS) C
TROPICANA AVE. TO FLAMINGO RD.**

FIGURE 4.2 37



Legend (2012)

- LOS < C
- R# Segment Reference Number



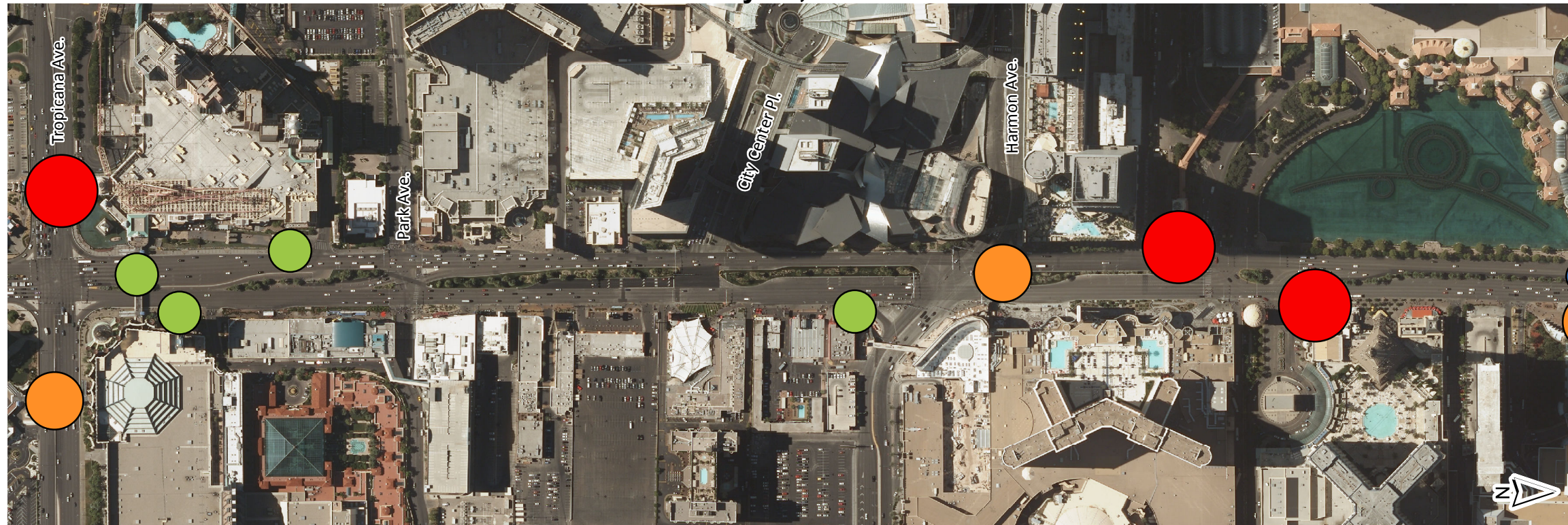
Legend (2015)

- LOS < C
- R# Segment Reference Number
- R# Segment No Longer Less than LOS C in 2015

**WALKWAY SEGMENTS THAT EXCEED LEVEL OF SERVICE (LOS) C
FLAMINGO RD. TO SPRING MOUNTAIN RD.**

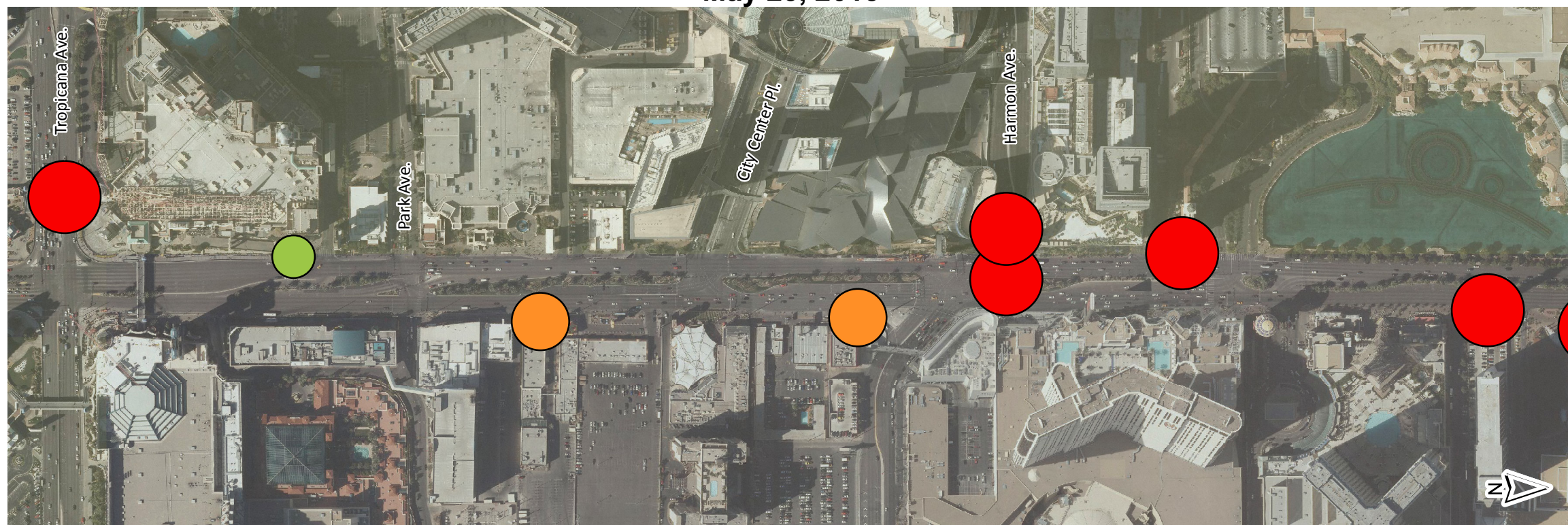
FIGURE 4.3 38

May 26, 2012



SEE FIGURE 4.5

May 23, 2015



SEE FIGURE 4.5

Legend

Max. 15-Minute Pedestrian Volume

- 200 or Less
- 201 - 800
- 800 - 1,400
- 1,401 - 2,000
- Greater than 2,000

**PEDESTRIAN VOLUME - MAX 15 MINUTES
TROPICANA AVE. TO FLAMINGO RD. (HOLIDAY SATURDAY)**

FIGURE 4.4 39

May 26, 2012



SEE FIGURE 4.4





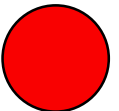
May 23, 2015



SEE FIGURE 4.4

Legend

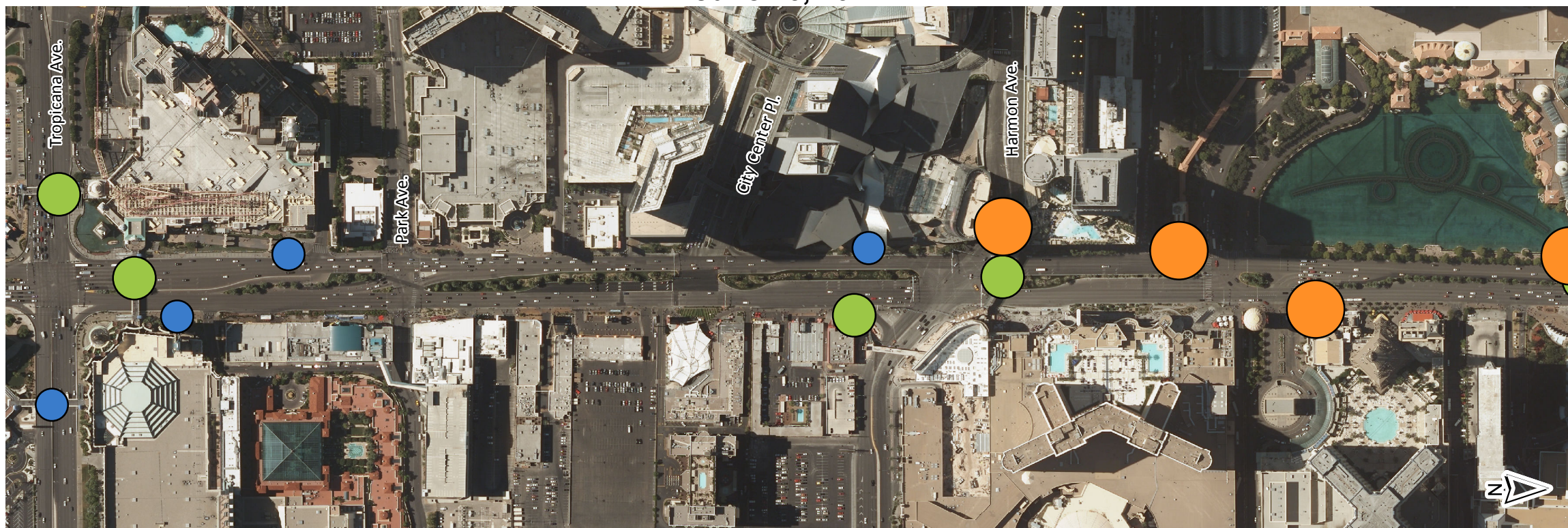
**Max. 15-Minute
Pedestrian Volume**

-  200 or Less
-  201 - 800
-  800 - 1,400
-  1,401 - 2,000
-  Greater than 2,000

**PEDESTRIAN VOLUME - MAX 15 MINUTES
FLAMINGO RD. TO SPRING MOUNTAIN RD. (HOLIDAY SATURDAY)**

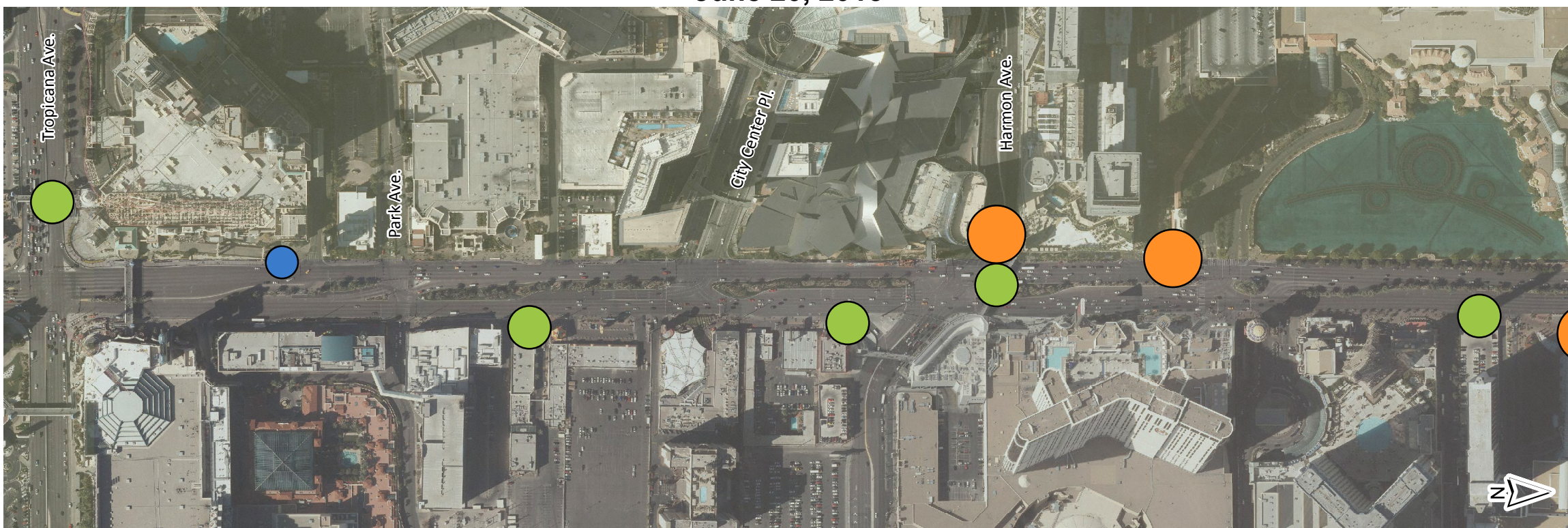
FIGURE 4.5 40

June 16, 2012

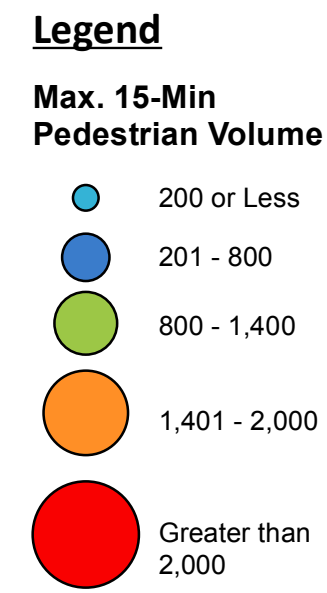


SEE FIGURE 4.7

June 20, 2015



SEE FIGURE 4.7



**PEDESTRIAN VOLUME - MAX 15 MINUTES
TROPICANA AVE. TO FLAMINGO RD. (TYPICAL SATURDAY)**

FIGURE 4.6 41

June 16, 2012



SEE FIGURE 4.6

June 20, 2015



SEE FIGURE 4.6

Legend

Max. 15-Minute Pedestrian Volume

- 200 or Less
- 201 - 800
- 800 - 1,400
- 1,401 - 2,000
- Greater than 2,000

**PEDESTRIAN VOLUME - MAX 15 MINUTES
FLAMINGO RD. TO SPRING MOUNTAIN RD. (TYPICAL SATURDAY)**

FIGURE 4.7 42

4.2.2 LOS Analysis/Results

Count Data

Figure 4.9 through **Figure 4.29** indicate the maximum 15-minute volume identified for both count dates (May 23, 2015 – holiday Saturday and June 20, 2015 – typical Saturday) at each count location. Also listed on each figure is the walkway width (W) and effective walkway width (W_E). The LOS threshold levels were calculated at each location and are shown in the figures. The time periods when LOS C was found to be exceeded are identified by a red rectangle on the volume graph with the time periods identified. A review of the summary figures shows that of the twenty-one (21) count locations, eight (8) count locations were found with pedestrian volumes on the holiday Saturday that exceeded LOS C conditions during peak the peak period of 9 PM -11 PM with four (4) of those locations providing LOS E. The locations shown in **Table 4.3** exceeded LOS C during the holiday Saturday. Pedestrian volumes at three (3) locations were found to exceed LOS C on the typical Saturday.

Table 4.3 – Pedestrian Volume Count Locations that Exceeded LOS C

Holiday Saturday - May 23, 2015			Typical Saturday - June 20, 2015		
Count Location	Figure	LOS	Count Location	Figure	LOS
Tropicana West	Figure 4.9	D	Flamingo West	Figure 4.18	D
Harmon West	Figure 4.13	D	Caesars Palace South	Figure 4.20	D
Harmon North	Figure 4.14	D	Venetian South	Figure 4.25	D
Flamingo West	Figure 4.18	E			
Cromwell	Figure 4.19	D			
Margaritaville	Figure 4.21	E			
Caesars Palace South	Figure 4.20	E			
Venetian South	Figure 4.25	E			

It should be noted that the LOS calculations were prepared assuming the entire effective walkway width (W_E) was available for pedestrian traffic. In situations where a non-permanent obstruction could be in the walkway, the calculated effective walkway width (W_E) would be reduced and thus a potentially lower LOS would be provided.

To provide an overall summary of the average effective walkway width along the Resort Corridor, **Figure 4.8** was created as an update from the 2012 study. **Figure 4.8** displays the average effective sidewalk width along the Resort Corridor. This includes public access easements as well as public walkways.

The following list of locations were identified as locations of constricted walkways widths within the study corridor which could result in conditions of LOS less than C:

- East walkway directly north of Flamingo Road underneath east/west pedestrian bridge at Cromwell (Cromwell)
- East walkway in front of Margaritaville directly south of Caesars Palace Boulevard (Margaritaville)
- Staircase on west walkway directly north of Caesars Palace Boulevard at Caesars rotunda (Caesars Rotunda)
- West walkway directly south of Caesars Palace Boulevard in front of the Colosseum (Colosseum)
- East walkway south of Venetian Hotel/Casino and directly north of Casino Royale driveway at bollards (Casino Royale)
- East walkway beneath Siren’s Cove South pedestrian bridge and North of Venetian Hotel/Casino(Siren’s Cove)

These locations are discussed and evaluated in **Section 4.5**. Pedestrian volume data was collected at twenty-one (21) locations between Tropicana Avenue and Spring Mountain Road. The following thirteen (13) locations were found to have a LOS of C or better:

- CC1 – New York-New York Hotel/Casino -Figure 4.10
- M11 – Metro Flag Food Court -Figure 4.11
- Metro1 – Harley Davidson Café -Figure 4.12
- CC2 – Bellagio Hotel/Casino South -Figure 4.15
- M12 – Bally’s Hotel/Casino South -Figure 4.16
- 9 – Bally’s Bazaar -Figure 4.17
- M13 – The Colosseum -Figure 4.22
- 13 – Forum Shops -Figure 4.23
- 14 – Harrah’s Hotel and Casino -Figure 4.24
- CC3 – Venetian Hotel/Casino South -Figure 4.25
- M14 – Treasure Island Bus Stop -Figure 4.26
- CC4 – Treasure Island Hotel/Casino South -Figure 4.28
- M15 – Treasure Island Hotel/Casino North -Figure 4.29

Pedestrian volumes were found to exceed LOS C at the following locations:

- 2 – Tropicana Avenue West Pedestrian Bridge -Figure 4.9
- 7 – Harmon Avenue West Pedestrian Bridge -Figure 4.13
- M4 – Harmon Avenue North Pedestrian Bridge -Figure 4.14
- 11 – Flamingo Road West Pedestrian Bridge -Figure 4.18
- Metro3 – Cromwell -Figure 4.19
- M6 – Caesars Palace South -Figure 4.20
- 12 – Margaritaville -Figure 4.21
- Metro4 – Venetian Hotel/Casino North -Figure 4.27

The time periods when LOS was found to exceed LOS C are identified by a red rectangle on the volume graph with the time periods identified.

Table 4.4 provides a comparison summary of maximum 15-minute volumes for each count location repeated from the 2012 study. The percentage difference was calculated between the maximum volumes in 2012 and 2015. As can be seen, the peak volumes have increased as well as decreased within the study corridor. Decreases are shown in red.

Table 4.5 and **Table 4.6** show the summary of data collected within the study corridor. Maximum 15-minute volumes are listed for each count locations along with the time this volume occurred and the resultant LOS at the location. The table lists data for count locations on both the west and east side of the “Strip” for the holiday Saturday and typical Saturday, respectively.

In general, as can be seen in **Table 4.4** the west side volumes have decreased from 2012 to those of 2015. This is most likely attributed to the redistribution of pedestrian flows to the east side of the “Strip” with the opening of new properties such as the LINQ, Cromwell Hotel/Casino, and the Bazaar at Bally’s etc. and the construction near Tropicana Avenue of the MGM Arena. In addition, the peak volumes previously seen in 2012 along the frontage of the Treasure Island Hotel/Casino walkways are substantially less in 2015. This can be associated with the closure of the Siren Show at Treasure Island.



Table 4.4 – Comparison of Max. 15-Min. Volumes

Comparison of Max 15-Min Volumes						
Count Location ID	Location	W _E (ft) (2012)	W _E (ft) (2015)	Max 15-Min Volume (2012)	Max 15-Min Volume (2015)	% Change in Vol
2	Tropicana W. Bridge	11.8	11.8	2634	1036	-22
CC1	New York-New York	8.3	12.8	1043	1025	-2
M11	Food Court	6.5	13	1343	1772	32
Metro1	Harley Davidson	5	13	1290	1938	50
7	Harmon W. Bridge	12.5	12.5	2702	2060	-24
M4	Harmon N. Bridge	12.3	12.3	1549	2028	31
CC2	Bellagio South	21.5	21.5	2633	2189	-17
M12	Bally's South	11	16	2124	2007	-6
9	Bally's Bazaar	28	14.5	1783	2137	20
11	Flamingo W. Bridge	12	12	2172	2238	3
Metro3	Cromwell	11.5	11.5	1549	2472	60
12	Margaritaville	8.5	8.5	1459	2044	40
M6	Caesars Palace S.	6.8	6.8	1684	1997	19
M13	Colosseum	4	15	2092	1953	-7
13	Forum Shops	12	12	2092	1749	-16
14	Harrah's	6.7	12.5	1242	1364	10
CC3	Venetian South	6.3	6.3	1737	1767	2
M14	Venetian North	7	7	1737	1385	-20
Metro4	TI Bus Stop	3	12.8	1963	1331	-32
CC4	TI South	1.7	1.7	524	24	-95
M15	TI North	5.5	15	1037	560	-46

Note: See **Figure 3.1** for count locations.

Table 4.5 - Data Summary– Holiday Saturday

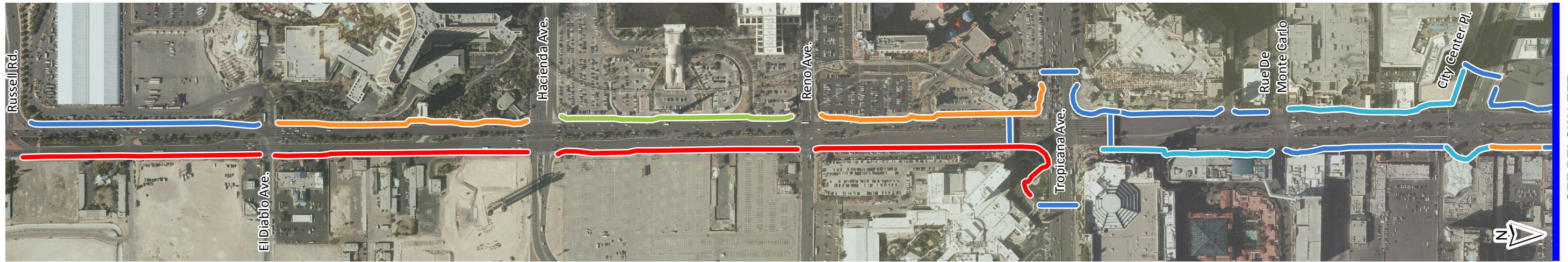
Holiday Saturday - May 23, 2015					
Count Location ID	Location	Max 15-min Vol	Time of Max Volume	W _E (ft)	LOS
2	Tropicana W. Bridge	1036	06:45PM - 07:00PM	11.8	D
CC1	New York-New York	1025	10:00PM - 10:15PM	12.8	B
M11	Food Court	1772	10:30PM - 10:45PM	13	C
Metro1	Harley Davidson	1938	08:00PM - 08:15PM	13	C
7	Harmon W. Bridge	2060	07:45PM - 08:00PM	12.5	D
M4	Harmon N. Bridge	2028	10:30PM - 10:45PM	12.3	D
CC2	Bellagio South	2189	11:45PM - 12:45PM	21.5	B
M12	Bally's South	2007	09:45PM - 10:00PM	16	C
9	Bally's Bazaar	2137	09:45PM - 10:00PM	14.5	C
11	Flamingo W. Bridge	2238	09:30PM - 09:45PM	12	E
Metro3	Cromwell	2472	11:15PM - 11:30PM	11.5	D
12	Margaritaville	2044	09:00PM - 09:15PM	8.5	E
M6	Caesars Palace S.	1977	10:00PM - 10:15PM	6.8	D
M13	Colosseum	1953	09:45PM - 10:00PM	15	C
13	Forum Shops	1749	08:45PM - 09:00PM	12	C
14	Harrah's	1364	05:45PM - 06:00PM	12.5	C
CC3	Venetian South	1767	11:30 PM - 11:45 PM	6.3	E
M14	Venetian North	1385	10:30PM - 10:45PM	7	D
Metro4	TI Bus Stop	1331	10:00PM - 10:15PM	12.8	B
CC4	TI South	21	09:00PM - 09:15PM	1.7	A
M15	TI North	560	09:15PM - 09:30PM	15	A

Table 4.6 - Data Summary– Typical Saturday

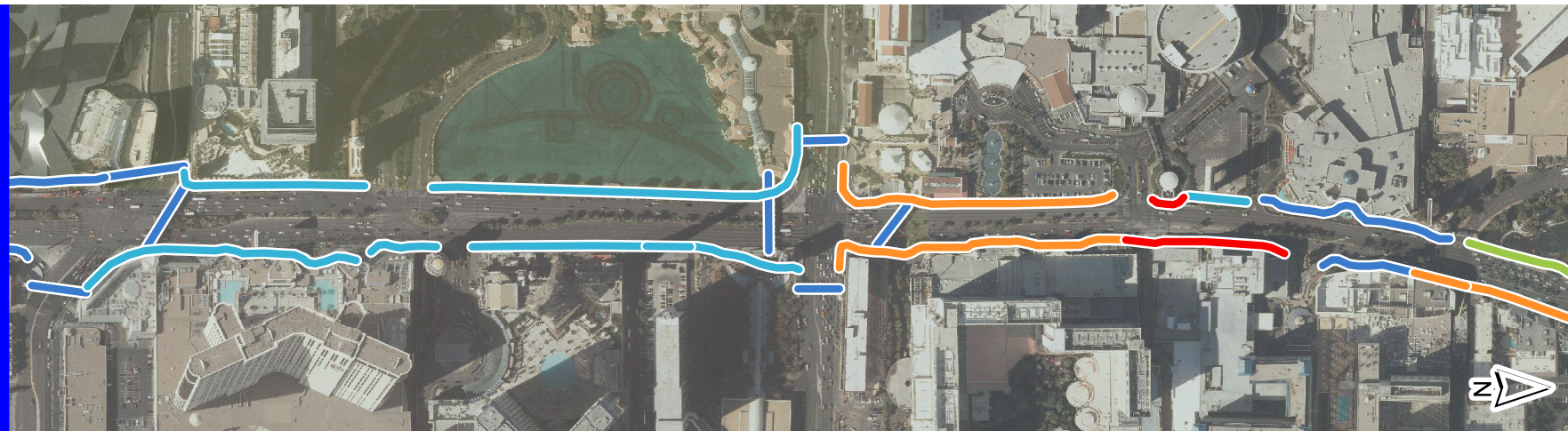
Typical Saturday - June 20, 2015					
Count Location ID	Location	Max 15-min Vol	Time of Max Volume	W _E (ft)	LOS
2	Tropicana W. Bridge	918	10:30PM - 10:45PM	11.8	B
CC1	New York-New York	421	10:45PM - 11:00PM	12.8	A
M11	Food Court	1059	11:00PM - 11:15PM	13	B
Metro1	Harley Davidson	859	11:00PM - 11:15PM	13	A
7	Harmon W. Bridge	1447	11:00PM - 11:15PM	12.5	C
M4	Harmon N. Bridge	893	9:45PM - 10:00PM	12.3	A
CC2	Bellagio South	1544	10:00PM - 10:15PM	21.5	A
M12	Bally's South	1350	11:15PM - 11:30PM	16	B
9	Bally's Bazaar	1414	11:15PM - 11:30PM	14.5	B
11	Flamingo W. Bridge	1841	10:15PM - 10:30PM	12	D
Metro3	Cromwell	1263	11:30PM - 11:45PM	11.5	C
12	Margaritaville	1176	11:00PM - 11:15PM	8.5	C
M6	Caesars Palace S.	1094	10:00PM - 10:15PM	6.8	C
M13	Colosseum	977	09:45PM - 10:00PM	15	A
13	Forum Shops	679	10:45PM - 11:00PM	12	C
14	Harrah's	843	10:00PM - 10:15PM	12.5	A
CC3	Venetian South	1065	11:00PM - 11:15PM	6.3	D
M14	Venetian North	1047	11:15PM - 11:30PM	7	C
Metro4	TI Bus Stop	802	10:00PM - 10:15PM	12.8	A
CC4	TI South	24	09:00PM - 09:15PM	1.7	A
M15	TI North	298	09:15PM - 09:30PM	15	A



2015



SEE BELOW LEFT



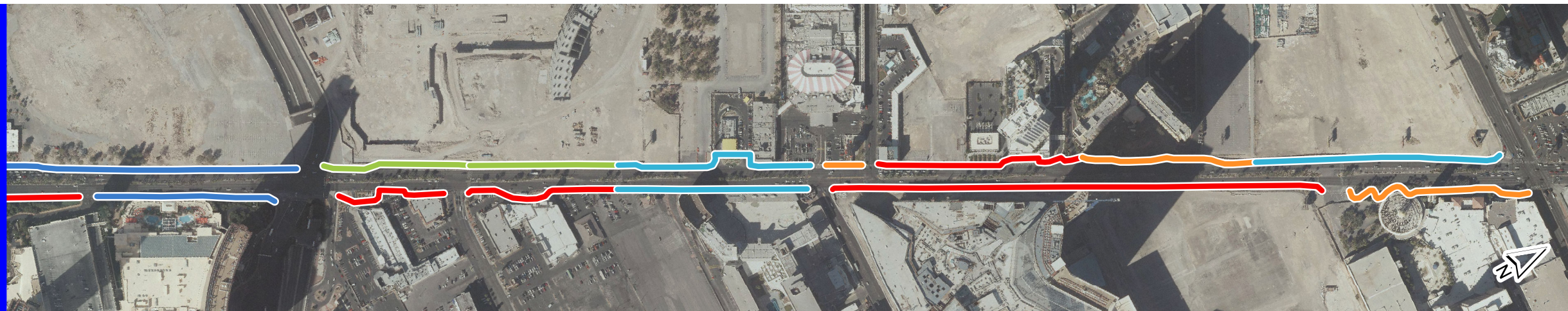
SEE ABOVE RIGHT

SEE RIGHT

SEE LEFT



SEE BELOW LEFT



SEE ABOVE RIGHT

Legend

Average Effective Walkway Width

- 5.0 or less
- 5.1 - 8.0
- 8.1 - 10.0
- 10.1 - 14.0
- Greater than 14.0

AVERAGE EFFECTIVE WALKWAY WIDTH (W_E) ALONG RESORT CORRIDOR

FIGURE 4.8 45

Tropicana Avenue West Pedestrian Bridge (Location ID: 2)

Manual Count Location: On Bridge

Walkway Width (W) = 16 feet

Effective Walkway Width (W_E) = 11.8 feet

LOS D

MAX = 2,048 peds/15-min
06:45 PM

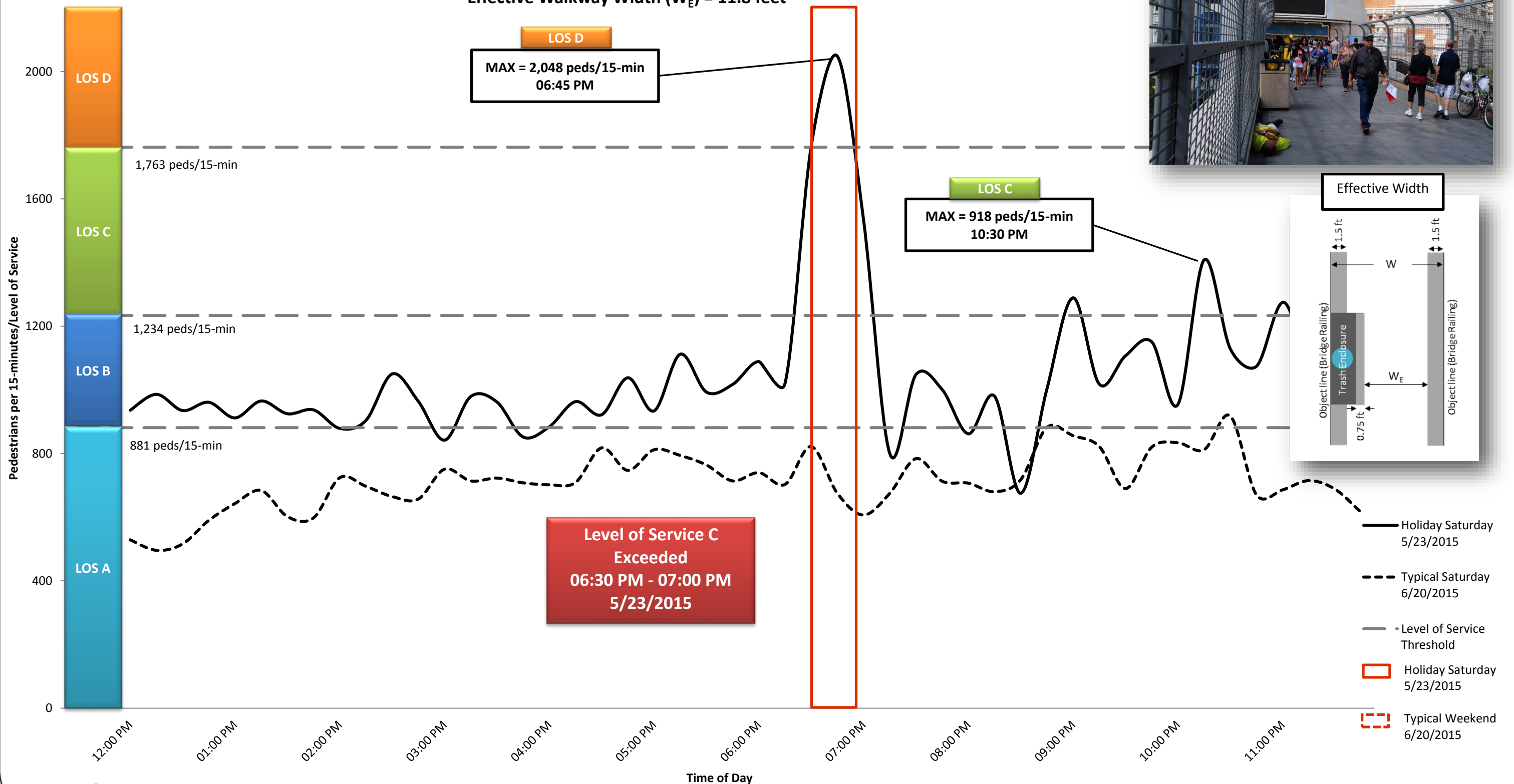
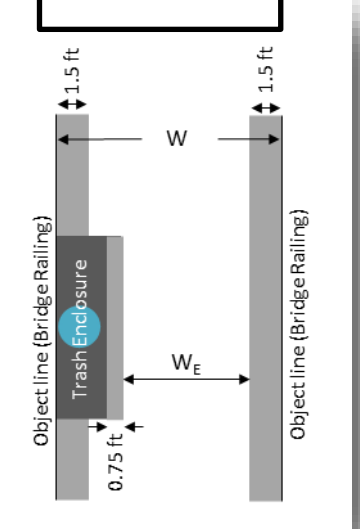
LOS C

MAX = 918 peds/15-min
10:30 PM

Level of Service C
Exceeded
06:30 PM - 07:00 PM
5/23/2015



Effective Width



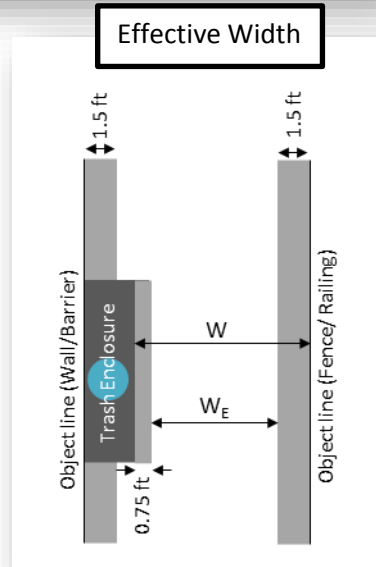
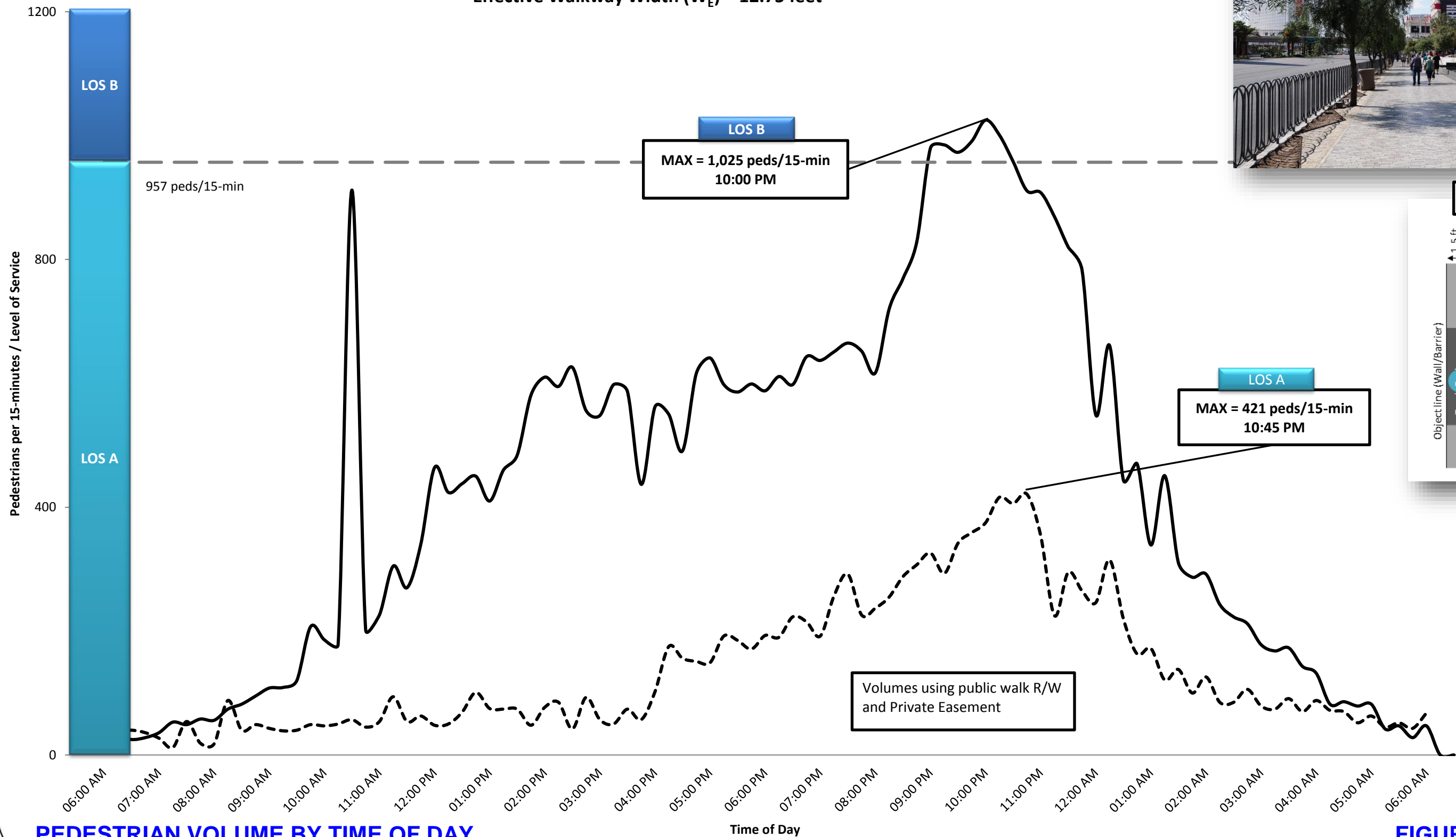
PEDESTRIAN VOLUME BY TIME OF DAY

FIGURE 4.9

New York New-York Hotel/Casino (Location ID: CC1)
 Video Count Location: North of Tropicana Avenue
Walkway Width (W) = 15 feet
Effective Walkway Width (W_E) = 12.75 feet



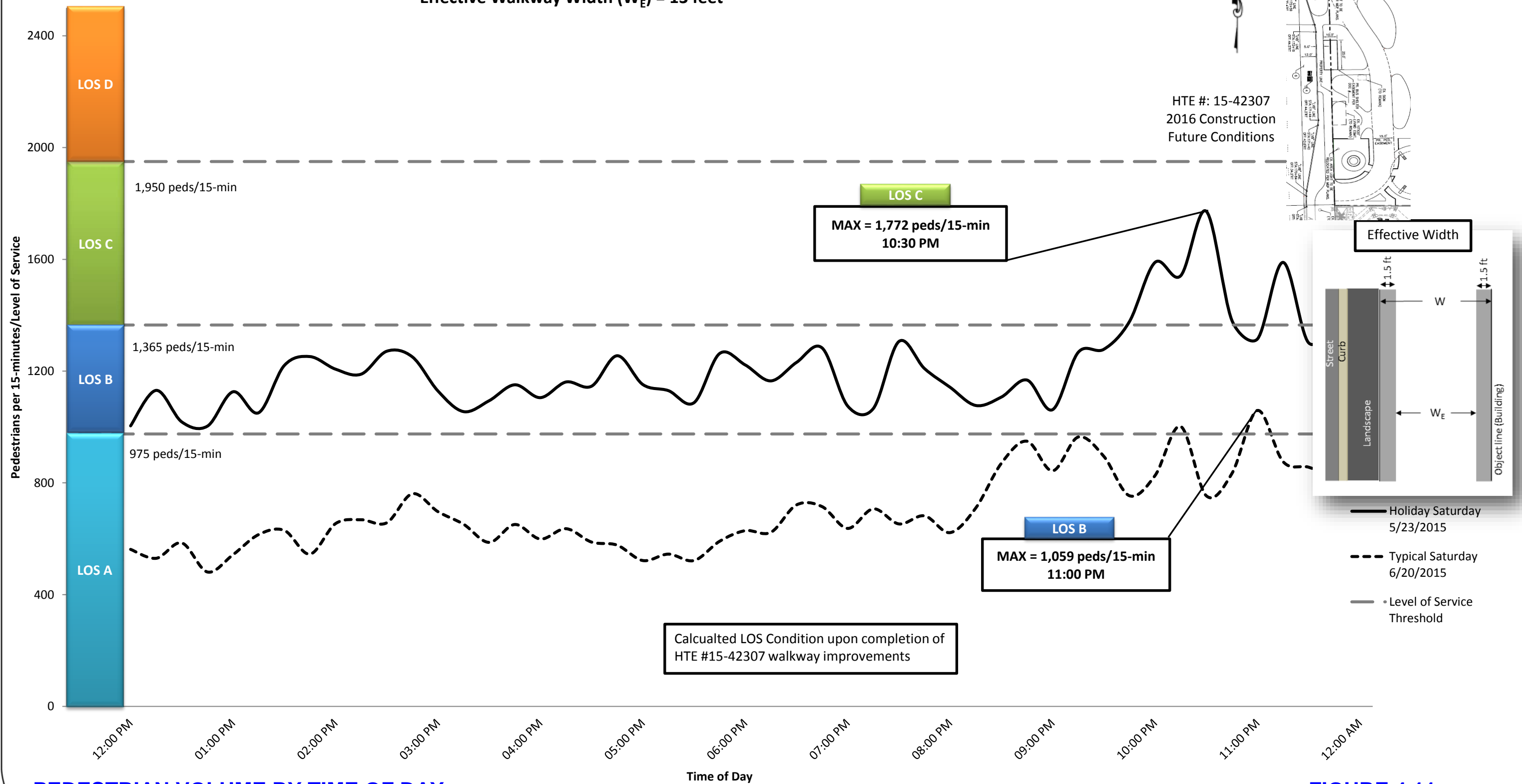
Count Location



PEDESTRIAN VOLUME BY TIME OF DAY

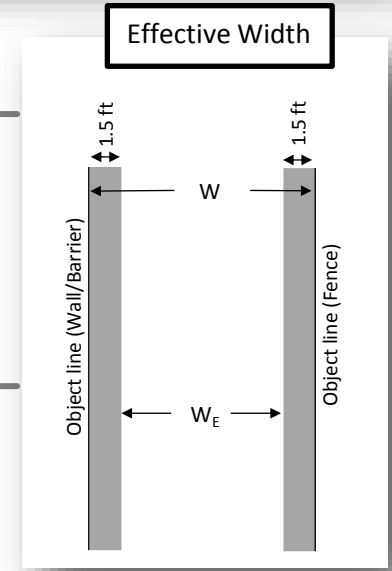
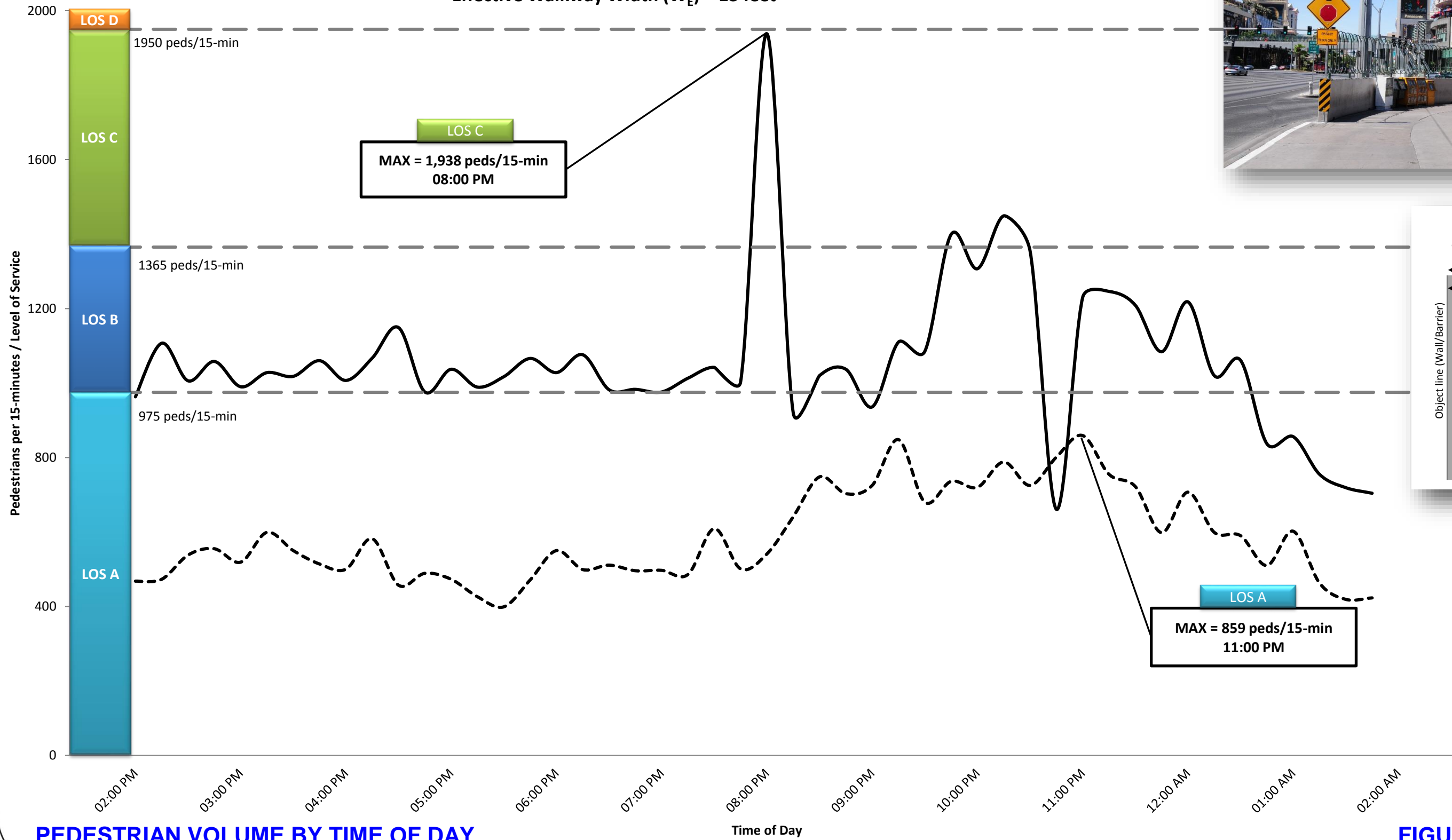
FIGURE 4.10

Metro Flag Food Court (Location ID: M11)
 Manual Count Location: North of Tropicana Avenue
Walkway Width (W) = 16 feet
Effective Walkway Width (W_E) = 13 feet



PEDESTRIAN VOLUME BY TIME OF DAY

Harley Davidson Cafe (Location ID: Metro1)
 Video Count Location: South of Harmon Avenue
Walkway Width (W) = 16 feet
Effective Walkway Width (W_E) = 13 feet



- Holiday Saturday 5/23/2015
- - - Typical Saturday 6/20/2015
- • Level of Service Threshold

PEDESTRIAN VOLUME BY TIME OF DAY

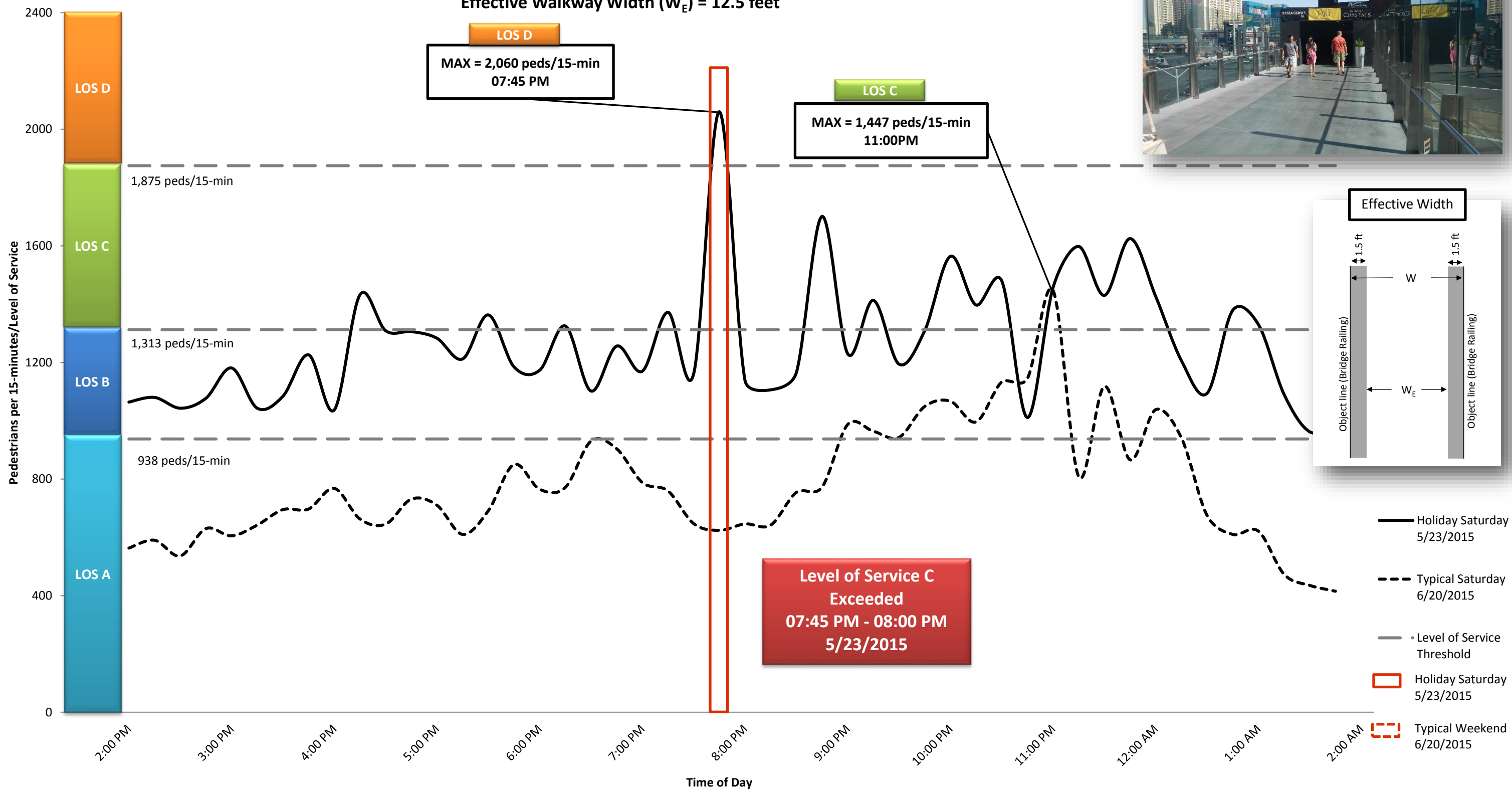
Harmon Avenue West Pedestrian Bridge (Location ID: 7)

Manual Count Location: On Bridge

Walkway Width (W) = 15.5 feet

Effective Walkway Width (W_E) = 12.5 feet

Count Location



PEDESTRIAN VOLUME BY TIME OF DAY

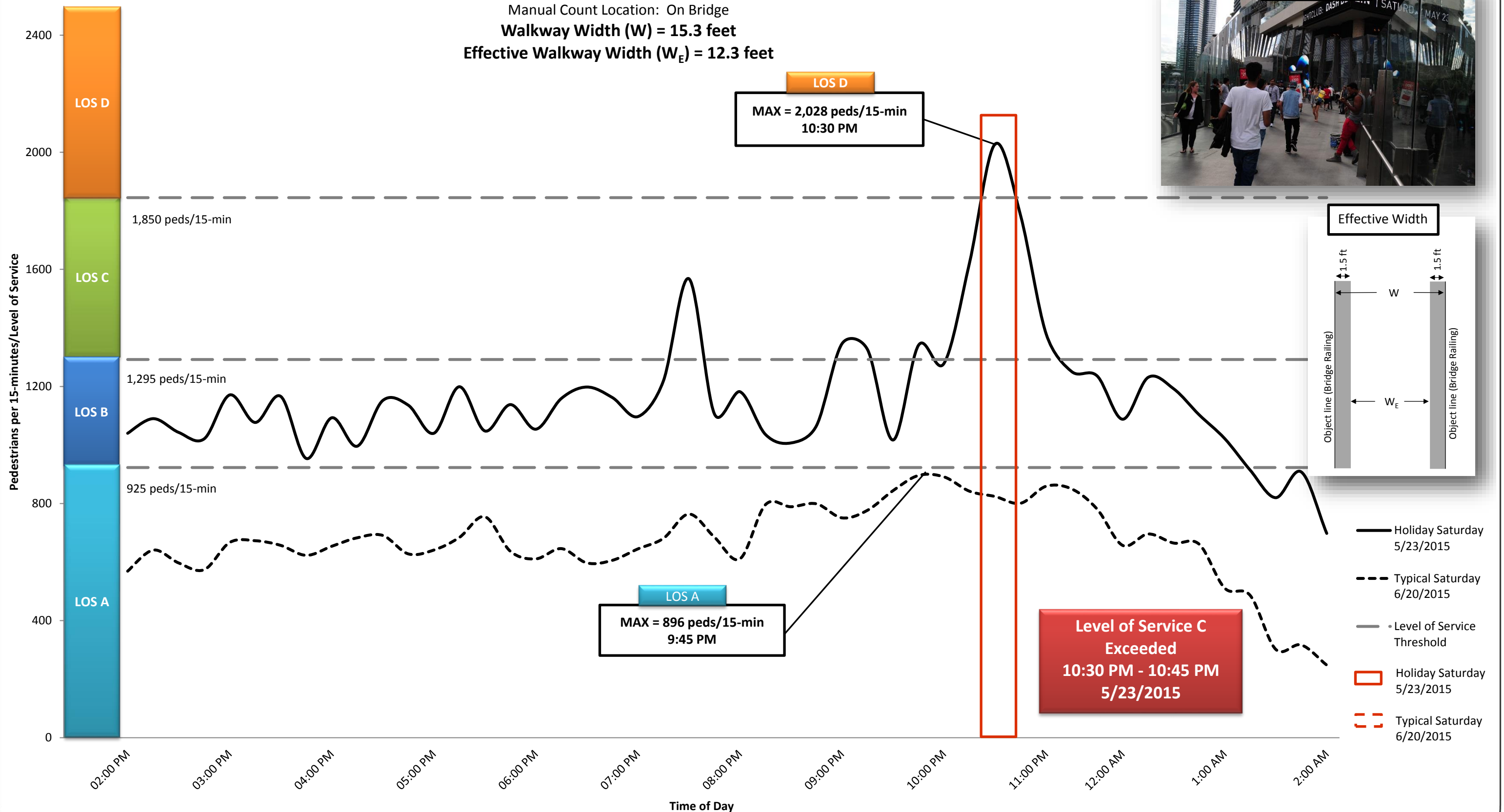
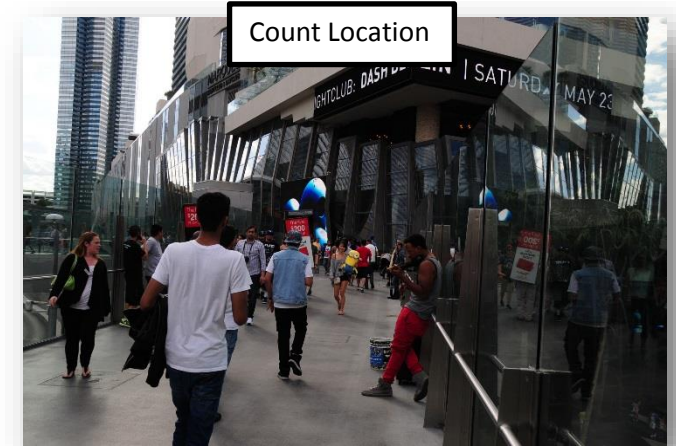
FIGURE 4.13

Harmon Avenue North Pedestrian Bridge (Location ID: M4)

Manual Count Location: On Bridge

Walkway Width (W) = 15.3 feet

Effective Walkway Width (W_E) = 12.3 feet



PEDESTRIAN VOLUME BY TIME OF DAY

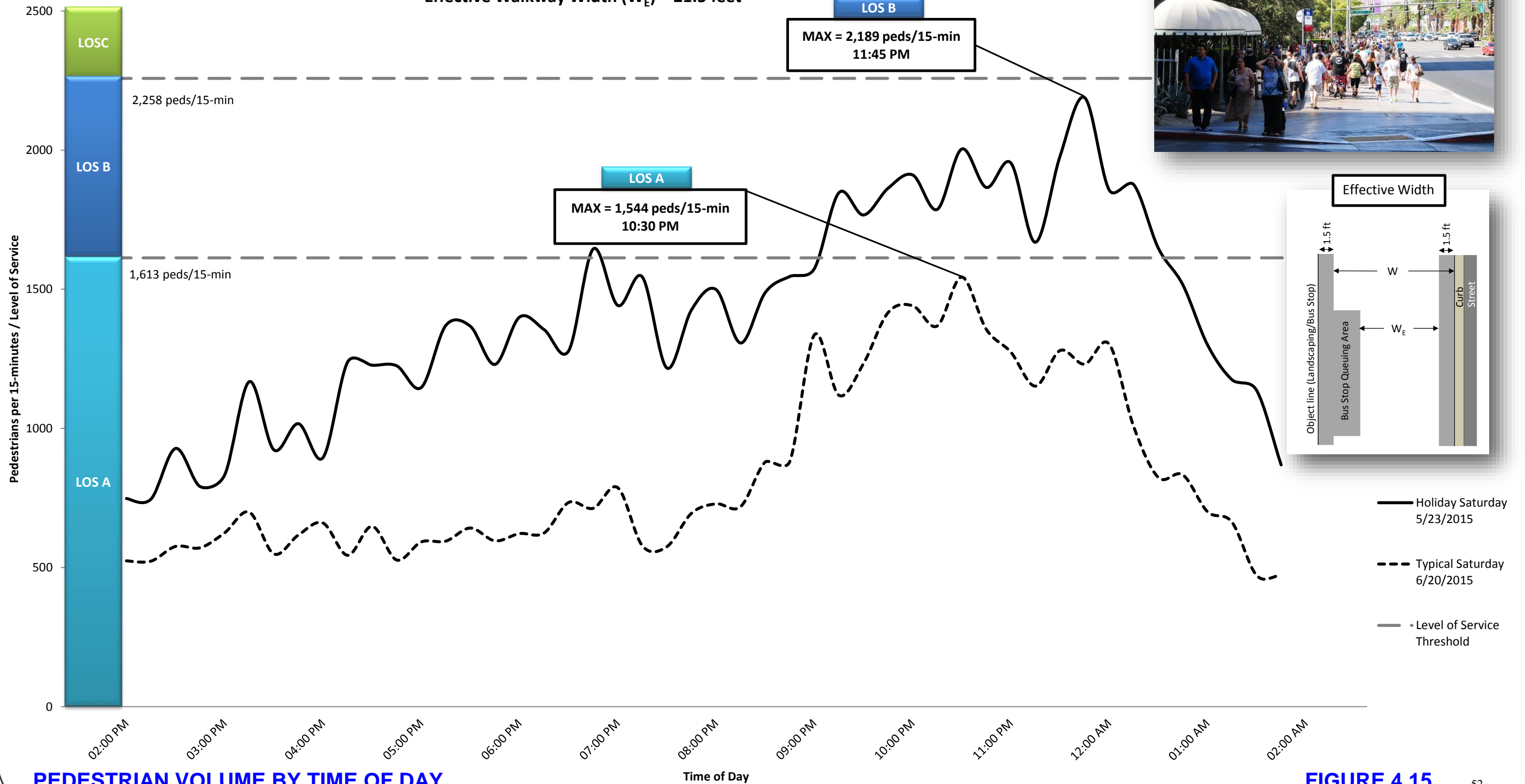
FIGURE 4.14 51

Bellagio Hotel/Casino South (Location ID: CC2)

Video Count Location: North of Harmon Avenue

Walkway Width (W) = 27 feet

Effective Walkway Width (W_E) = 21.5 feet



PEDESTRIAN VOLUME BY TIME OF DAY

FIGURE 4.15

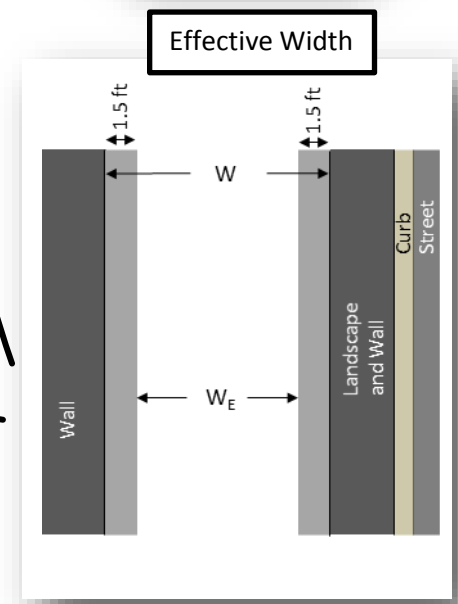
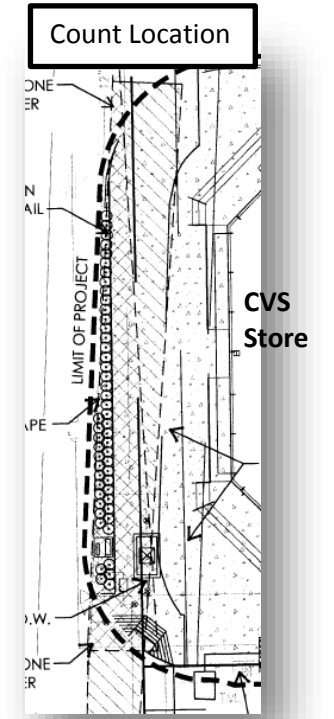
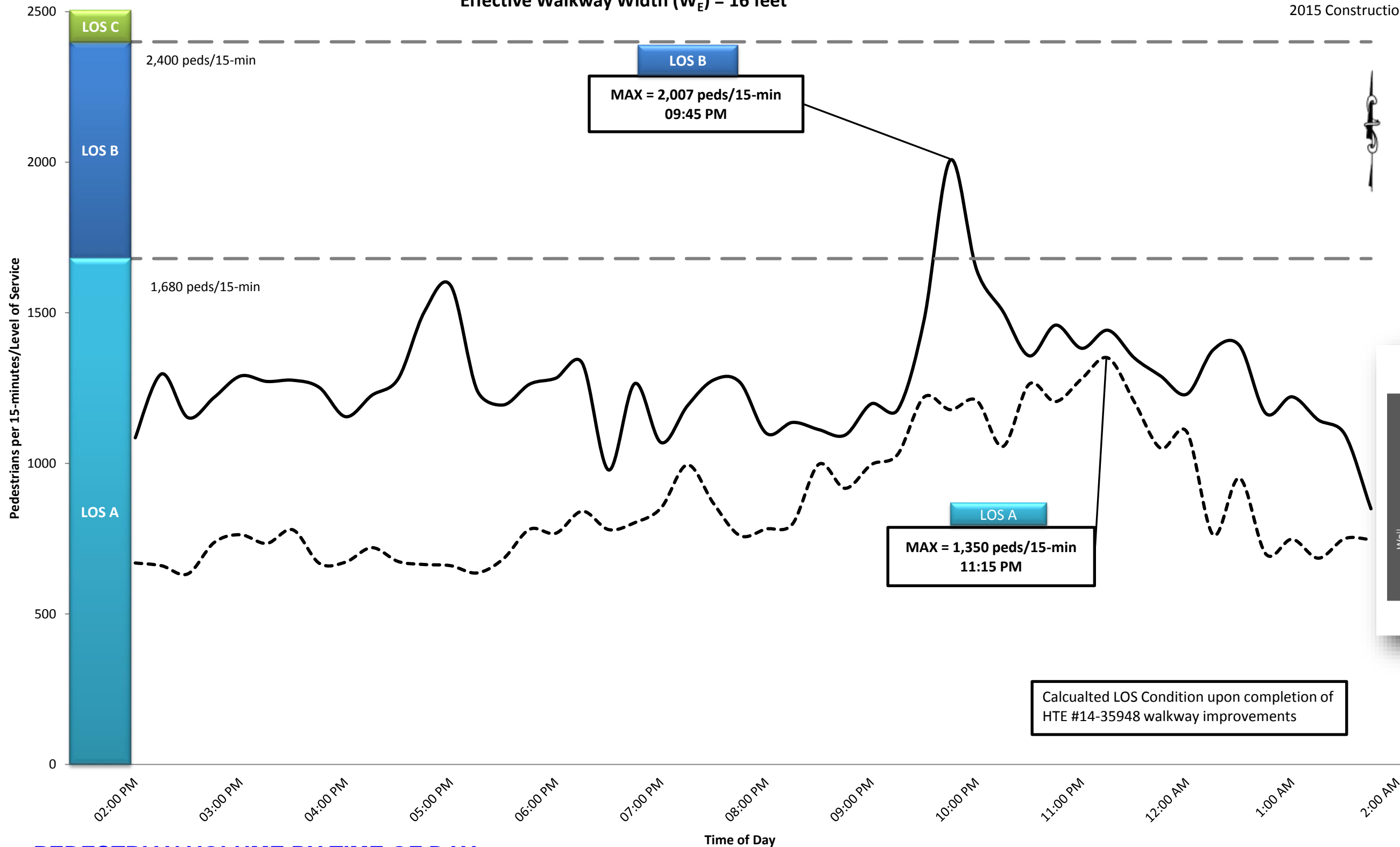
Bally's Hotel/Casino South (Location ID: M12)

Manual Count Location: South of Flamingo Road

Walkway Width (W) = 19 feet

Effective Walkway Width (W_E) = 16 feet

HTE #: 14-35948
2015 Construction

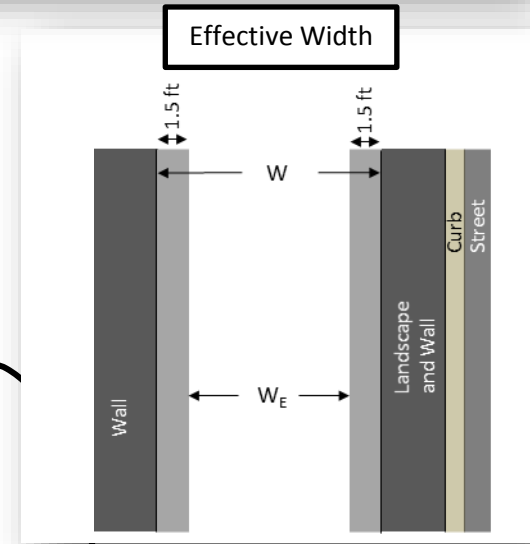
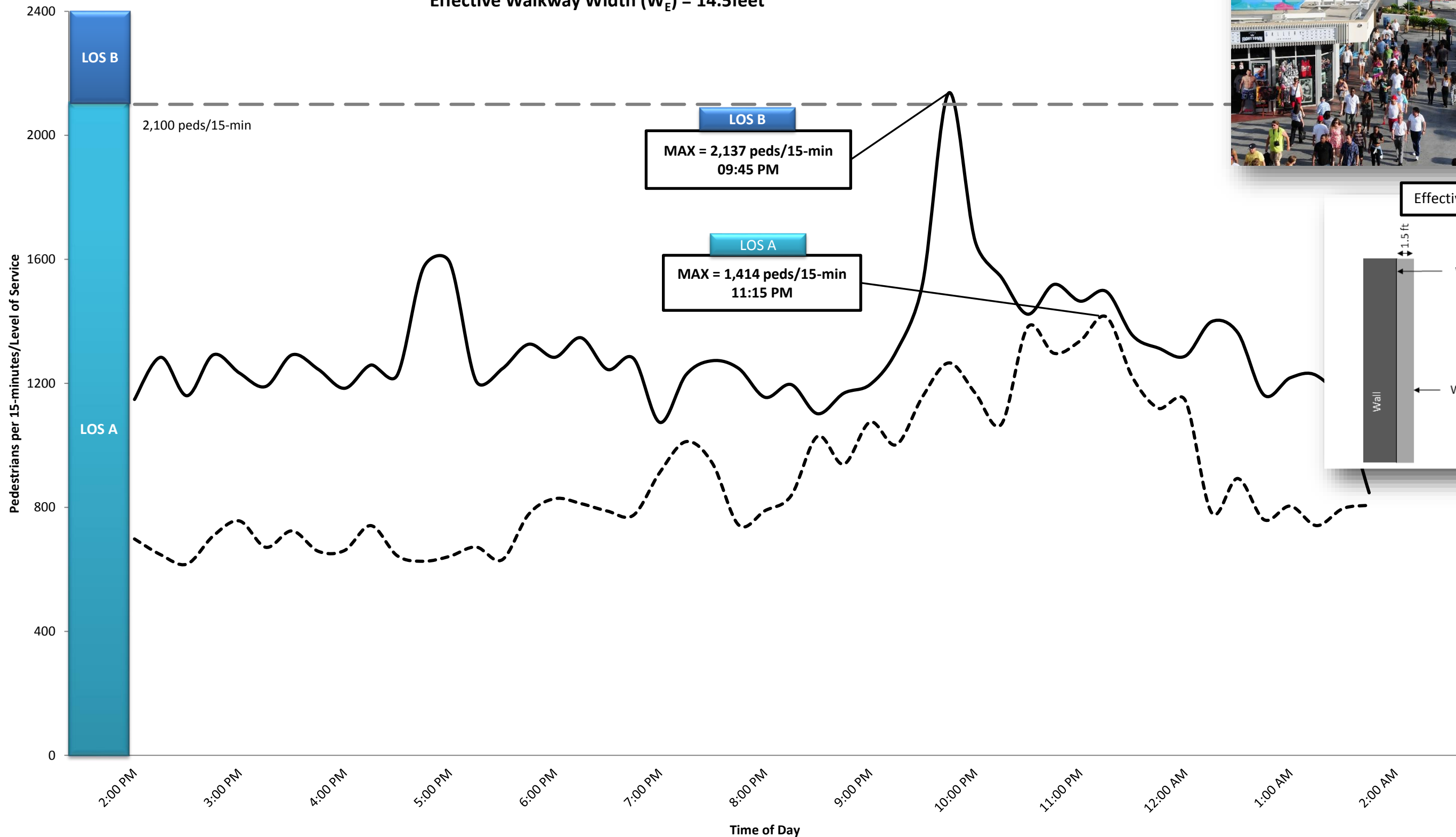


- Holiday Saturday 5/23/2015
- - - Typical Saturday 6/20/2015
- • Level of Service Threshold

PEDESTRIAN VOLUME BY TIME OF DAY

FIGURE 4.16

Bally's Bazaar (Location ID: 9)
 Manual Count Location: South of Flamingo Road
Walkway Width (W) = 17.5 feet
Effective Walkway Width (W_E) = 14.5feet



- Holiday Saturday 5/23/2015
- - - Typical Saturday 6/20/2015
- • Level of Service Threshold

PEDESTRIAN VOLUME BY TIME OF DAY

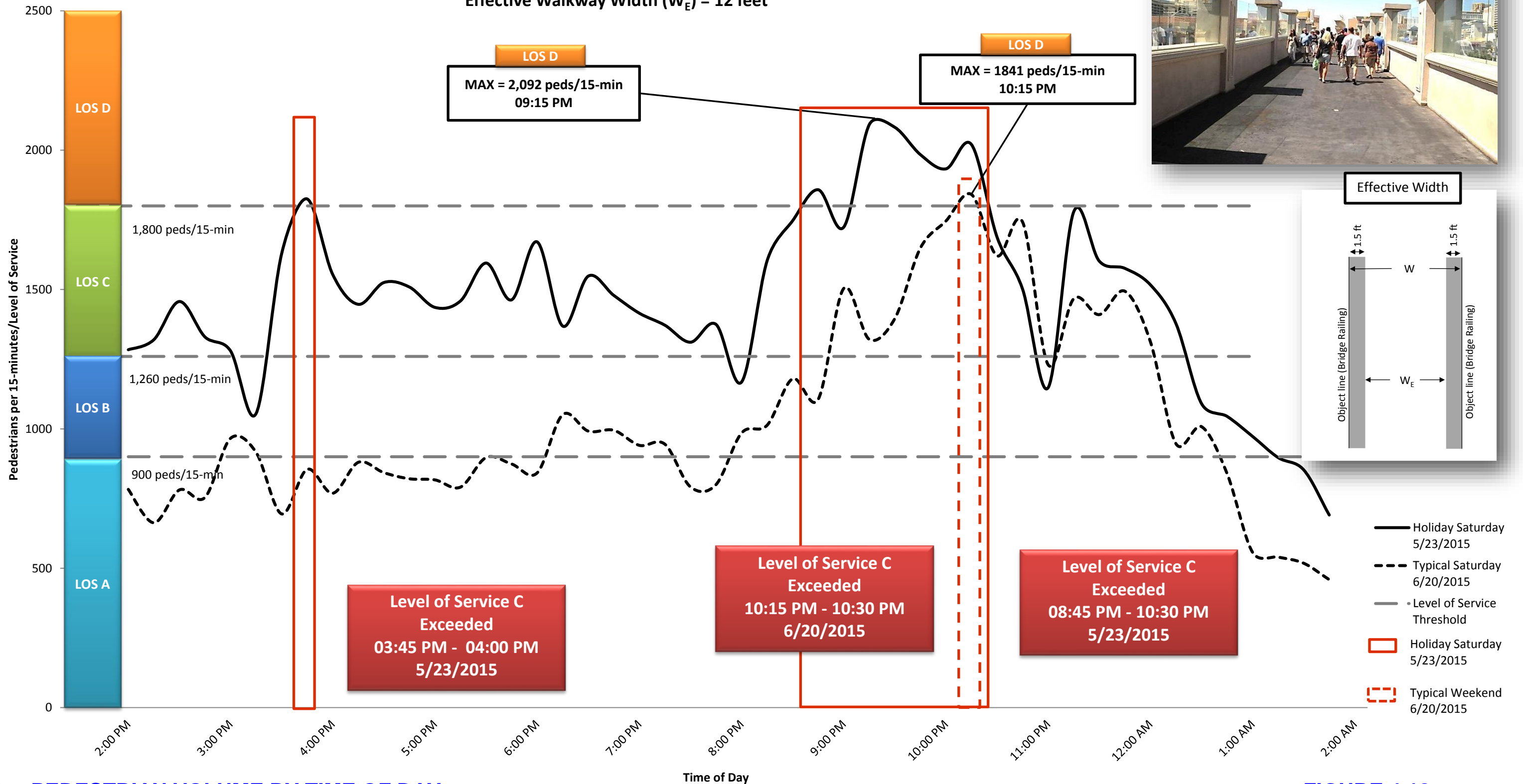
FIGURE 4.17 54

Flamingo Road West Pedestrian Bridge (Location ID: 11)

Manual Count Location: On Bridge

Walkway Width (W) = 15 feet

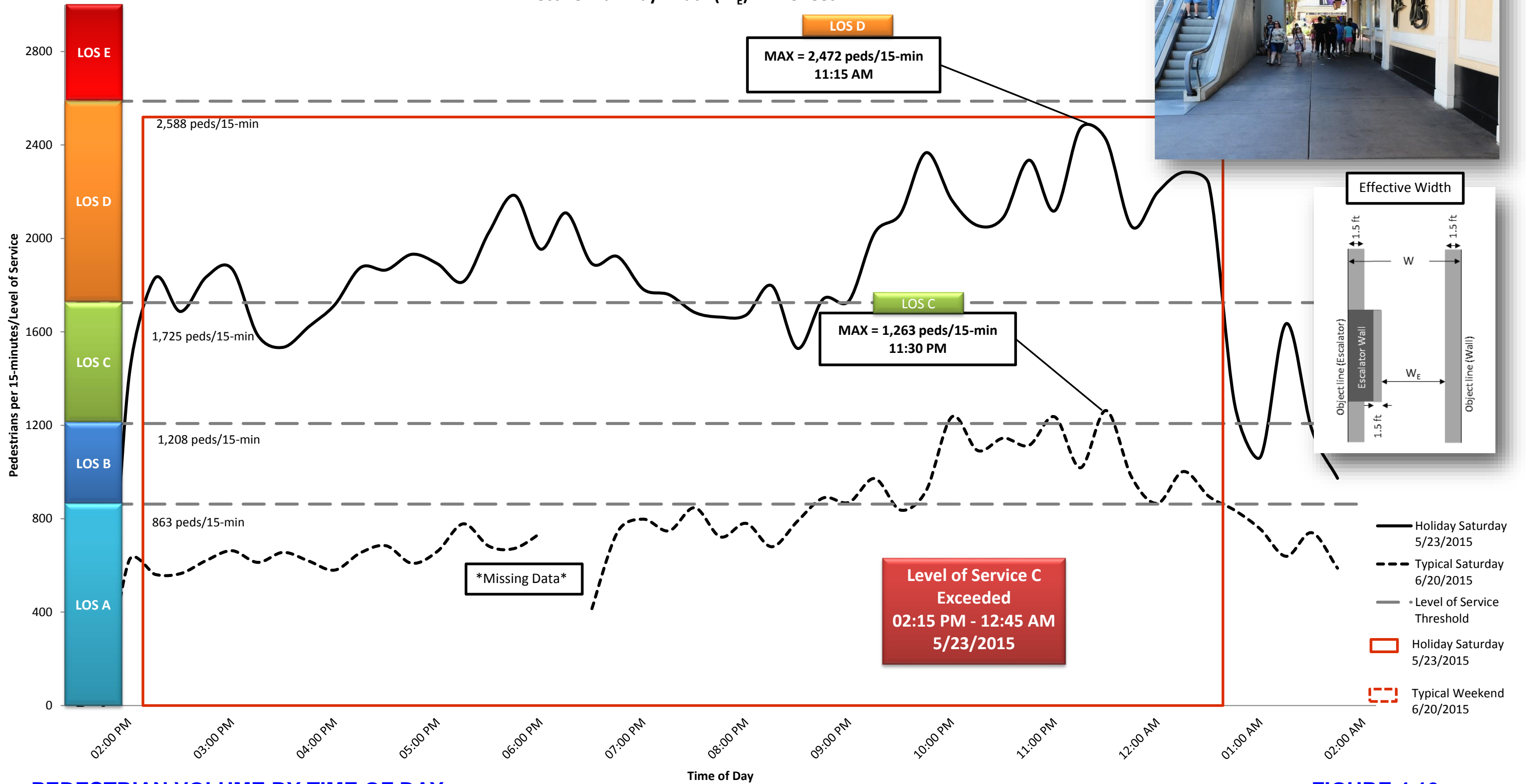
Effective Walkway Width (W_E) = 12 feet



PEDESTRIAN VOLUME BY TIME OF DAY

FIGURE 4.18

Cromwell (Location ID: Metro3)
 Video Count Location: Northeast Corner of Flamingo Road and Las Vegas Boulevard
Walkway Width (W) = 14.5 feet
Effective Walkway Width (W_E) = 11.5 feet



PEDESTRIAN VOLUME BY TIME OF DAY

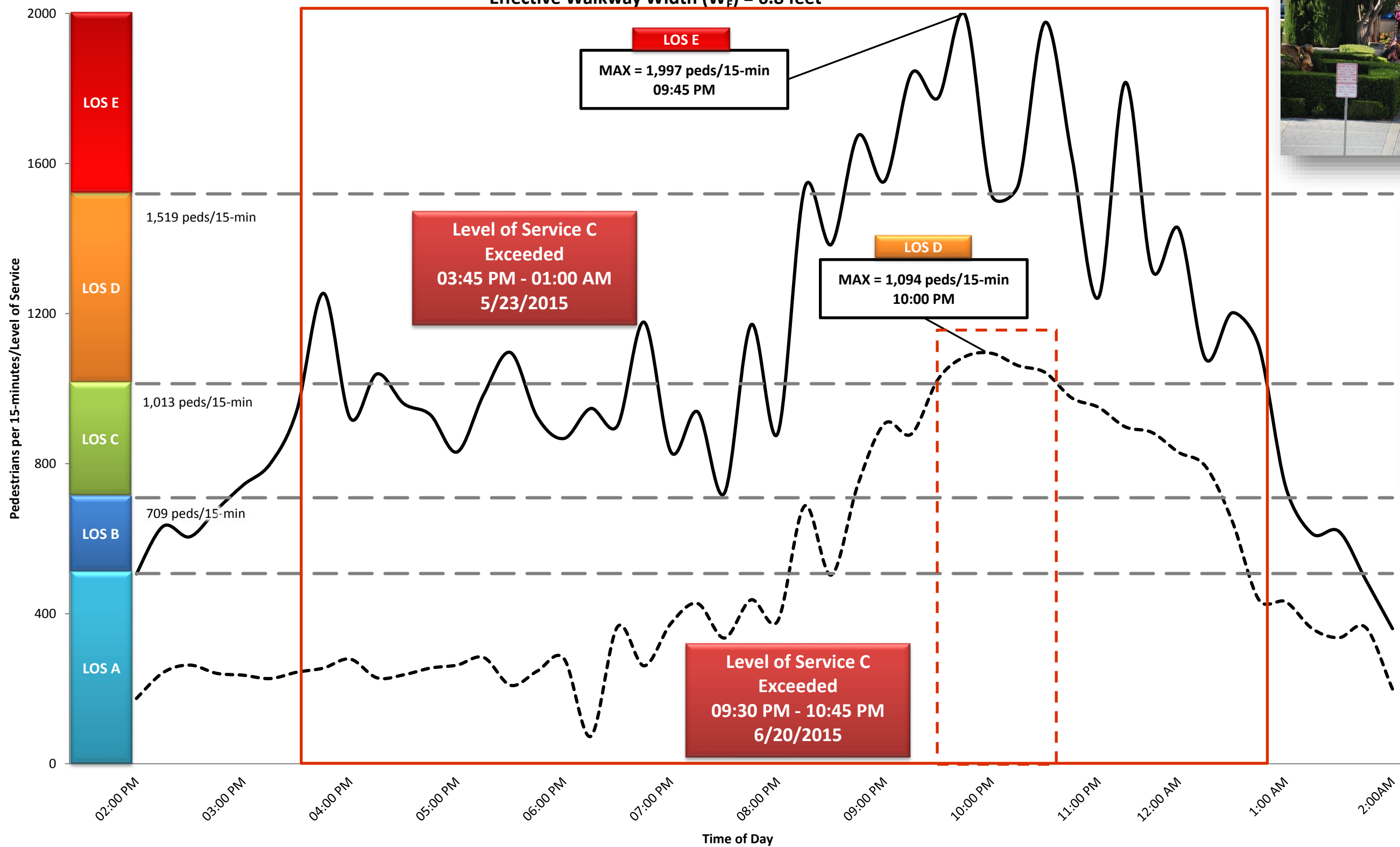
FIGURE 4.19 56

Caesar's Palace Hotel/Casino South (Location ID: M6)

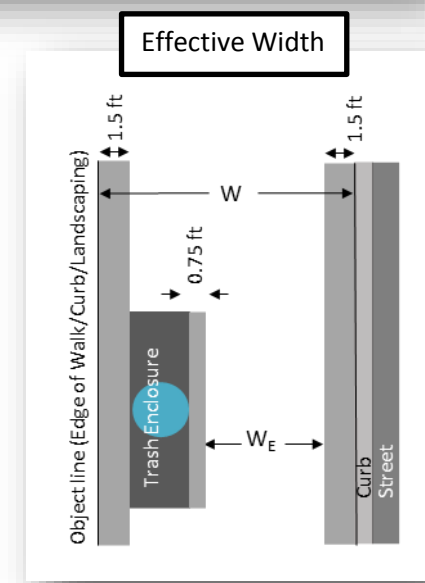
Video Count Location: North of Flamingo Road

Walkway Width (W) = 9 feet

Effective Walkway Width (W_E) = 6.8 feet



Count Location

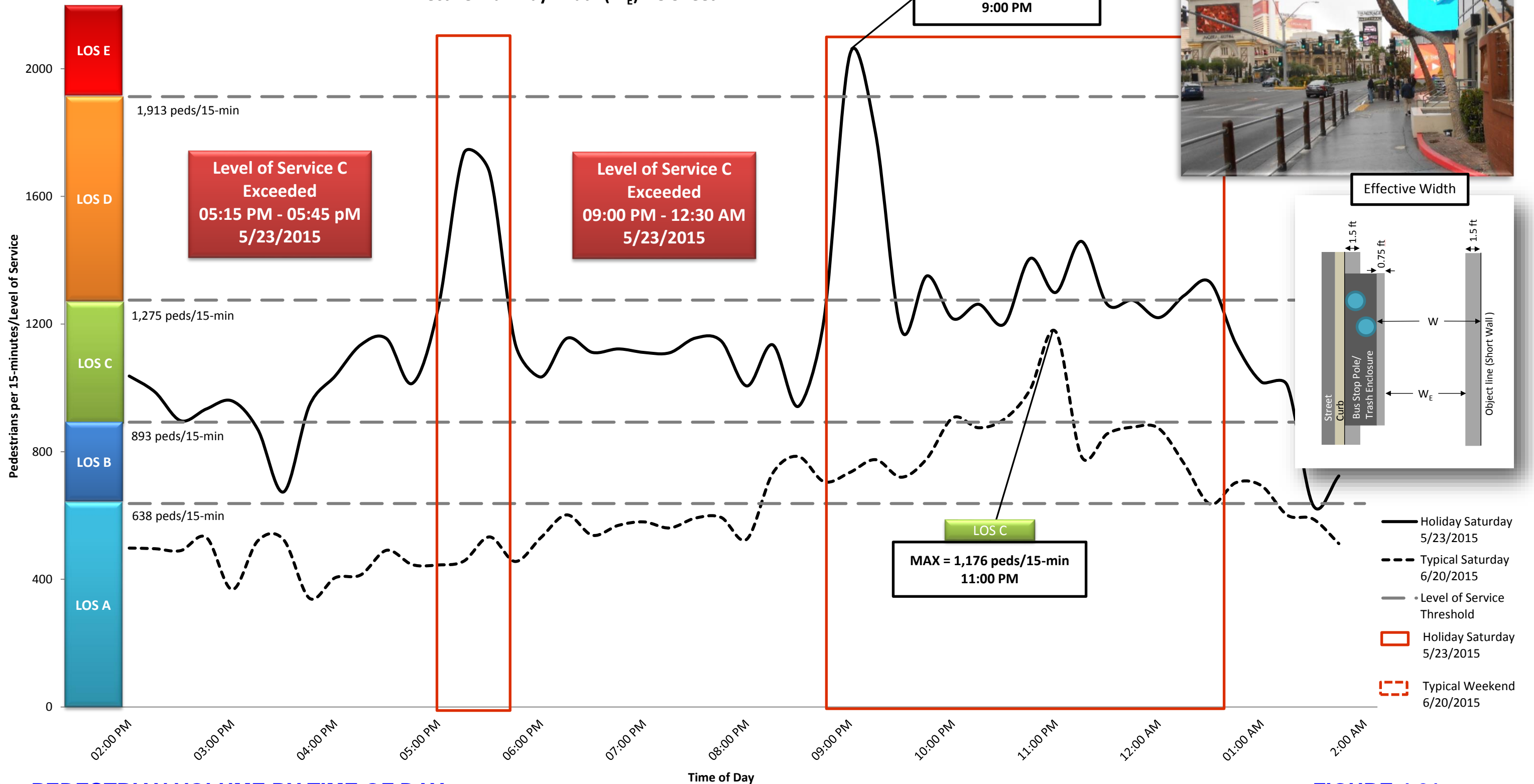


Effective Width

PEDESTRIAN VOLUME BY TIME OF DAY

FIGURE 4.20

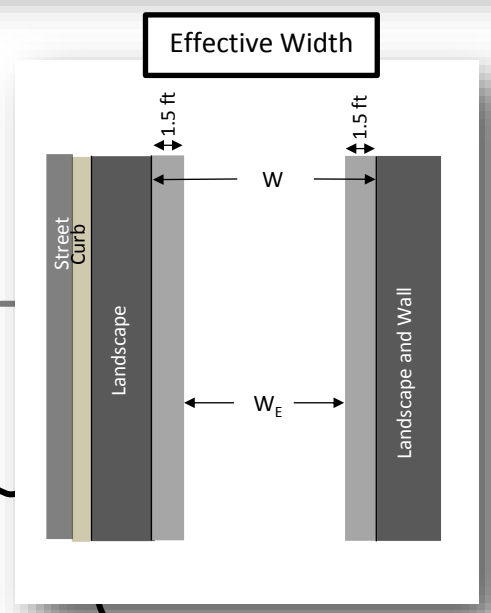
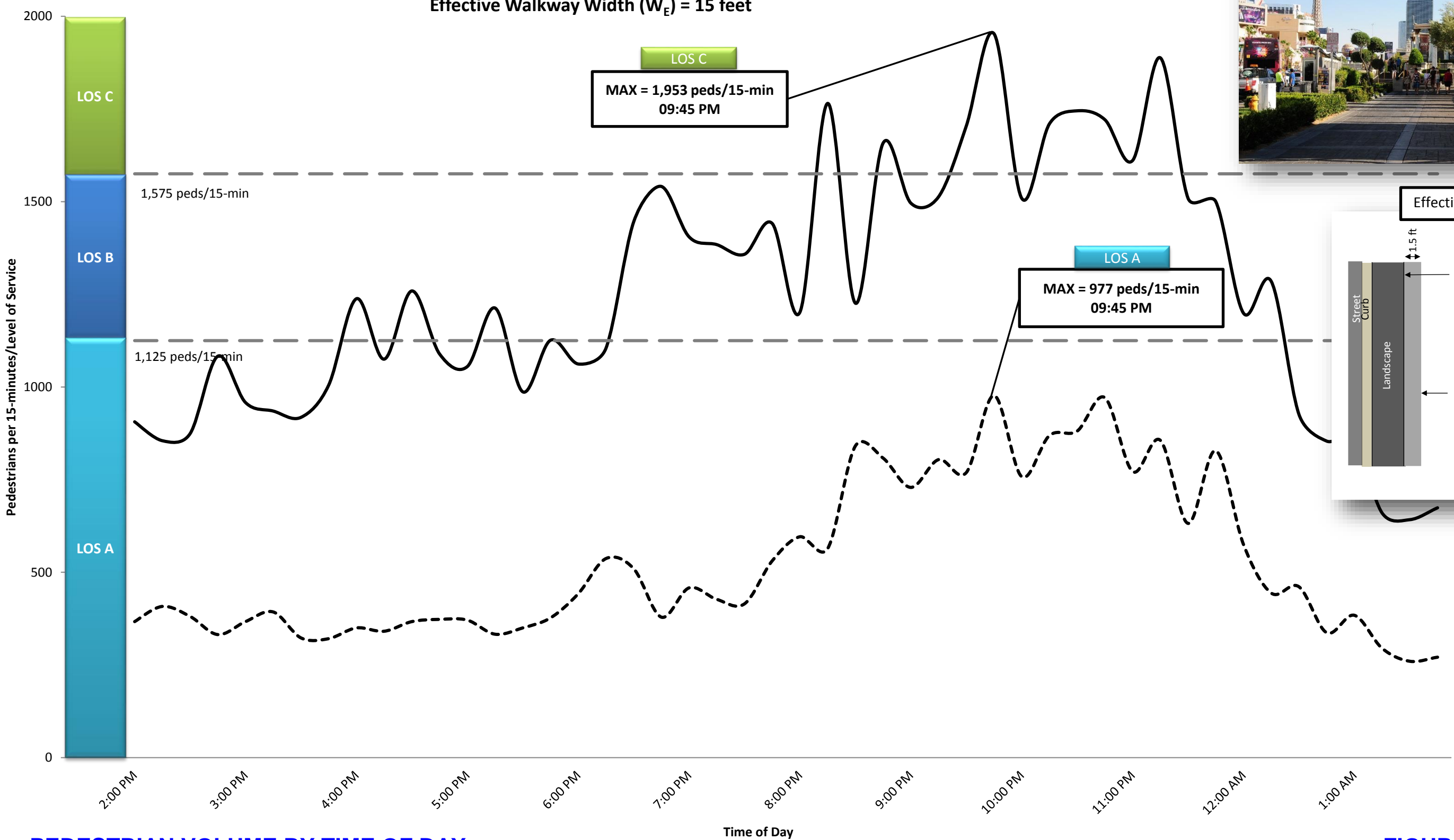
Margaritaville (Location ID: 12)
 ManualCount Location: North of Flamingo Road
Walkway Width (W) = 10.8 feet
Effective Walkway Width (W_E) = 8.5 feet



PEDESTRIAN VOLUME BY TIME OF DAY

FIGURE 4.21 58

Caesars Colosseum (Location ID: M13)
 Manual Count Location: North of Flamingo Road
Walkway Width (W) = 18 feet
Effective Walkway Width (W_E) = 15 feet



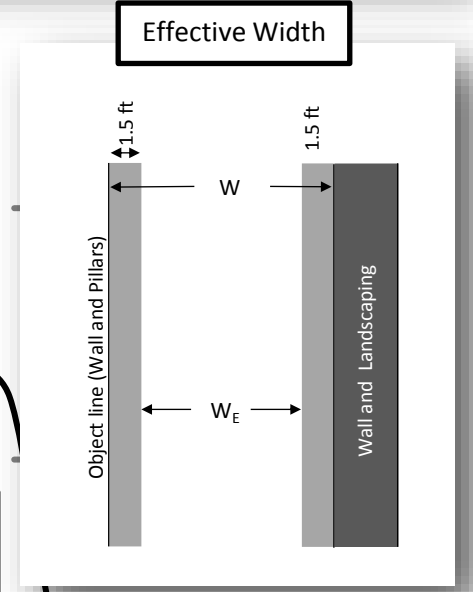
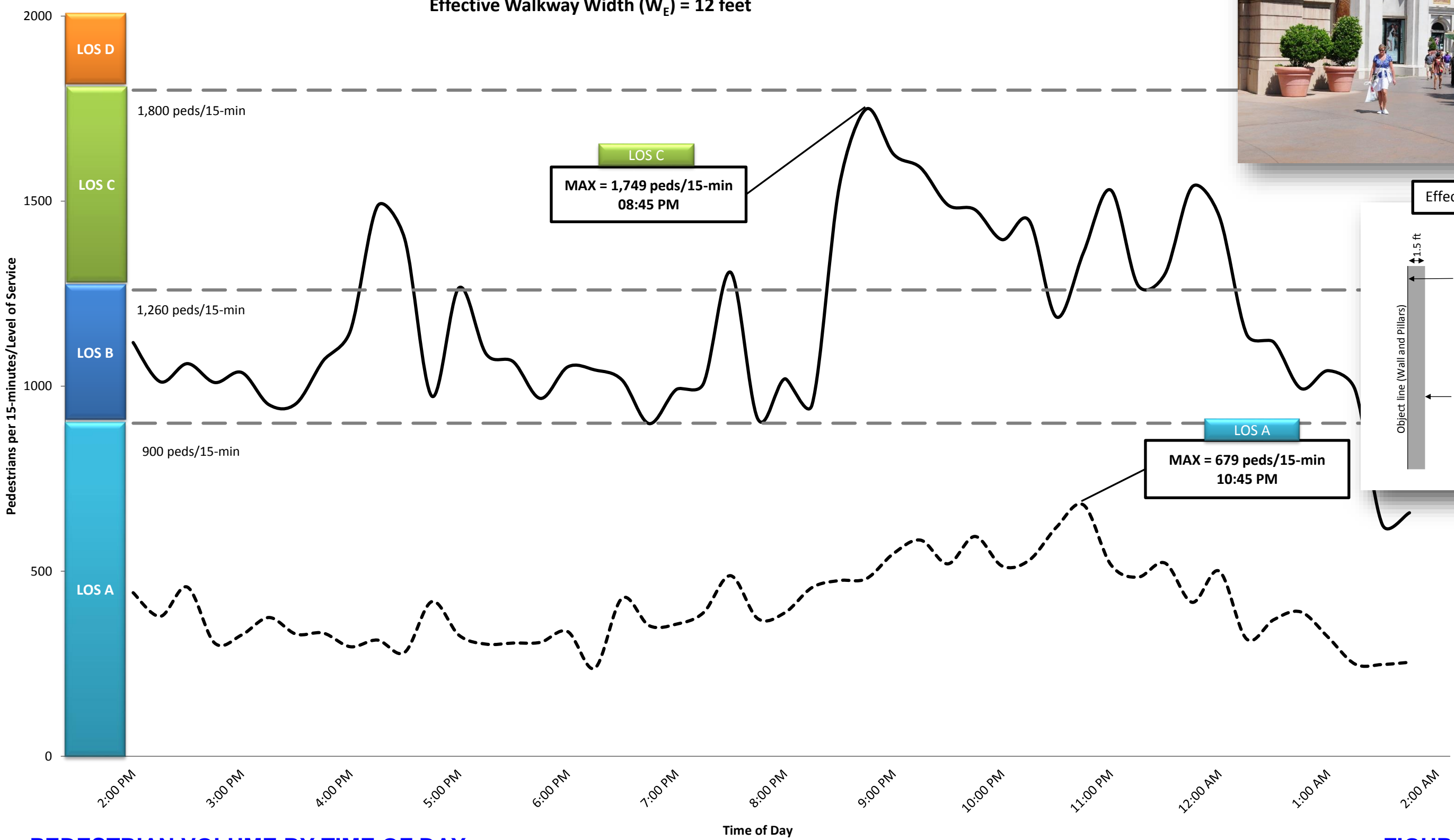
- Holiday Saturday 5/23/2015
- - - Typical Saturday 6/20/2015
- Level of Service Threshold

PEDESTRIAN VOLUME BY TIME OF DAY

Forum Shops (Location ID: 13)
 Manual Count Location: North of Flamingo Road
Walkway Width (W) = 15 feet
Effective Walkway Width (W_E) = 12 feet



Count Location

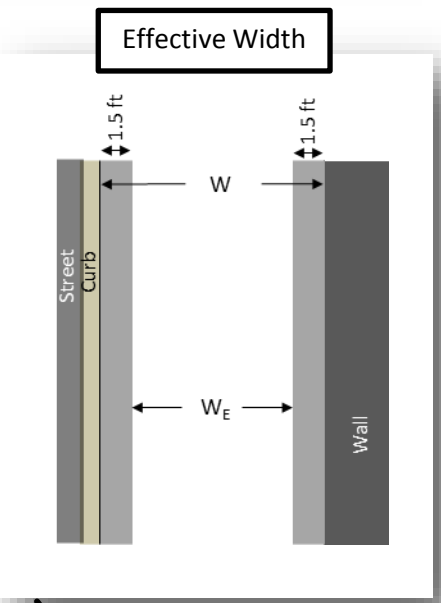
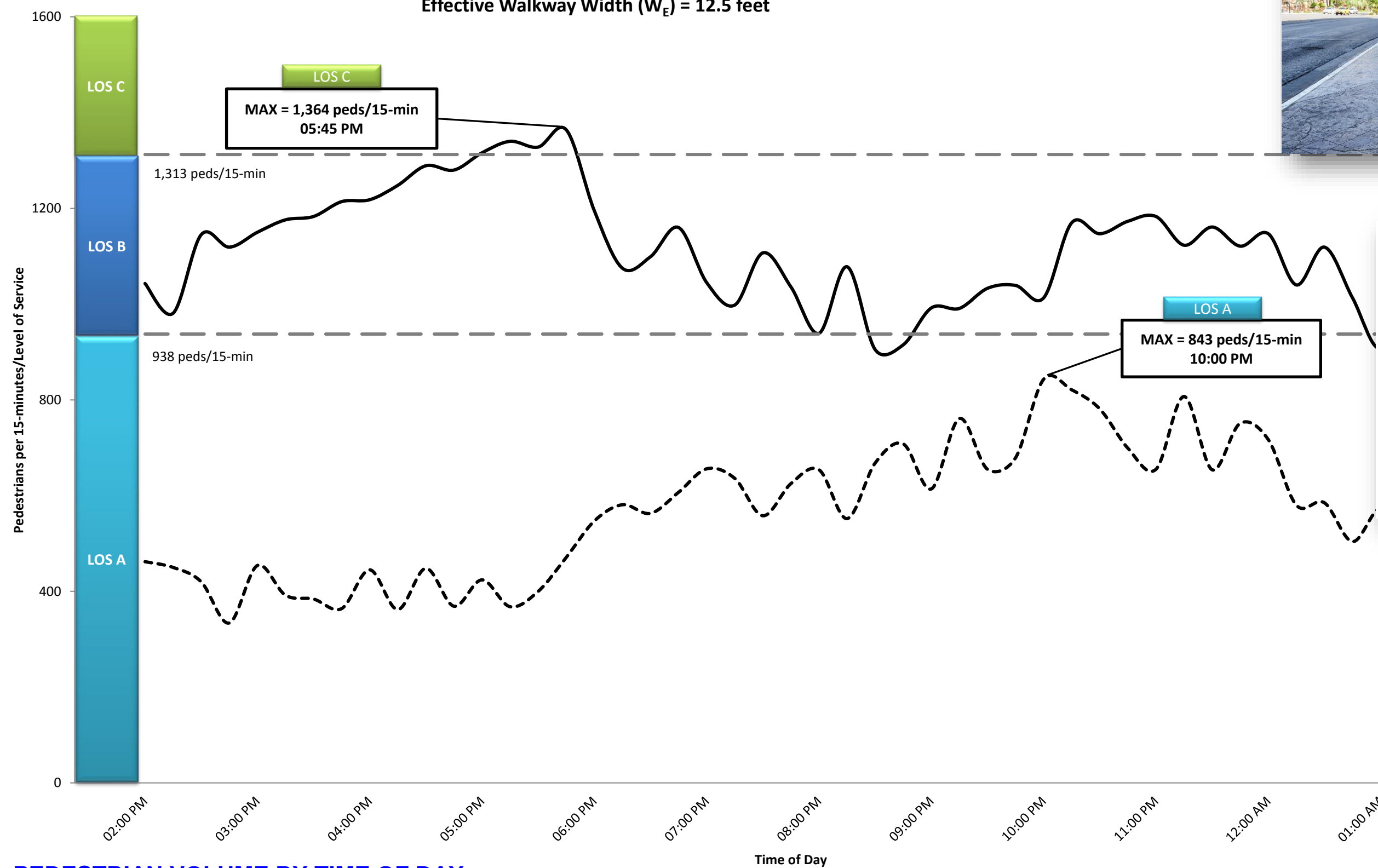
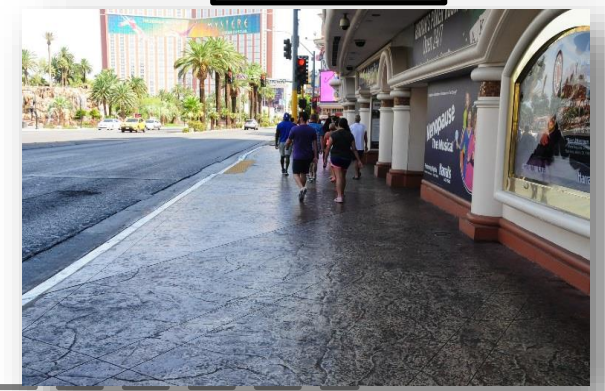


- Holiday Saturday 5/23/2015
- - - Typical Saturday 6/20/2015
- Level of Service Threshold

PEDESTRIAN VOLUME BY TIME OF DAY

Harrah's Hotel/Casino (Location ID: 14)
 Video Count Location: North of Flamingo Road
Walkway Width (W) = 15.5 feet
Effective Walkway Width (W_E) = 12.5 feet

Count Location



- Holiday Saturday 5/23/2015
- - - Typical Saturday 6/20/2015
- • Level of Service Threshold

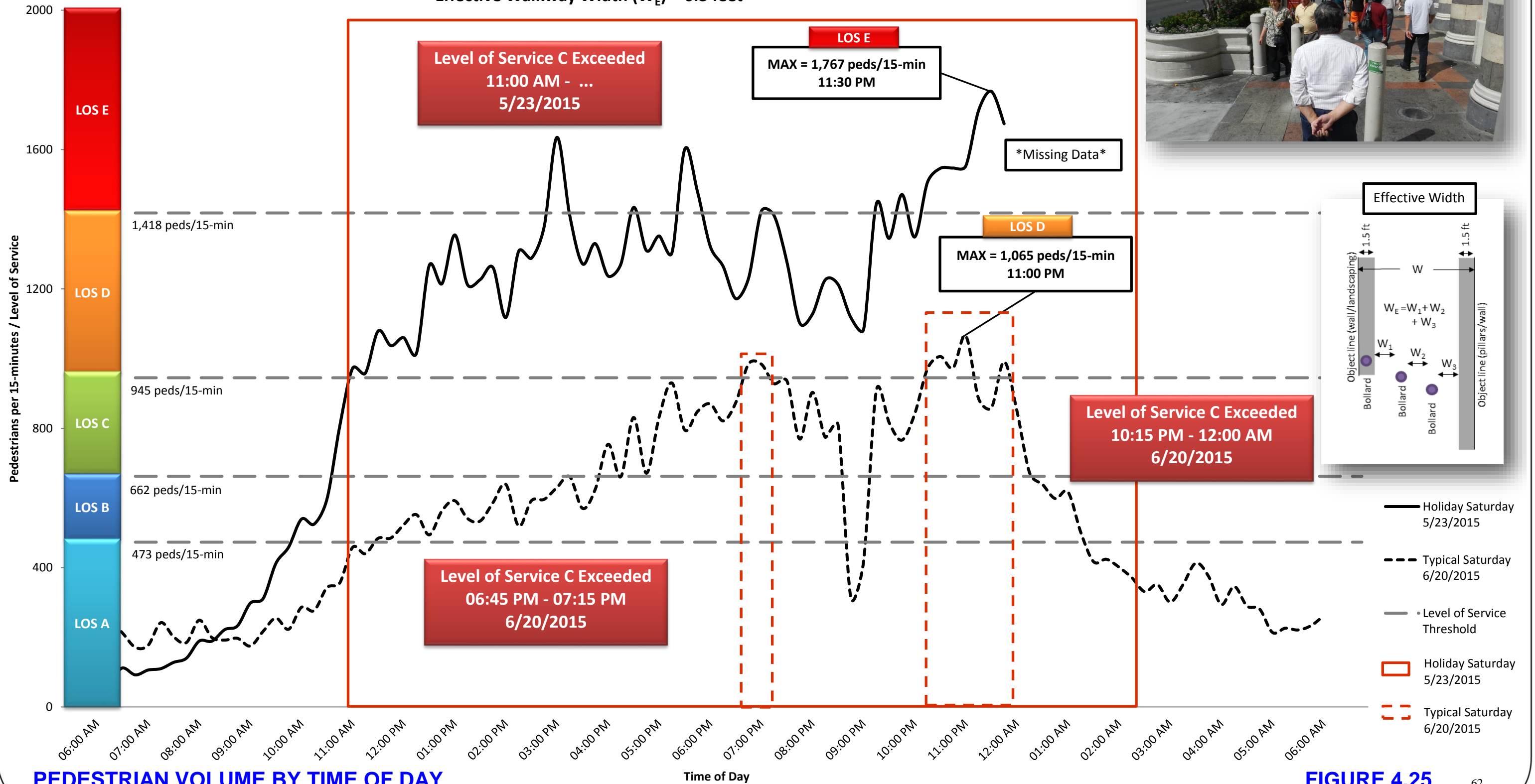
PEDESTRIAN VOLUME BY TIME OF DAY

Venetian Hotel/Casino South (Location ID: CC3)

Video Count Location: South of Spring Mountain Road

Walkway Width (W) = 11.3 feet

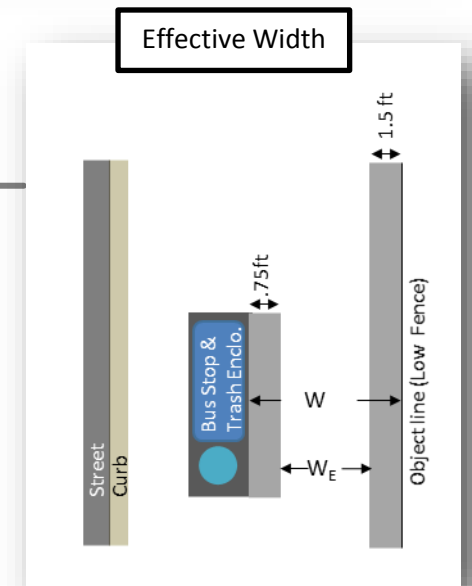
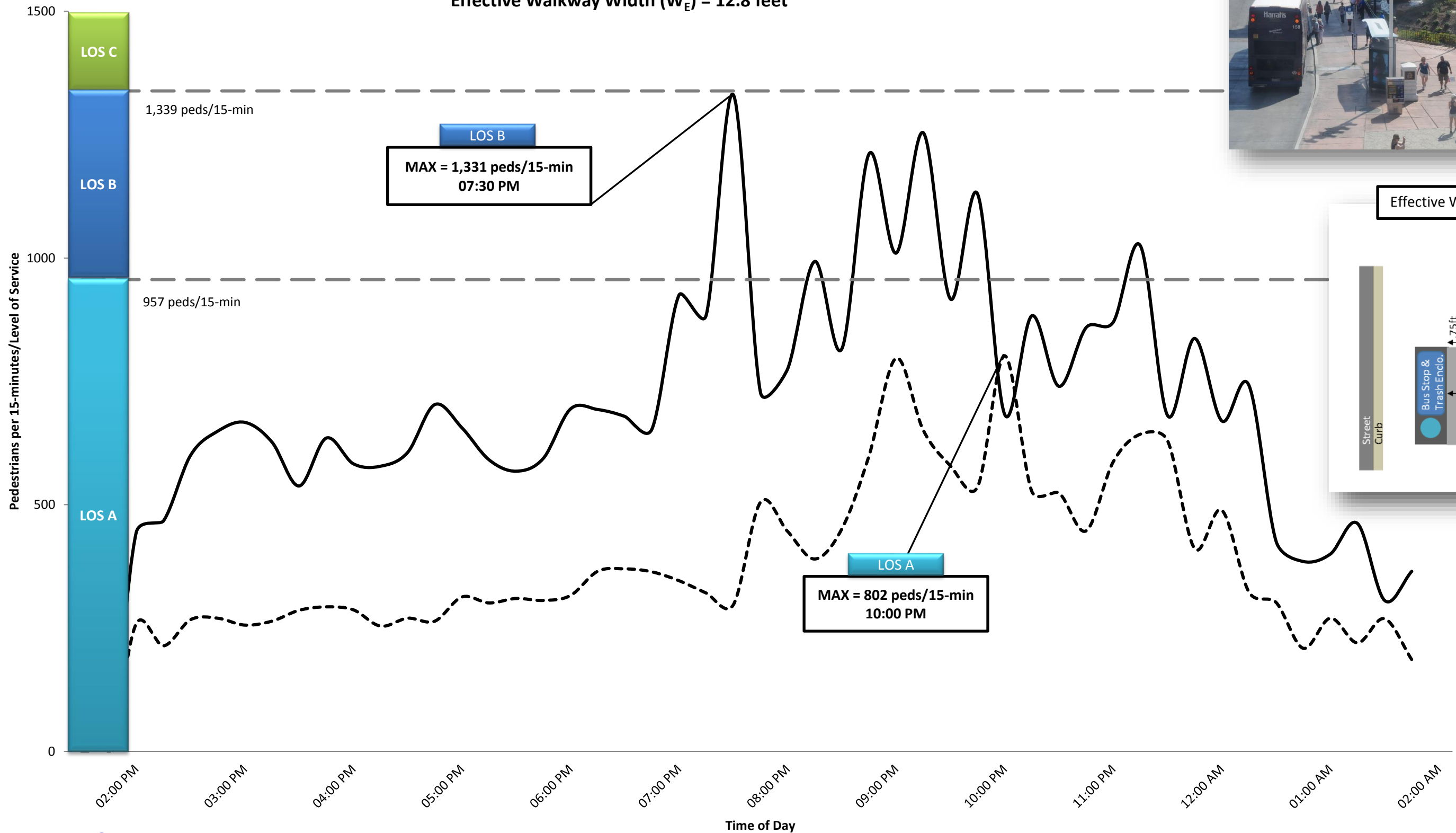
Effective Walkway Width (W_E) = 6.3 feet



PEDESTRIAN VOLUME BY TIME OF DAY

FIGURE 4.25

Treasure Island Bus Stop (Location ID: M14)
 Manual Count Location: South of Spring Mountain Road
Walkway Width (W) = 15 feet
Effective Walkway Width (W_E) = 12.8 feet



- Holiday Saturday 5/23/2015
- - - Typical Saturday 6/20/2015
- Level of Service Threshold

PEDESTRIAN VOLUME BY TIME OF DAY

FIGURE 4.26

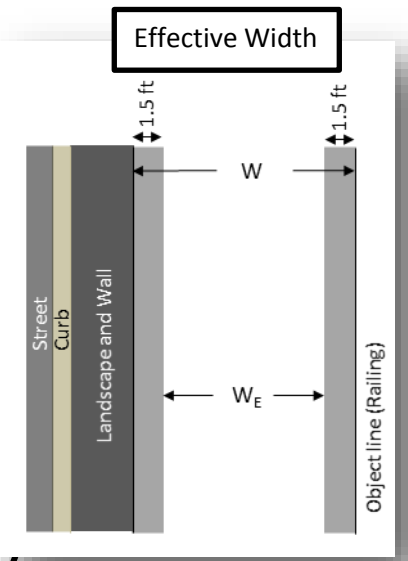
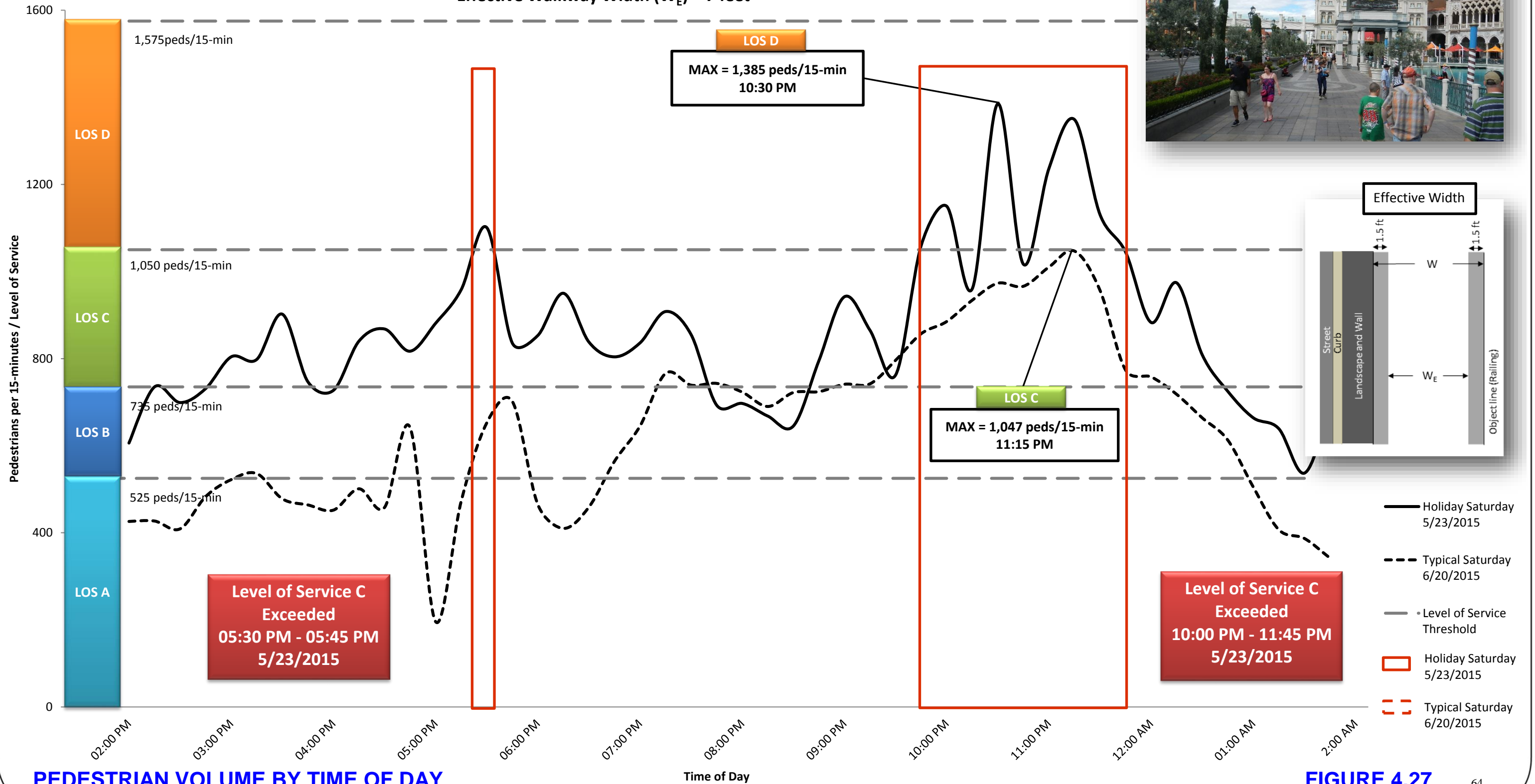
Venetian Hotel/Casino North (Location ID: Metro4)

Video Count Location: South of Spring Mountain Road

Walkway Width (W) = 10 feet

Effective Walkway Width (W_E) = 7 feet

Count Location



PEDESTRIAN VOLUME BY TIME OF DAY

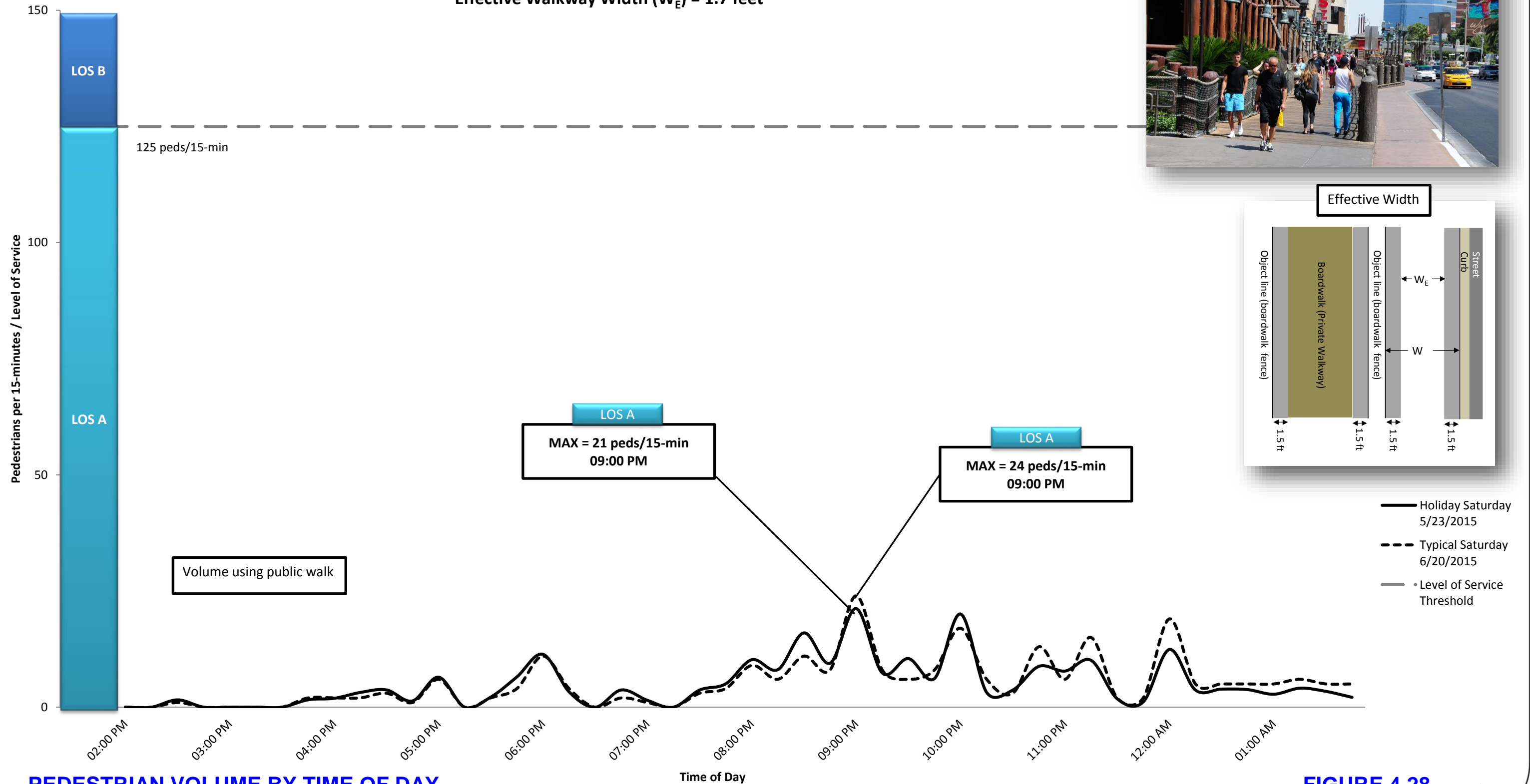
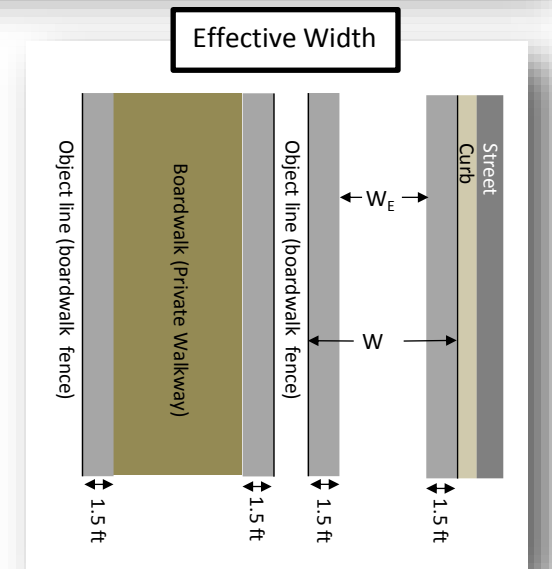
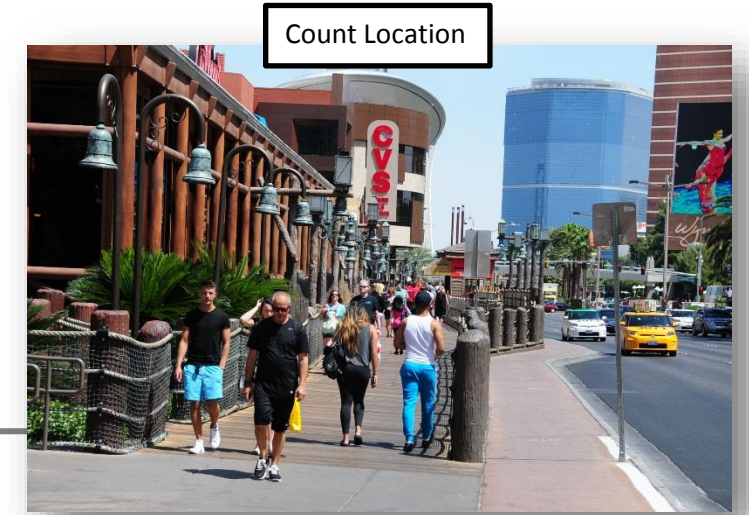
FIGURE 4.27

Treasure Island Hotel/Casino South (Location ID: CC4)

Video Count Location: South of Spring Mountain Road

Walkway Width (W) = 4.7 feet

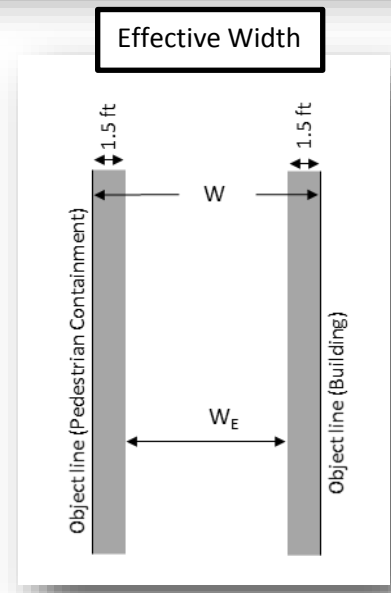
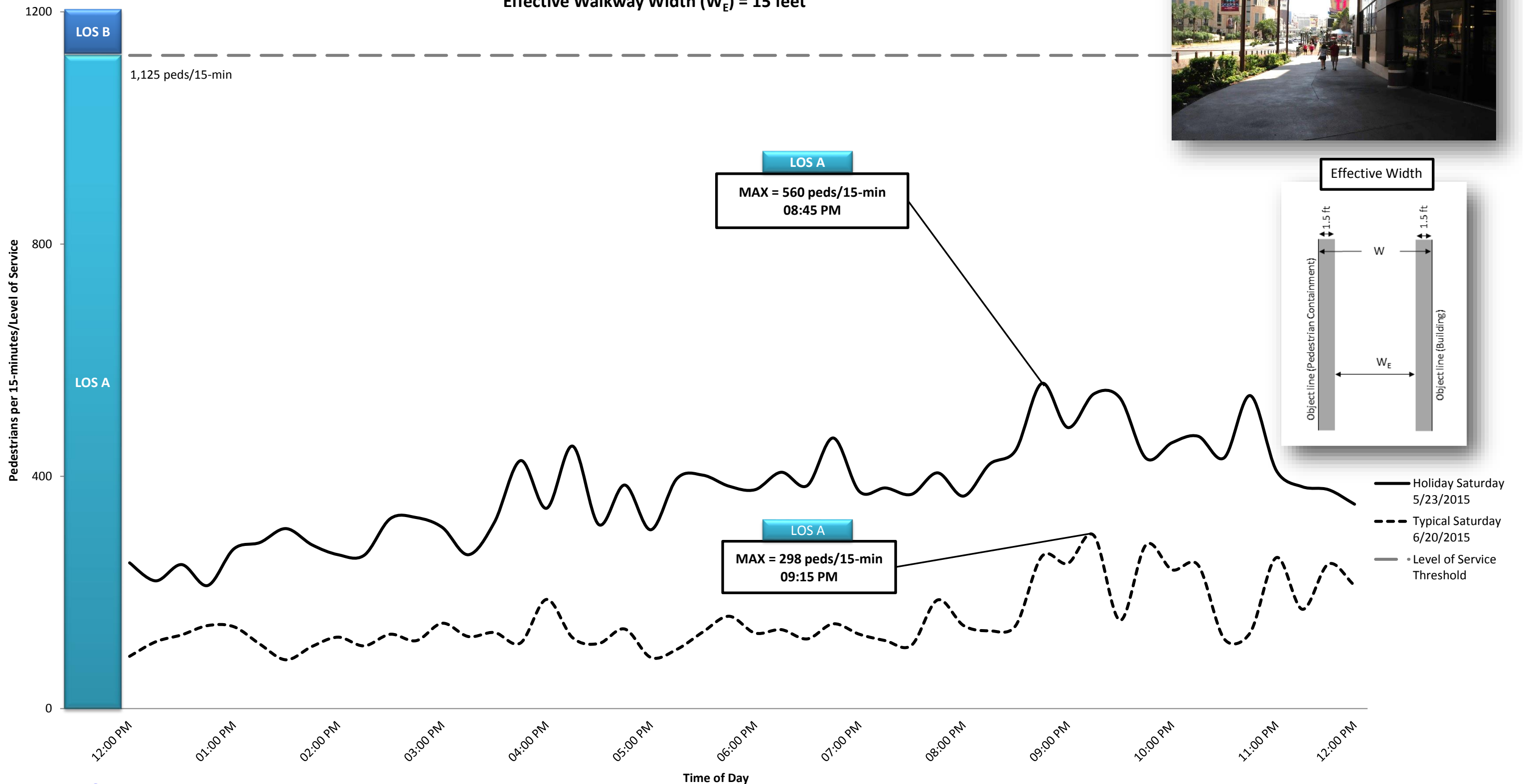
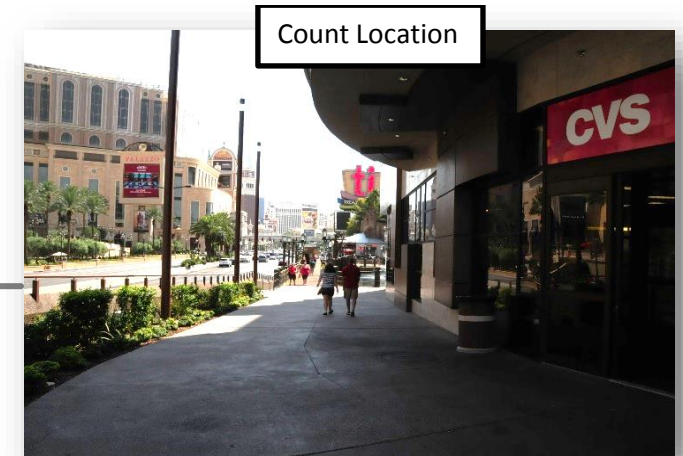
Effective Walkway Width (W_E) = 1.7 feet



PEDESTRIAN VOLUME BY TIME OF DAY

FIGURE 4.28

Treasure Island Hotel/Casino North (Location ID: M15)
 Manual Count Location: NW Corner of Spring Mountain Rd and Las Vegas Blvd
Walkway Width (W) = 18 feet
Effective Walkway Width (W_E) = 15 feet



PEDESTRIAN VOLUME BY TIME OF DAY

FIGURE 4.29

4.2.3 Adjacent Public Right-of-Way/Pedestrian Easement Theoretical LOS Analysis

Research conducted in close coordination with Clark County Public Works staff yielded an updated comprehensive exhibit of the existing public walkways and the privately owned and maintained pedestrian walkway easements that are available to the public for pedestrian access. **Exhibit B** displays the existing public right-of-ways and pedestrian easements along Las Vegas Boulevard from Russell Road to Sahara Avenue. It should be noted that this exhibit is the summation of the best available information for this study.

Many locations along the Resort Corridor have public right-of-way and pedestrian walkway easements that are parallel to privately owned walkways. Although they both serve pedestrian needs along Las Vegas Boulevard, an analysis was conducted to determine the LOS of walkway segments if a property were to temporarily or permanently take their parallel private walkway out of service.

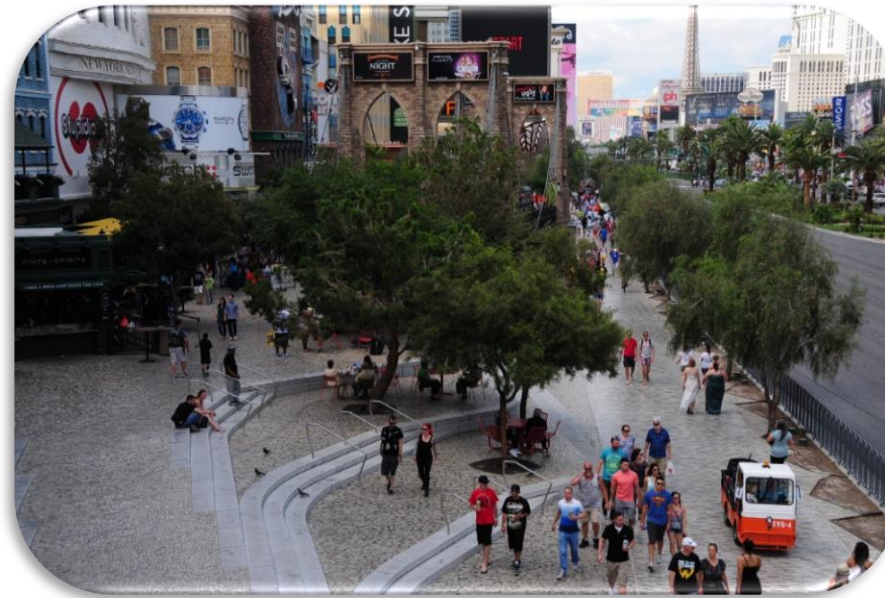
This analysis was conducted at the count locations below for the 2015 Pedestrian Study Update:

- New York-New York Hotel/Casino (**Picture 4.2** and **Picture 4.3**)
- Planet Hollywood Hotel/Casino (**Picture 4.4** and **Picture 4.5**)

Figure 4.10 displays the observed pedestrian volume present on the available walkway segments at New York-New York. Comparatively, **Figure 4.30** represents the LOS of the walkway segments at New York-New York and if all the observed pedestrian volume along Las Vegas Boulevard were to be directed to use only the public right-of-way and/or pedestrian easement walkway.

Although under existing conditions LOS C was observed at this location, if all pedestrians were placed on the public walk and/or private easement walkway, LOS E would result. Likewise, under similar conditions at Planet Hollywood, the pedestrian LOS reduces to below C if all pedestrians must use only the public right-of-way and/or private easement walkway.

Walkway segments that provide LOS less than C under these conditions are shown in **Figure 4.31** and **Figure 4.32**. Existing conditions from **Figure 2.1** are shown here for comparison.



Picture 4.2 – New York-New York Plaza.



Picture 4.4 – Performer Spans Easement Line – Planet Hollywood.

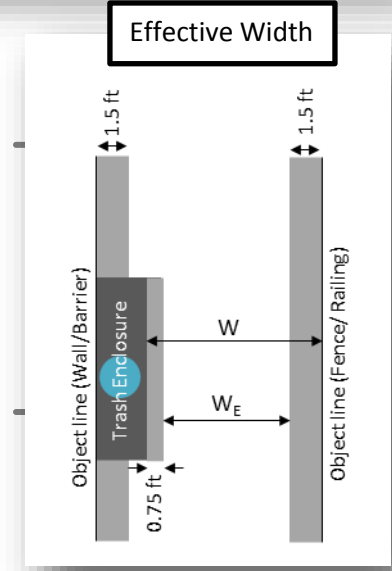
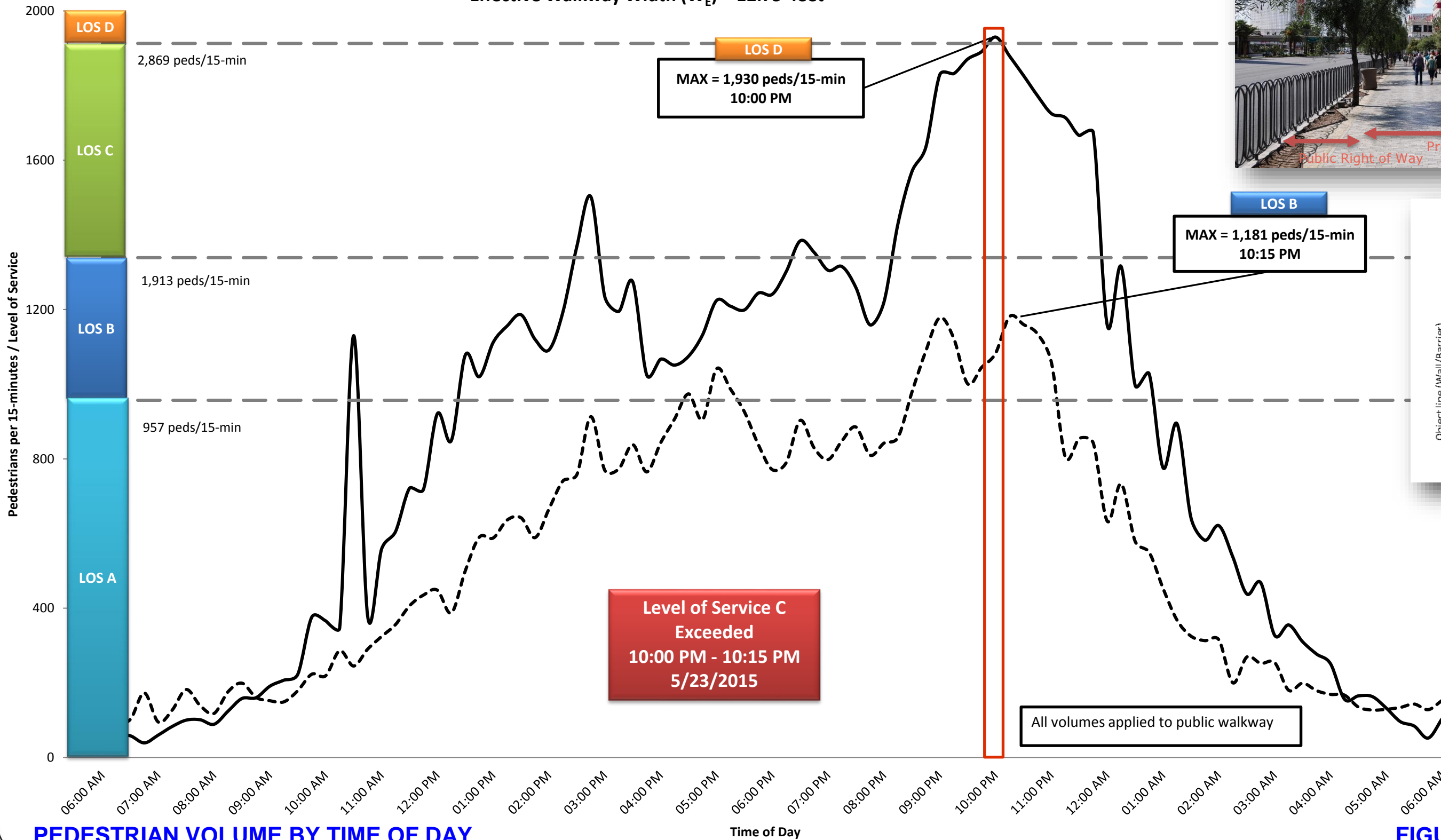


Picture 4.3 – New York-New York Bridge.



Picture 4.5 – Easement Line – Planet Hollywood.

New York-New York Hotel/Casino (Location ID: CC1)
 Video Count Location: North of Tropicana Avenue
Walkway Width (W) = 15 feet
Effective Walkway Width (W_E) = 12.75 feet



PEDESTRIAN VOLUME BY TIME OF DAY

FIGURE 4.30

2015 Existing



SEE FIGURE 4.32

2015 Theoretical



SEE FIGURE 4.32

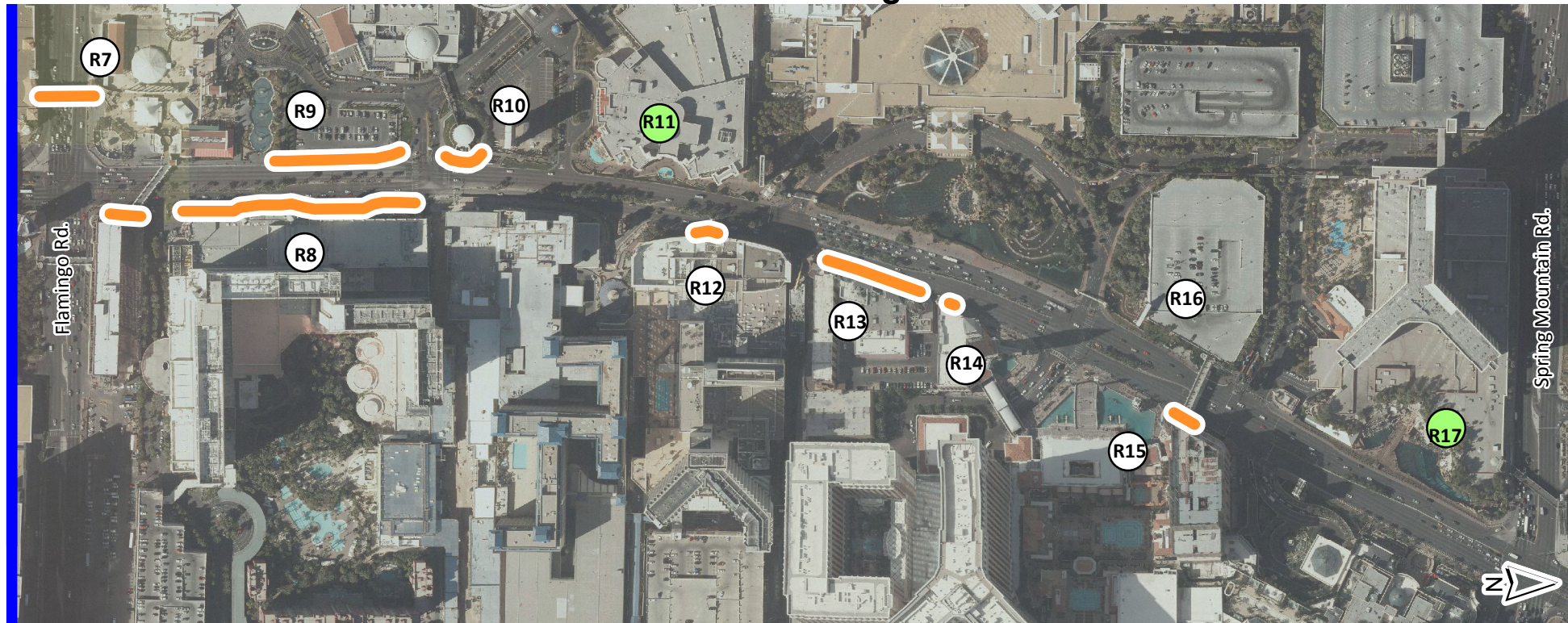
Legend

- LOS < C
- Calculated LOS < C for theoretical volumes on public right of way walkway width
-
- R# Segment Reference Number
- R# Segment No Longer Less than LOS C in 2015

PUBLIC RIGHT OF WAY WALKWAY SEGMENTS THAT THEORETICALLY EXCEED LEVEL OF SERVICE (LOS) C TROPICANA AVE. TO FLAMINGO RD.

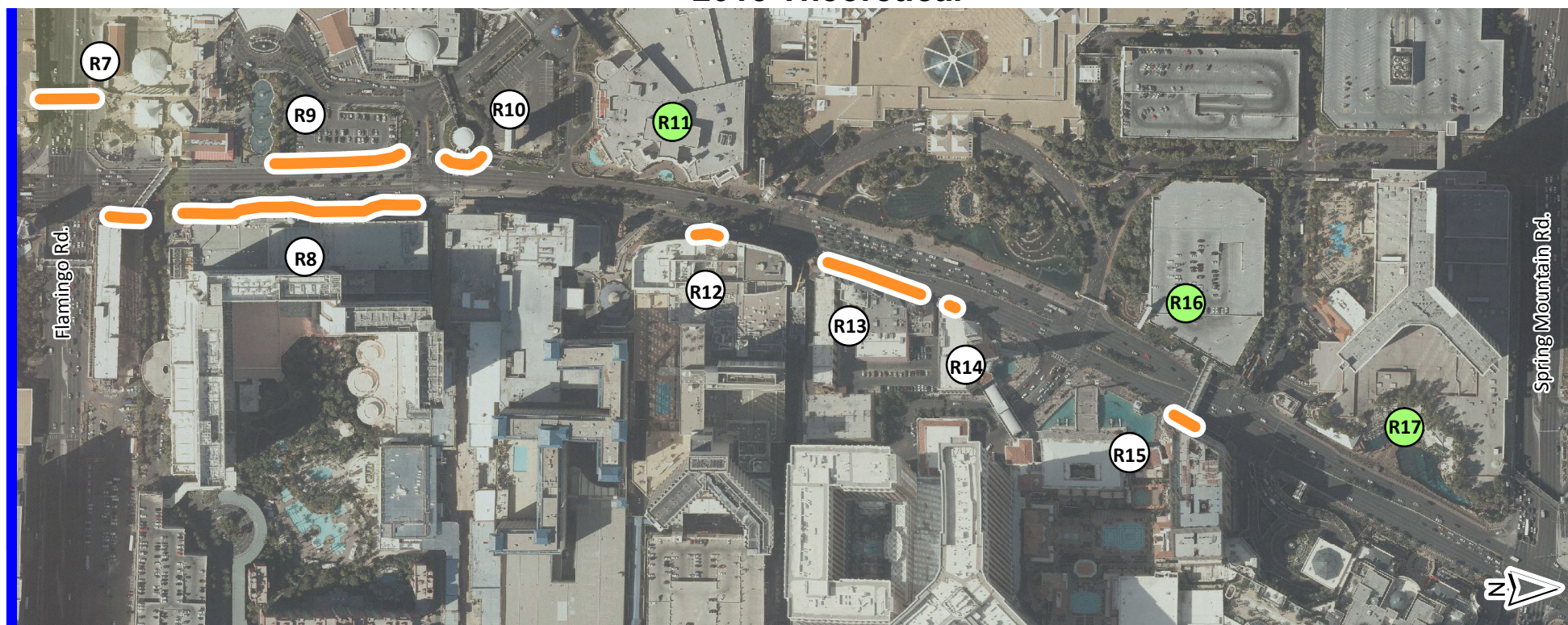
FIGURE 4.31 69

2015 Existing







SEE FIGURE 4.31

2015 Theoretical



SEE FIGURE 4.31

Legend

-  LOS < C
-  Calculated LOS < C for theoretical volumes on public right of way walkway width
-  Segment Reference Number
-  Segment No Longer Less than LOS C in 2015

PUBLIC RIGHT OF WAY WALKWAY SEGMENTS THAT THEORETICALLY EXCEED LEVEL OF SERVICE (LOS) C FLAMINGO RD. TO SPRING MOUNTAIN RD.

FIGURE 4.32

4.3 Non-Permanent Obstructions

The quantity, location and classification of non-permanent obstructions as observed during the Saturday of Memorial Day weekend (May 23, 2015) and the typical summer Saturday (June 20, 2015) was summarized and analyzed to evaluate the effect of non-permanent obstructions on pedestrian LOS on walkway segments that were found in the 2012 Pedestrian Study to experience a pedestrian LOS of less than C. Individuals that were identified as non-permanent obstructions were summarized for three time periods (1 PM – 4 PM, 5 PM – 8 PM and 9 PM – 12 AM) to compare with the findings of the 2012 Pedestrian Study.

It is important to note that during the data collection process, the field agents were instructed to not make judgement if the “non-permanent obstruction” as counted was actually an obstruction to pedestrian flow. All non-permanent obstructions documented were considered as possible obstructions. **Picture 4.6** and **Picture 4.7** provide examples of typical activities witnessed during the data collection process. **Picture 4.6** through **Picture 4.12** provide pictorial examples of the classified non-permanent obstructions observed for this study.

In addition to the four types of non-permanent obstructions described previously, “short-term” non-permanent obstructions were also present within the Resort Corridor (see **Picture 4.13**). Short-term non-permanent obstructions can be classified as activities that take place within the public right-of-way and obstruct pedestrian traffic, but are quickly removed and/or relocated. Due to the random nature of these short-term activities, these non-permanent obstructions were not included in the analysis. It should be noted, however, that although the installations of Metro surveillance cameras has helped enforcement, these activities were observed within the corridor.

To provide an overall comparison to the 2012 Pedestrian Study, **Figure 4.33** through **Figure 4.38** were created to represent the observed number of non-permanent obstructions in 2012 and 2015 per walkway segment and pedestrian bridge for each of the observation periods (1 PM – 4 PM, 5 PM – 8 PM and 9 PM – 12 AM) both for the holiday and typical Saturday. The following sections detail the data collected with regard to non-permanent obstructions both on walkways and on the pedestrian bridges along Las Vegas Boulevard.

In addition to the pedestrian bridges along Las Vegas Boulevard, non-permanent obstructions were also quantified on pedestrian bridges crossing Las Vegas Boulevard for this 2015 Update. To provide a more direct comparison to the 2012 data, these pedestrian bridges are discussed separately in **Section 4.3.2**.

Table 4.7 provides a count summary for the average number of non-permanent obstructions observed for each side of Las Vegas Boulevard from Russell Road to Sahara Avenue during the holiday Saturday data collection effort in 2015 and 2012 for comparison. The highest number of non-permanent obstructions observed for a holiday Saturday was 278 individuals between 5PM and 8PM on Saturday, May 23, 2015.

The highest number of non-permanent obstructions were observed on Saturday, May 23, 2015 between 5:00 PM and 8:00 PM, totaling 278 individuals either handbilling, performing, soliciting or vending. Similarly, **Table 4.8** summarizes the non-permanent obstructions observed on Saturday, June 20, 2015 and the non-permanent obstructions observed on Saturday, June 16, 2012 for comparison. The highest number of non-permanent obstructions observed for a typical Saturday was 252 individuals between 9 PM and 12 AM on Saturday, June 16, 2012.

Table 4.7 – Observed Non-Permanent Obstructions Holiday Saturday

Time Period	West Side		East Side		Total	
	2012	2015	2012	2015	2012	2015
1 PM - 4 PM	65	104	104	164	169	268
5 PM - 8 PM	103	126	156	152	259	278
9 PM - 12 PM	92	117	133	141	224	258

Table 4.8 – Observed Non-Permanent Obstructions Typical Saturday

Time Period	West Side		East Side		Total	
	2012	2015	2012	2015	2012	2015
1 PM - 4 PM	51	61	88	62	139	123
5 PM - 8 PM	80	79	145	80	225	159
9 PM - 12 PM	103	131	149	95	252	226



Picture 4.6 – Non-Permanent Obstructions (Performers) Jump Over Tourists – MGM Grand.



Picture 4.7 – Non-Permanent Obstructions (Vendor and Solicitor) – Bellagio.



Picture 4.8 – Non-Permanent Obstruction Example – Handbiller.



Picture 4.10 – Non-Permanent Obstruction Example – Performers.



Picture 4.12 – Non-Permanent Obstruction Example – Vendor.



Picture 4.9 – Non-Permanent Obstruction Example – Handbiller (Sign-holders).



Picture 4.11 – Non-Permanent Obstruction Example – Solicitor.



Picture 4.13 – Non-Permanent Obstruction Example – “Short-Term” – Illegal Street Gambling.

The non-holiday Saturday (June 20, 2015) experienced a decrease in the total number of non-permanent obstructions in all time periods except for 9 PM to 12 AM on the west side where there was a slight increase. The highest number of non-permanent obstructions observed on Saturday, June 20 was 226, a decrease from the 278 observed on the holiday weekend, Saturday, May 23. The observed reduction could have been related to the high afternoon temperature of 113°F that day.

The field notes recorded by the data collection agents for the highest observed time periods for each Saturday count were used to quantify the location of the

observed non-permanent obstructions. The non-permanent obstructions were reviewed for walkway locations identified in Clark County Code Chapter 16.11. These locations are where non-permanent obstructions are not permitted to obstruct including: within 50 feet of a signalized intersection, access drive or mid-block crosswalk. Categories were also created grouping non-permanent obstructions that were observed on pedestrian bridges, within 15 feet of pedestrian bridge landings and within 15 feet of a bus shelter.

Table 4.9 summarizes the distribution of the non-permanent obstruction types within the study corridor on the holiday and typical Saturdays for 2012

and 2015. It can be seen in **Table 4.9** that 98 or 35% on Saturday, May 23, 2015 and 94 or 42% on Saturday, June 20, 2015 of the observed non-permanent obstructions were located within areas where non-permanent obstructions are not permitted to obstruct under County Code 16.11. The majority of these non-permanent obstructions were classified as handbillers. The non-permanent obstructions were quantified within each of the 53 study corridor segments (25 west segments and 28 east segments) and are graphically shown in **Figure 4.39** through **Figure 4.46**.

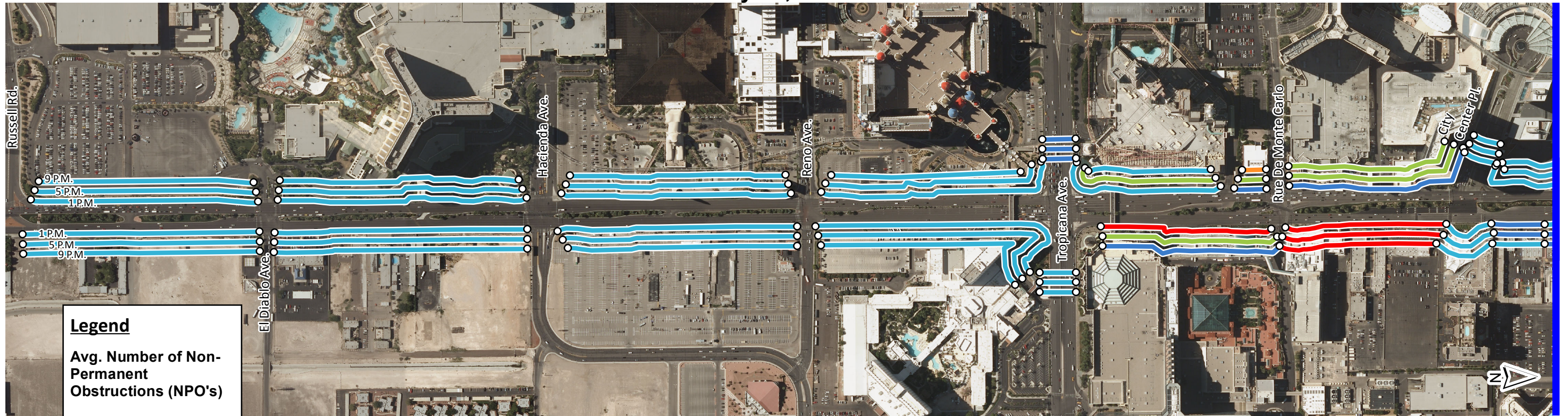
Table 4.9 – Distribution of Non-Permanent Obstructions

Distribution of Non-Permanent Obstructions - Holiday Saturday												
Non-Permanent Obstruction Category	Within 50' of an intersection, driveway, or crosswalk		On pedestrian bridges parallel to LVB		Within 15' of a pedestrian bridge landing		Within 15' of a bus stop		Other		Total	
	2012	2015	2012	2015	2012	2015	2012	2015	2012	2015	2012	2015
Handbiller	110 (42%)	65 (23%)	4 (2%)	5 (2%)	3 (1%)	1 (0%)	9 (3%)	5 (2%)	27 (10%)	40 (14%)	154 (59%)	116 (42%)
Performer	21 (8%)	18 (6%)	9 (3%)	4 (1%)	1 (1%)	15 (5%)	1 (1%)	7 (3%)	43 (17%)	47 (17%)	75 (29%)	91 (33%)
Solicitor	4 (2%)	14 (5%)	7 (3%)	16 (6%)	1 (1%)	1 (0%)	0 (0%)	0 (0%)	4 (2%)	11 (4%)	16 (6%)	42 (15%)
Vendor	5 (2%)	1 (0%)	4 (2%)	4 (1%)	0 (0%)	1 (0%)	0 (0%)	1 (0%)	6 (2%)	22 (8%)	15 (6%)	29 (10%)
Total	140 (54%)	98 (35%)	24 (9%)	29 (10%)	5 (2%)	18 (6%)	10 (4%)	13 (5%)	80 (31%)	120 (43%)	259 (100%)	278 (100%)

Distribution of Non-Permanent Obstructions - Typical Saturday												
Non-Permanent Obstruction Category	Within 50' of an intersection, driveway, or crosswalk		On pedestrian bridges parallel to LVB		Within 15' of a pedestrian bridge landing		Within 15' of a bus stop		Other		Total	
	2012	2015	2012	2015	2012	2015	2012	2015	2012	2015	2012	2015
Handbiller	113 (45%)	45 (20%)	2 (1%)	45 (20%)	4 (2%)	5 (2%)	2 (2%)	4 (2%)	24 (10%)	19 (8%)	145 (58%)	76 (34%)
Performer	22 (9%)	32 (14%)	5 (2%)	32 (14%)	3 (1%)	1 (1%)	2 (1%)	6 (3%)	38 (15%)	42 (19%)	70 (28%)	81 (36%)
Solicitor	6 (2%)	8 (4%)	7 (3%)	8 (4%)	0 (0%)	1 (0%)	0 (0%)	0 (0%)	4 (2%)	10 (4%)	17 (7%)	30 (13%)
Vendor	5 (2%)	9 (4%)	6 (2%)	9 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	10 (4%)	17 (8%)	21 (8%)	36 (16%)
Total	146 (58%)	94 (42%)	20 (8%)	94 (42%)	7 (3%)	7 (3%)	4 (2%)	10 (4%)	76 (30%)	88 (39%)	252 (100%)	226 (100%)

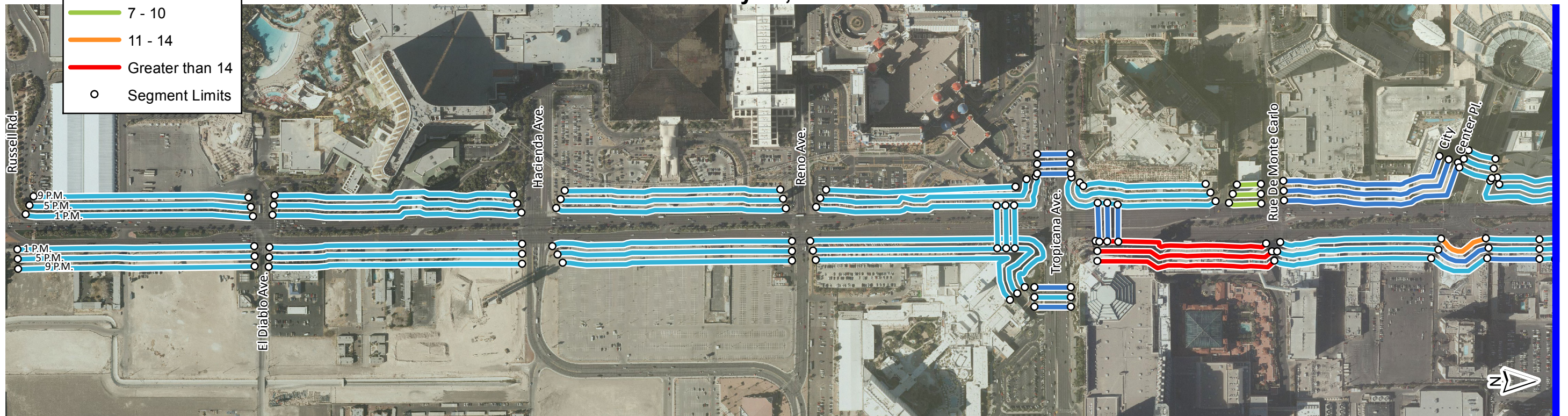


May 26, 2012



SEE FIGURE 4.34

May 23, 2015

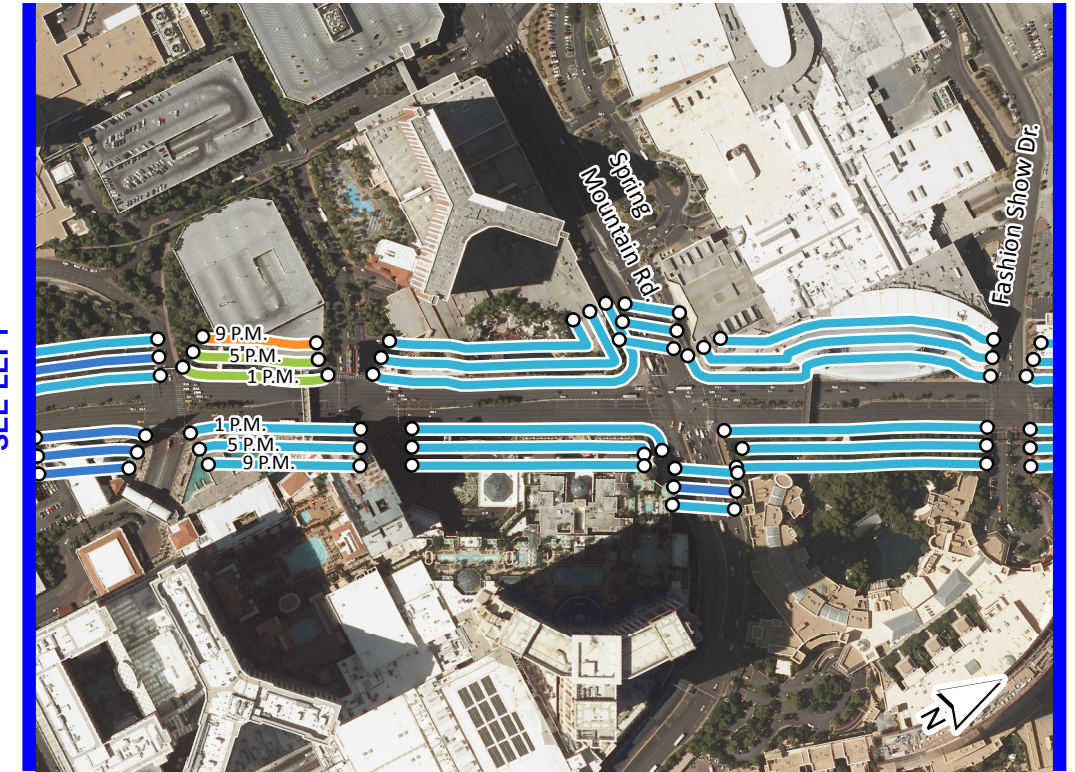
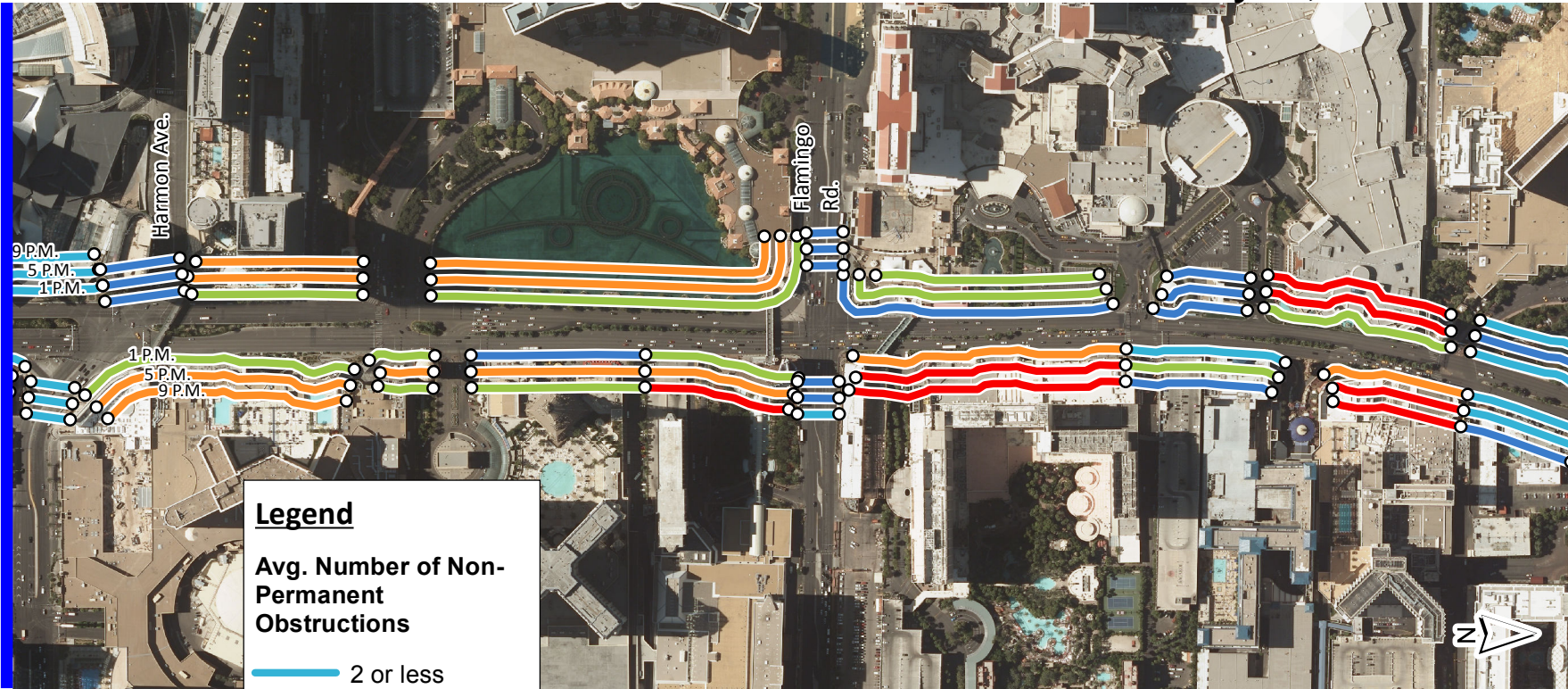


SEE FIGURE 4.34

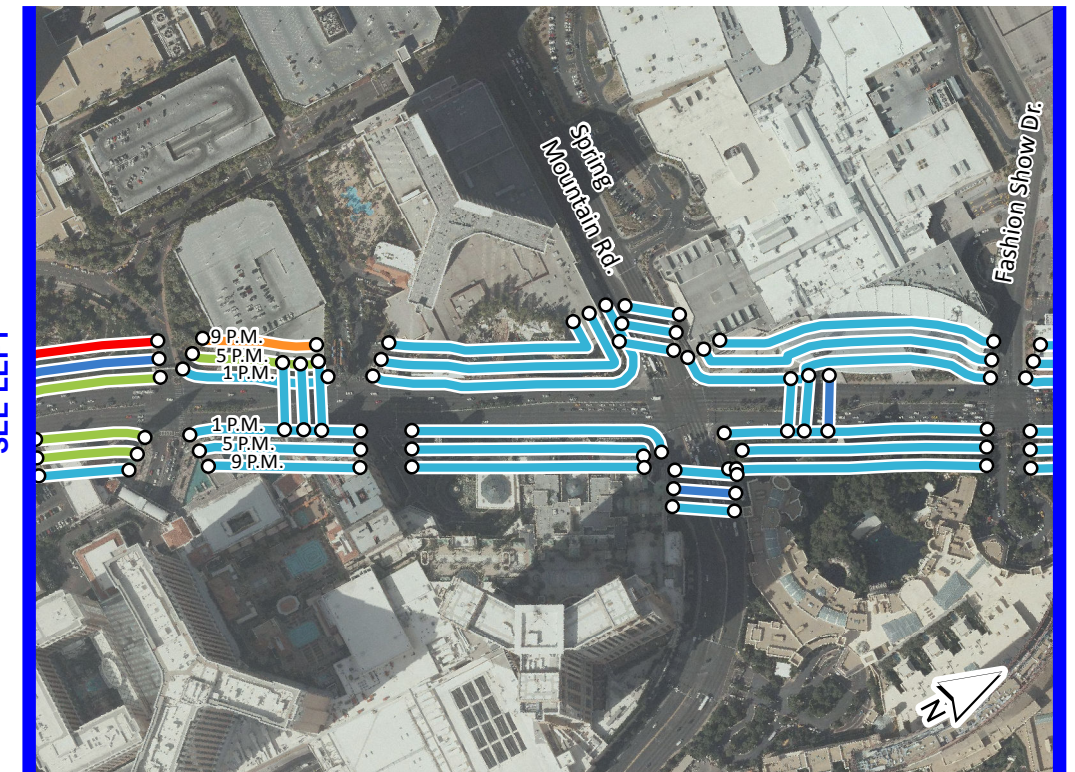
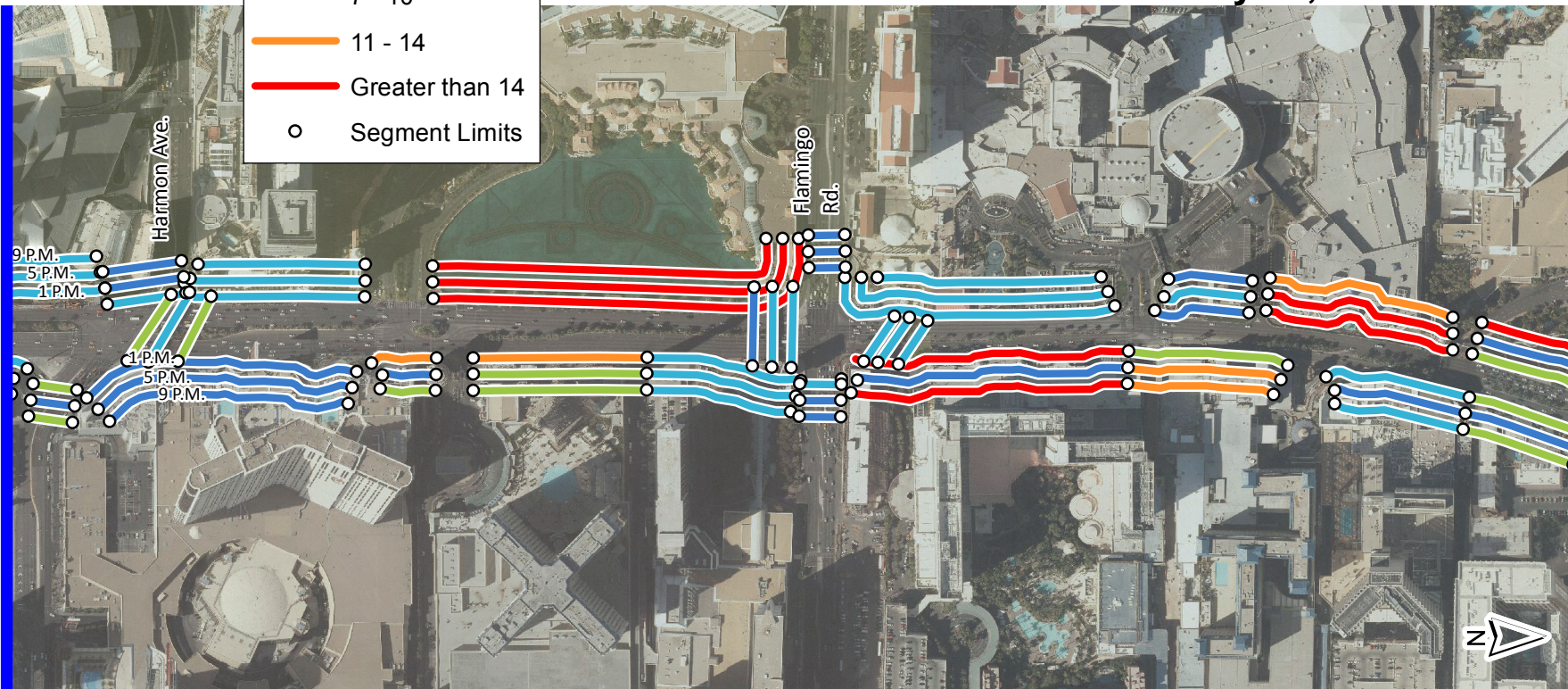
**AVERAGE NON-PERMANENT OBSTRUCTIONS PER SEGMENT
RUSSELL RD. TO CITY CENTER PL. (HOLIDAY SATURDAY)**

FIGURE 4.33

May 26, 2012



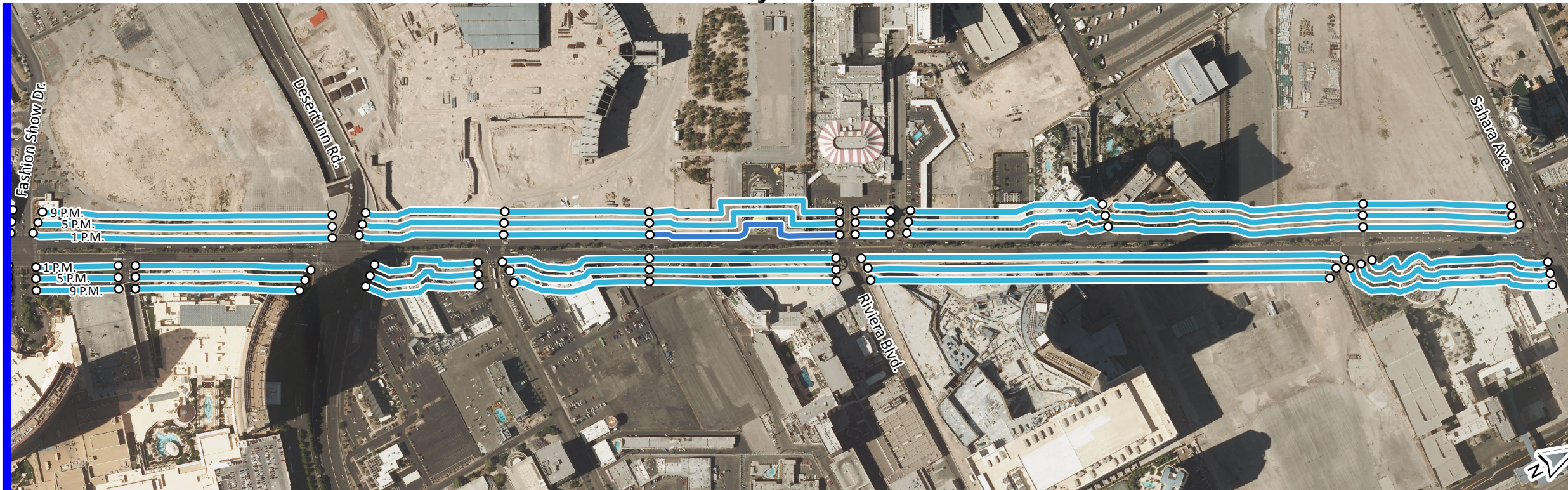
May 23, 2015



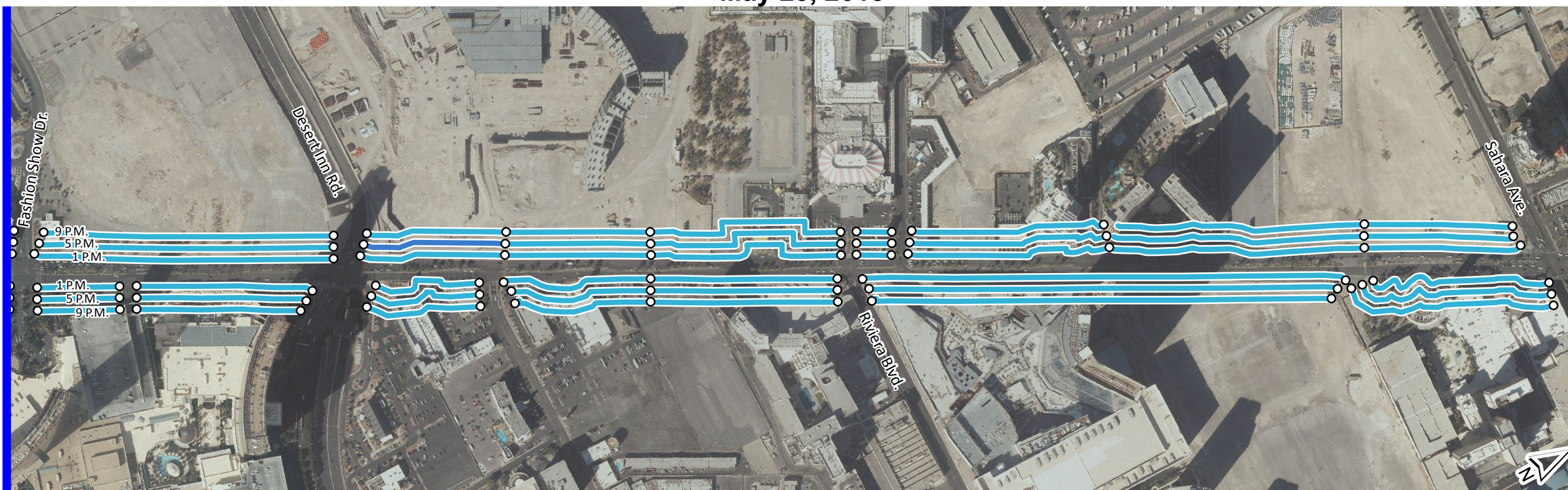
**AVERAGE NON-PERMANENT OBSTRUCTIONS PER SEGMENT
HARMON AVE. TO FASHION SHOW DR. (HOLIDAY SATURDAY)**

FIGURE 4.34 75

May 26, 2012



May 23, 2015



Legend

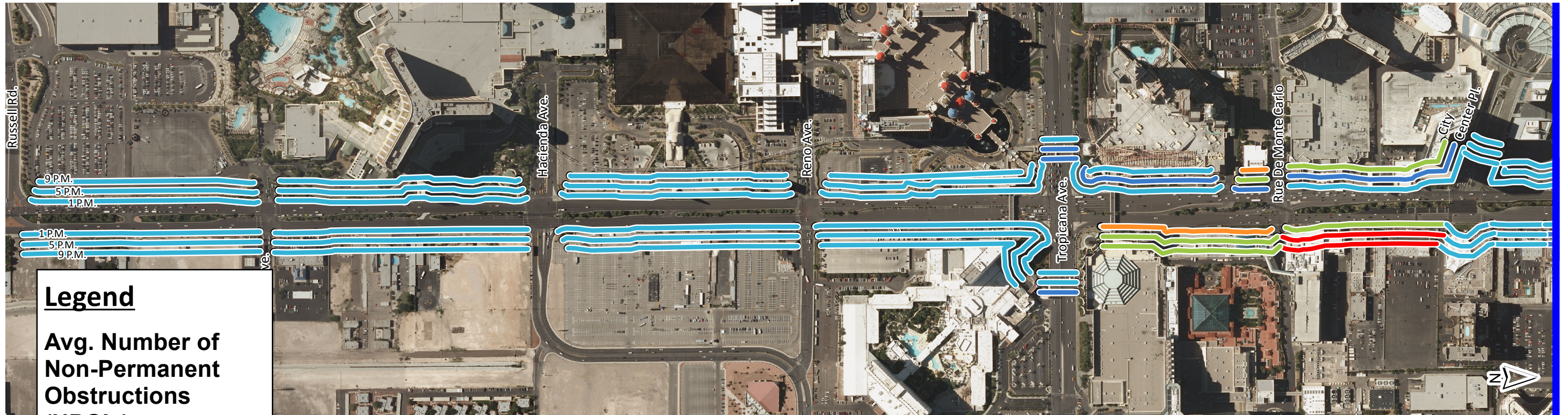
Avg. Number of Non-Permanent Obstructions (NPO's)

- 2 or less
- 3 - 6
- 7 - 10
- 11 - 14
- Greater than 14
- Segment Limits

**AVERAGE NON-PERMANENT OBSTRUCTIONS PER SEGMENT
FASHION SHOW DR. TO SAHARA AVE. (HOLIDAY SATURDAY)**

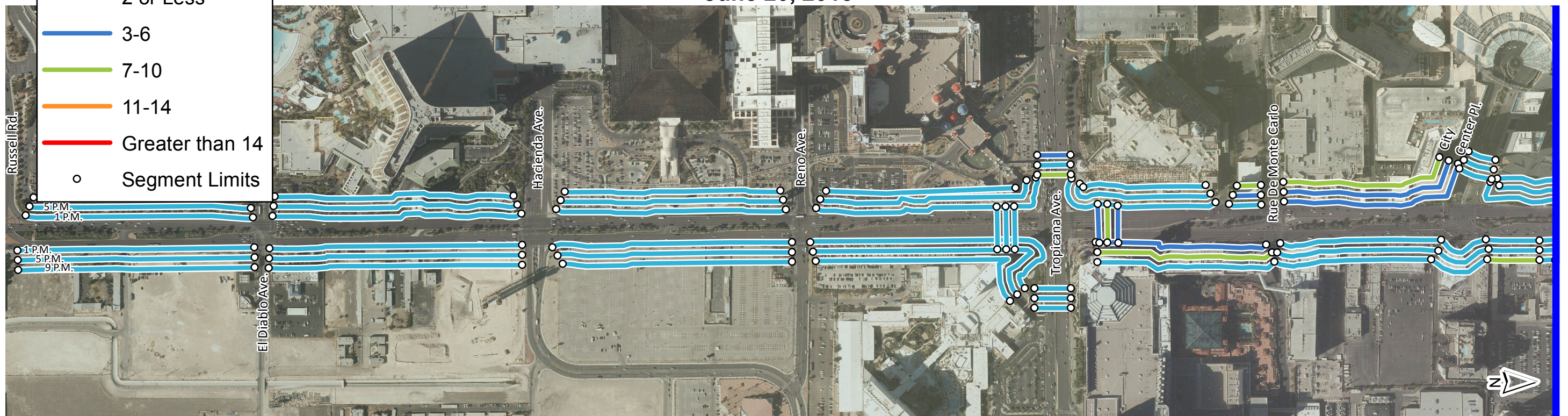
FIGURE 4.35 76

June 16, 2012



SEE FIGURE 4.37

June 20, 2015

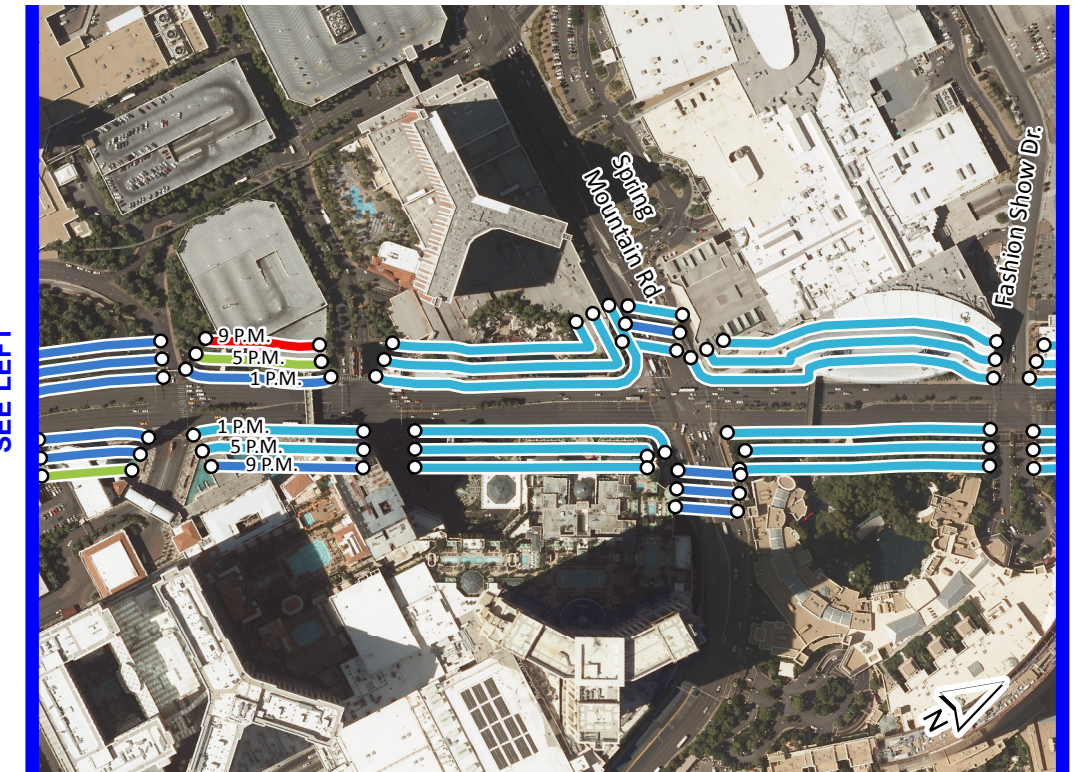
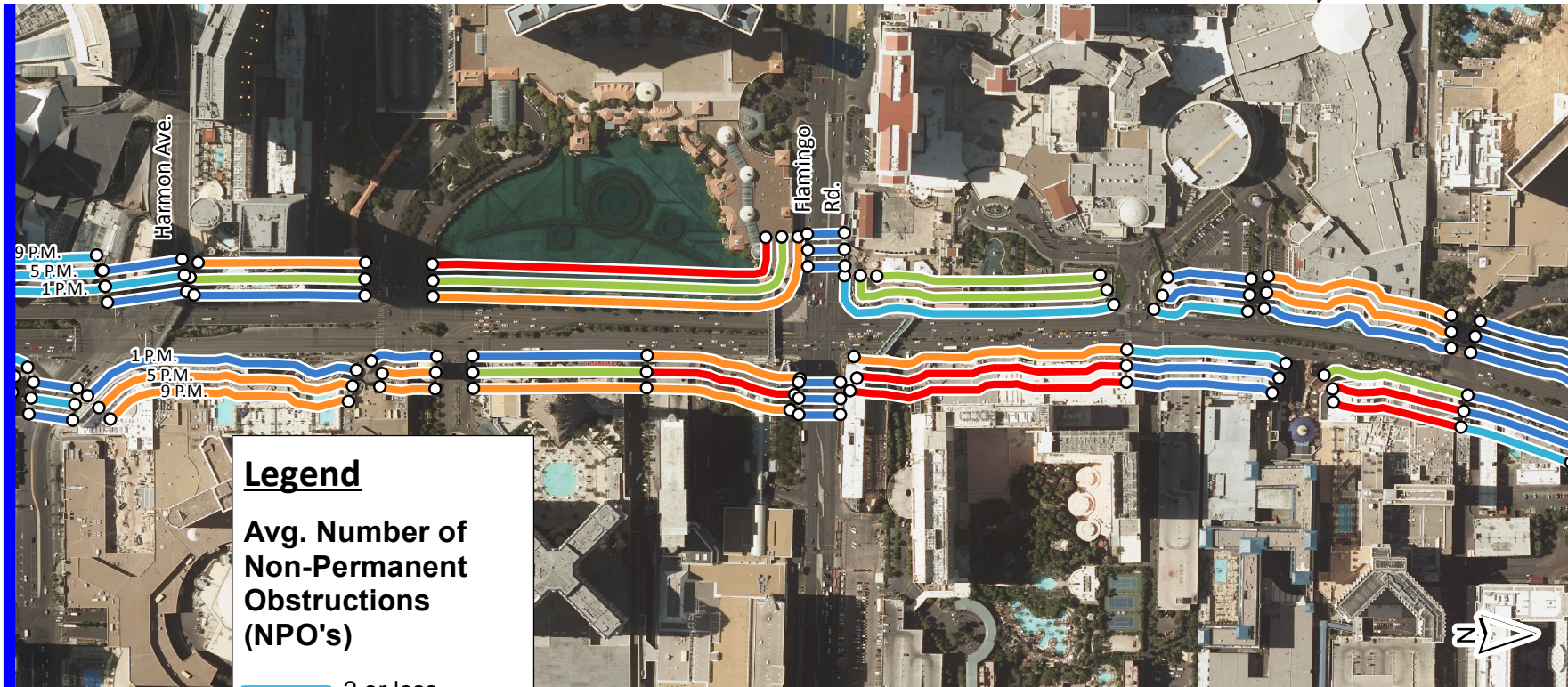


SEE FIGURE 4.37

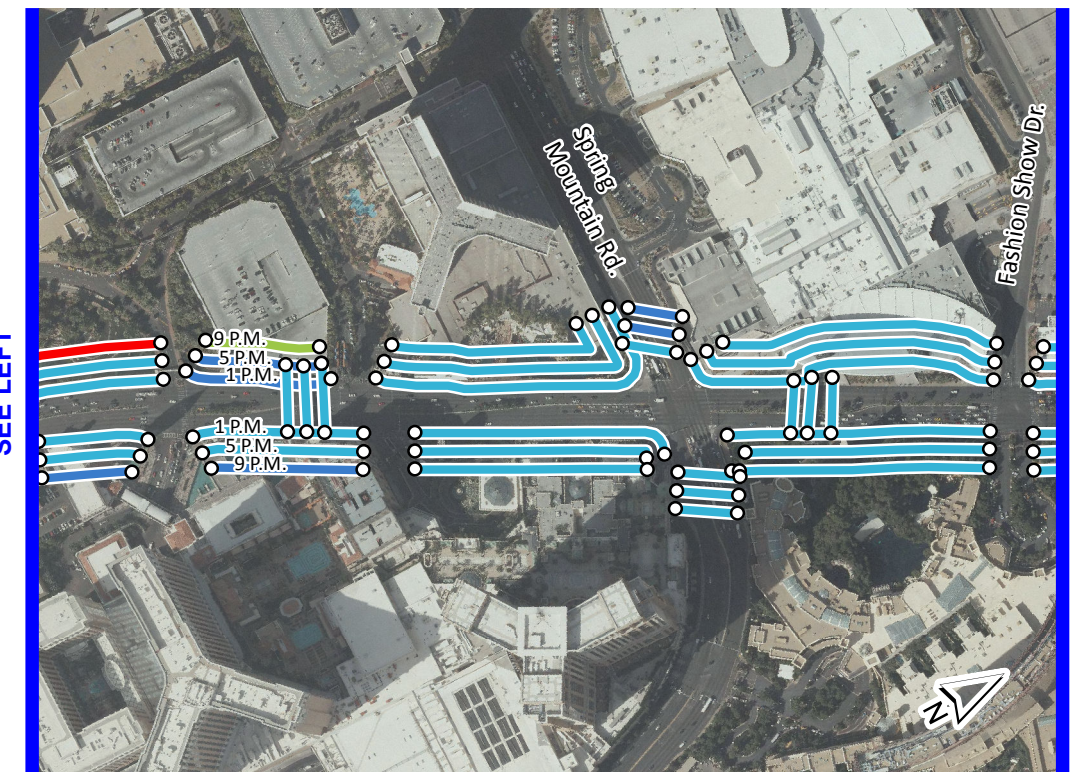
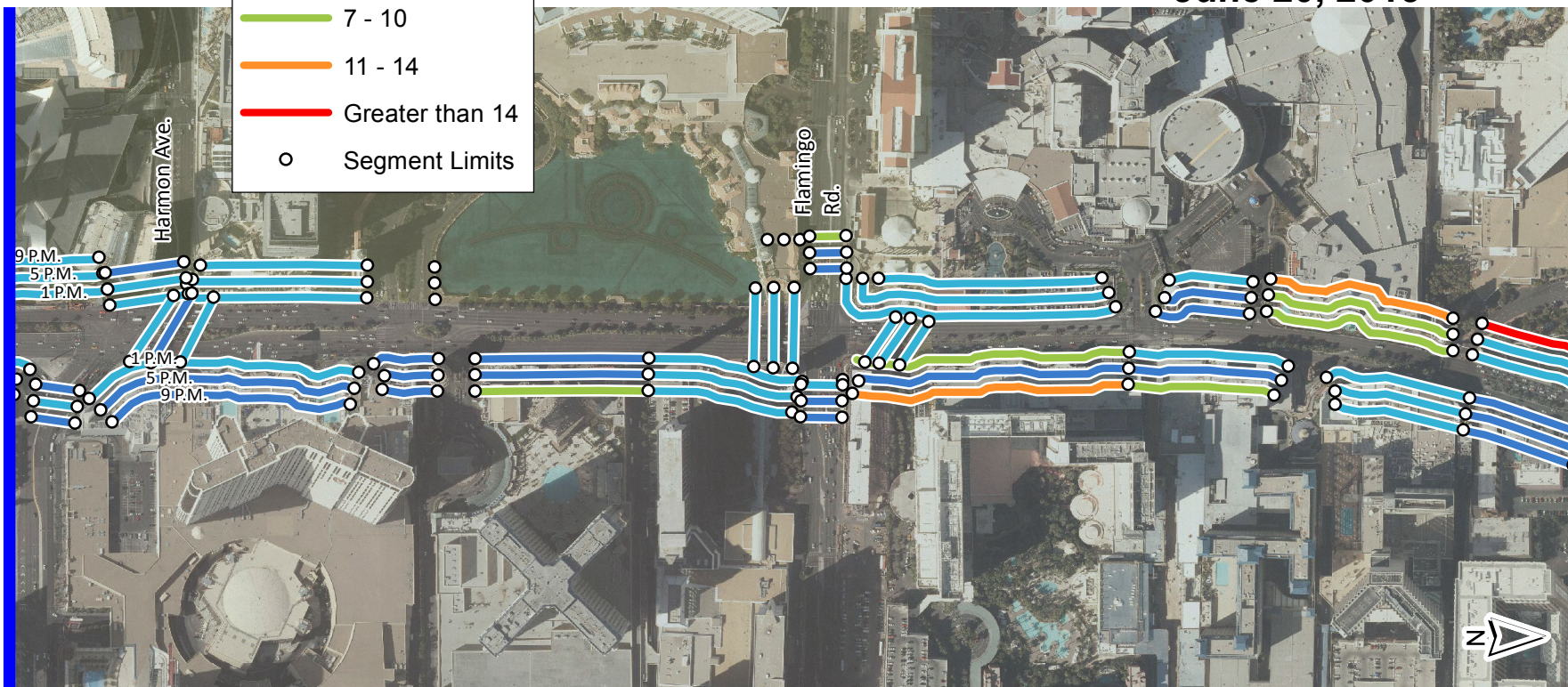
**AVERAGE NON-PERMANENT OBSTRUCTIONS PER SEGMENT
RUSSELL RD. TO CITY CENTER PL. (TYPICAL SATURDAY)**

FIGURE 4.36 77

June 16, 2012



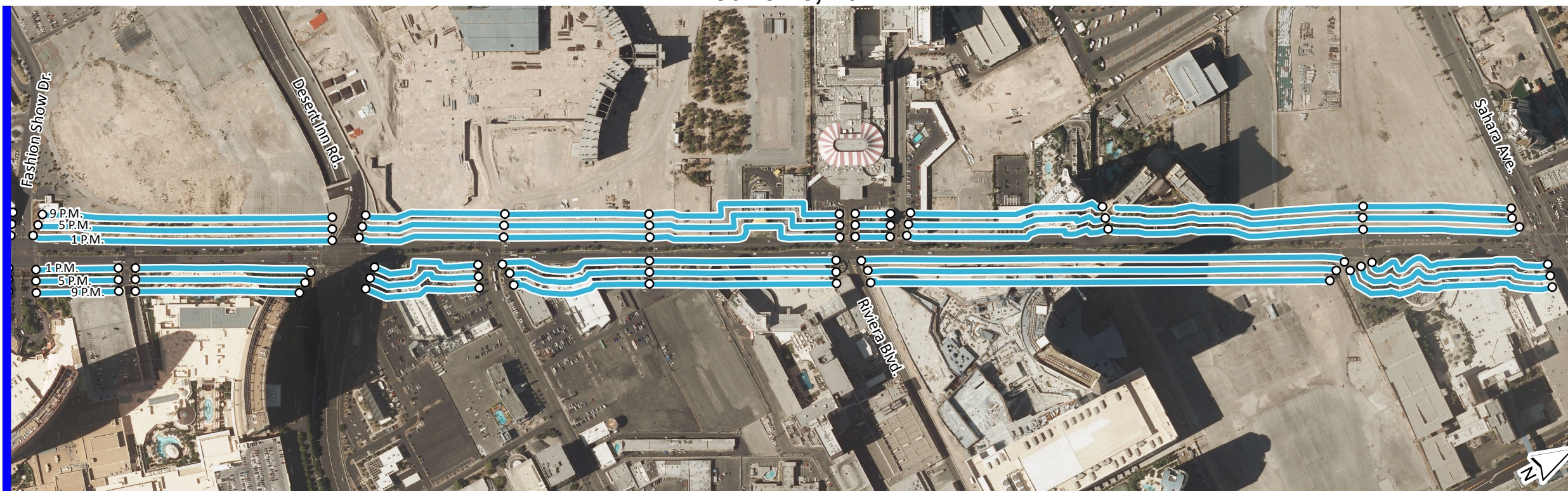
June 20, 2015



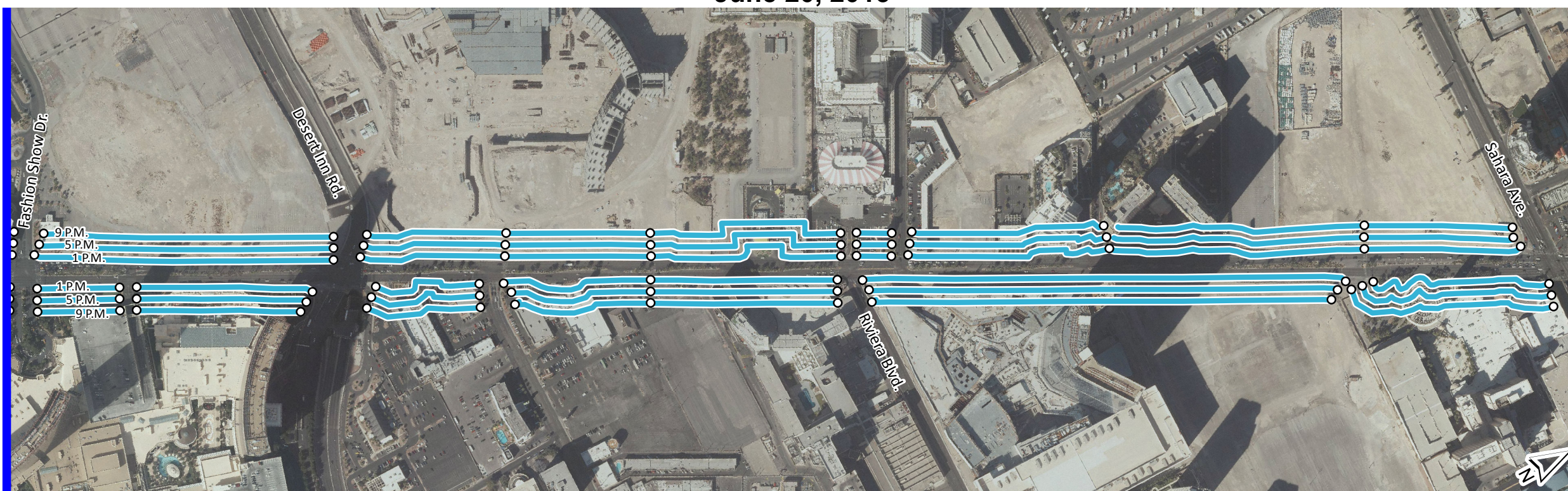
**AVERAGE NON-PERMANENT OBSTRUCTIONS PER SEGMENT
HARMON AVE. TO FASHION SHOW DR. (TYPICAL SATURDAY)**

FIGURE 4.37 78

June 16, 2012



June 20, 2015



Legend

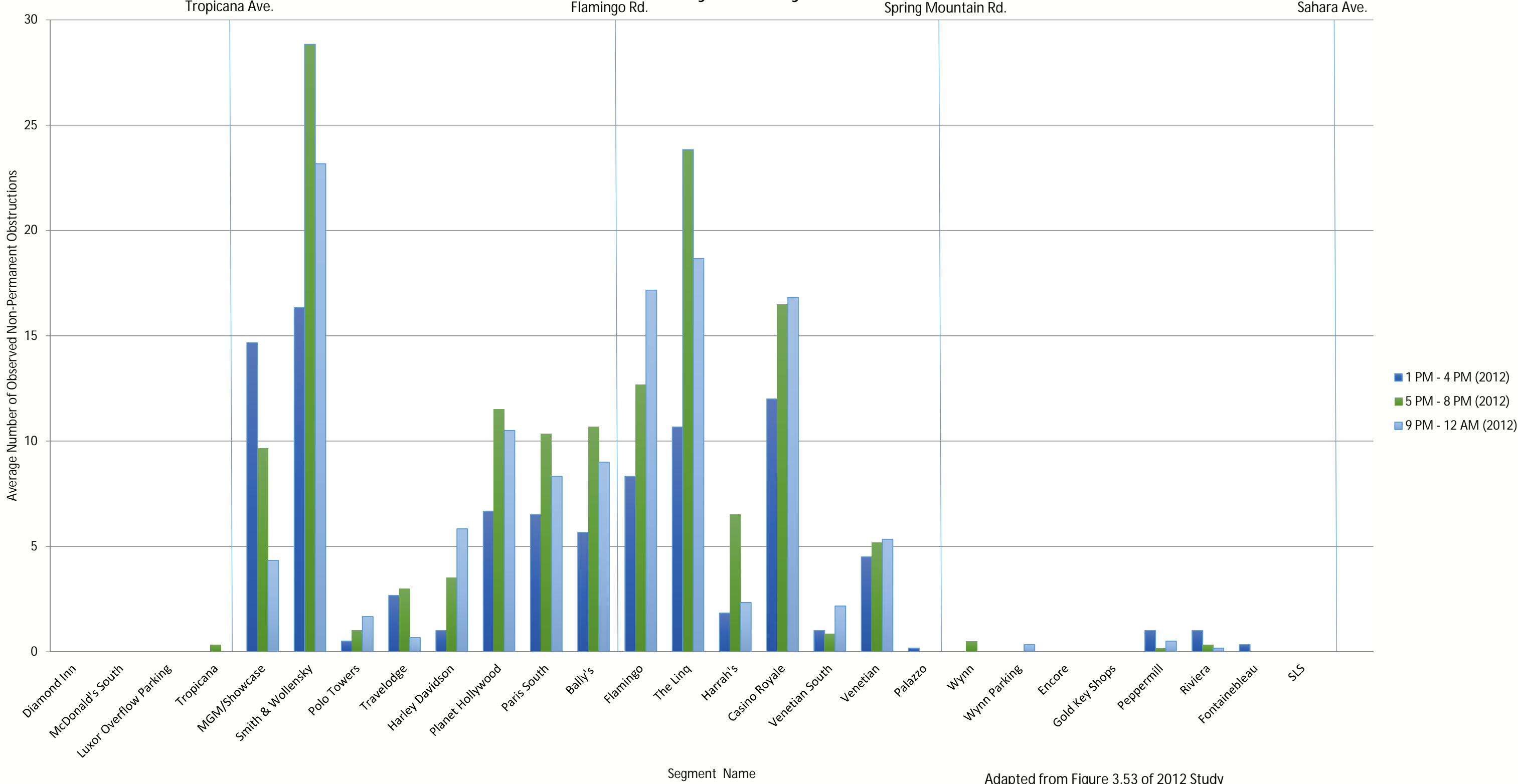
Avg. Number of Non-Permanent Obstructions (NPO's)

- 2 or less
- 3 - 6
- 7 - 10
- 11 - 14
- Greater than 14
- Segment Limits

**AVERAGE NON-PERMANENT OBSTRUCTIONS PER SEGMENT
FASHION SHOW DR. TO SAHARA AVE. (TYPICAL SATURDAY)**

FIGURE 4.38 79

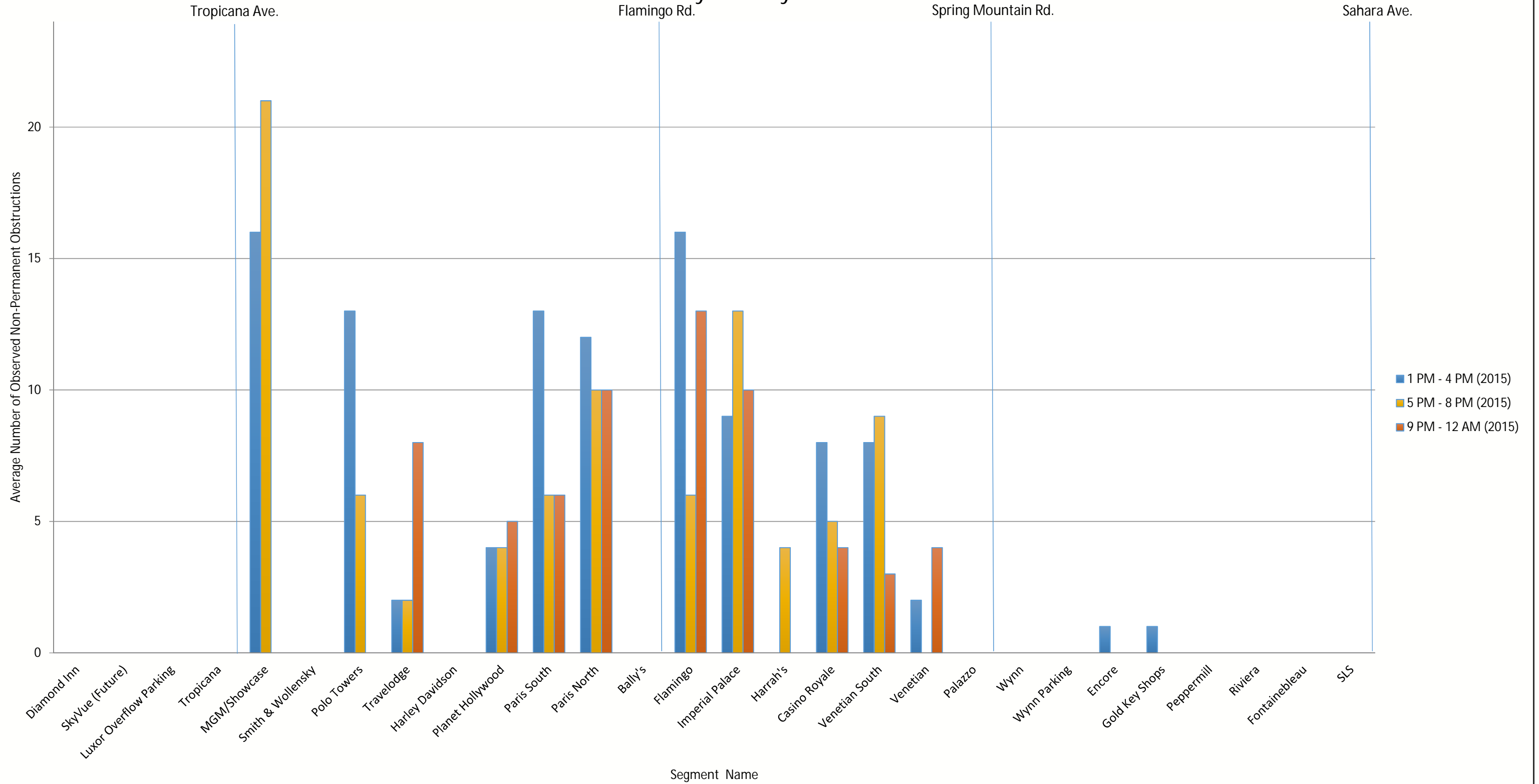
East Strip Non-Permanent Obstructions by Segment Holiday Saturday 5/26/12



Adapted from Figure 3.53 of 2012 Study

NON-PERMANENT OBSTRUCTIONS

East Strip Non-Permanent Obstructions by Segment Holiday Saturday 5/23/15

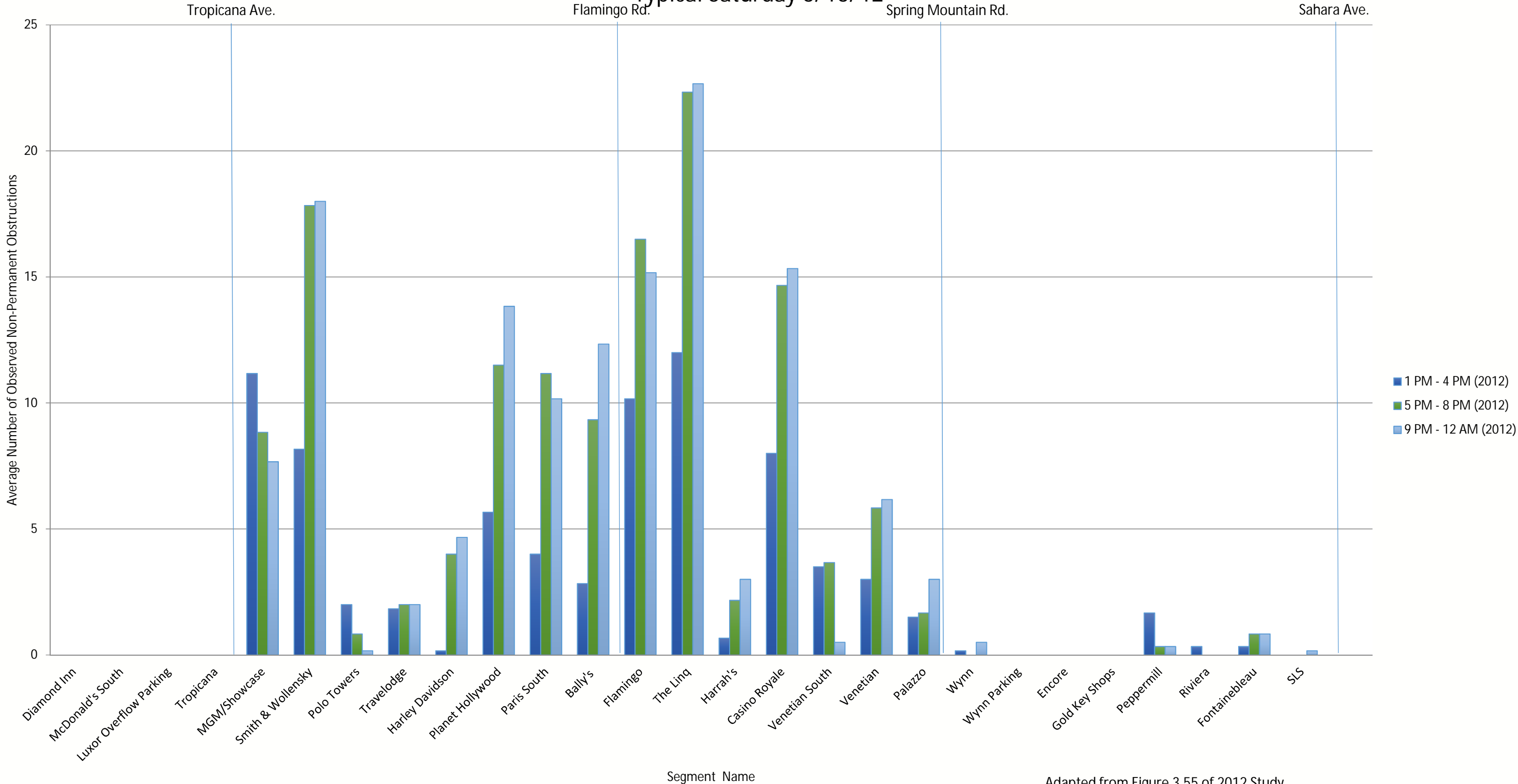


NON-PERMANENT OBSTRUCTIONS

FIGURE 4.40 81

East Strip Non-Permanent Obstructions by Segment

Typical Saturday 6/16/12

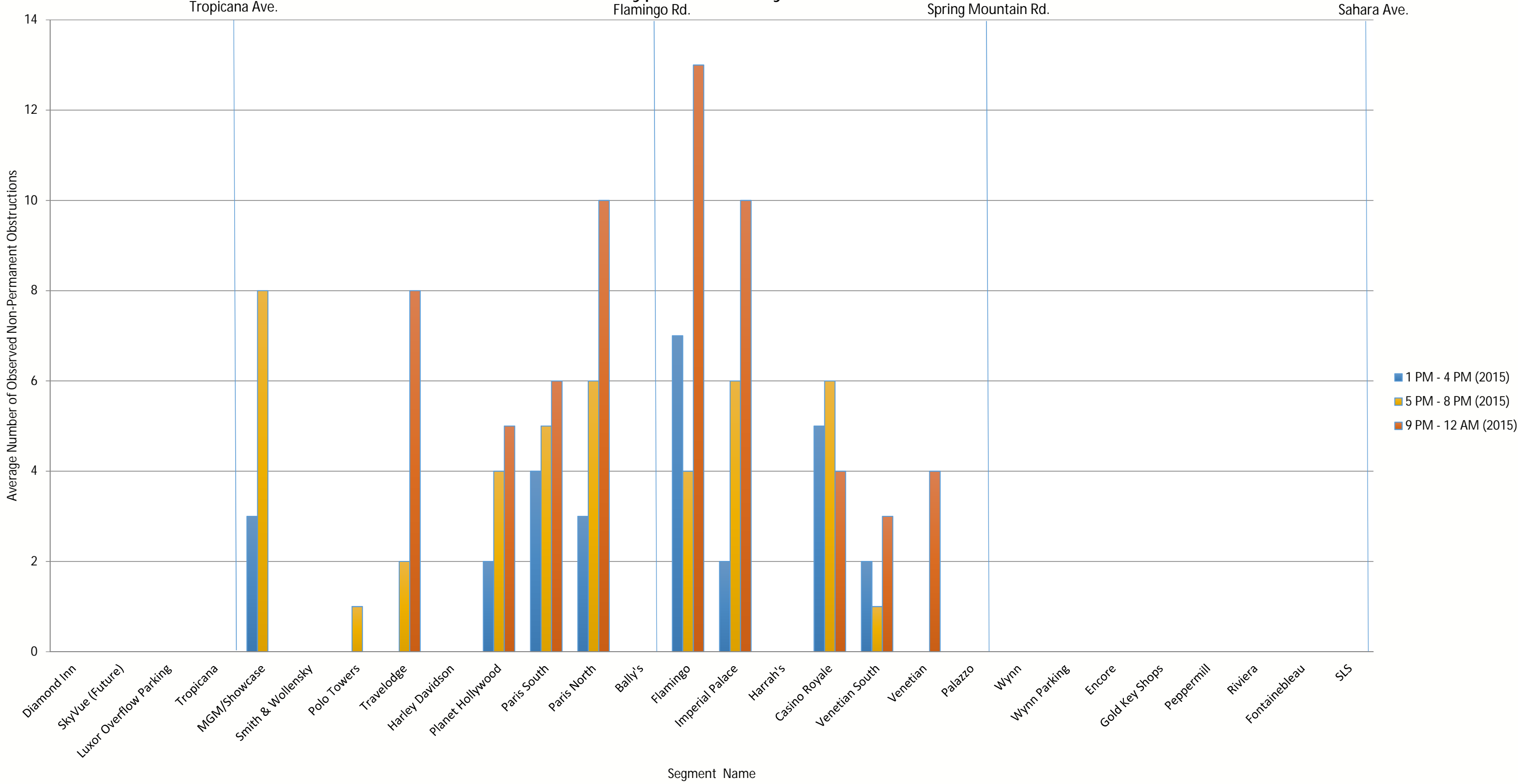


Adapted from Figure 3.55 of 2012 Study

NON-PERMANENT OBSTRUCTIONS

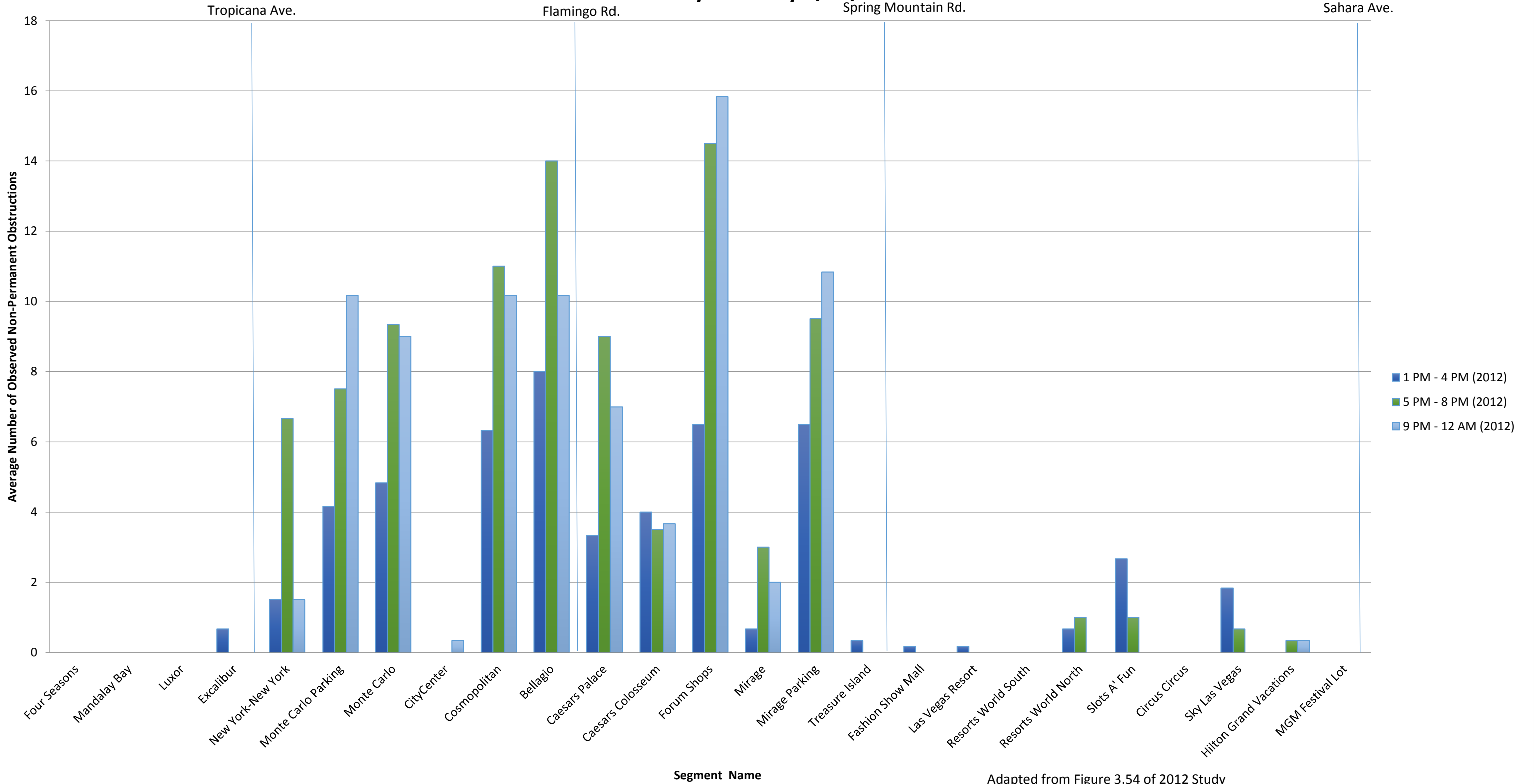
FIGURE 4.41 82

East Strip Non-Permanent Obstructions by Segment Typical Saturday 6/20/2015



NON-PERMANENT OBSTRUCTIONS

West Strip Non-Permanent Obstructions by Segment Holiday Saturday 5/26/12

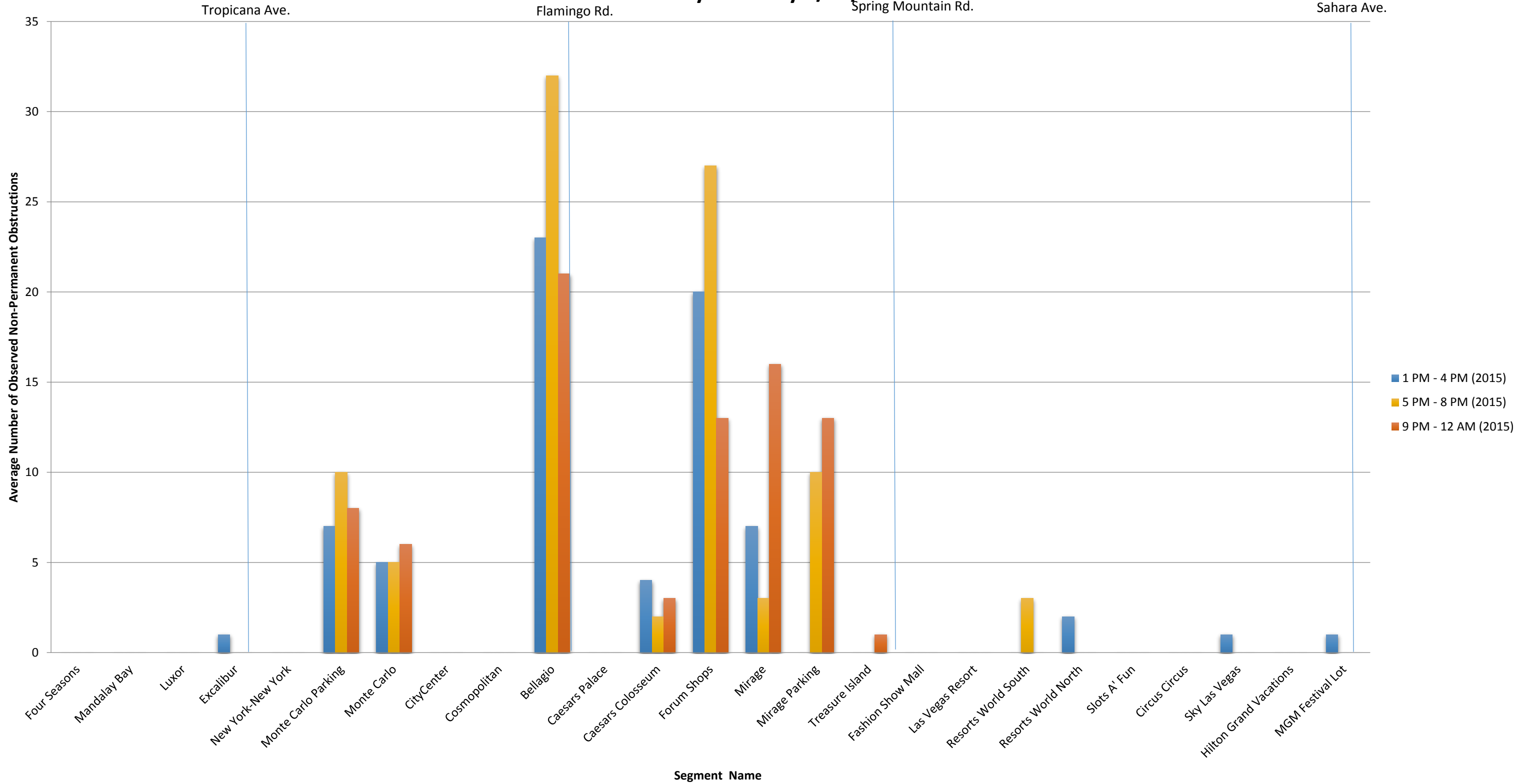


Adapted from Figure 3.54 of 2012 Study

NON-PERMANENT OBSTRUCTIONS

FIGURE 4.43

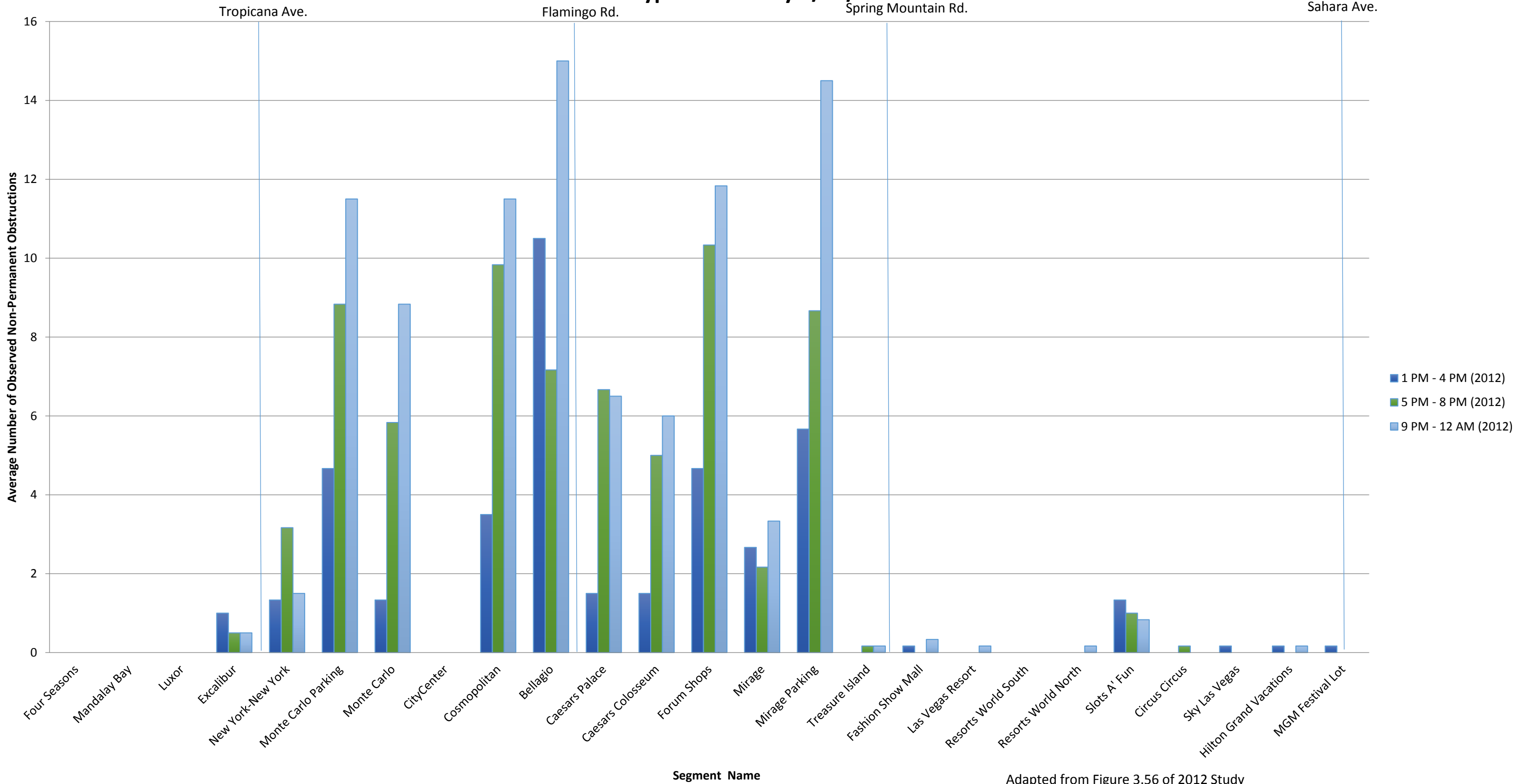
West Strip Non-Permanent Obstructions by Segment Holiday Saturday 5/23/15



NON-PERMANENT OBSTRUCTIONS

FIGURE 4.44 85

West Strip Non-Permanent Obstructions by Segment Typical Saturday 6/16/12

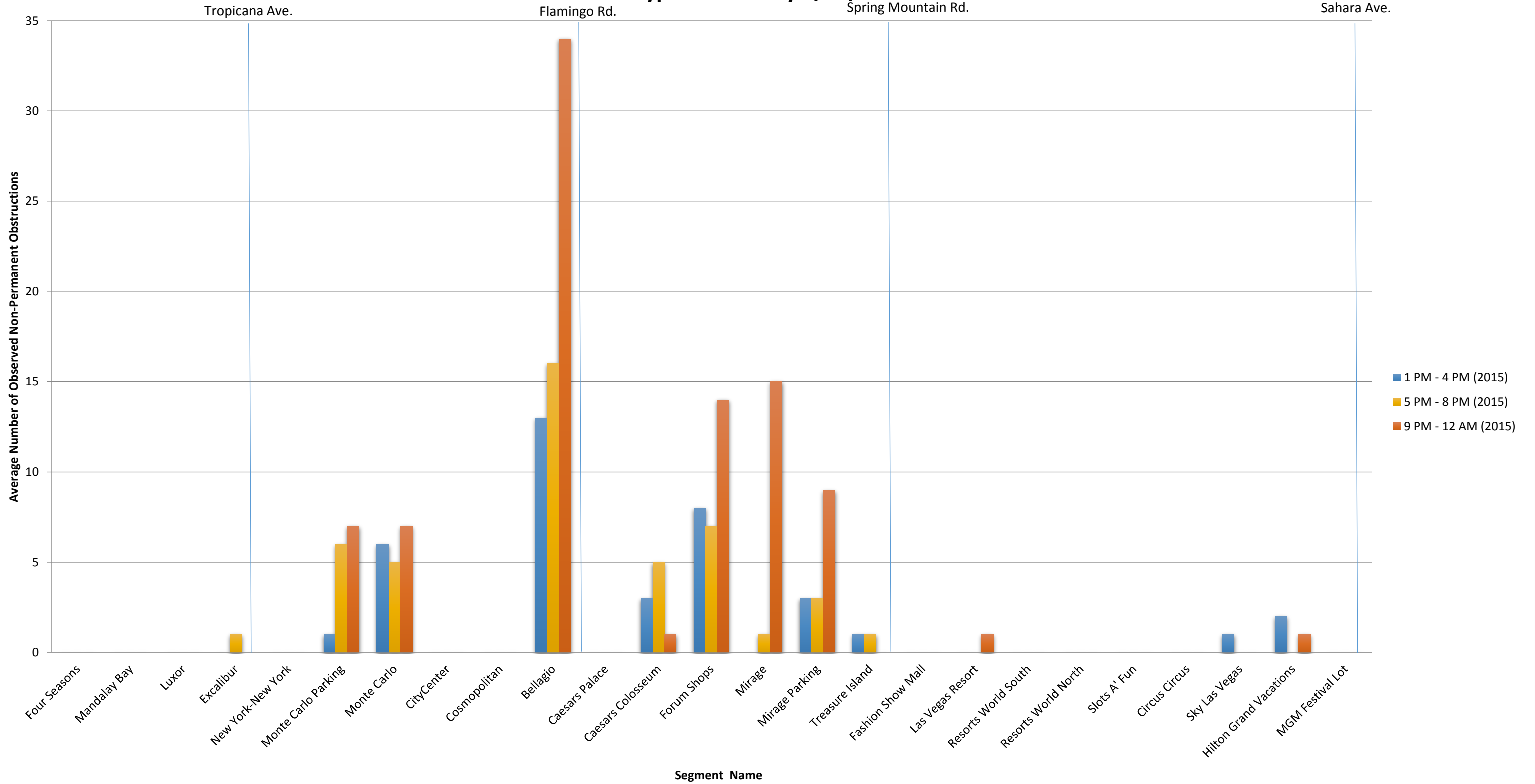


Adapted from Figure 3.56 of 2012 Study

NON-PERMANENT OBSTRUCTIONS

FIGURE 4.45

West Strip Non-Permanent Obstructions by Segment Typical Saturday 6/20/15



NON-PERMANENT OBSTRUCTIONS

FIGURE 4.46 87

4.3.1 Non-Permanent Obstructions on Pedestrian Bridges along Las Vegas Boulevard

A separate evaluation was conducted for non-permanent obstructions observed on the fifteen (15) pedestrian bridges within the re-study area. The maximum number of individuals identified to be non-permanent obstructions on the pedestrian bridges was observed to be ten (10) on the Harmon Avenue east pedestrian bridge between the Harley Davidson Café and the Miracle Mile Shops at Planet Hollywood Hotel/Casino.

Table 4.10 and **Table 4.11** summarize the total observed number of non-permanent obstructions on each pedestrian bridge running parallel to (along) Las Vegas Boulevard within the Resort Corridor. Bridges “parallel to Las Vegas Boulevard” indicate bridges that carry pedestrians in the north/south direction parallel to Las Vegas Boulevard and are on the east and west side of intersections. **Table 4.12** and **Table 4.13** provide the distribution of the non-permanent obstruction types within the study corridor for 2012 and 2015 on the holiday and typical Saturdays respectively.

Table 4.10 – NPO’s on Pedestrian Bridges Parallel to Las Vegas Boulevard – Holiday Saturday

Pedestrian Bridge	1 PM - 4 PM		5 PM - 8 PM		9 PM - 12 PM	
	2012	2015	2012	2015	2012	2015
Tropicana East	2	3	1	0	1	4
Tropicana West	3	6	4	5	4	4
Harmon East	2	7	1	5	1	10
Harmon West	3	0	3	5	2	5
Flamingo East	5	0	3	3	1	2
Flamingo West	4	3	4	4	3	4
Spring Mountain East	1	2	3	4	2	2
Spring Mountain West	2	2	1	2	1	1

Table 4.11 – NPO’s on Pedestrian Bridges Parallel to Las Vegas Boulevard– Typical Saturday

Pedestrian Bridge	1 PM - 4 PM		5 PM - 8 PM		9 PM - 12 PM	
	2012	2015	2012	2015	2012	2015
Tropicana East	1	1	1	2	3	0
Tropicana West	3	8	2	2	2	5
Harmon East	3	4	2	0	3	3
Harmon West	2	0	2	2	3	4
Flamingo East	5	2	3	3	3	3
Flamingo West	3	3	3	4	3	7
Spring Mountain East	5	2	4	1	5	2
Spring Mountain West	2	2	3	5	2	3

Figure 4.47 through **Figure 4.50** display the total number of non-permanent obstructions observed on pedestrian bridges for a holiday Saturday and a typical Saturday respectively for both 2012 and 2015. In comparing the pedestrian volume LOS on the pedestrian bridges in **Table 4.5** and **Table 4.6** and the average number of non-permanent obstructions on pedestrian bridges in **Figure 4.47** through **Figure 4.50**, it can be seen that the average number of non-permanent obstructions increased from 2012 to 2015, generally. Additionally, the LOS decreased when pedestrian volumes were significant. The decrease in LOS is expected with the increase in non-permanent obstruction as the effective walkway width (W_E) decreases and pedestrians are not provided the total walkway width (W) for walking. The Flamingo Road West and Harmon North pedestrian bridges were calculated to experience a LOS less than LOS C on the typical Saturday.

It is important to note that during 9 PM to 12 AM, the Flamingo Road west pedestrian bridge had four non-permanent obstructions on the bridge while it experienced a calculated LOS D volume conditions (calculated without any reduction of width due to non-permanent obstructions). This suggests that at least where pedestrian volumes are large, non-permanent obstructions are contributing to walkway congestion. **Picture 4.14** and **Picture 4.15** show pedestrian bridges with non-permanent obstructions in 2015 at Flamingo Road and Tropicana Avenue, respectively.



Picture 4.14 – Non-Permanent Obstructions (vendor) on Pedestrian Bridge – Flamingo Road West.



Picture 4.15 – Non-Permanent Obstructions on Pedestrian Bridge (handbillers) – Tropicana Avenue West.

Table 4.12 – NPO’s on Pedestrian Bridges Parallel to Las Vegas Boulevard – Holiday Saturday

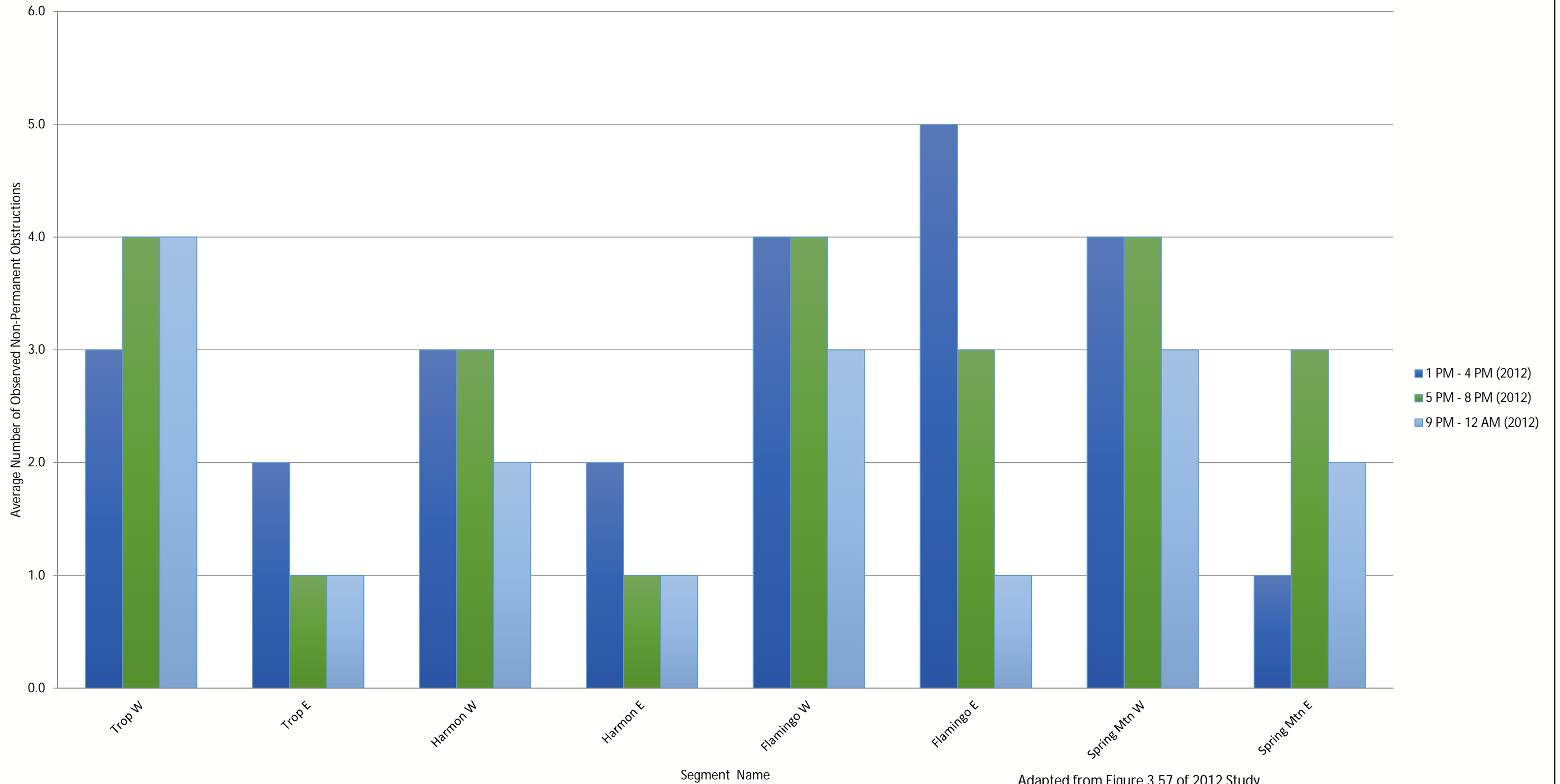
Non-Permanent Obstruction Category	On Pedestrian Bridges		Within 15' of a pedestrian bridge landing	
	2012	2015	2012	2015
Handbiller	4	5	3	1
Performer	9	4	1	15
Solicitor	7	16	1	1
Vendor	4	4	0	1
Total	24	29	5	18

Table 4.13 –NPO’s on Pedestrian Bridges Parallel to Las Vegas Boulevard – Typical Saturday

Non-Permanent Obstruction Category	On Pedestrian Bridges		Within 15' of a pedestrian bridge landing	
	2012	2015	2012	2015
Handbiller	2	3	4	5
Performer	5	3	3	1
Solicitor	7	11	0	1
Vendor	6	10	0	0
Total	20	27	7	7



Non-Permanent Obstructions by Pedestrian Bridge Holiday Saturday 5/26/12

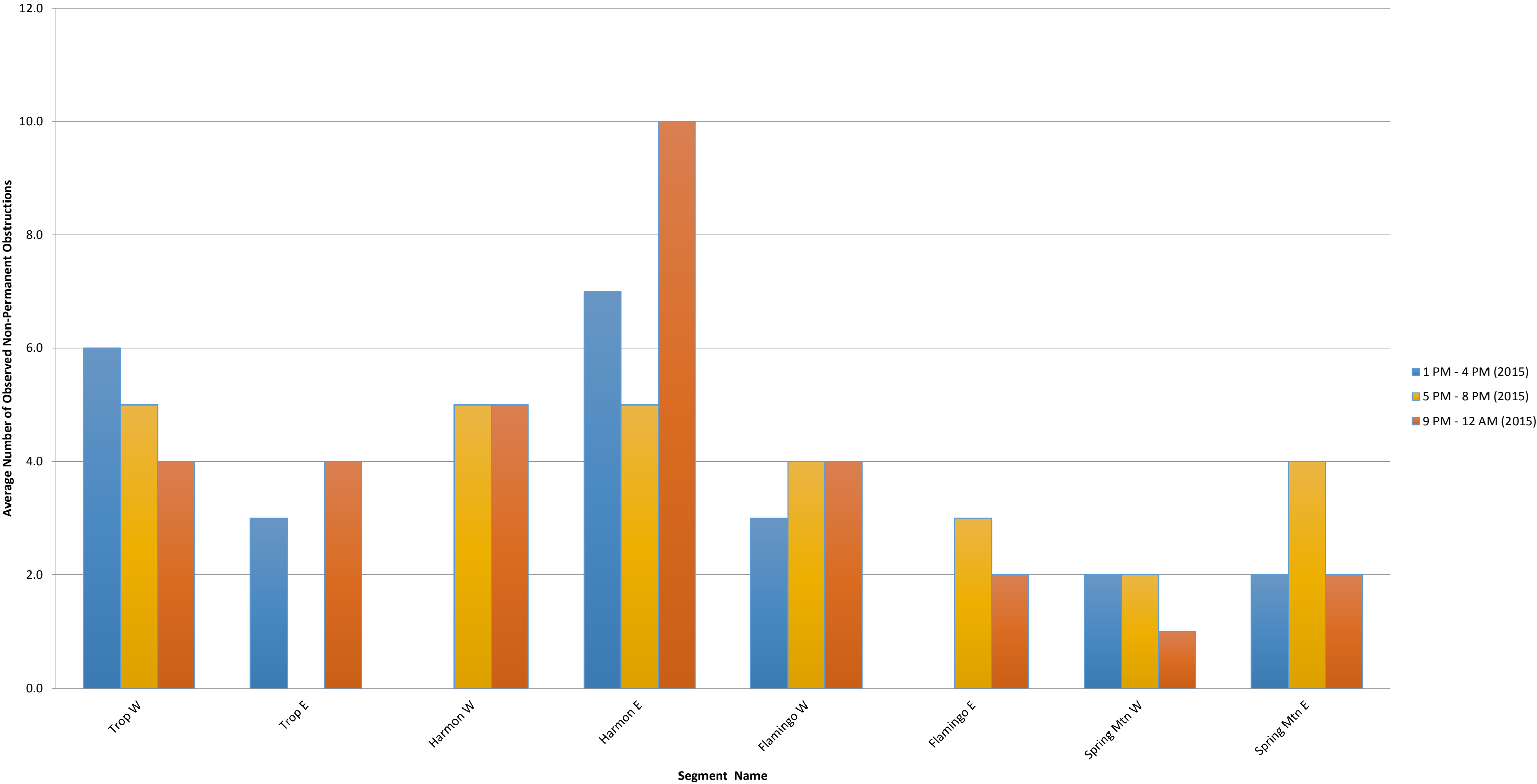


Adapted from Figure 3.57 of 2012 Study

NON-PERMANENT OBSTRUCTIONS

FIGURE 4.47 90

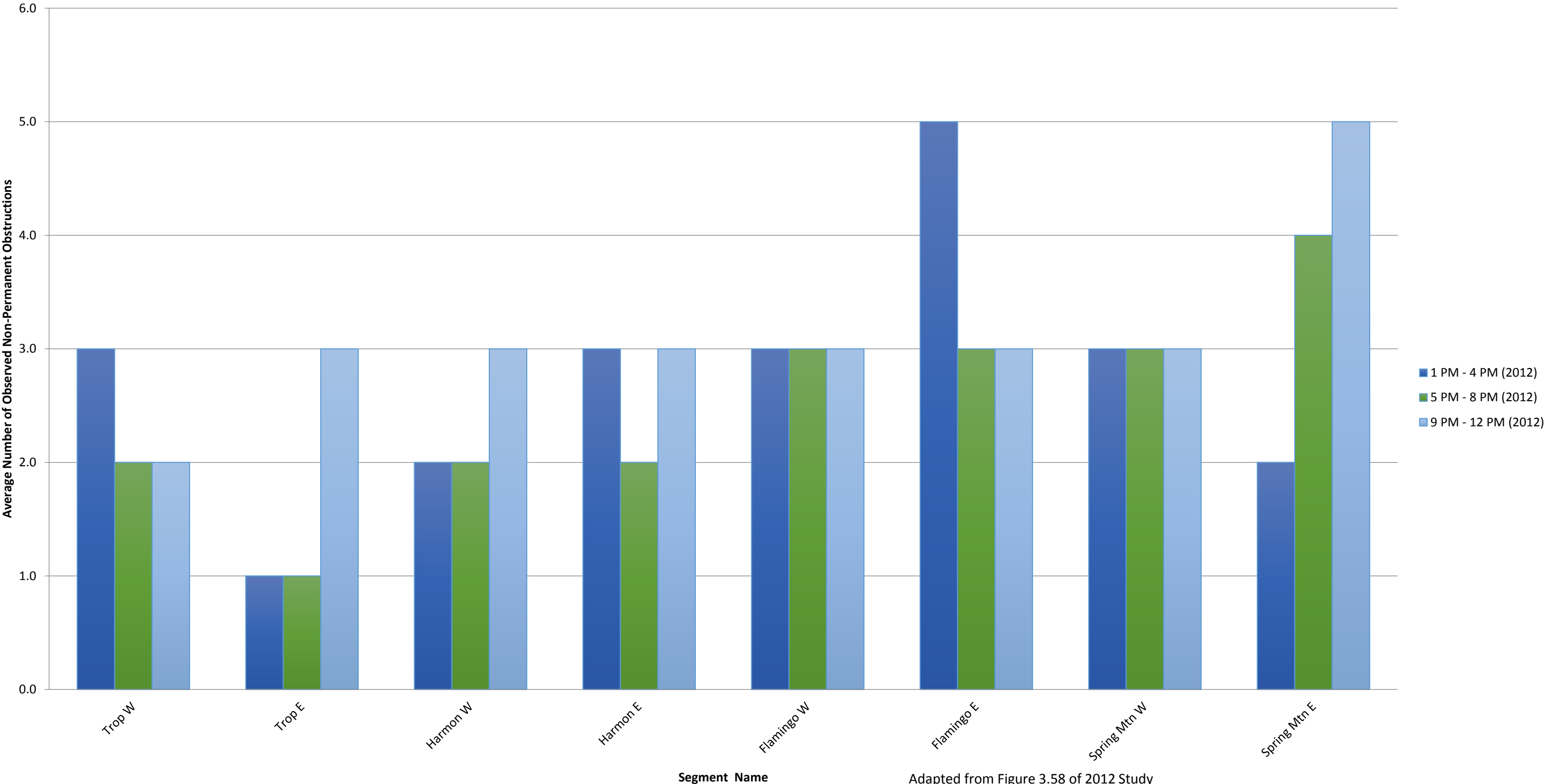
Non-Permanent Obstructions by Pedestrian Bridge Holiday Saturday 5/23/15



NON-PERMANENT OBSTRUCTIONS

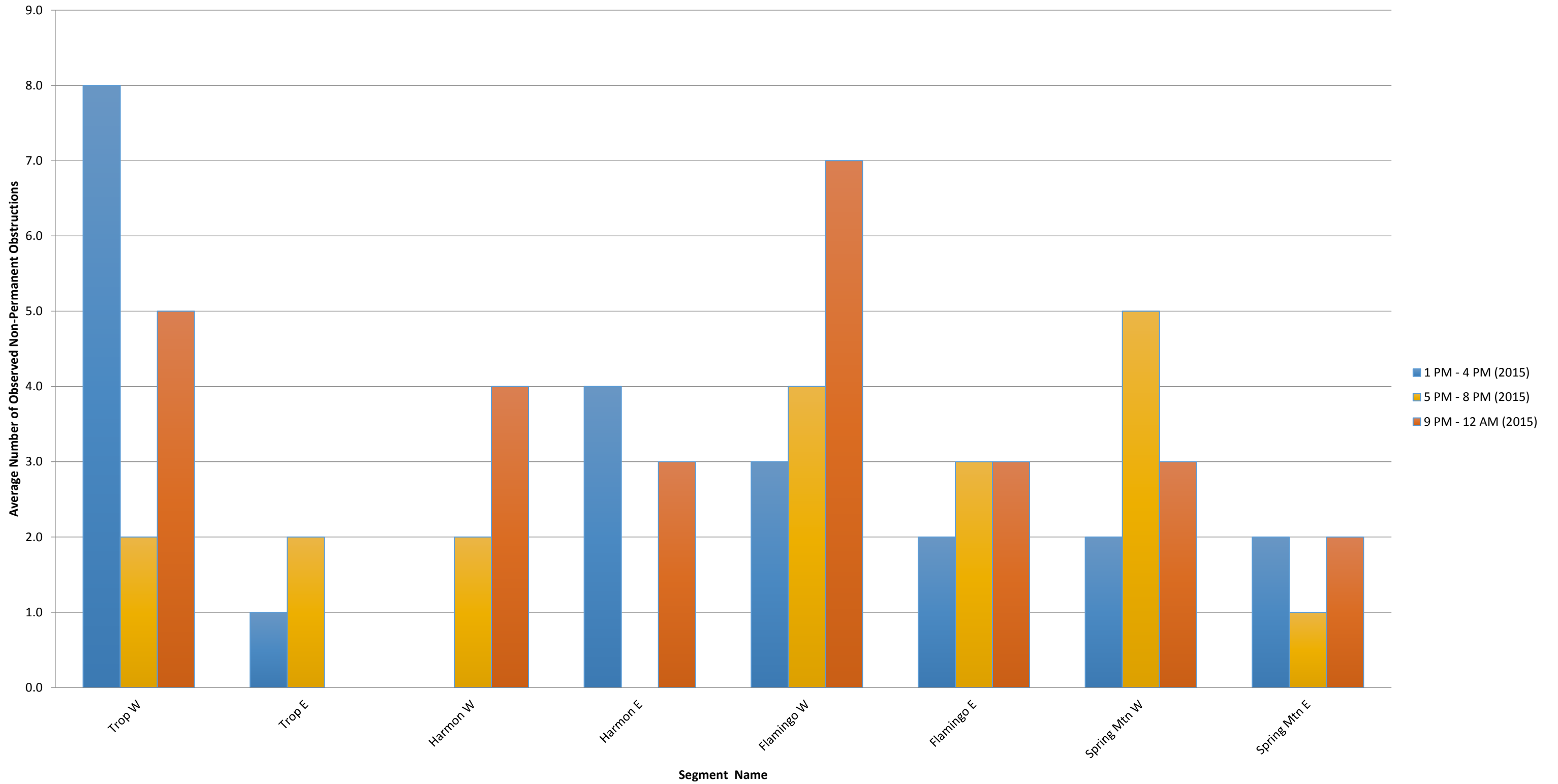
FIGURE 4.48 91

Non-Permanent Obstructions by Pedestrian Bridge Typical Saturday 6/16/12



Adapted from Figure 3.58 of 2012 Study

Non-Permanent Obstructions by Pedestrian Bridge Typical Saturday 6/20/15



NON-PERMANENT OBSTRUCTIONS

FIGURE 4.50 93

4.3.2 Non-Permanent Obstructions on Pedestrian Bridges Crossing Las Vegas Boulevard

In addition to the north/south pedestrian bridges, non-permanent obstructions were also quantified on east/west pedestrian bridges for this 2015 update. In order to provide a more direct comparison to the bridges that were represented in the 2012 data, the pedestrian bridges crossing Las Vegas Boulevard are discussed separately here. Bridges “crossing Las Vegas Boulevard” represent bridges that carry pedestrians in the east/west direction over Las Vegas Boulevard and are on the north and south side of intersections.

Table 4.14 provides a count summary for the average number of non-permanent obstructions observed for pedestrian bridges crossing Las Vegas Boulevard between Russell Road and Sahara Avenue during the holiday Saturday data collection effort in 2015. **Table 4.15** provides a count summary for the average number of non-permanent obstructions observed for pedestrian bridges during the typical Saturday in 2015.

Table 4.14 – NPO’s on Pedestrian Bridges Crossing Las Vegas Boulevard – 5/23/2015

Number of Non-Permanent Obstructions – Holiday Saturday			
Pedestrian Bridge	1 PM – 4 PM	5 PM – 8 PM	9 PM – 12 AM
Tropicana South	1	0	2
Tropicana North	3	4	3
Harmon North	7	2	9
Flamingo South	3	1	1
Flamingo North	4	0	0
Sirens Cove South	1	1	1
Spring Mountain North	0	1	3

Table 4.15 – NPO’s on Pedestrian Bridges Crossing Las Vegas Boulevard –6/20/2015

Number of Non-Permanent Obstructions – Typical Saturday			
Pedestrian Bridge	1 PM – 4 PM	5 PM – 8 PM	9 PM – 12 AM
Tropicana South	1	2	1
Tropicana North	4	7	4
Harmon North	2	3	7
Flamingo South	1	0	2
Flamingo North	0	0	0
Sirens Cove South	0	0	1
Spring Mountain North	0	0	3

The distribution of the non-permanent obstruction types on these bridges for 2015 is given in **Table 4.16** for both the holiday and typical Saturdays.

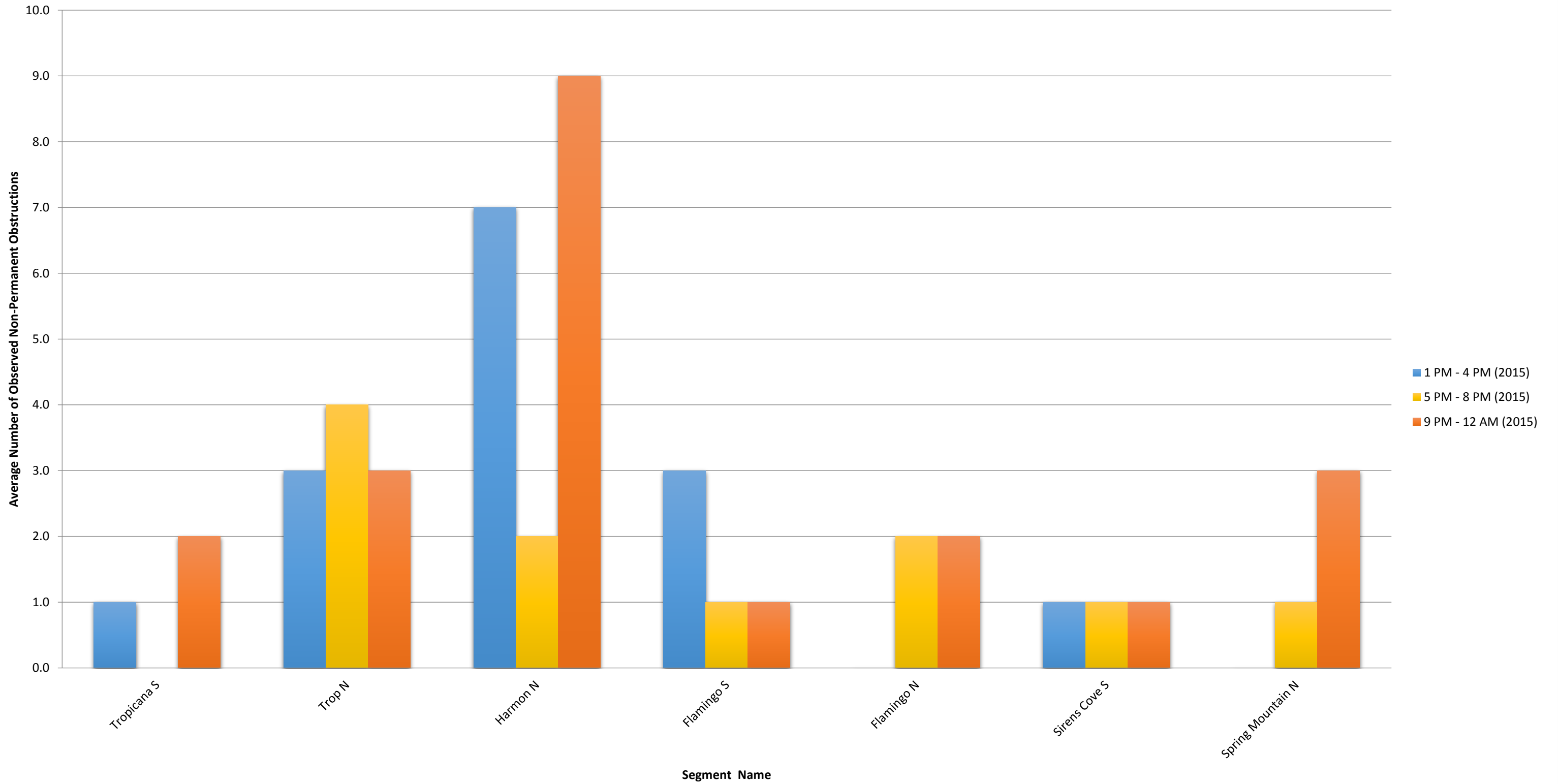
Table 4.16 – Distribution of NPO’s on Pedestrian Bridges Crossing Las Vegas Boulevard

Non-Permanent Obstruction Category	On Pedestrian Bridges (Holiday Sat.)	On Pedestrian Bridges (Typ. Sat.)
Handbiller	12(26%)	10(26%)
Performer	16(34%)	10(26%)
Solicitor	16(34%)	13(35%)
Vendor	3(6%)	5(13%)
Total	47	38

Figure 4.51 and **Figure 4.52** display the total number of non-permanent obstructions observed on east/west pedestrian bridges for a holiday Saturday and a typical Saturday respectively.



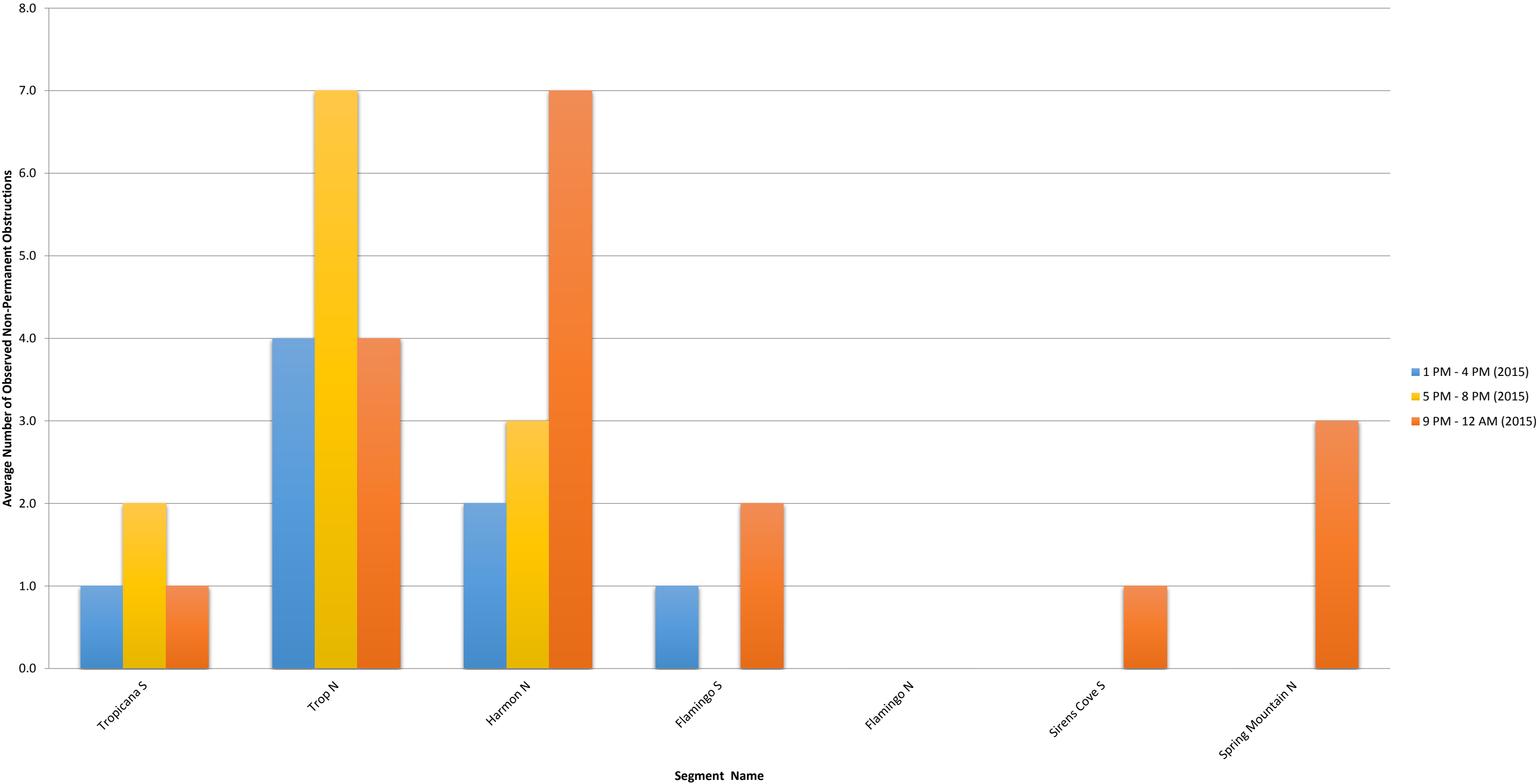
Non-Permanent Obstructions by Pedestrian Bridge Holiday Saturday 5/23/15



NON-PERMANENT OBSTRUCTIONS

FIGURE 4.51

Non-Permanent Obstructions by Pedestrian Bridge Typical Saturday 6/20/15



NON-PERMANENT OBSTRUCTIONS

FIGURE 4.52 96

4.3.3 Theoretical Analysis of Non-Permanent Obstructions' Effect on LOS

The LOS evaluation and the associated **Figure 4.9** through **Figure 4.29** were completed assuming the full effective walkway width (W_E) was available for pedestrian traffic. If a non-permanent obstruction is theoretically present along the side of the walkway, the effective walkway width (W_E) is reduced and the LOS of the walkway could also be reduced. An additional theoretical analysis was conducted to determine the LOS impact of one (1) non-permanent obstruction (NPO) standing on the side of the walkway which results in a reduction of 2.25 feet from the effective walkway width (W_E). The same analysis was then conducted assuming two (2) non-permanent obstructions were standing on opposite sides of the walkway directly across from each other. See **Section 3.1.3** for background information on the effects of a person standing within a walkway. **Figure 4.53** displays graphically the reduction in effective walkway width when zero, one, and two non-permanent obstructions are present while **Figure 4.54** through **Figure 4.57** compare the segments that exceed level of service C with zero, one, and two non-permanent obstructions.

Under these conditions the count locations presented in **Table 4.17** were calculated to degrade to below LOS C. Level of Service conditions presented in **Table 4.17** below are based on maximum 15-minute volumes for the count location.

It is important to note that the benefits of improvements and capital expended by the County to improve the "Strip" walkways can be rapidly reduced when non-permanent obstructions are present.

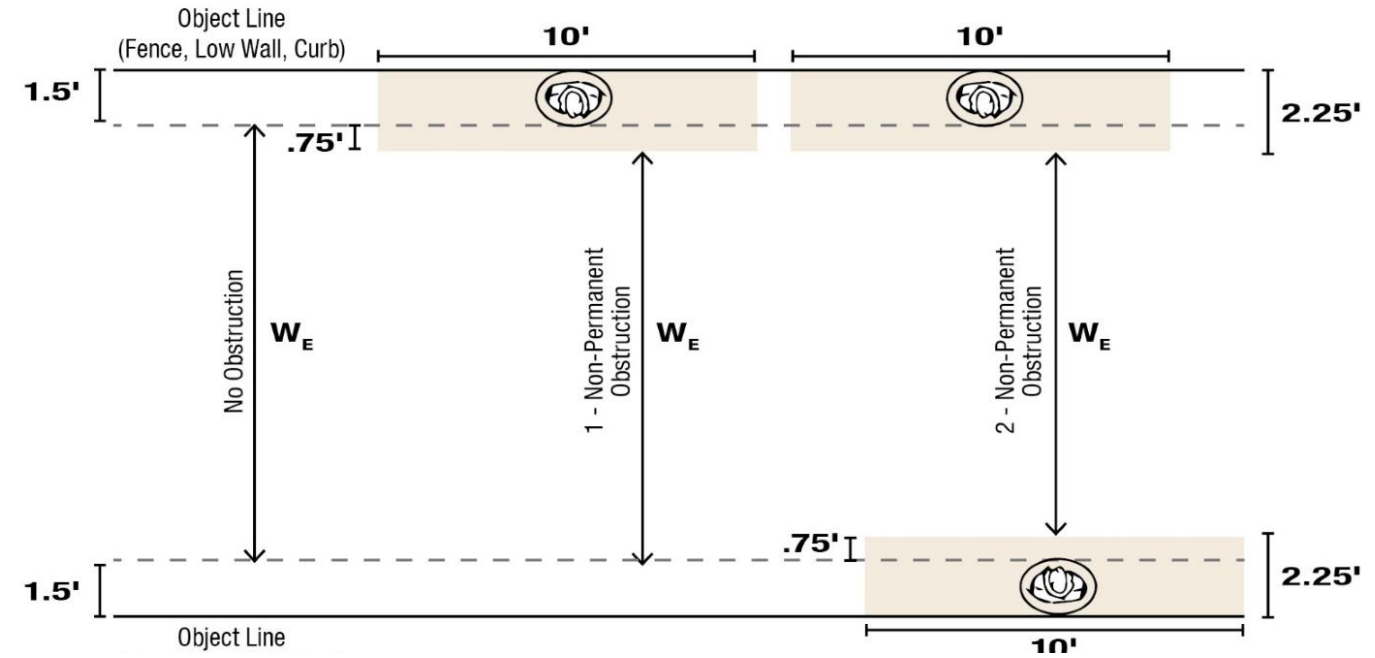
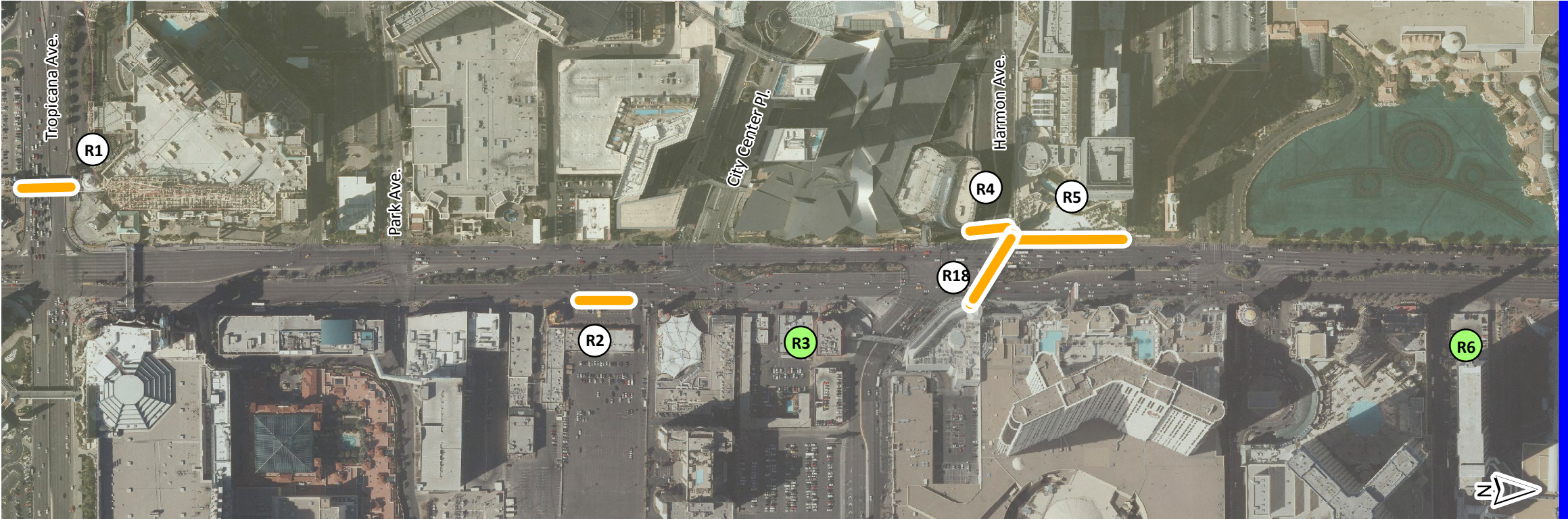


Figure 4.53 – Effective Walkway Width (W_E) Diagram with Zero, One, and Two Obstructions

Table 4.17 – NPO's Effect on LOS with Maximum Observed Volumes (Holiday or Typical Saturday)

Count Location	WE Existing	LOS Existing	Time of Day Exceed LOS C	WE w/ 1 NPO	LOS w/ 1 NPO	Time of Day Exceed LOS C	WE w/ 2 NPOs	LOS w/ 2 NPOs	Time of Day Exceed LOS C
2 Tropicana West Bridge	11.8	D	6:30PM-7:00PM	11	D	6:30PM-7:00PM	10.3	D	6:30PM-7:00PM
M11 Food Court	13	C	-	12.3	C	-	11.5	D	10:30PM-10:45PM
Metro1 Harley Davidson	13	C	-	12.3	D	8:00PM-8:15PM	11.5	D	8:00PM-8:15PM
7 Harmon West Bridge	12.5	D	7:45PM-8:00PM	11.8	D	7:45PM-8:00PM	11	E	7:45PM-9:00PM
M4 Harmon North Bridge	12.3	D	10:30PM-10:45PM	11.6	D	10:30PM-11:00PM	10.8	D	10:30PM-11:00PM
9 Bally's Bazaar	14.5	C	-	13.8	D	9:45PM-10:00PM	13	D	9:45PM-10:00PM
11 Flamingo West Bridge	12	D	8:45PM-12:15AM	11.3	D	8:45PM-12:15AM	10.5	D	3:30PM-12:15AM
Metro3 Cromwell	11.5	D	2:15PM-12:45AM	10.8	E	2:15PM-1:30AM	10	D	2:15PM-1:30AM
12 Margaritaville	8.5	E	5:15PM-12:45AM	7	E	4:15PM-1:00AM	6.3	E	2:00PM-1:30AM
M6 Caesars South	6.8	E	3:45PM-12:45AM	6.1	E	3:30PM-12:45AM	5.3	F	3:15PM-12:45AM
13 Forum Shops	12	C	-	11.3	D	8:45PM-9:00PM	10.5	D	8:45PM-9:00PM
CC3 Venetian South	6.3	E	12:00PM-12:00AM	5.6	E	12:00PM-12:00AM	4.8	F	12:00PM-12:00AM
Metro4 Venetian North	7	D	9:45PM-11:45PM	6.3	D	5:15PM-12:30AM	5.5	D	3:30PM-12:30AM

2015
Non-Permanent Obstruction Absent



SEE FIGURE 4.55

2015
One Non-Permanent Obstruction



SEE FIGURE 4.55

- Legend (2015)**
- LOS < C when NPO Absent
 - LOS < C when 1 NPO is present
 - R# Segment Reference Number
 - R# Segment No Longer Less than LOS C in 2015 with No Non-Permanent Obstructions

COMPARISON OF SEGMENTS THAT EXCEED LEVEL OF SERVICE (LOS) C WITH ONE NON-PERMANENT OBSTRUCTION TROPICANA AVE. TO FLAMINGO RD.

FIGURE 4.54 98

2015
Non-Permanent Obstruction Absent



SEE FIGURE 4.54

2015
One Non-Permanent Obstruction



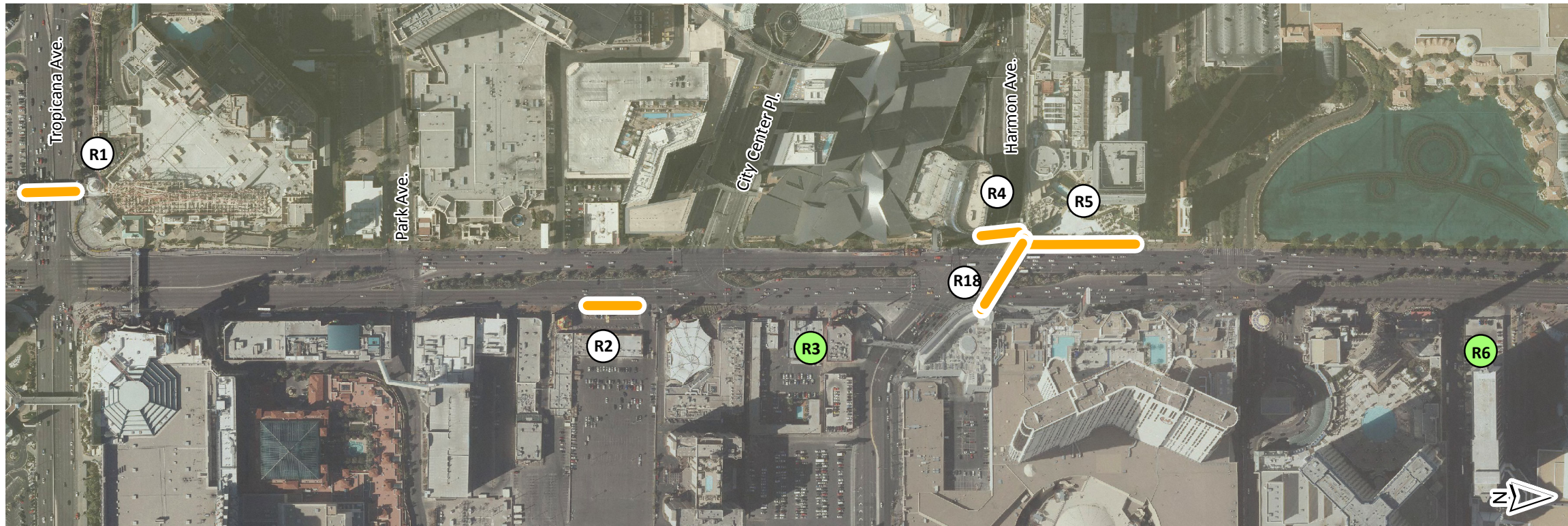
SEE FIGURE 4.54

- Legend (2015)**
- Segment where LOS < C when 1 NPO is present
 - LOS < C when no NPO is present
 - R# Segment Reference Number
 - R# Segment No Longer Less than LOS C in 2015 with No Non-Permanent Obstructions

COMPARISON OF SEGMENTS THAT EXCEED LEVEL OF SERVICE (LOS) C WITH ONE NON-PERMANENT OBSTRUCTION FLAMINGO RD. TO SPRING MOUNTAIN RD.

FIGURE 4.55 99

2015
Non-Permanent Obstruction Absent



SEE FIGURE 4.57

2015
Two Non-Permanent Obstructions



SEE FIGURE 4.57

Legend (2015)

- █ LOS < C when 2 NPOs are present
- █ LOS < C when NPO is Absent
- Segment Reference Number
- R# Segment No Longer Less than LOS C in 2015 with No Non-Permanent Obstructions

COMPARISON OF SEGMENTS THAT EXCEED LEVEL OF SERVICE (LOS) C WITH TWO NON-PERMANENT OBSTRUCTIONS TROPICANA AVE. TO FLAMINGO RD.

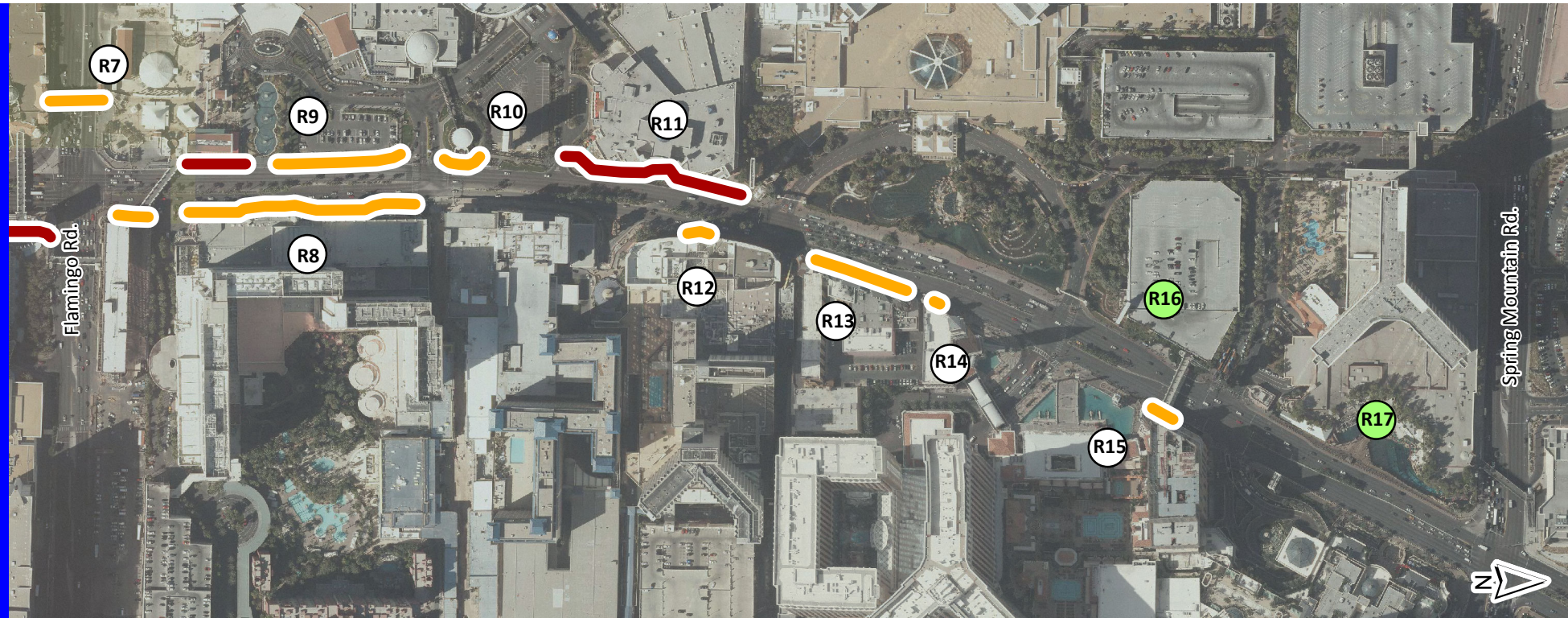
FIGURE 4.56 100

2015
Non-Permanent Obstruction Absent



SEE FIGURE 4.56

2015
Two Non-Permanent Obstructions



SEE FIGURE 4.56

Legend (2015)

- LOS < C when 2 NPOs are present
- LOS < C when NPO is Absent
- R# Segment Reference Number
- R# Segment No Longer Less than LOS C in 2015 with No Non-Permanent Obstructions

COMPARISON OF SEGMENTS THAT EXCEED LEVEL OF SERVICE (LOS) C WITH TWO NON-PERMANENT OBSTRUCTIONS FLAMINGO RD. TO SPRING MOUNTAIN RD.

FIGURE 4.57 101

4.4 Bus Stop Queuing

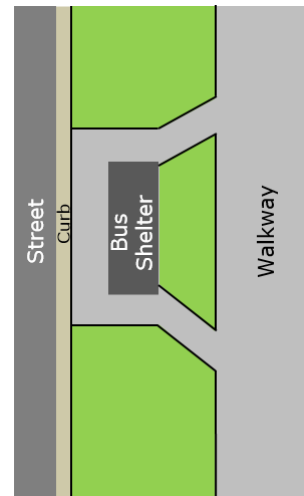
The twenty-eight (28) bus stops within the corridor are classified into three types as defined in the 2012 Pedestrian Study:

- Type 1 bus stops have separate queuing areas that are isolated from the pedestrian walkway and bus queuing does not affect the pedestrian flow in these locations (see **Figure 2.5**).
- Type 2 bus stops have queue areas in front of the pedestrian walkway, affording queue space for transit riders outside the stream of pedestrian traffic (see **Figure 2.6**).
- Type 3 bus stops have queue areas behind the pedestrian walkway and can experience congestion when transit passengers are boarding, alighting the bus, and potentially while waiting for the bus to arrive (see **Figure 2.7**).

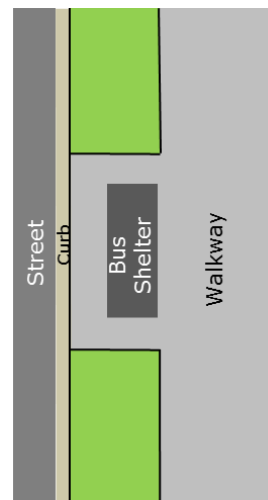
Only Type 2 and Type 3 bus stops were analyzed in the 2015 study of the "Strip". As noted in **Section 2.10**, the bus stops at Harrah's and Monte Carlo were converted to Type 1 bus stops since the 2012 Pedestrian Study. For comparison, these two Type 1 bus stops were analyzed as well as the Type 2 and Type 3 bus stops within the study area.

Following the methodology used in the 2012 Pedestrian Study, the maximum 15-minute boarding number was evaluated at each Type 2 and Type 3 bus stop. In some cases, where bus queuing is significant, queues overcrowd the queuing area and spill into the adjacent pedestrian walkway. Bus stops were not further analyzed if 375 or less pedestrians per 15 minutes were observed passing by the bus stop during the Memorial Day holiday weekend (May 23, 2015). A volume of 375 pedestrians in 15 minutes requires an effective walkway width of 2.5 feet to maintain a LOS C. The 375 pedestrian volume is based on the pedestrian volume capacity of a four-foot walkway with LOS C. Bus stops were also excluded from further evaluation if the maximum 15-minute boarding was less than 15 people. For 15 people, the queue space is calculated to be 105 square feet at 7.0 square feet per person for a queuing LOS of C.

Of the nine (9) stops identified for analysis, five (5) were documented to have a maximum 15-minute boarding during the holiday Saturday of May 23, 2015, while the remaining four (4) were found to have maximum boardings on the typical Saturday, June 20, 2015. The maximum boarding volumes as provided by the RTC of Southern Nevada were used in the evaluation of the bus stop queuing areas. **Figure 4.58** through **Figure 4.63** show bus stop locations, types, as well as the maximum 15-minute boarding for both data collection dates in 2012 and 2015 (see also **Figure 2.4** for stop location and type). To maintain a queue space of LOS C or better, each person in a bus stop queue area requires a minimum of seven square feet. This area allows for an 18-inch no-touch zone for each queued person. **Table 4.19** shows the maximum queues at each of the identified bus stops and the queue area required for LOS C to serve that maximum queue.



Type 1 (Isolated) Bus Stop Example (Figure 2.5)



Type 2 (Front of Walk) Bus Stop Example (Figure 2.6)



Type 3 (Behind Walk) Bus Stop Example (Figure 2.7)

To provide a comparison to the bus stop analysis conducted in the 2012 Pedestrian Study, the bus stops listed below in **Table 4.18** were further evaluated in the 2015 update:

Table 4.18 – Bus Stops Included in Queuing Analysis

Bus Stop	Type
Monte Carlo South	1
Polo Towers North	3
Bellagio South	3
Paris North	2
Harrah's North	1
Caesars Palace South	2
Mirage South	2
Treasure Island South	3
Venetian North	2

Table 4.19 – Bus Stop Max Boardings and Queue Area

Bus Stop	Day	Maximum 15-minute volume	Maximum 15-minute boardings	Demand Queue Area (sq. ft.)	Existing Queue Area (sq. ft.)	Existing Queue Area (2012) (sq. ft.)
Monte Carlo S	5/23	1025	22	154	440	400
Polo Towers N	5/23	1,772	47	329**	265	265
Bellagio S	6/20	2,189	64	448	900	900
Paris N	5/23	2,007	74	518	520	260
Harrah's N*	5/22	1,364	78	546**	440	375
Caesars S	5/22	1,997	39	273	321	321
Mirage S	6/20	1,749	37	245	279	279
Treasure Island S	6/20	1,331	35	245	360	148
Venetian N	6/20	1,385	47	329**	312	312

*Previously named/located Flamingo N

**Demand Queue Exceeds Existing Area

Further evaluation of the individual bus stops showed that the bus stops in **Table 4.20** have adequate queue area within and in front of the shelter. For Type 3 bus stops (with bus shelter behind the pedestrian walkway), a minimum four-foot walk was calculated to be provided.

Table 4.20 – Analyzed Bus Stops with Adequate Queue Area

Bus Stop	Type
Monte Carlo S	1
Bellagio S	2
Paris N	2
Caesars S	2
Mirage S	2
Treasure Island S	3

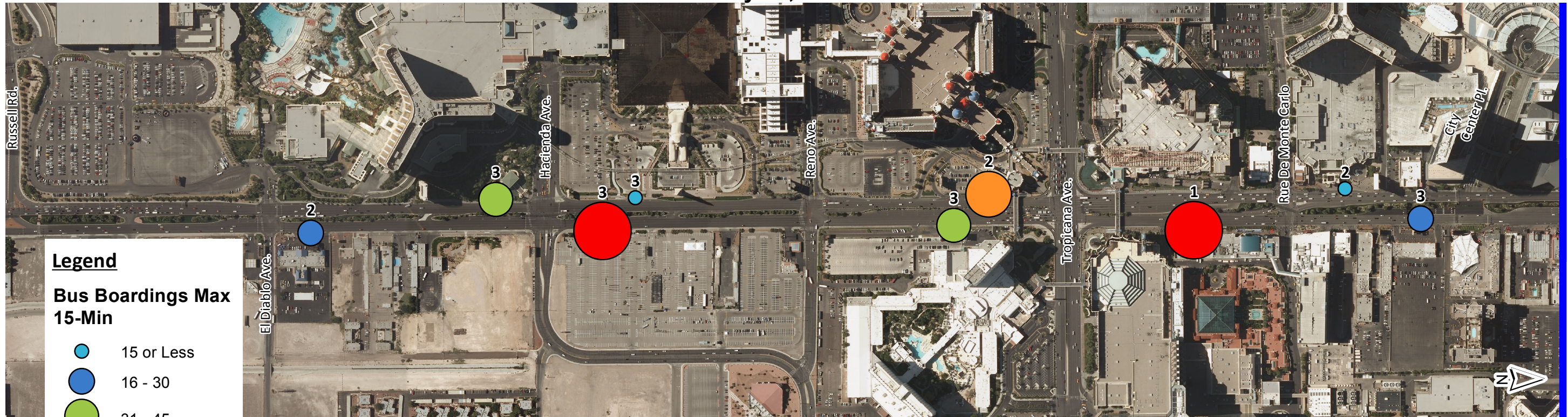
The remaining bus stops were determined to lack the amount of queue space that is desired for the maximum boardings while maintaining a LOS C queue area. These bus stops are included in **Table 4.21**.

Table 4.21 – Analyzed Bus Stops with Inadequate Queue Area

Bus Stop	Type
Polo Towers N	3
Harrah’s N	1
Venetian N	2

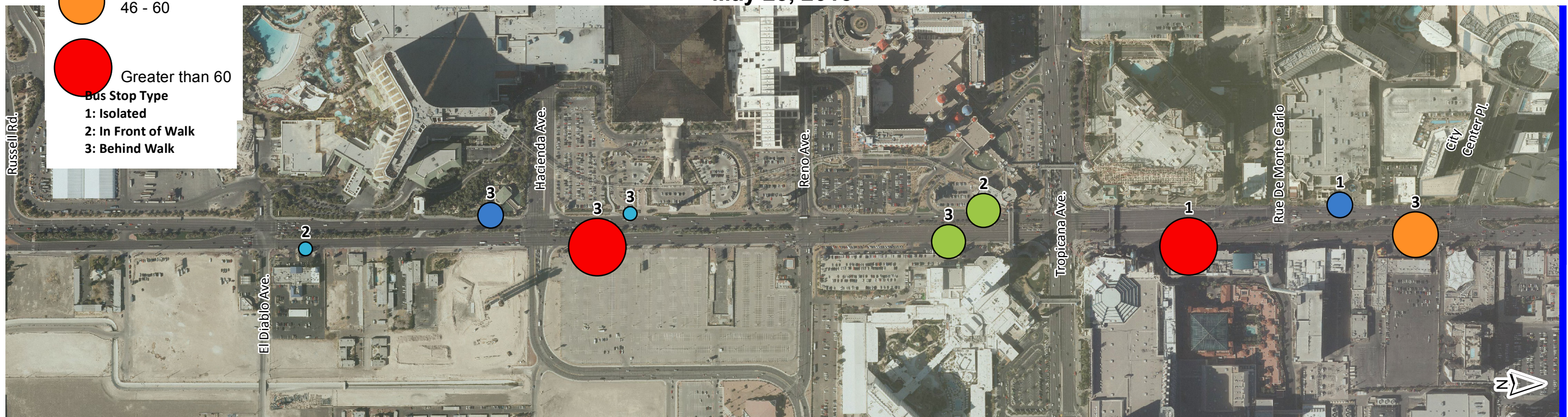
The bus stop evaluation of LOS for passenger queuing suggests that where insufficient queue area is identified, 15 feet on either side and in front of the bus shelter should be reserved for bus patrons by restricting non-permanent obstructions. The LOS evaluation also concluded that all Type 2 and Type 3 bus stops should allow the area between the queue area and the curb to be available for only queued and walking pedestrians with a recommended delineated no-obstructive use zone. In addition, from field observations, all Type 1 bus stops should also be considered for no-obstructive use zones to encourage transit use by maintaining queue areas of LOS C or better and aiding transit rider flow in front of Type 1 bus stops.

May 26, 2012



SEE FIGURE 4.59

May 23, 2015



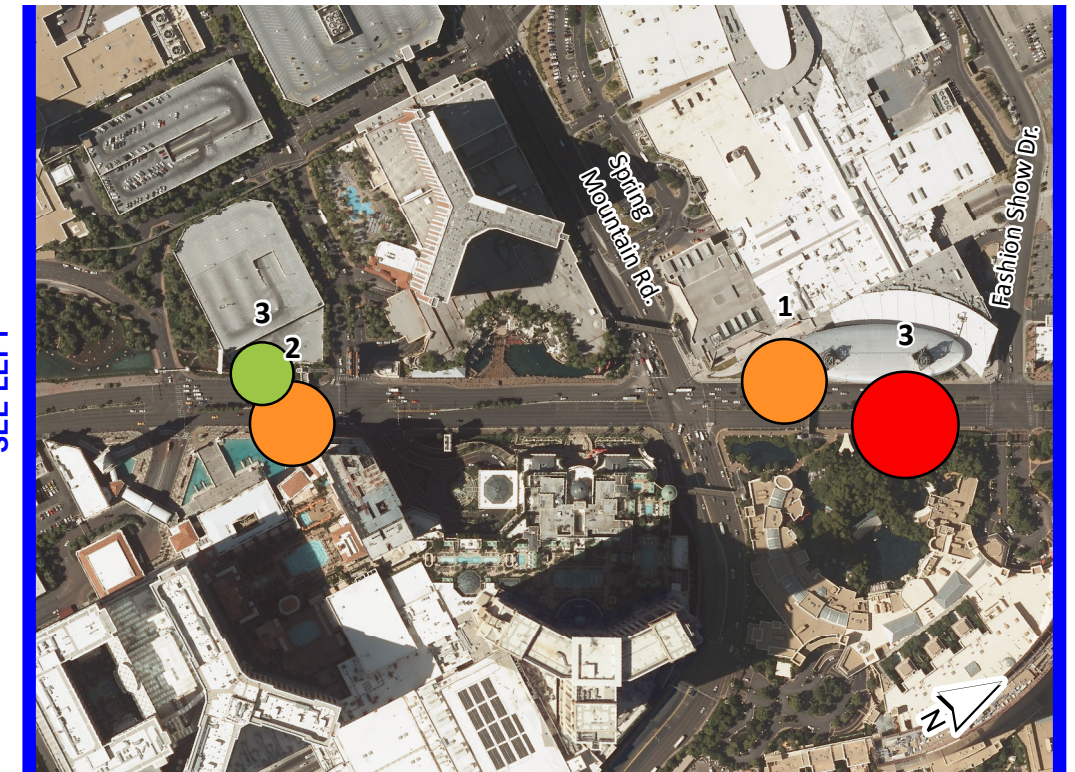
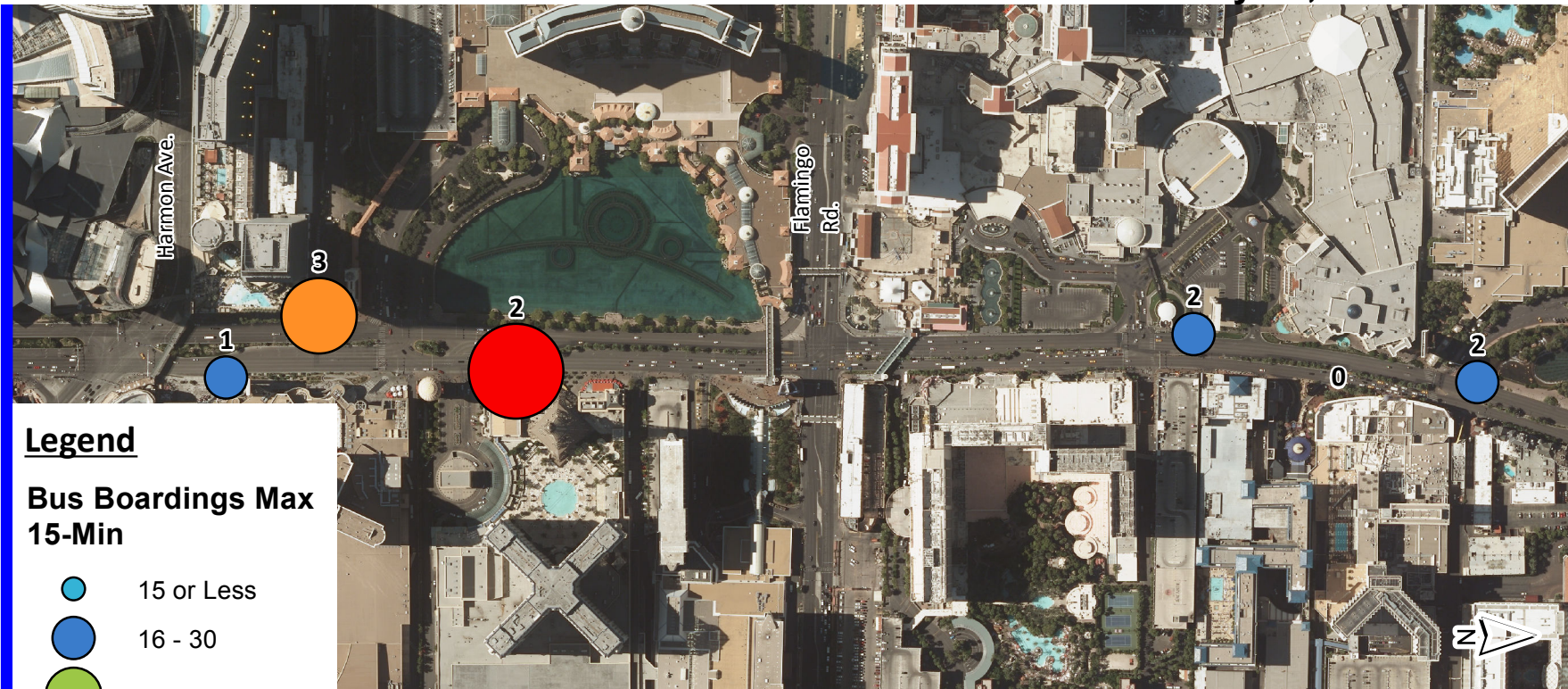
SEE FIGURE 4.59

* Type "0" Bus Stops represent bus stops that have moved or been removed.

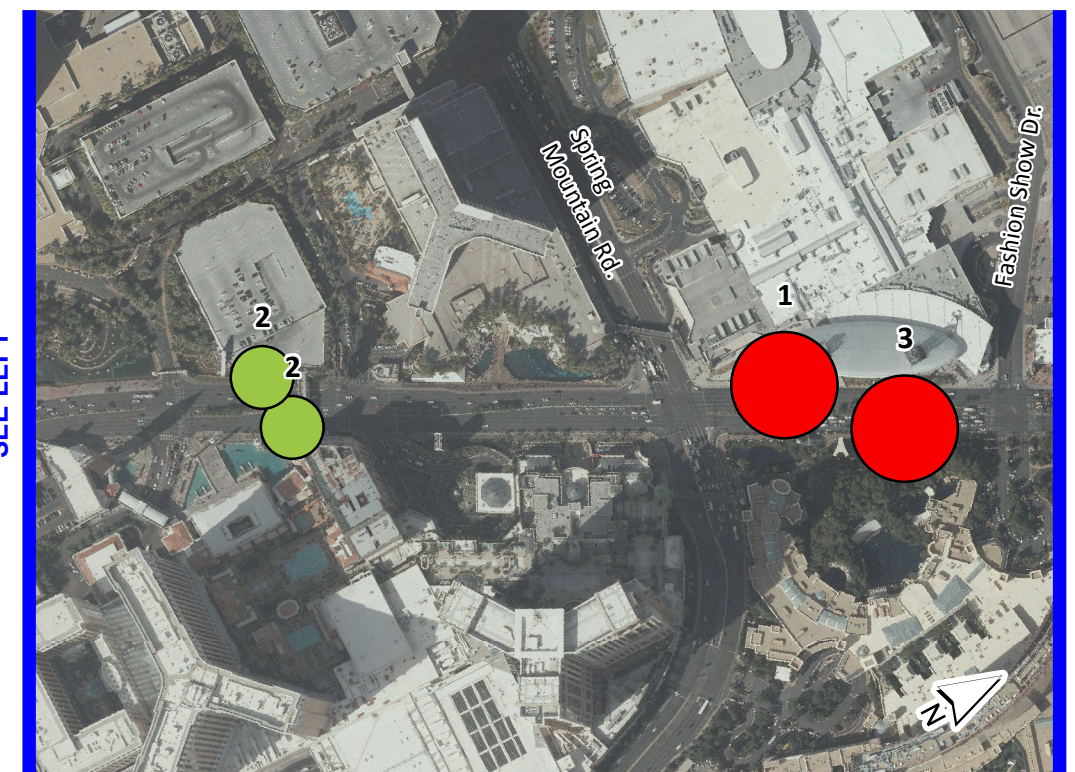
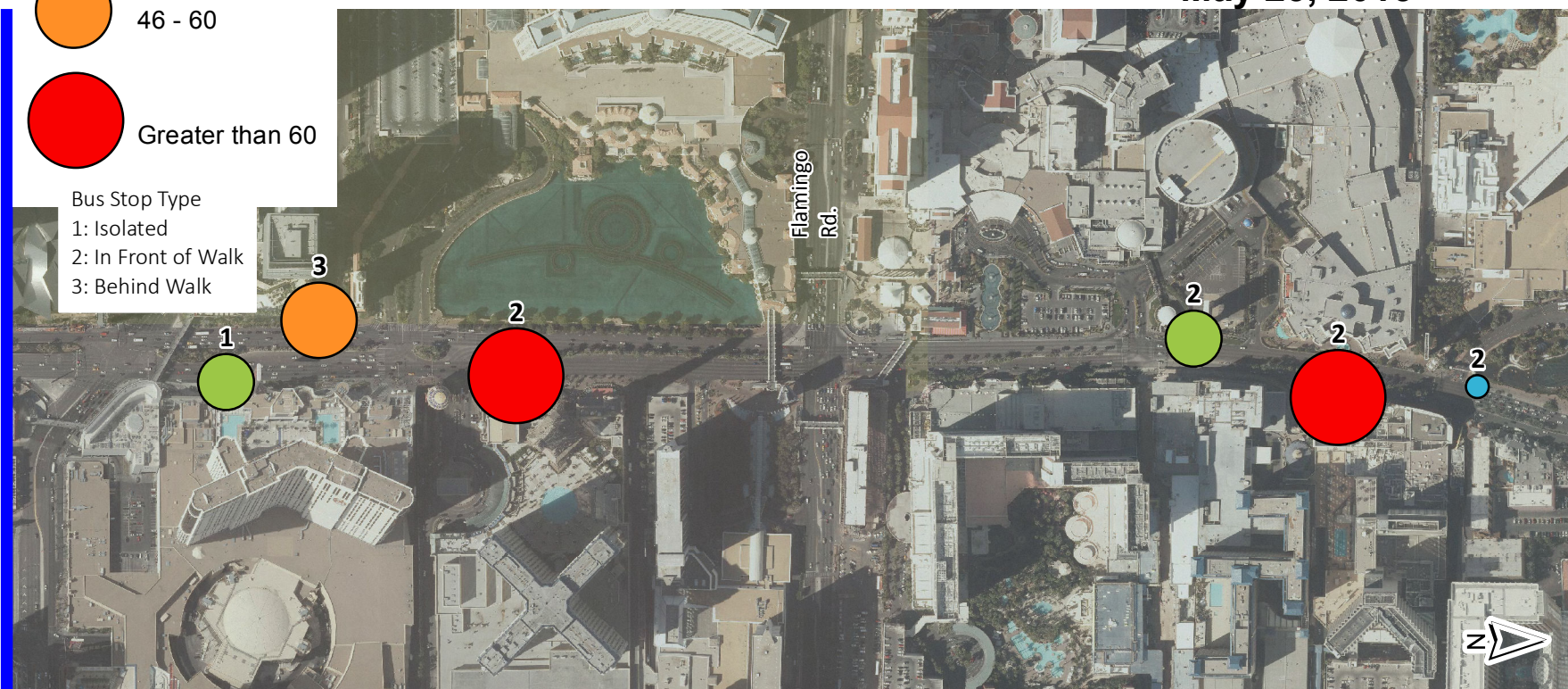
**MAX PEAK 15-MINUTE BUS BOARDING
 RUSSELL RD. TO CITY CENTER PL. (HOLIDAY SATURDAY)**

FIGURE 4.58 104

May 26, 2012



May 23, 2015

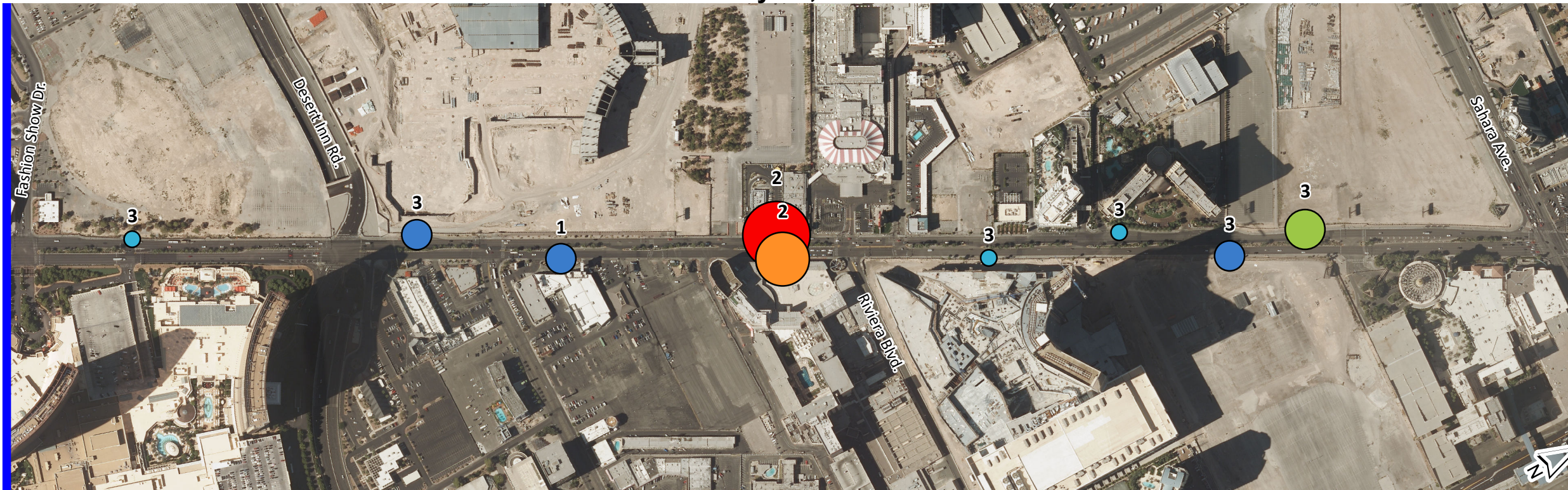


*Type "0" Bus Stops represent bus stops that have moved or been removed.

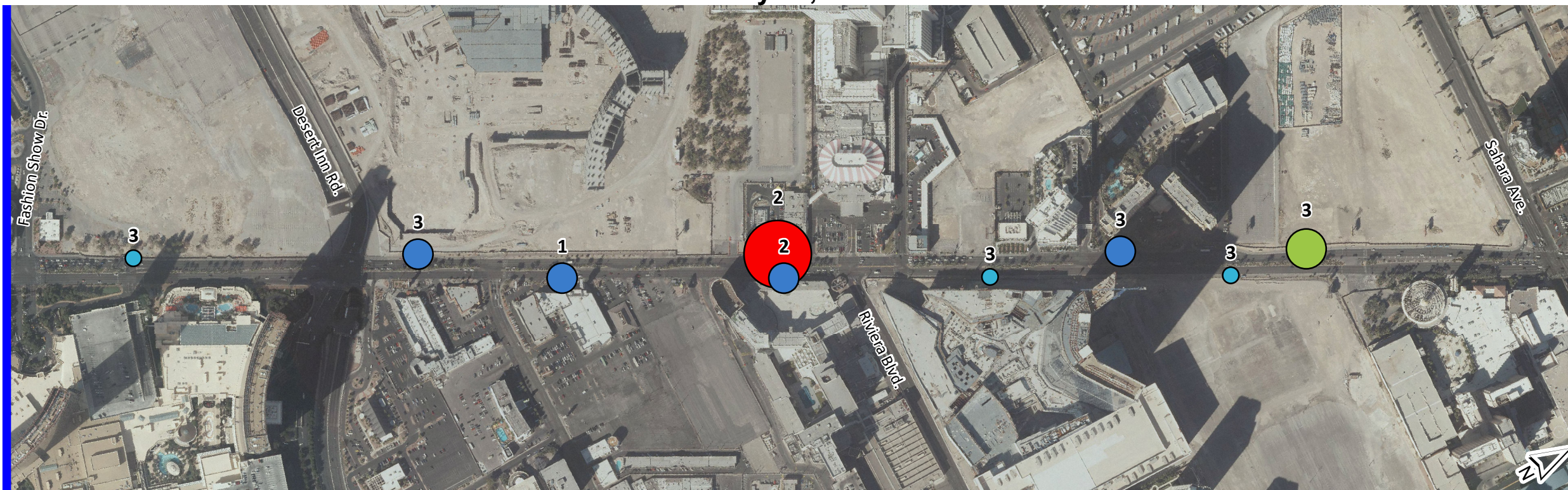
**MAX PEAK 15-MINUTE BUS BOARDING
HARMON AVE. TO FASHION SHOW DR. (HOLIDAY SATURDAY)**

FIGURE 4.59 105

May 26, 2012



May 23, 2015



*Type "0" Bus Stops represent bus stops that have moved or been removed.

Legend

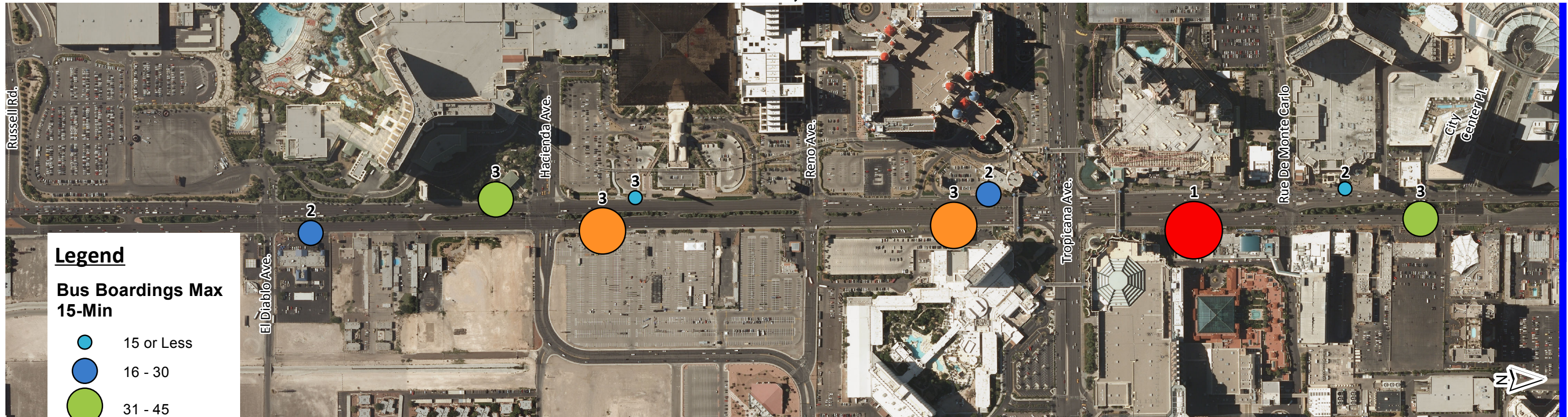
Bus Boardings Max 15-Min

- 15 or Less
 - 16 - 30
 - 31 - 45
 - 46 - 60
 - Greater than 60
- Bus Stop Type**
- 1: Isolated
 - 2: In Front of Walk
 - 3: Behind Walk

**MAX PEAK 15-MINUTE BUS BOARDINGS
FASHION SHOW DR. TO SAHARA AVE. (HOLIDAY SATURDAY)**

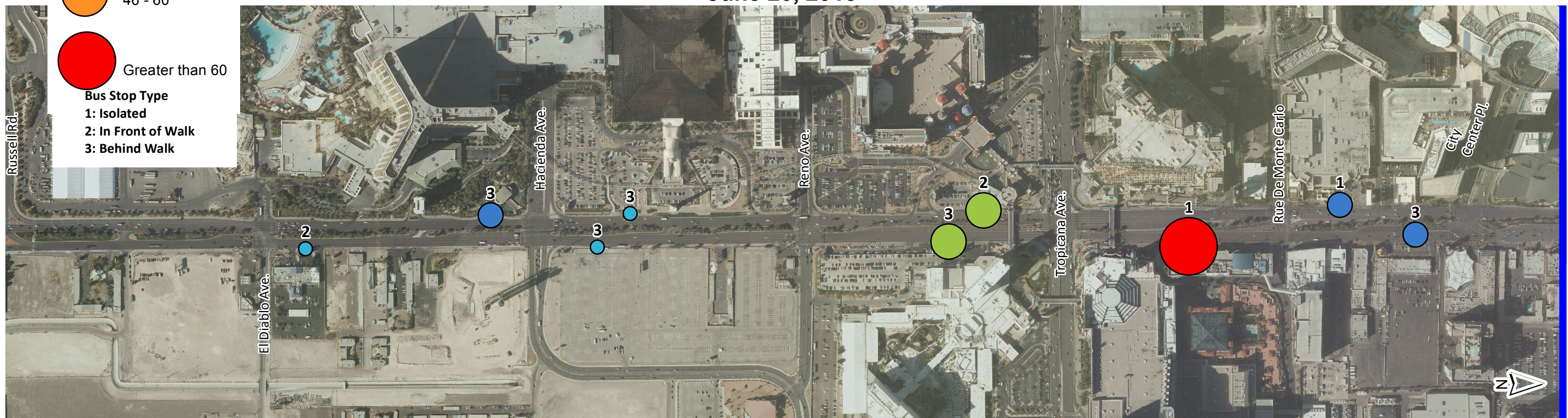
FIGURE 4.60 106

June 16, 2012



SEE FIGURE 4.62

June 20, 2015



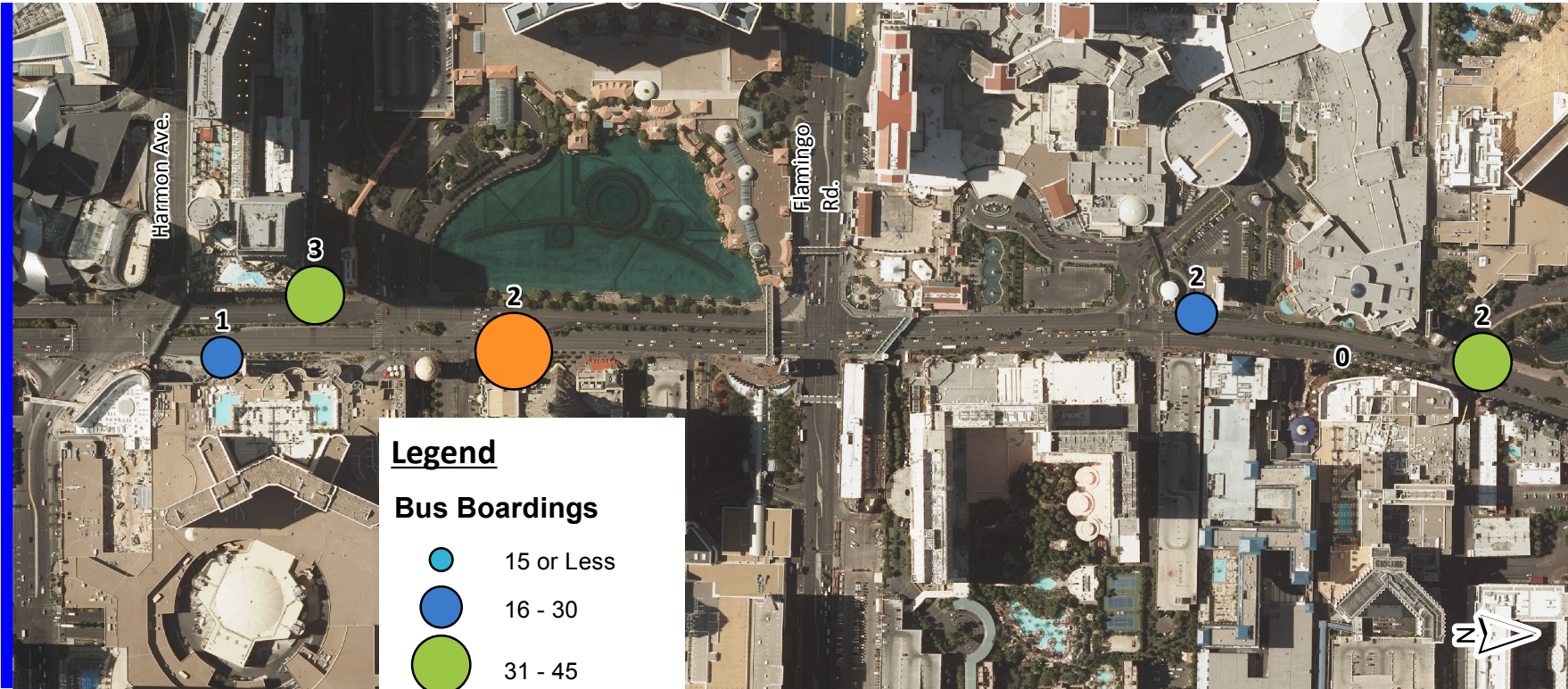
SEE FIGURE 4.62

*Type "0" Bus Stop represents bus stops that have moved or been removed.

**MAX PEAK 15-MINUTE BUS BOARDING
RUSSELL RD. TO CITY CENTER PL. (TYPICAL SATURDAY)**

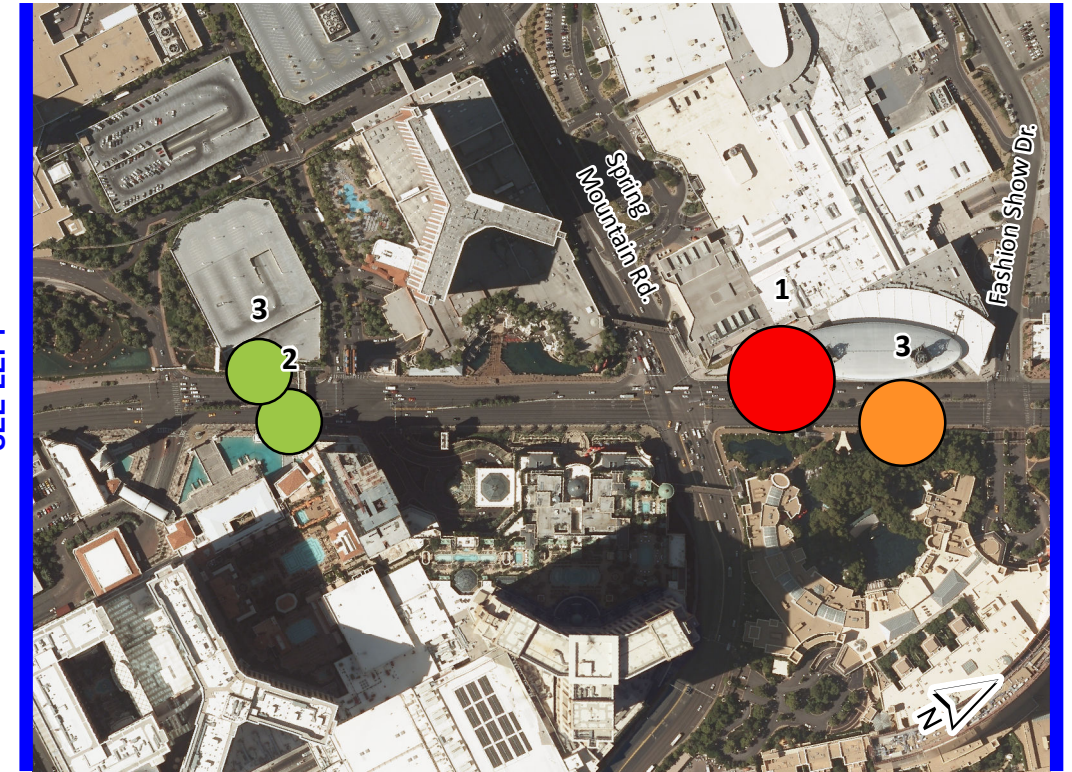
FIGURE 4.61 107

June 16, 2012



SEE FIGURE 4.61

SEE RIGHT
SEE LEFT



SEE FIGURE 4.63

June 20, 2015



SEE FIGURE 4.61

SEE RIGHT
SEE LEFT



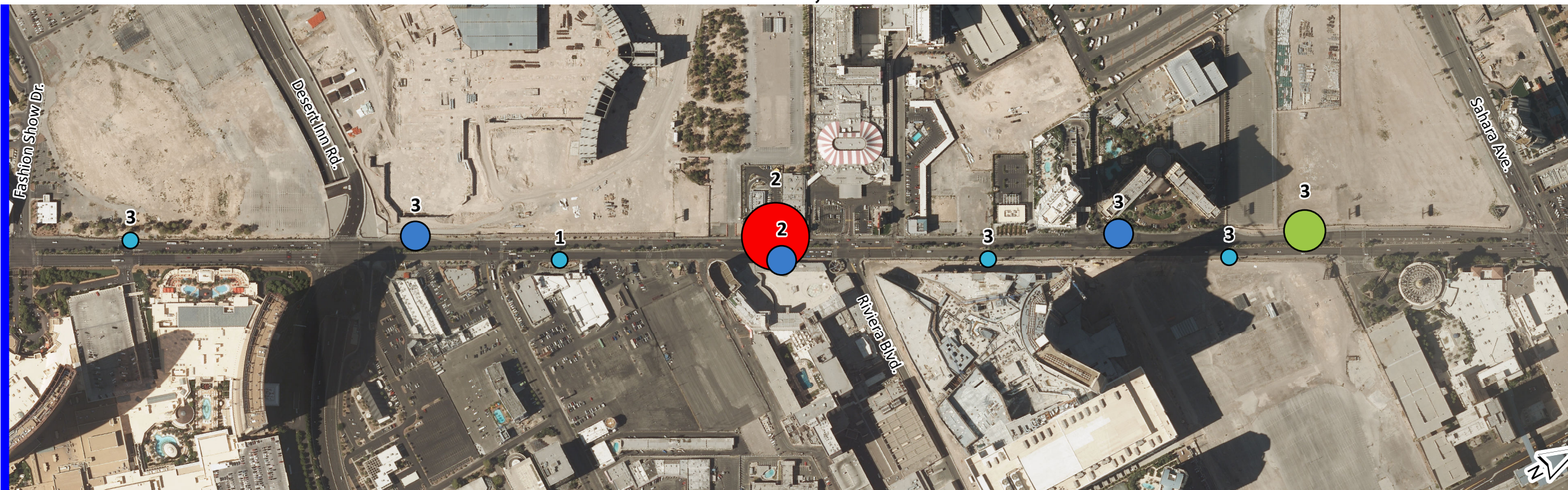
SEE FIGURE 4.63

*Type "0" Bus Stop represents bus stops that have moved or been removed.

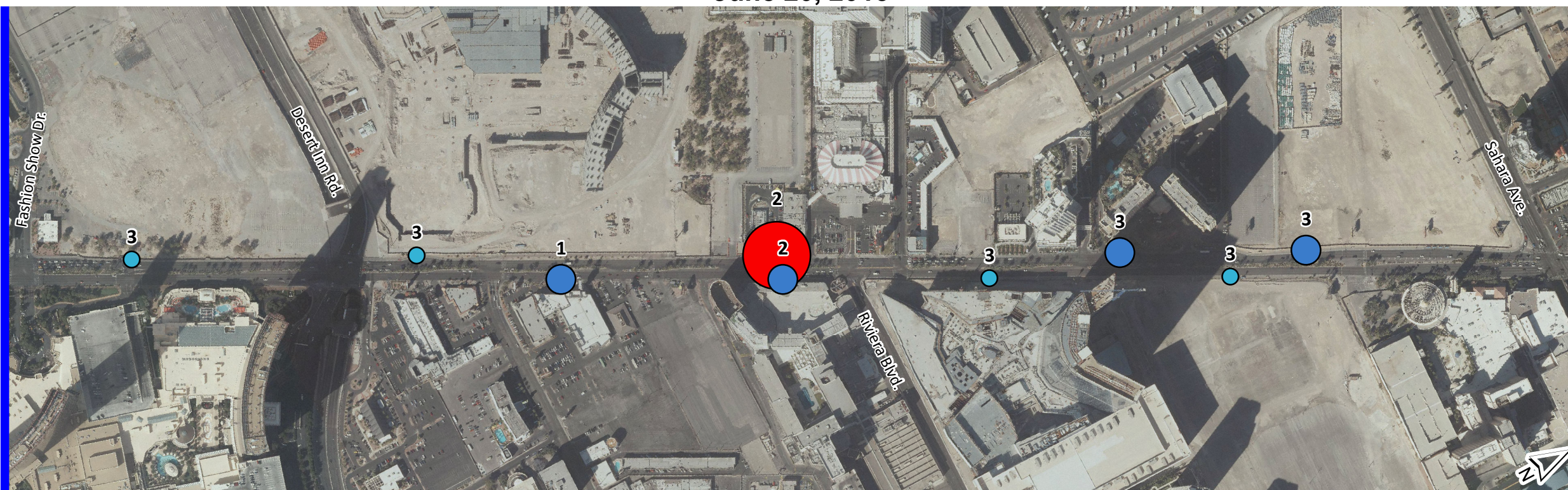
**MAX PEAK 15-MINUTE BUS BOARDING
HARMON AVE. TO FASHION SHOW DR. (TYPICAL SATURDAY)**

FIGURE 4.62 108

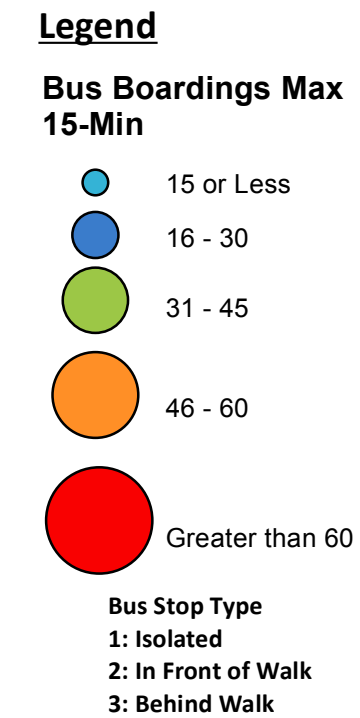
June 16, 2012



June 20, 2015



*Type "0" Bus Stop represents bus stops that have moved or been removed.



**MAX PEAK 15-MINUTE BUS BOARDINGS
FASHION SHOW DR. TO SAHARA AVE. (TYPICAL SATURDAY)**

FIGURE 4.63 109

4.5 Walkway Segment Time of Day Restriction Analysis

Based on observed pedestrian volumes, LOS, walkway conditions and pedestrian safety concerns, the locations shown in **Figure 4.64** through **Figure 4.68** within the study corridor, have been identified as walkway segments in which non-permanent obstruction restrictions should be considered during specific days of the week and times of the day. Example of existing signage is shown in **Picture 4.16** and **Picture 4.17**.

To identify the time of day, day of week, and month of year that certain walkway segments within the study corridor should be considered for restriction of non-permanent obstructions, the following steps were taken:

- Segments created in 2012 were re-evaluated to determine which segments were still found to exceed LOS C.
- Pedestrian volumes from all count locations were evaluated on a common daily peak pedestrian time found to occur between 9:00 PM and 11:00 PM.
- Walkway segments that were found to continue to exceed LOS C on the holiday and/or typical Saturday (May 23 and/or June 20, 2015) are labeled R1 to R19 (see **Figure 4.2** and **Figure 4.3**).
- Walkway segments that resulted in a LOS C were considered further and analyzed to determine if the addition of one (1) non-permanent obstruction would result in the LOS deteriorating to D or less. A reduction of the effective walkway width (W_E) of 2.25 feet associated with the obstruction of one person standing on the side of the walkway was applied for the analysis.
- The walkway segments were separated into three categories including: walkways with no pedestrian containment, walkways with pedestrian containment, and pedestrian bridges.
- The Saturday count data was adjusted using the week-long data and the year-long data, provided by Caesars International and used in the 2012 Pedestrian Study, to determine day of week and month of year adjustment factors. The adjustment factors were used to determine time periods when walkway segments were estimated to exceed LOS C for days other than those counted on Saturday May 23 and June 20, 2015.

Table 4.23 summarizes the results of the analysis for possible time of day, day of week, and month of year no obstructive use restrictions based solely on pedestrian volumes and walkway widths.

Table 4.24 provides a summary of the analysis for possible no obstructive use restrictions including an effective walkway width (W_E) reduction of 2.25 feet for non-permanent obstructions (note that the length of time for many areas increase and additional days of week are included).

Table 4.25 provides a summary of the analysis for possible no obstructive use restrictions including an effective walkway width (W_E) reduction of 4.5 feet for two non-permanent obstructions.



Picture 4.16 – No Obstructive Use Signs



Picture 4.17 – Time of Day Restriction Sign

4.5.1 Localized Walkway Width Restrictions

The following list of locations were identified as constricted walkways within the study corridor which could result in localized conditions of LOS less than C:

- East walkway directly north of Flamingo Road underneath east/west pedestrian bridge at Cromwell (Cromwell)
- East walkway in front of Margaritaville directly south of Caesars Palace Boulevard (Margaritaville)
- Staircase on west walkway directly north of Caesars Palace Boulevard at Caesars rotunda (Caesars Rotunda)
- West walkway directly north of Caesars Palace Boulevard in front of the Colosseum (Colosseum)
- East walkway south of Venetian Hotel/Casino and directly north of Casino Royale driveway at bollards (Casino Royale)
- East walkway beneath Siren’s Cove South pedestrian bridge and North of Venetian Hotel/Casino(Siren’s Cove)

The effective walkway width, pedestrian volumes, and projected LOS at each localized width restriction location is shown in **Table 4.22** below.

Table 4.22 – Localized Walkway Width Restriction Summary

Width Restriction Summary			
Location	W_E (ft)	Max 15-min Volume	LOS
Cromwell	10	2472	E
Margaritaville	8.5	2044	E
Caesars Rotunda	5.5	1953	F
Colosseum	6.8	1953	E
Casino Royale	6.3	1767	E
Siren's Cove	6	1331	D

Table 4.23 – Count Locations Exceeding LOS C - Time of Day, Day of Week, and Month of Year

Holiday Weekend – Existing Walkway

Segment #	Count Location	Friday LOS	Hours of Friday LOS	Saturday LOS	Hours of Saturday LOS	Sunday LOS	Hours of Sunday LOS	Monday LOS	Hours of Monday LOS	Feb - Nov - Dec			Shortest Period of Time Common to All Days (Minimum of 4 hours)
										Jan	Nov	Dec	
R1	Trop West Bridge	-	-	D	6:30PM-7:00PM	D	6:30PM-7:00PM	-	-	-	X	-	-
R3	Harley Davidson	-	-	-	-	D	8:00PM-8:15PM	-	-	-	X	-	-
R4	Harmon West Bridge	-	-	D	7:45PM-8:00PM	D	7:45PM-8:00PM	-	-	-	X	-	-
R18*	Harmon North Bridge	-	-	D	10:30PM-10:45PM	D	10:30PM-11:00PM	-	-	-	X	-	-
-	Bally's Bazaar**	-	-	-	-	D	9:45PM-10:00PM	-	-	-	X	-	-
R7	Flamingo West Bridge	-	-	D	8:45PM-12:15AM	D	8:45PM-12:15AM	-	-	-	X	-	-
R8	Cromwell	D	9:30PM-12:45AM	D	2:15PM-12:45AM	D	2:15PM-12:45AM	-	-	X	X	-	2:15PM-12:45AM (Saturday and Sunday)
R9	Caesars South	D/E	8:15PM-12:00AM	D/E	3:45PM-12:45AM	D/E	3:45PM-12:45AM	D	9:45PM-11:30PM	X	X	X	3:45PM-12:45AM (Saturday and Sunday)
R8	Margaritaville	D	9:00PM-9:30PM	D/E	5:15PM-12:45AM	D/E	5:15PM-12:45AM	-	-	X	X	-	5:15PM-12:45AM (Saturday and Sunday)
R10	Colosseum	D/E	6:30PM-12:30AM	D/E	2:45PM-12:30AM	D/E	2:45PM-12:30AM	D	9:45PM-11:30PM	X	X	X	6:30PM-12:30AM (Friday, Saturday and Sunday)
R11	Forum Shops	-	-	-	-	D	8:45PM-9:00PM	-	-	-	X	-	-
R12	Harrah's	-	-	D	3:45PM-6:00PM	D	3:15PM-11:45PM	-	-	-	X	-	3:15PM-11:45PM (Sunday)
R13***	-	D/E	12:30PM-12:00AM	D/E	12:00PM-12:00AM	D/E	12:00PM-12:00AM	-	-	X	X	-	12:30PM-12:00AM (Friday, Saturday, and Sunday)
R14	Venetian South	D/E	12:00PM-12:00AM	D/E	12:00PM-12:00AM	D/E	12:00PM-12:00AM	D	11:15PM-12:00AM	X	X	X	12:00PM-12:00AM (Friday, Saturday and Sunday)
R15	Venetian North	D	10:30PM-11:30PM	D	9:45PM-11:45PM	D	9:45PM-11:45PM	-	-	-	X	-	-

Typical Weekend – Existing Walkway

Segment #	Count Location	Friday LOS	Hours of Friday LOS	Saturday LOS	Hours of Saturday LOS	Sunday LOS	Hours of Sunday LOS	Monday LOS	Hours of Monday LOS	Feb - Nov - Dec			Shortest Period of Time Common to All Days (Minimum of 4 hours)
										Jan	Nov	Dec	
R7	Flamingo West Bridge	-	-	D	10:15PM-10:30PM	-	-	-	-	-	X	-	-
R9	Caesars South	-	-	D	9:30PM-10:45PM	-	-	-	-	-	X	-	-
R13***	-	-	-	D	10:00PM-11:15PM	-	-	-	-	-	X	-	-
R14	Venetian South	-	-	D	10:15PM-12:00AM	-	-	-	-	-	X	-	-

*New segment created in 2015

**Count location not located within one of original 17 segments of 2012 study

***No count location located within segment.



Table 4.24 – Count Locations Exceeding LOS C - Time of Day, Day of Week, and Month of Year (with 1 NPO)

Holiday Weekend – with a Non-Permanent Obstruction Effective Walk Width Reduction

Segment #	Count Location	Friday LOS	Hours of Friday LOS	Saturday LOS	Hours of Saturday LOS	Sunday LOS	Hours of Sunday LOS	Monday LOS	Hours of Monday LOS	Feb - Nov - Dec			Shortest Period of Time Common to All Days (Minimum of 4 hours)
										Jan	Nov	Dec	
R1	Trop West Bridge	D	6:45PM-7:00PM	D	6:30PM-7:00PM	D	6:30PM-7:00PM	-	-	-	X	-	-
R3	Harley Davidson	-	-	D	8:00PM-8:15PM	D	8:00PM-8:15PM	-	-	-	X	-	-
R4	Harmon West Bridge	-	-	D	7:45PM-8:00PM	D	7:45PM-9:00PM	-	-	-	X	-	-
R18*	Harmon North Bridge	-	-	D	10:30PM-11:00PM	D	10:30PM-11:00PM	-	-	-	X	-	-
-	Bally's Bazaar**	-	-	D	9:45PM-10:00PM	D	2:15PM-12:30AM	-	-	-	X	-	-
R7	Flamingo West Bridge	D	9:30PM-10:30PM	D	8:45PM-12:15AM	D	8:45PM-12:15AM	-	-	-	X	-	-
R8	Cromwell	D	5:30PM-12:45AM	D/E	2:15PM-1:30AM	D/E	2:15PM-1:30AM	-	-	X	X	-	2:15PM-1:30AM (Saturday and Sunday)
R9	Caesars South	D/E	3:45PM-12:45AM	D/E	3:30PM-12:45AM	D/E/F	3:30PM-12:45AM	D	8:45PM-11:30PM	X	X	X	3:45PM-12:45AM (Friday, Saturday, and Sunday)
R8	Margaritaville	D	5:15PM-12:45AM	D/E	4:15PM-1:00AM	D/E	2:00PM-1:15AM	D	9:00PM-9:15PM	X	X	X	5:15PM-12:45AM (Friday, Saturday, and Sunday)
R10	Colosseum	D/E	4:00PM-12:30AM	D/E	2:45PM-12:30AM	D/E	2:00PM-12:45AM	D	8:15PM-11:30PM	X	X	X	6:30PM-12:30AM (Friday, Saturday and Sunday)
R11	Forum Shops	-	-	D	8:45PM-9:00PM	D	8:45PM-9:00PM	-	-	-	X	-	-
R12	Harrah's	D	5:00PM-6:00PM	D	2:30PM-12:45AM	D	2:30PM-1:30AM	-	-	-	X	-	2:30PM-12:45AM (Saturday and Sunday)
R13***	-	D/E	12:30PM-12:00AM	D/E	12:00PM-12:00AM	D/E	12:00PM-12:00AM	-	-	X	X	X	12:30PM-12:00AM (Friday, Saturday, and Sunday)
R14	Venetian South	D/E	12:00PM-12:00AM	D/E	12:00PM-12:00AM	D/E	12:00PM-12:00AM	D	9:45PM-12:00AM	X	X	X	12:00PM-12:00AM (Friday, Saturday, and Sunday)
R15	Venetian North	D	10:00PM-11:45PM	D	5:15PM-12:30AM	D/E	3:30PM-12:30AM	-	-	X	X	-	3:30PM-12:30AM (Friday, Saturday, and Sunday)

Typical Weekend – with a Non-Permanent Obstruction Effective Walk Width Reduction

Segment #	Count Location	Friday LOS	Hours of Friday LOS	Saturday LOS	Hours of Saturday LOS	Sunday LOS	Hours of Sunday LOS	Monday LOS	Hours of Monday LOS	Feb - Nov - Dec			Shortest Period of Time Common to All Days (Minimum of 4 hours)
										Jan	Feb-Nov	Dec	
R7	Flamingo West Bridge	D	10:15PM-10:30PM	D	10:00PM-11:00PM	-	-	-	-	-	X	-	-
R9	Caesars South	D	9:30PM-10:45PM	D/E	9:00PM-11:15PM	-	-	-	-	-	X	-	-
R8	Margaritaville	D	11:00PM-11:15PM	D	11:00PM-11:15PM	-	-	-	-	-	X	-	-
R10	Colosseum	-	-	D	9:45PM-11:00PM	-	-	-	-	-	X	-	-
R11	Forum Shops	-	-	-	-	-	-	-	-	-	-	-	-
R12	Harrah's	-	-	-	-	-	-	-	-	-	-	-	-
R13***	-	D	11:00PM-11:15PM	D	6:45PM-12:00AM	-	-	-	-	-	X	-	6:45PM-12:00AM (Saturday)
R14	Venetian South	D	5:15PM-12:00AM	D	5:15PM-12:15AM	D	11:00PM-11:15PM	-	-	-	X	-	5:15PM-12:00AM (Friday and Saturday)
R16	TI Bus Stop	-	-	-	-	-	-	-	-	-	-	-	-
R15	Venetian North	D	11:15PM-11:30PM	D	10:30PM-11:45PM	-	-	-	-	-	X	-	-

*New segment created in 2015

**Count location not located within one of original 17 segments of 2012 study

***No count location located within segment.



Table 4.25 – Count Locations Exceeding LOS C - Time of Day, Day of Week, and Month of Year (with 2 NPO's)

Holiday Weekend – with Two Non-Permanent Obstruction Effective Walk Width Reductions

Segment #	Count Location	Friday LOS	Hours of Friday LOS	Saturday LOS	Hours of Saturday LOS	Sunday LOS	Hours of Sunday LOS	Monday LOS	Hours of Monday LOS	Jan	Feb-Nov	Dec	Shortest Period of Time Common to All Days (Minimum of 4 hours)
R1	Trop West Bridge	D	6:45PM-7:00PM	D	6:30PM-7:00PM	D	6:30PM-7:15PM	-	-	-	X	-	-
R2	Food Court	-	-	D	10:30PM-10:45PM	D	10:30PM-10:45PM	-	-	-	X	-	-
R3	Harley Davidson	-	-	D	8:00PM-8:15PM	D	8:00PM-8:15PM	-	-	-	X	-	-
R4	Harmon West Bridge	D	7:45PM-8:00PM	D	7:45PM-9:00PM	D	7:45PM-9:00PM	-	-	-	X	-	-
R18*	Harmon North Bridge	D	10:30PM-10:45PM	D	10:15PM-11:00PM	D	7:30PM-11:00PM	-	-	-	X	-	-
-	Bally's Bazaar**	-	-	D	9:45PM-10:00PM	D	9:45PM-10:00PM	-	-	-	X	-	-
R7	Flamingo West Bridge	D	8:45PM-11:00PM	D	3:30PM-12:15AM	D	3:30PM-12:30AM	-	-	X	X	-	3:30PM-12:15AM (Saturday and Sunday)
R8	Cromwell	D	2:15PM-12:45AM	D/E	2:15PM-1:30AM	D/E	2:15PM-1:30AM	-	-	X	X	-	2:15PM-1:30AM (Friday, Saturday and Sunday)
R9	Caesars South	D/E	3:45PM-12:45AM	D/E/F	3:15PM-12:45AM	D/E/F	3:15PM-12:45AM	D	8:15PM-12:00AM	X	X	X	3:45PM-12:45AM (Friday, Saturday, and Sunday)
R8	Margaritaville	D	4:15PM-1:00AM	D/E	4:15PM-1:00AM	D/E	2:00PM-1:30AM	D	5:15PM-9:30PM	X	X	X	4:15PM-1:00AM (Friday, Saturday, and Sunday)
R10	Colosseum	D/E	2:45PM-12:30AM	D/E/F	2:00PM-1:15AM	D/E/F	2:00PM-1:15AM	D	6:45PM-12:00AM	X	X	X	6:45PM-12:30AM (Friday, Saturday, Sunday, and Monday)
R11	Forum Shops	-	-	D	8:45PM-9:00PM	D	8:30PM-12:00AM	-	-	-	X	-	-
R12	Harrah's	D	3:15PM-6:15PM	D	2:00PM-1:30AM	D	2:00PM-1:30AM	-	-	X	X	-	2:00PM-1:30AM (Saturday and Sunday)
R13***	-	D/E	12:00PM-12:00AM	D/E	12:00PM-12:00AM	D/E	12:00PM-12:00AM	D	3:00PM-12:00AM	X	X	-	3:00PM-12:00AM (Friday, Saturday, Sunday and Monday)
R14	Venetian South	D/E	12:00PM-12:00AM	D/E	12:00PM-12:00AM	D/E	12:00PM-12:00AM	D	12:30PM-12:00AM	X	X	X	12:30PM-12:00AM (Friday, Saturday, Sunday, and Monday)
R15	Venetian North	D	5:30PM-12:00AM	D	3:30PM-12:30AM	D/E	3:00PM-12:45AM	-	-	X	X	-	5:30PM-12:00AM (Friday, Saturday, and Sunday)

Typical Weekend – with Two Non-Permanent Obstruction Effective Walk Width Reductions

Segment #	Count Location	Friday LOS	Hours of Friday LOS	Saturday LOS	Hours of Saturday LOS	Sunday LOS	Hours of Sunday LOS	Monday LOS	Hours of Monday LOS	Jan	Feb-Nov	Dec	Shortest Period of Time Common to All Days (Minimum of 4 hours)
R7	Flamingo West Bridge	D	10:00PM-11:00PM	D	9:45PM-11:00PM	-	-	-	-	-	X	-	-
R9	Caesars South	D	9:00PM-11:45PM	D	9:00PM-12:15AM	D	9:30PM-11:00PM	D	9:30PM-10:45PM	-	X	-	-
R8	Margaritaville	D	11:00PM-11:15PM	D	11:00PM-11:15PM	D	11:00PM-11:15PM	-	-	-	X	-	-
R10	Colosseum	D	9:45PM-11:00PM	D	8:30PM-12:00AM	-	-	-	-	-	X	-	-
R13***	-	D	5:15PM-12:00AM	D	4:30PM-12:15AM	D	11:00PM-11:15PM	-	-	-	X	-	5:15PM-12:00AM (Friday and Saturday)
R14	Venetian South	D	4:30PM-12:00AM	D	4:00PM-12:15AM	D	5:15PM-12:00AM	D	6:45PM-12:00AM	X	X	-	6:45PM-12:00AM (Friday, Saturday, Sunday and Monday)
R15	Venetian North	D	10:15PM-11:45PM	D	9:45PM-11:45PM	D	11:15PM-11:30PM	-	-	-	X	-	-

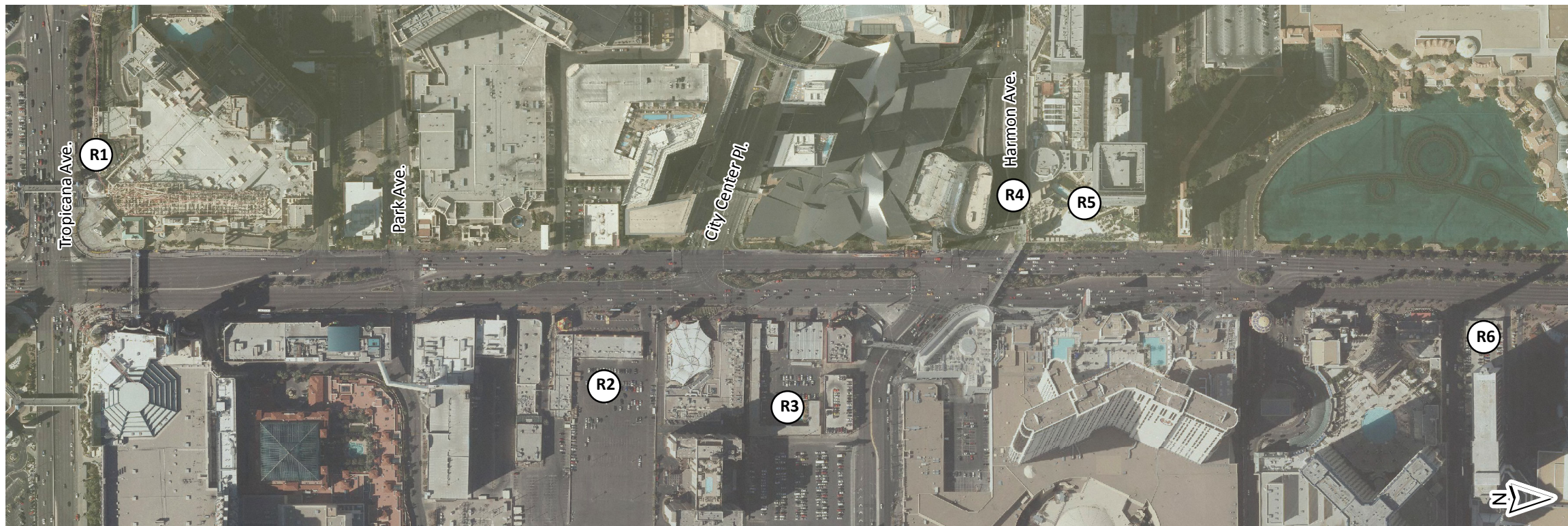
*New segment created in 2015

**Count location not located within one of original 17 segments of 2012 study

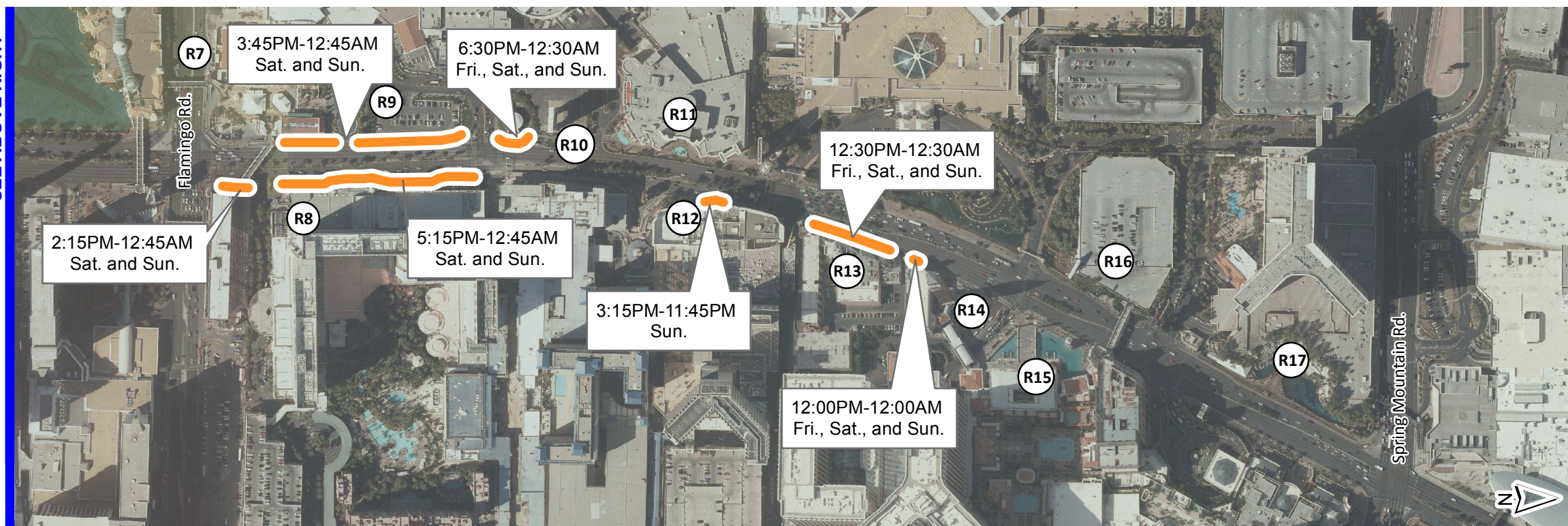
***No count location located within segment.



2015



SEE BELOW LEFT



SEE ABOVE RIGHT

Legend (2015)

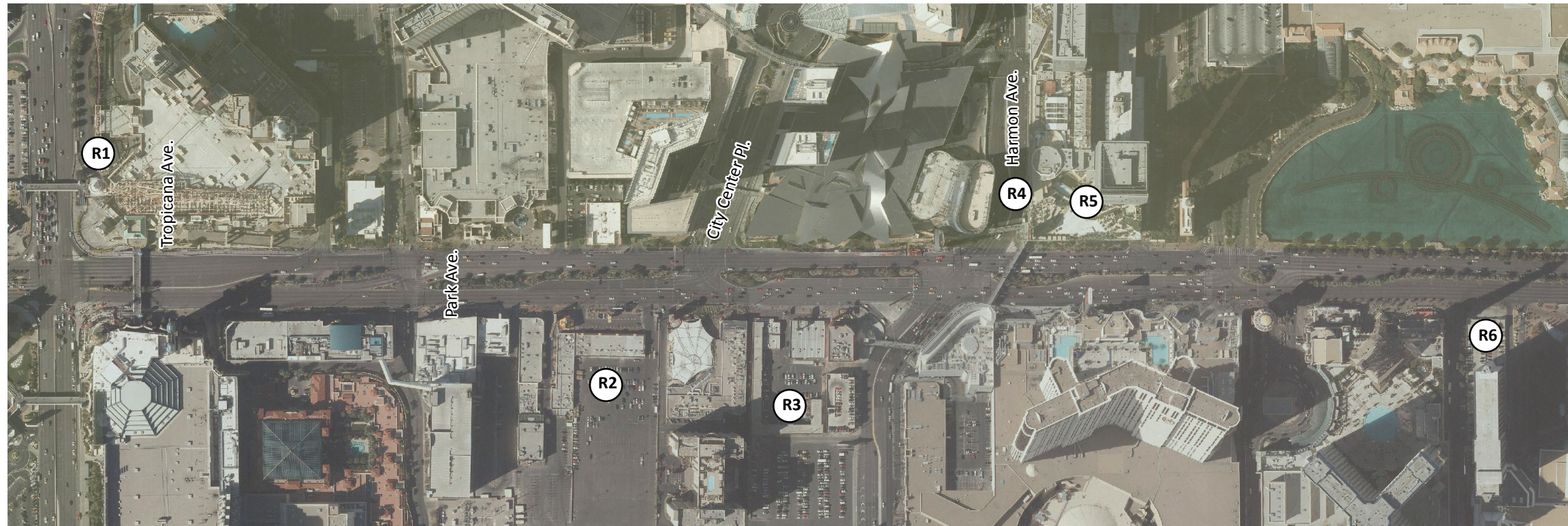
Segment where LOS < C for more than four hours

R# Segment Reference Number

WALKWAY SEGMENTS THAT EXCEEDED LEVEL OF SERVICE (LOS) C FOR MORE THAN FOUR HOURS WITH NON-PERMANENT OBSTRUCTION ABSENT



FIGURE 4.64 114

NON-PERMANENT OBSTRUCTION ABSENT

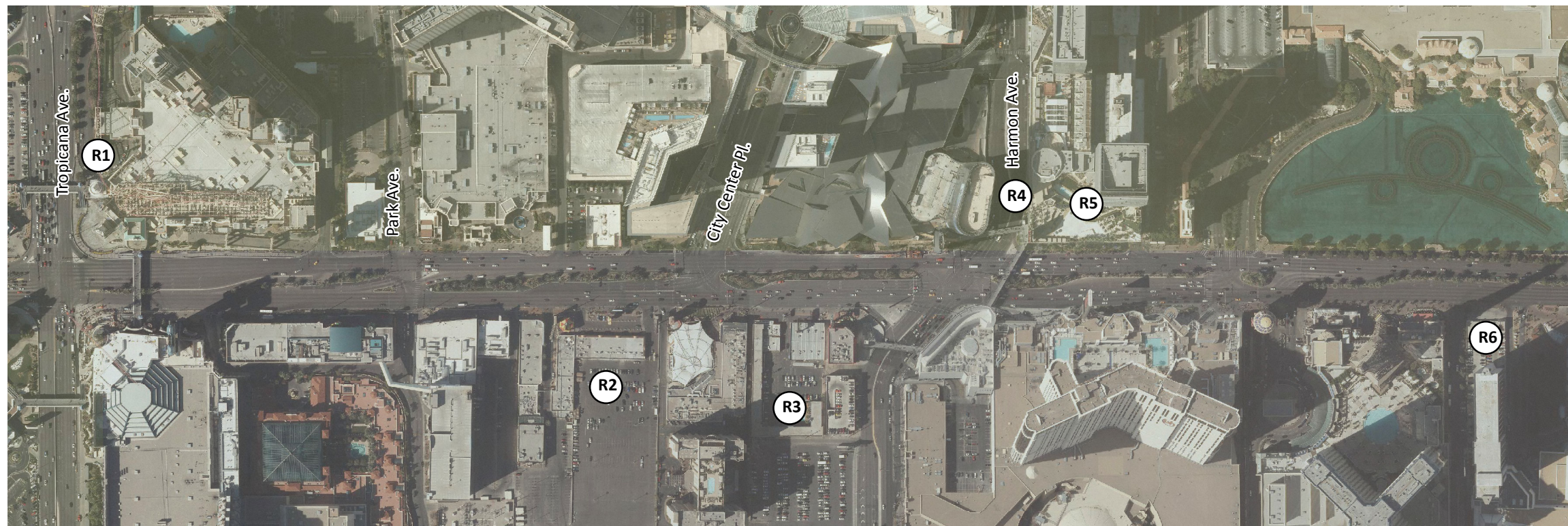


SEE FIGURE 4.66

Legend (2015)



-  Segment where LOS < C for more than four hours
-  Segment Reference Number

ONE NON-PERMANENT OBSTRUCTION PRESENT



SEE FIGURE 4.66

Legend (2015)

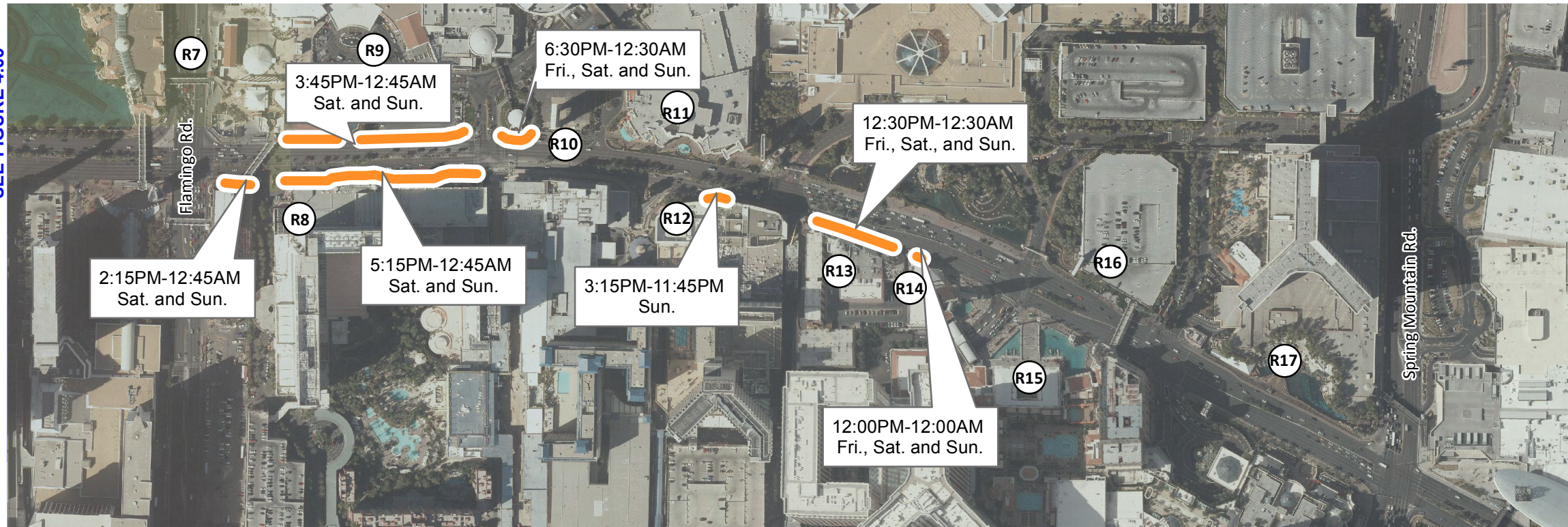
-  Segment where LOS < C for more than four hours when 1 NPO is present
-  Segment Reference Number

WALKWAY SEGMENTS THAT EXCEEDED LEVEL OF SERVICE (LOS) C FOR MORE THAN FOUR HOURS WITH ONE NON-PERMANENT OBSTRUCTION PRESENT TROPICANA AVE. TO FLAMINGO RD.



FIGURE 4.65 115

NON-PERMANENT OBSTRUCTION ABSENT

SEE FIGURE 4.65

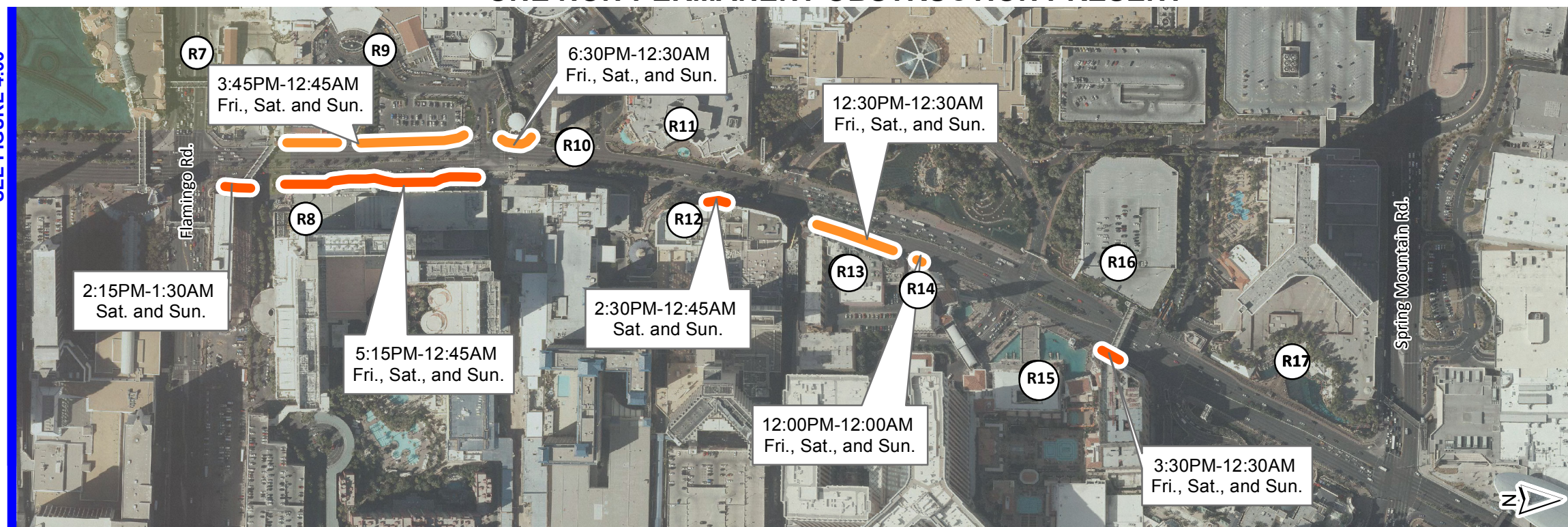


Legend




-  Segment where LOS < C for more than four hours
-  Segment Reference Number

ONE NON-PERMANENT OBSTRUCTION PRESENT

SEE FIGURE 4.65



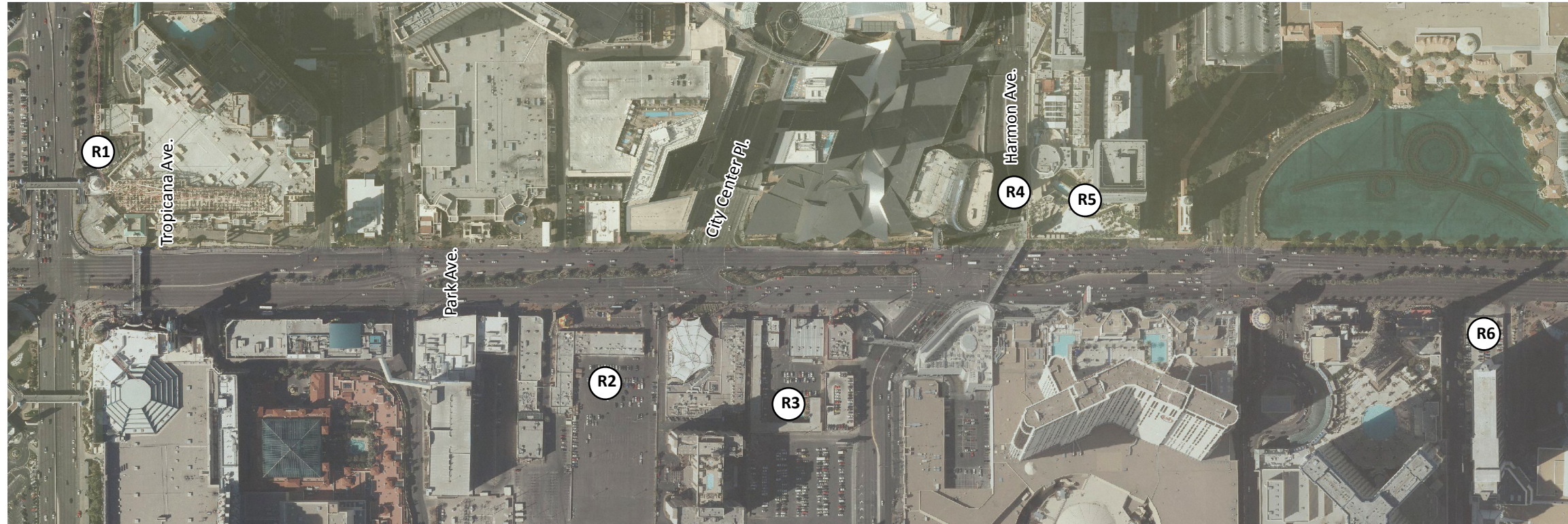
Legend

-  Segment where LOS < C for more than four hours with 1 NPO present
-  Segment where LOS < C for more than four hours
-  Segment Reference Number

WALKWAY SEGMENTS THAT EXCEED LEVEL OF SERVICE (LOS) C FOR MORE THAN FOUR HOURS WITH ONE NON-PERMANENT OBSTRUCTIONS PRESENT FLAMINGO RD. TO SPRING MOUNTAIN RD.



FIGURE 4.66 116

NON-PERMANENT OBSTRUCTIONS ABSENT

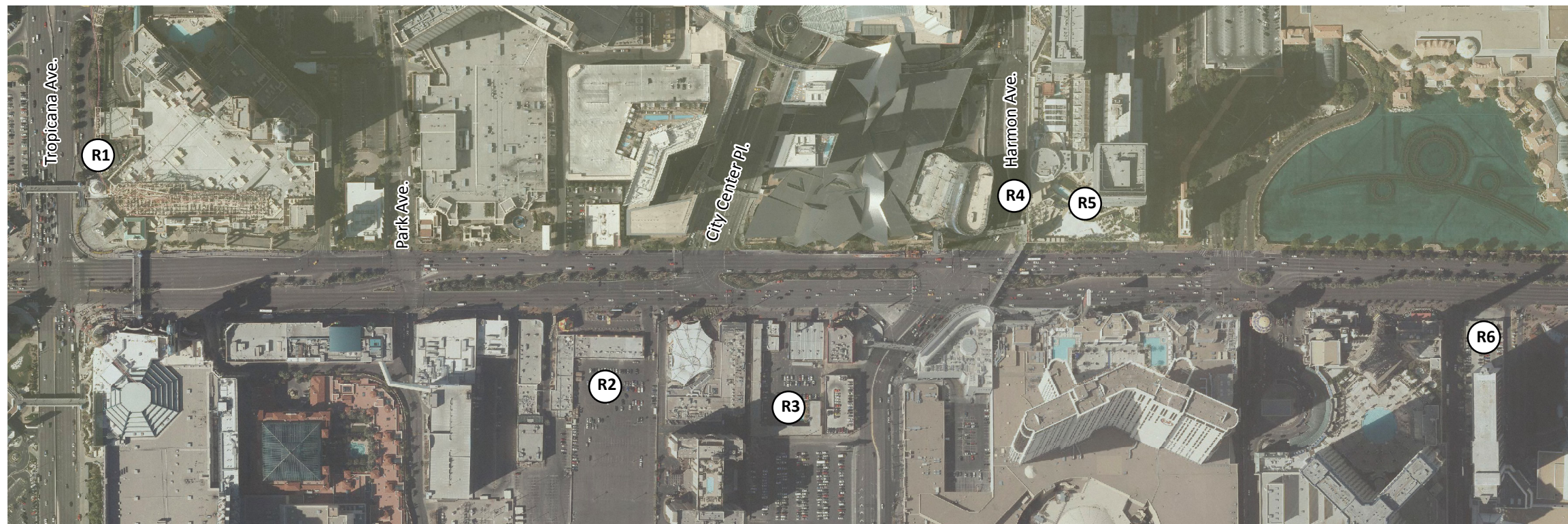


SEE FIGURE 4.68

Legend (2015)



-  Segment where LOS < C for more than four hours
-  Segment Reference Number

TWO NON-PERMANENT OBSTRUCTIONS PRESENT



SEE FIGURE 4.68

Legend (2015)

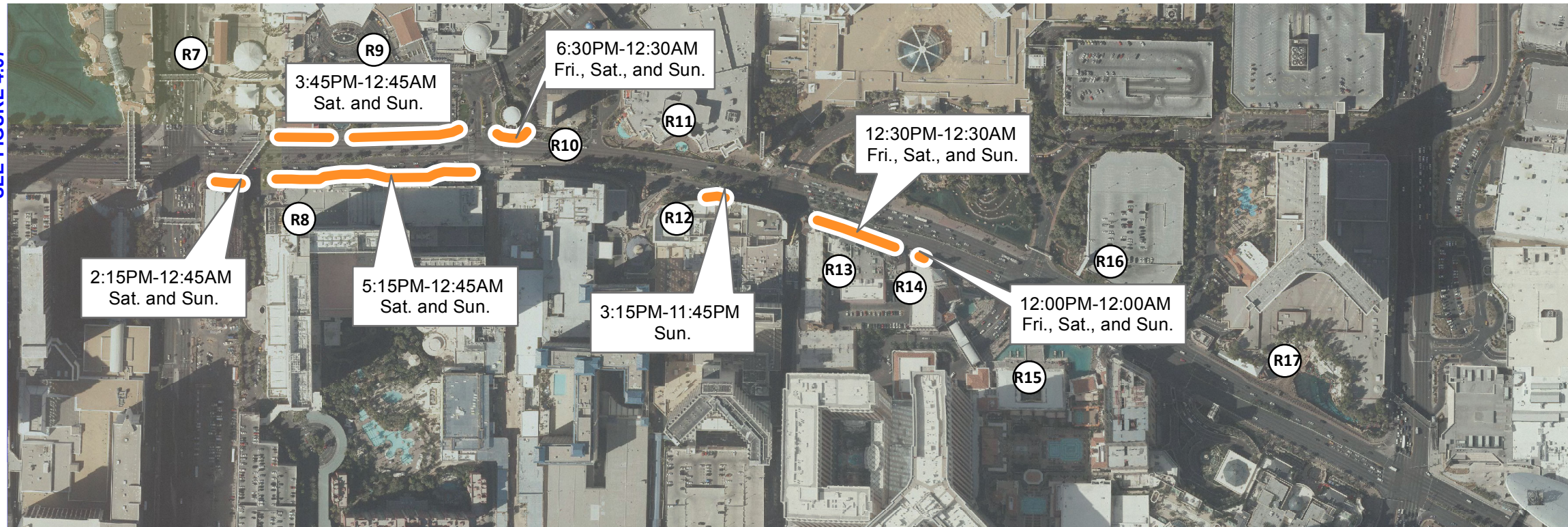
-  Segment where LOS < C for more than four hours when 2 NPO's are present
-  Segment Reference Number

WALKWAY SEGMENTS THAT EXCEEDED LEVEL OF SERVICE (LOS) C FOR MORE THAN FOUR HOURS WITH TWO NON-PERMANENT OBSTRUCTIONS PRESENT TROPICANA AVE. TO FLAMINGO RD.

FIGURE 4.67 117

NON-PERMANENT OBSTRUCTIONS ABSENT

SEE FIGURE 4.67



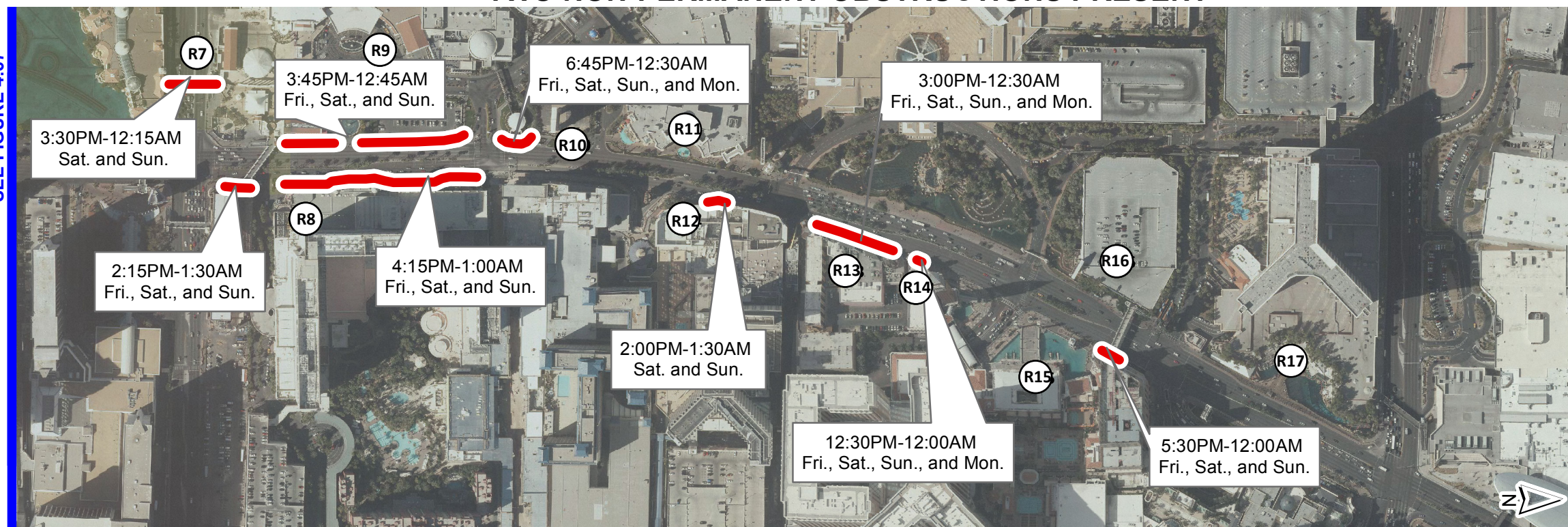
Legend

Segment where LOS < C for more than four hours

R# Segment Reference Number

TWO NON-PERMANENT OBSTRUCTIONS PRESENT

SEE FIGURE 4.67



Legend

Segment where LOS < C for more than four hours

Segment where LOS < C for more than four hours when 2 NPO's are present

R# Segment Reference Number

WALKWAY SEGMENTS THAT EXCEED LEVEL OF SERVICE (LOS) C FOR MORE THAN FOUR HOURS WITH TWO NON-PERMANENT OBSTRUCTIONS PRESENT FLAMINGO RD. TO SPRING MOUNTAIN RD.

FIGURE 4.68 118

5 CONCLUSIONS AND RECOMMENDATIONS

General conclusions, specific recommendations, and best practices are discussed in this section based on the observation of 2,650,000 pedestrians, 288 hours of in-field observations and the detailed data analysis and evaluation conducted during this update. General conclusions and specific recommendations are provided in relation to pedestrian safety and infrastructure improvement throughout the study corridor of Las Vegas Boulevard. Specific mitigation recommendations for constrained walkways are detailed on **Figure 5.1** and in **Section 5.2**. Recommendations are also provided for consideration in updating the current no-obstructive use ordinance (see **Section 3.3**). **Section 5.4** provides measures of Best Practices for the continued improvement to the pedestrian experience along Las Vegas Boulevard.

5.1 General Conclusions

The following general conclusions are provided recognizing the importance of maintaining the economic vitality of Las Vegas Boulevard (the Strip) through the improvement and maintenance of a safe pedestrian walkway system.

- The results of this restudy continue to support the no-obstruction zone recommendations of the 1994 Lee Engineering Pedestrian Study as incorporated into Clark County Code Chapter 16.11 where obstructive uses are not permitted near a signalized intersection, access drive, or mid-block cross walk.
- Clark County entitlement requirements on new construction within the Resort Corridor should continue to require pedestrian walks to be designed for a minimum effective walkway width (W_E) of fifteen feet (15') or a pedestrian walkway LOS of C or better. Considering a typical 1.5-foot shy distance on each side of the walk (3 feet of shy distance), a total of 18 feet of walkway width should be provided. A walkway with 15 feet of effective width (W_E) can serve up to 2,250 pedestrians in 15 minutes while maintaining a LOS of C.
- Clark County entitlement requirements on new construction projects within the Resort Corridor should incorporate the removal, replacement, and/or installation of no-obstructive use zone signs and white painted sidewalk markings as appropriate, into the projects' civil improvement drawings. Depending on the scope of these improvements, the development should work with the Department of Public Works to update the "No Obstruction Zones" map for adoption by the Board of County Commissions.
- The study observed a significant number of individuals creating undue obstruction in the current no-obstructive use zones at intersections and driveways. This study provides additional support and justification to maintain these areas free from obstructions during peak walkway usage. Maintaining no-obstructive use zones at intersections, midblock crosswalks and access drive entrances reduces congestion which allows for increased visibility and enhanced walkway safety.

- The pedestrian bridges are an integral part of the pedestrian walkway system, but have constrained widths. Based upon the observed pedestrian volumes and walkway LOS, it is appropriate at times to designate pedestrian bridges as no-obstruction zones. Pedestrian bridges should be maintained free of any obstructions, whether permanent or non-permanent in nature. In addition, the areas on and around stair landings, elevator waiting areas, as well as escalator approach, and departure landing zones should also be maintained free of any obstructions (permanent or non-permanent).
- LOS evaluations at bus stops suggest that where insufficient bus patron queue area is identified, bus stops should be reserved for bus patrons by restricting non-permanent obstructions. The LOS evaluations concluded that all Type 2 (In Front of Walk) and Type 3 (Behind Walk) bus stops should allow the area between the bus patron queue area and the curb to be available for only queued bus patrons and walking pedestrians with a delineated no-obstructive use zone. In addition, from field observations, all Type 1 (Isolated) bus stops should also be considered for no-obstructive use zones to encourage transit use by maintaining queue areas of LOS C or better and aiding transit rider flow in front of Type 1 bus stops.
- With development or redevelopment within the Resort Corridor, the developer should work with the Las Vegas Valley Water District to relocate any water district facilities out of the pedestrian walkway by providing appropriate utility easements.
- Pedestrian containment measures should be standardized along the Resort Corridor including placement and design. Containment encourages the use of pedestrian bridges and signalized crosswalks. Containment installations should be installed recognizing the need to maintain intersection site visibility zones, especially at driveway crossings.
- Pedestrian crosswalks within the resort corridor along Las Vegas Boulevard should be constructed to:
 - Accommodate the observed pedestrian volumes at the desired crossing location. This is especially important at signalized crossings in order to improve visibility of the crossing.
 - Be perpendicular to the sidewalk when possible in order to provide pedestrians the shortest path in crossing the street.
 - Consider median refuge islands for marked at-grade crosswalks with approved markings.
 - Discourage the use of "porkchop" right-turn islands for exclusive right-turn lanes to shorten pedestrian street crossing widths whenever applicable.

5.1.1 Safety Enhancements

During the study collection periods, general observations of the pedestrian activities and walkway conditions within the study corridor were conducted. The following measures are given as general safety enhancements based on study observation evaluations:

- Pedestrian containment should continue to be deployed in the median of Las Vegas Boulevard throughout the study corridor where no adjacent sidewalk containment exists to encourage the use of pedestrian bridges and signalized crosswalks.
- At the present time, the RTC maintains a text and email update service providing information on bus stop arrival times. For the Strip, the RTC should consider implementing an additional system to display real-time arrival time for transit vehicles at each of the bus stops within the study corridor. Not only will this continue to enhance the transit system and the visitor experience, it will also help mitigate the motivation to step out into the street to see if the bus is coming. This is especially useful in the Resort Corridor due to the number of visitors and tourists who are unfamiliar with the local transit system and texting service. A tourist being aware of the bus arrival time may elect to not wait for the next bus and continue to walk.
- Supplemental pedestrian walkway lighting should be installed to eliminate dark alcoves and other dark areas within the Resort Corridor. Pedestrian bridge lighting should continue to be installed and lighting levels adjusted as appropriate to provide nighttime security and safety for the Las Vegas visitor experience.
- Pedestrian bridge stairwells should be designed and constructed to allow the users to be visible to surrounding public areas and walkways.

5.2 Infrastructure Improvement Recommendations

Following the acceptance of the 2012 Pedestrian Study, many of the previously identified short-term infrastructure areas of concern have been addressed or are in the process of being acted upon as detailed in **Section 2.3**. With the 2015 Update, the following specific areas of concern have been identified by field observations and updated data evaluations.

Each measure is classified as short, intermediate, or long-term. Short-term measures are relatively low construction cost measures with estimated implementation times of less than one year. Intermediate measures may be more costly and require multi-agency and property coordination to implement. Intermediate measures can require one to three years to implement. Long-term measures require additional study and significant planning and design for implementation which would require more than three years to implement. Specific location improvements may not result in improving LOS to C or better. The following areas of concern for specific mitigation measures are shown in **Figure 5.1** in relationship to the Resort Corridor.

General

Recommendation (Short-Term):

- Enforce the no-obstructive use ordinance within the Resort Corridor.
- Review and update the Transportation Element of the Clark County Master Plan (see Appendix F) to reflect the recommendations of this report section to provide additional pedestrian bridge systems within the Resort Corridor.

Recommendations (Intermediate/Long-Term):

- With development fire hydrants and other utility infrastructure facilities are to be relocated and/or constructed outside of adjacent pedestrian walkways.
- Construct pedestrian bridge systems to eliminate at-grade pedestrian crossings in compliance with the adopted Transportation Element of the Clark County Master Plan.

5.2.1 Areas with LOS Less than C

Location A: Tropicana Avenue Pedestrian Bridges



Picture 5.1 – Location A: Tropicana Avenue Pedestrian Bridges.

Recommendations (Short-Term):

- Coordinate with the Nevada Department of Transportation (NDOT) to remove trash enclosures located on existing pedestrian bridges.

Location B: Sidewalk adjacent to Caesars Palace Hotel/Casino



Picture 5.2 – Location B: Caesars Palace Sidewalk.

Recommendations (Intermediate-Term):

- In coordination with Caesars Palace, landscaping should be modified to allow for sidewalk widening to obtain a minimum effective walkway width of 15 feet. During this update, peak 15-minute pedestrian demands of 1,997 pedestrians were observed along this walkway segment.

Location C: Sidewalk Adjacent to Caesars Palace Rotunda



Picture 5.3 – Location C: Caesars Palace Rotunda.

Recommendations (Short-Term):

- Study, in coordination with Caesars Palace, the feasibility to modify existing rotunda structure to widen adjacent sidewalk widths.

Recommendations (Intermediate-Term):

- Implement study recommendations to widen walkway on the northwest corner of the Caesars Palace Drive/Las Vegas Boulevard intersection.

Location D: Venetian North Bus Stop at Las Vegas Boulevard Pedestrian Bridge

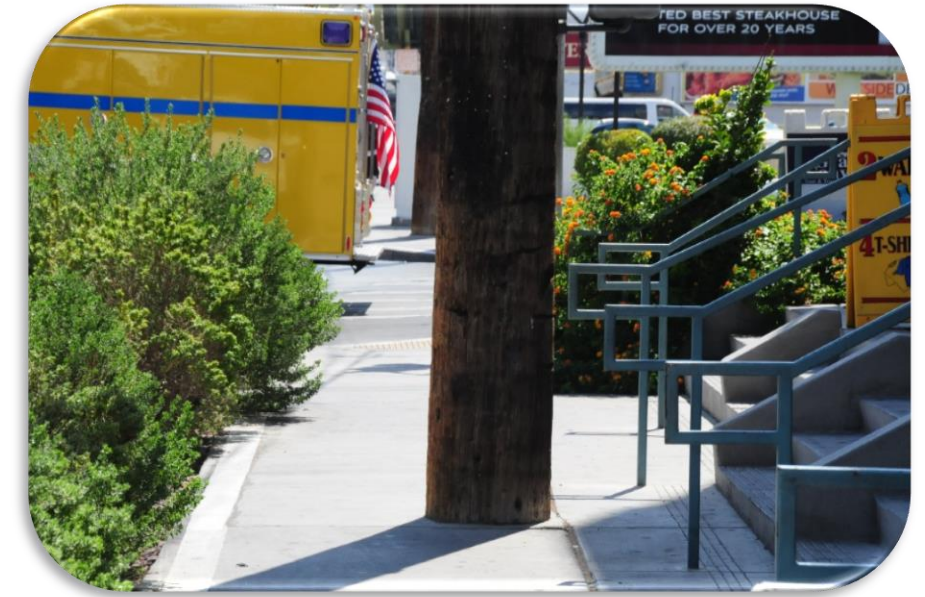


Picture 5.4 – Location D: Venetian N. Bus Stop.

Recommendations (Intermediate-Term):

- In coordination with the Venetian Hotel/Casino, widen the existing ($W_E = 6$ feet) walkway width beneath the Las Vegas Boulevard pedestrian bridge. This may require bus stop relocation, traffic signal cabinet relocation, and/or landscape modifications.

Location E: Sidewalk north of Circus Circus Drive



Picture 5.5 – Location E: Sidewalk at Mini Mart.

Recommendations (Short-Term):

- Coordinate with NV Energy to relocate utility pole outside of existing sidewalk on the west side of Las Vegas Boulevard north of Circus Circus Drive.
- Evaluate and implement options to widen existing walkway.

5.2.2 Street Crossings

Location F: Las Vegas Boulevard and Park Avenue intersection



Picture 5.6 – Location F: MGM - Park Avenue/Las Vegas Boulevard Intersection.



Picture 5.7 – Location F: MGM - Park Avenue/Las Vegas Boulevard Intersection.

Recommendations (Short-Term):

- Study the feasibility of advancing the time schedule for the construction of a pedestrian bridge system at this intersection.

Location G: Las Vegas Boulevard and Bellagio/Paris intersection



Picture 5.8 – Location G: Pedestrian Volumes at Bellagio-Paris Intersection.

Recommendation (Intermediate-Term):

- Study the safety and feasibility in coordination with Bellagio Hotel/Casino to remove the right-turn “porkchop” island on the south west corner of the Bellagio/Paris - Las Vegas Boulevard intersection.
- Widen existing crosswalk widths both north/south and east/west for identified pedestrian volume demands.
- Study the safety and feasibility of providing a Las Vegas Boulevard median refuge for pedestrians crossing Las Vegas Boulevard.

Recommendations (Long-Term):

- Study the feasibility of a pedestrian bridge system at this major intersection to eliminate the at-grade pedestrian crossing of Las Vegas Boulevard.

Location H: Caesars Palace Drive and Las Vegas Boulevard intersection pedestrian crossings



Picture 5.9 – Location H: LINQ - Caesars Palace Drive/Las Vegas Boulevard Intersection.

Recommendations (Intermediate-Term):

- Study the safety and feasibility in coordination with Caesars Palace to remove the right-turn “porkchop” island on the southwest corner of the intersection.

Recommendations (Long-Term):

- Study the feasibility of a pedestrian bridge system at this intersection location to eliminate the at grade pedestrian crossings between Caesars Palace and the LINQ.

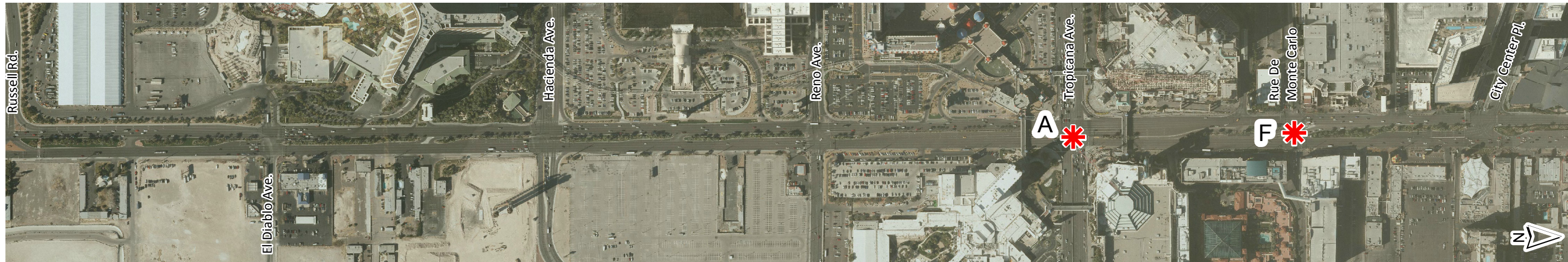
Location I Las Vegas Boulevard and Mirage South Entrance



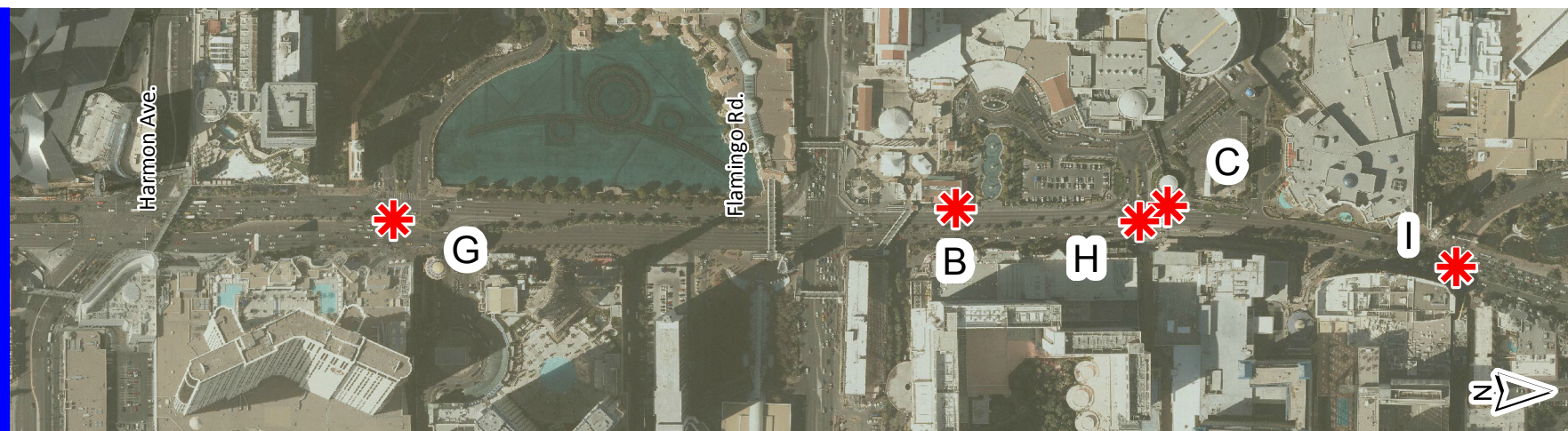
Picture 5.10 – Location I: Mirage/Harrah’s – Intersection of Las Vegas Boulevard and Mirage South Entrance.

Recommendations (Short-Term):

- Study the feasibility of a pedestrian bridge system at this location to eliminate the at-grade pedestrian crossings of Las Vegas Boulevard.

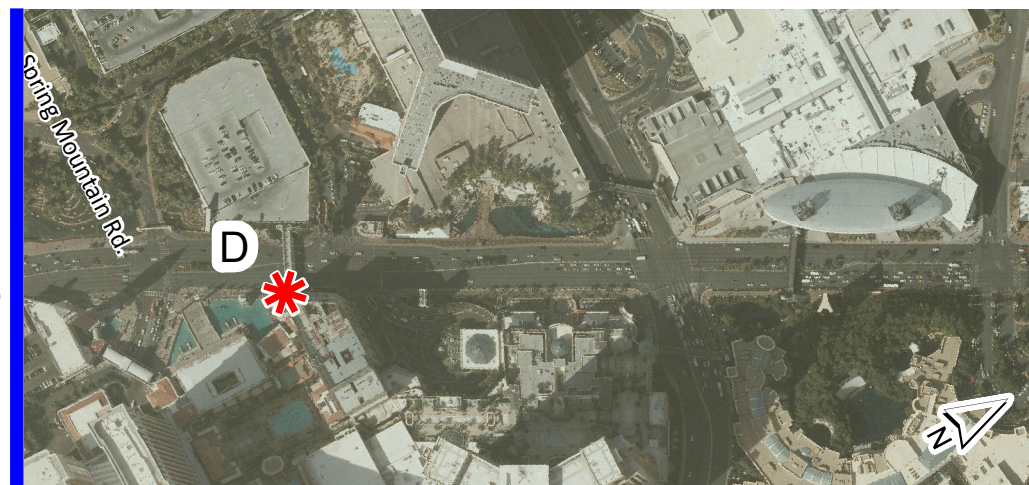


SEE BELOW LEFT

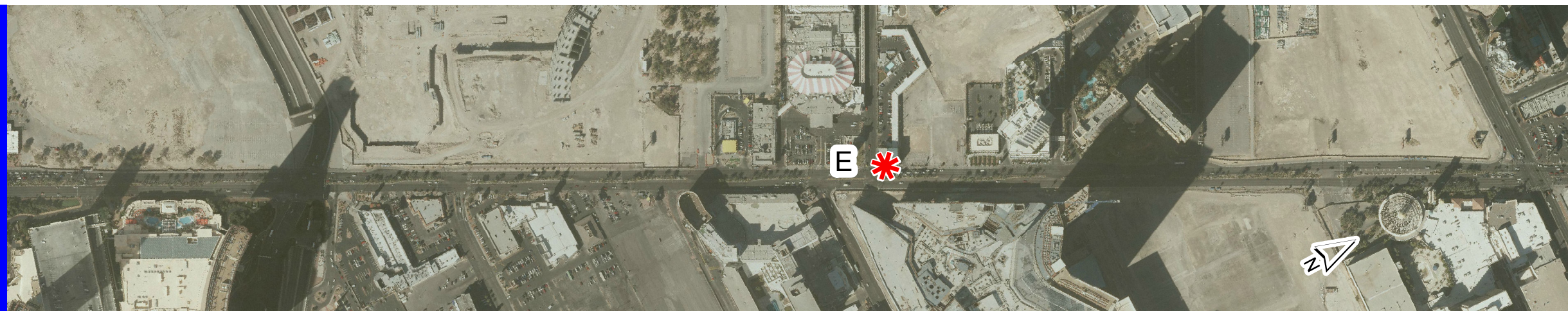


SEE ABOVE RIGHT

SEE RIGHT
SEE LEFT



SEE BELOW LEFT



SEE ABOVE RIGHT

Legend

 Improvement Locations

**LOCATIONS OF PEDESTRIAN
MOVEMENT CONCERN IN 2015**

FIGURE 5.1 124

5.3 Recommended Updates to No-Obstructive Use Zones

The following recommendations are provided based on the technical findings of this study update and are presented for legal review and consideration by the Clark County Board of Commissioners for amendments to the existing no-obstructive use ordinance (Clark County Code of Ordinances Title 16 – Roads and Highways Chapter 16.11 – Obstructive Uses of Public Sidewalks) shown in **Exhibit D**:

- No-obstruction zones should be applied to all construction zones affecting pedestrian walkways.
- To date, engineering judgement has been used to implement the no-obstruction zone to the unique sidewalk conditions along the Resort Corridor. The no-obstruction zones should be clarified so that dimensions for midblock crosswalks, intersections, and driveways are measured following the adjacent pedestrian walkway that does not always follow the back of curb. Exceptions to back of curb measurements should be addressed:
 - When the defined prohibition distance is greater than the distance to a nearby pedestrian containment object, the prohibition marking should end at these physical containment measures.
 - The no-obstructive zone delineation should follow the front of sidewalk if it veers away from or is separated by landscaping from the curb line.
 - Allow for engineering judgment to be used for unique and unusual walkway conditions.
- No-obstruction zones (shown in yellow in **Figure 5.2** through **Figure 5.4**) are recommended at bus stops:
 - For a bus turnout, the no-obstructive use zone should be for the entire bus turnout from the beginning to the end of the curb line deflections for the bus turnout (see **Figure 5.2**).
 - For curbside bus stops with bus shelters, the no-obstructive use zone should begin and end a minimum of 15 feet from each side of the shelter as installed (see **Figure 5.3**).
 - At curbside bus stops without a shelter, the no-obstructive use zone should begin 35 feet in the approaching direction and end 15 feet past the bus stop sign post (see **Figure 5.4**).
 - Ticket vending machines, bus stop signs and trash cans are allowable obstructions as long as placed within shelter influence zone.
- No-obstruction zones are recommended in front of elevators and at the landing area safety zones of escalators and stairs. Based upon research conducted during this restudy, the safety zone as shown in red in **Figure 5.5** through **Figure 5.6** is recommended to be defined within the ordinance including the identified shy distances.
- Pedestrian Bridge Systems and their associated walkways should be clarified as non-obstructive use zones as they are an integral part of the public street crossings replacing at-grade crosswalks. Pedestrian bridges should be maintained free of any obstructions including permanent and non-permanent obstructions.

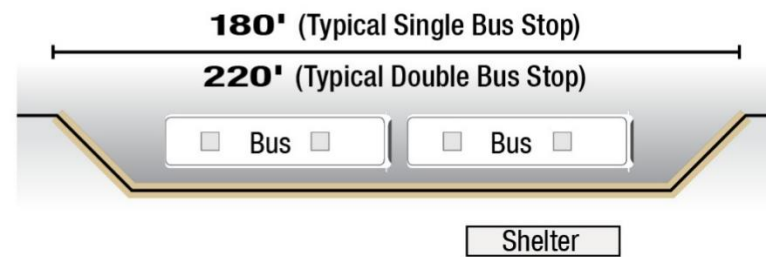


Figure 5.2 – Bus Turnout No-obstruction Zone

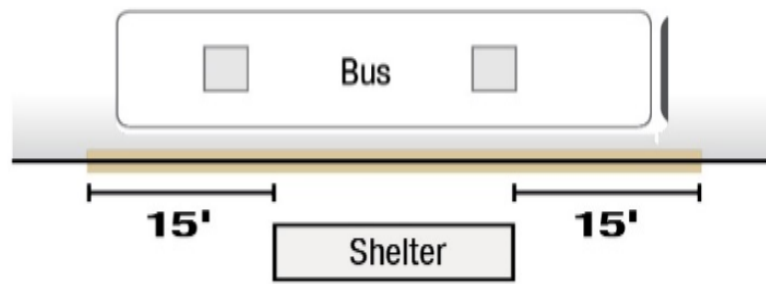


Figure 5.3 – Bus Shelter No-obstruction Zone

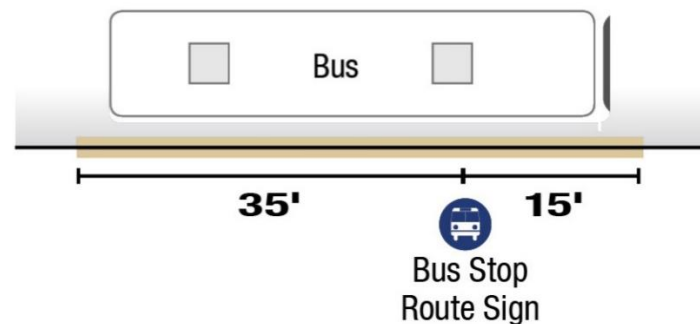


Figure 5.4 – Bus Stop Sign Without Shelter, No-obstruction Zone

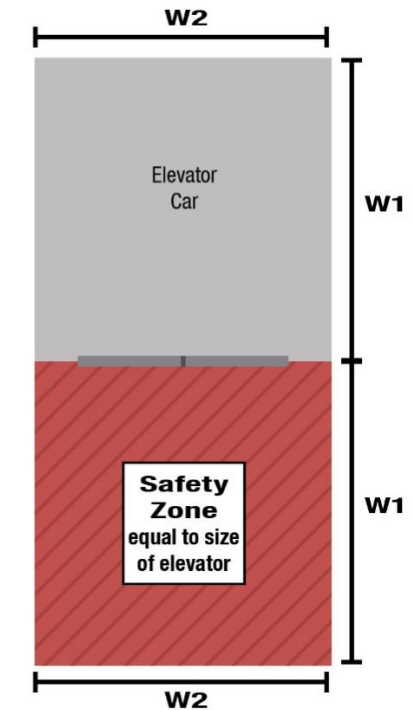


Figure 5.5 – Elevator Safety Zone

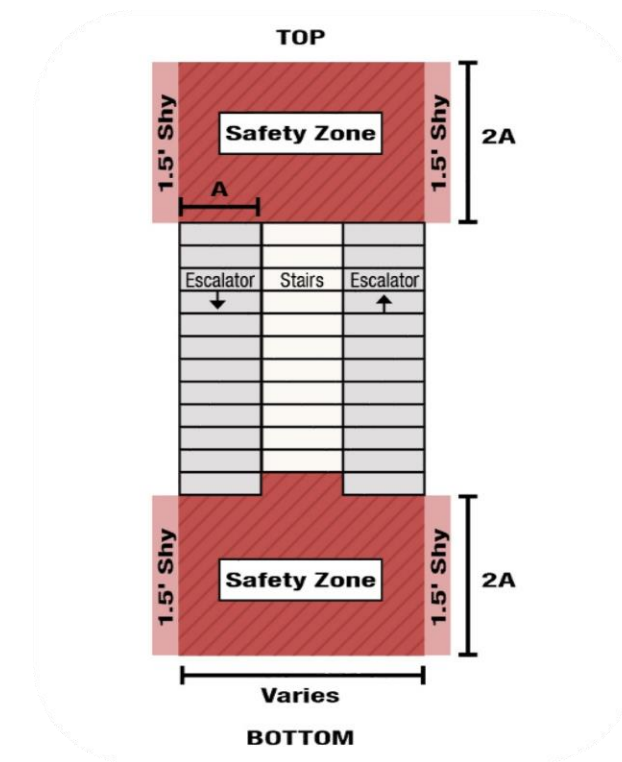


Figure 5.6 – Escalator and Stair Safety Zone

5.3.1 Identified Time, Place, and Manner Restrictions for Non-Obstructive Use Zones

Based on the updated pedestrian volume observations, LOS, walkway conditions, and pedestrian safety concerns, the locations shown in **Figure 4.64** through **Figure 4.68** within the study corridor, have been identified as walkway segments in which non-permanent obstruction restrictions should be considered during specific days of the week and times of the day.

To identify the time of day, day of week, and month of year that certain walkway segments within the study corridor should be considered for restriction of non-permanent obstructions, the following steps were taken:

- The previously identified 17 segments that exceeded a LOS C from the 2012 Pedestrian Study were reevaluated for LOS.
- The common daily peak pedestrian volume time period (between 9 PM and 11 PM) identified in 2012 was used in this 2015 Pedestrian Study.
- The LOS analysis of the previous 17 walkway segments that exceeded LOS C in 2012 on the holiday and/or typical Saturday were re-evaluated for 2015 pedestrian volume data to determine locations that exceeded LOS C.
- Similar to the 2012 evaluation, walkway segments that resulted in a LOS C were considered further and analyzed to determine if the addition of an obstruction would result in the LOS deteriorating to D or greater. A reduction of the effective walkway width (W_E) of 2.25 feet associated with the obstruction of one person standing on the side of the walkway and 4.5 feet associated with the obstruction of two individuals standing on each side of the walkway was applied for the analysis.
- The Saturday count data was adjusted using week-long data from 2012 and year-long data, provided by Caesars International, to determine day of week and month of year adjustment factors. The 2012 adjustment factors were determined to be appropriate for use in this study and were used to determine time periods when walkway segments were estimated to exceed LOS C for days other than those counted on Saturday May 23 and June 20, 2015.

Table 4.23 summarizes the results of the analysis for possible time of day, day of week, and month of year restrictions based solely on current 2015 pedestrian volumes and walkway widths (without non-permanent obstructions). **Table 4.24** provides a summary of the analysis for the conditions of one non-permanent obstruction and **Table 4.25** for two non-permanent obstructions (one on each side of the walkway) reducing the effective walk way width (W_E). It is important to recognize that the time duration of impact in many areas increased as well as additional days of the week.

5.4 Resort Corridor Best Practices

The following best practices are provided recognizing the positive measures taken by the County and Strip property owners recognizing the importance of maintaining the economic vitality of the Resort Corridor and a positive visitor experience.

- With development and/or redevelopment within the Resort Corridor, sidewalks should be kept clear of permanent obstructions. This includes tripping hazards within the pedestrian walkway, fire hydrants, traffic signal and other equipment, and any other permanent obstructions that could impede pedestrian flow. In addition service counters near the sidewalk should form their customer queue to the side away from the pedestrian walkway (see **Picture 5.11**).



Picture 5.11 – Pedestrian Queue Away from Street Walkway.

- Whenever possible designs should avoid the need for installation of bollards within the walkway area. If the placement of bollards is deemed necessary, additional walkway width should be provided to recognize the loss of effective walkway (W_E) width due to the placement of bollards within the walkway.
- Signs should be placed 18" from the back of curb in landscaping areas where possible in accordance with Manual on Uniform Traffic Control Devices (MUTCD) standards.

- Pedestrian crosswalks along Las Vegas Boulevard should have ramps facing toward the direction of travel. The finish curb should be provided with tactile domes. An example of a preferred directional ramp is shown below in **Picture 5.12**. Curb ramps should be individually custom designed to accommodate the desire to have perpendicular crosswalks to minimize street crossing widths.



Picture 5.12 – Directional Ramps.

- When a driveway has been abandoned or is no longer in active use, the driveway should be replaced with curb, gutter, and sidewalk along with the removal of the associated driveway from the non-obstructive use zone.
- With new escalator installations, escalators should be routinely reversed to ensure even equipment wear. With even wear, if an escalator is down for repair, the adjacent escalator can be switched to a preferred upward direction. The desire is to have escalators always working in the upward direction even if the adjacent escalator is closed for maintenance (see **Picture 5.13**). Pedestrian bridge escalators and elevators should continue to be maintained on a regular schedule that ensures a high reliability of service. It is important to have these facilities fully operational during holiday weekends. The capacity of the accompanying pedestrian bridges are severely impacted when the escalators are not functioning.



Picture 5.13 – Downward Escalator under Repair.

- As development occurs within the Resort Corridor, bus stops should be modified to a Type 2 (see **Figure 5.7**) design placing the shelter and queuing area in front of the through pedestrian walkway. Ticket vending machines and signs should also be placed adjacent to the stop to reduce losses in effective walkway widths.



Figure 5.7 – Type 2 Bus Stop

- Installation of pavement marking should follow the below criteria:
 - Markings within valley gutters should be avoided.
 - Medians should be painted and maintained according to MUTCD standards (see **Picture 5.14**).



Picture 5.14 – Paint Colors Not in Compliance with MUTCD.

- Mature tree canopies for walkway shading should be encouraged while maintaining a minimum clearance height of 14 feet (see **Picture 5.15**).



Picture 5.15 – Desirable Tree Canopy.

- Low landscaping heights should be used within site visibility zones at intersection corners, especially at access drives.
- With new development, walkways should have paving distinctions between private property and the public walkway (such as different textures and/or colors, see **Picture 5.16**).



Picture 5.16 – Public Walkway/Private Property Distinction by Pavement Textures.

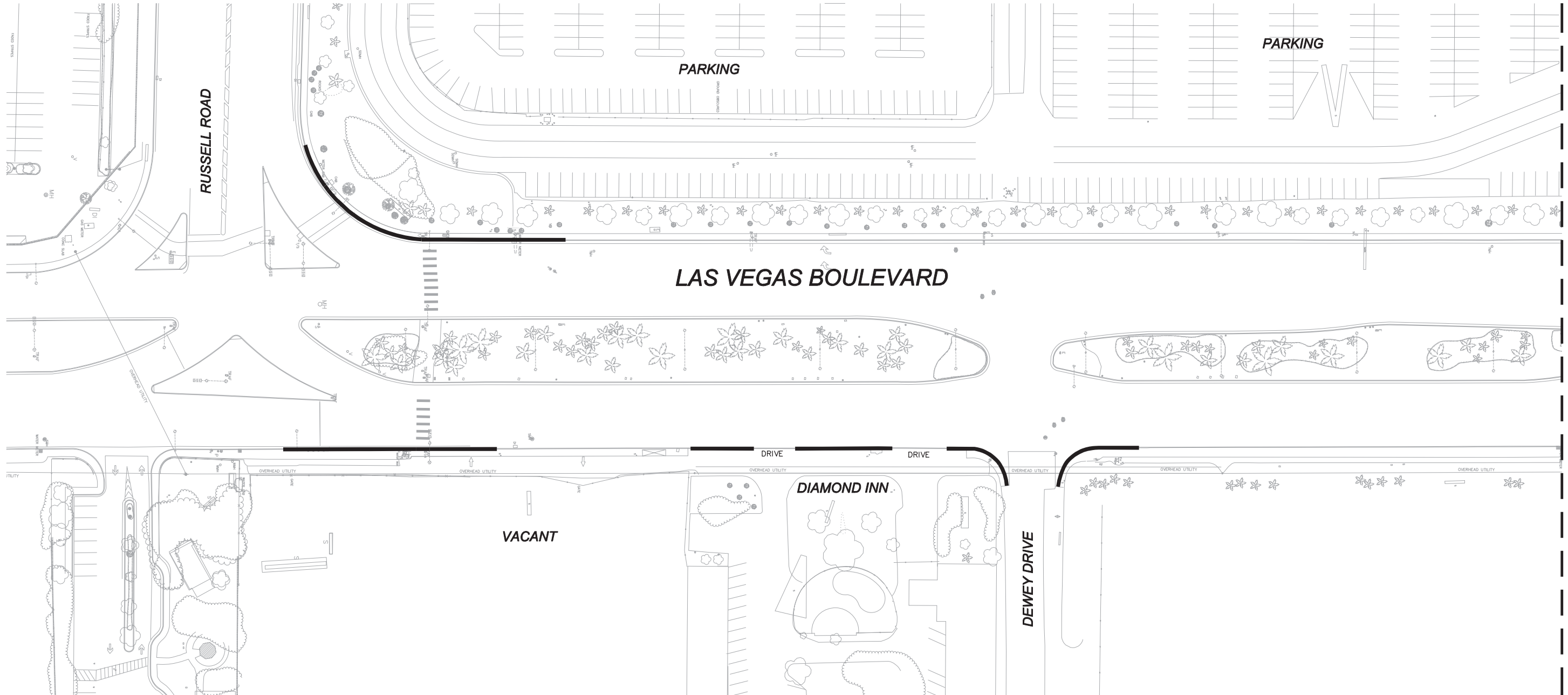
- Landscaping and pedestrian walkway planning and design should recognize adjacent properties and walkway transition areas should be provided between properties so as not to negatively impact walkway widths. Alcoves should be avoided to reduce hidden areas and landscaping corners of 90 degrees at property boundaries should be avoided.
- Construction work zones should be planned so as to not negatively impact pedestrian flow on adjacent sidewalks (see **Picture 5.17**).



Picture 5.17 – Work Zone Walkway on Memorial Day Weekend 2015.

EXHIBIT A
NO OBSTRUCTION ZONES (ADOPTED OCTOBER 7, 2014)

CLARK COUNTY
NO OBSTRUCTION ZONES
CC CODE 16.11
LAS VEGAS BOULEVARD



MATCHLINE - SEE MAP 2

LEGEND

———— PAINTED WHITE LINE

- - - - - TIME PERIODS LESS THAN LEVEL OF SERVICE C

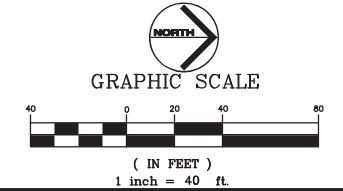
NOTE:
 TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.

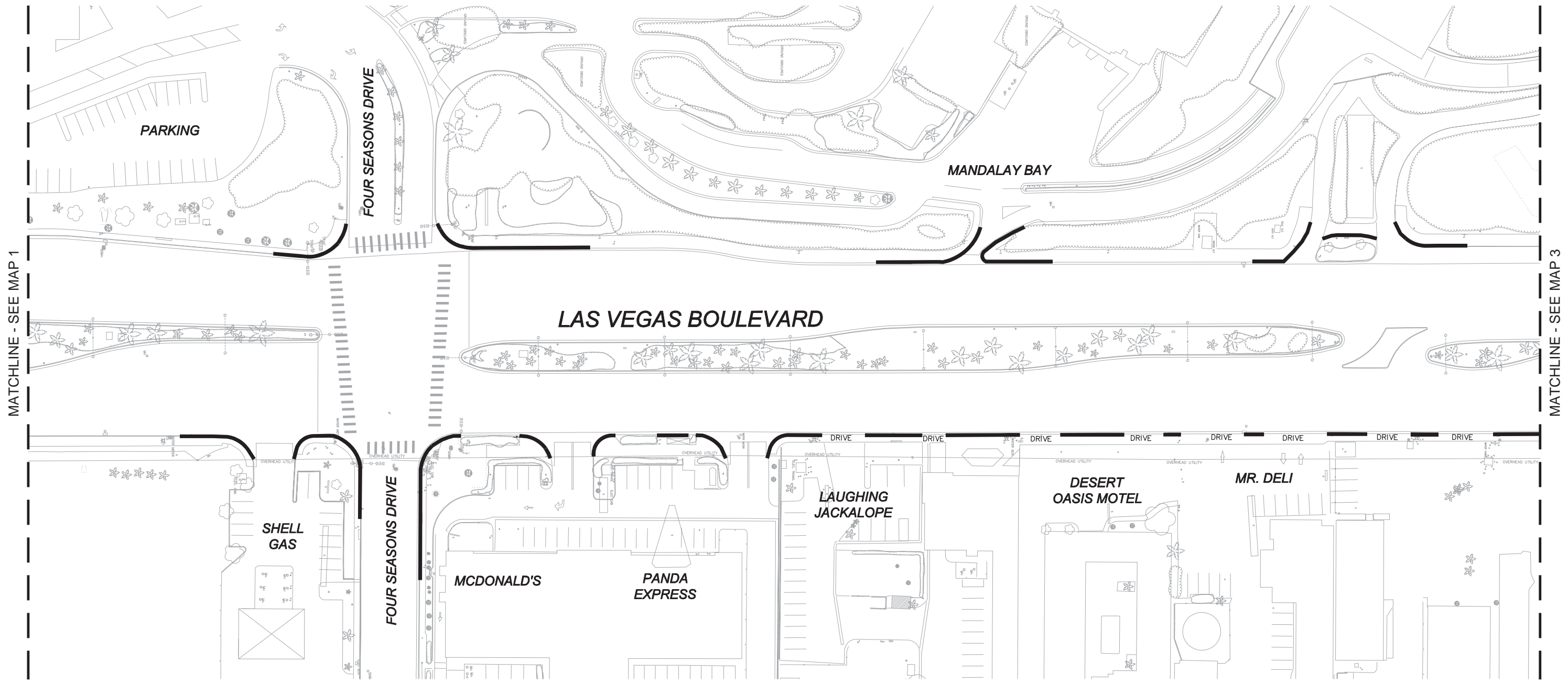


**NO OBSTRUCTION ZONES - LAS VEGAS BLVD
 RUSSELL ROAD TO SAHARA AVENUE**

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET:	MAP 1
SCALE:	AS SHOWN
DATE:	SEPTEMBER 26, 2014





LEGEND

———— PAINTED WHITE LINE

- - - - TIME PERIODS LESS THAN LEVEL OF SERVICE C

NOTE:
 TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.



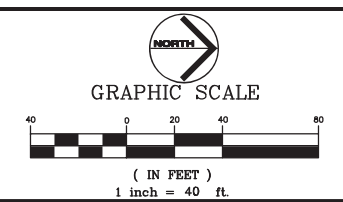
**NO OBSTRUCTION ZONES - LAS VEGAS BLVD
 RUSSELL ROAD TO SAHARA AVENUE**

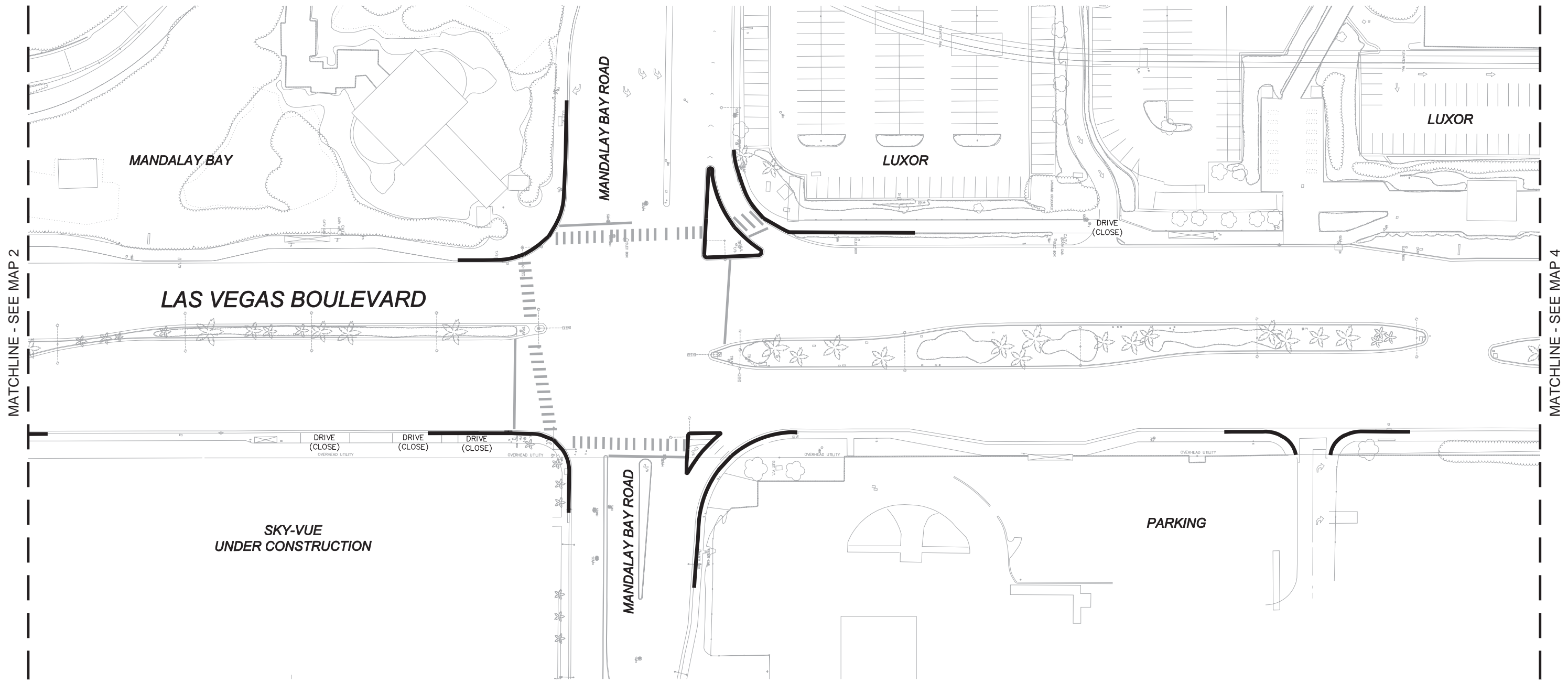
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET: **MAP 2**

SCALE: AS SHOWN

DATE: SEPTEMBER 26, 2014







MATCHLINE - SEE MAP 2

MATCHLINE - SEE MAP 4

LEGEND

-  PAINTED WHITE LINE
-  TIME PERIODS LESS THAN LEVEL OF SERVICE C

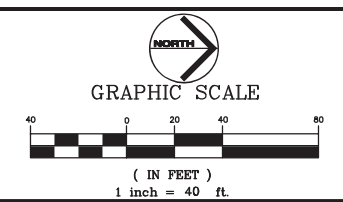
NOTE:
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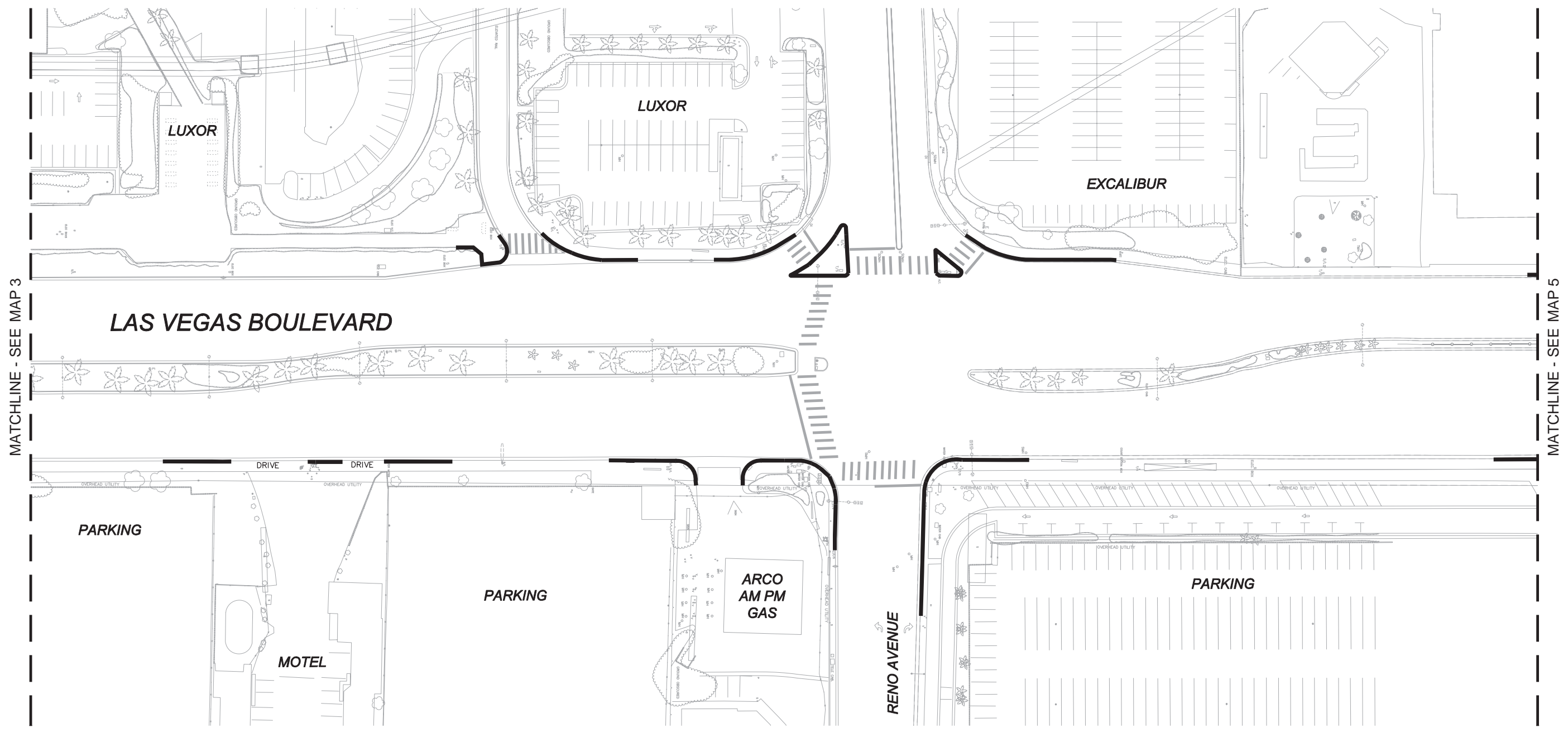


**NO OBSTRUCTION ZONES - LAS VEGAS BLVD
 RUSSELL ROAD TO SAHARA AVENUE**

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET: **MAP 3**
 SCALE: AS SHOWN
 DATE: SEPTEMBER 26, 2014





LEGEND

———— PAINTED WHITE LINE

----- TIME PERIODS LESS THAN LEVEL OF SERVICE C

NOTE:
 TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.



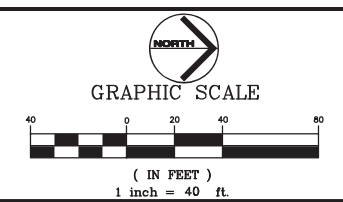
**NO OBSTRUCTION ZONES - LAS VEGAS BLVD
 RUSSELL ROAD TO SAHARA AVENUE**

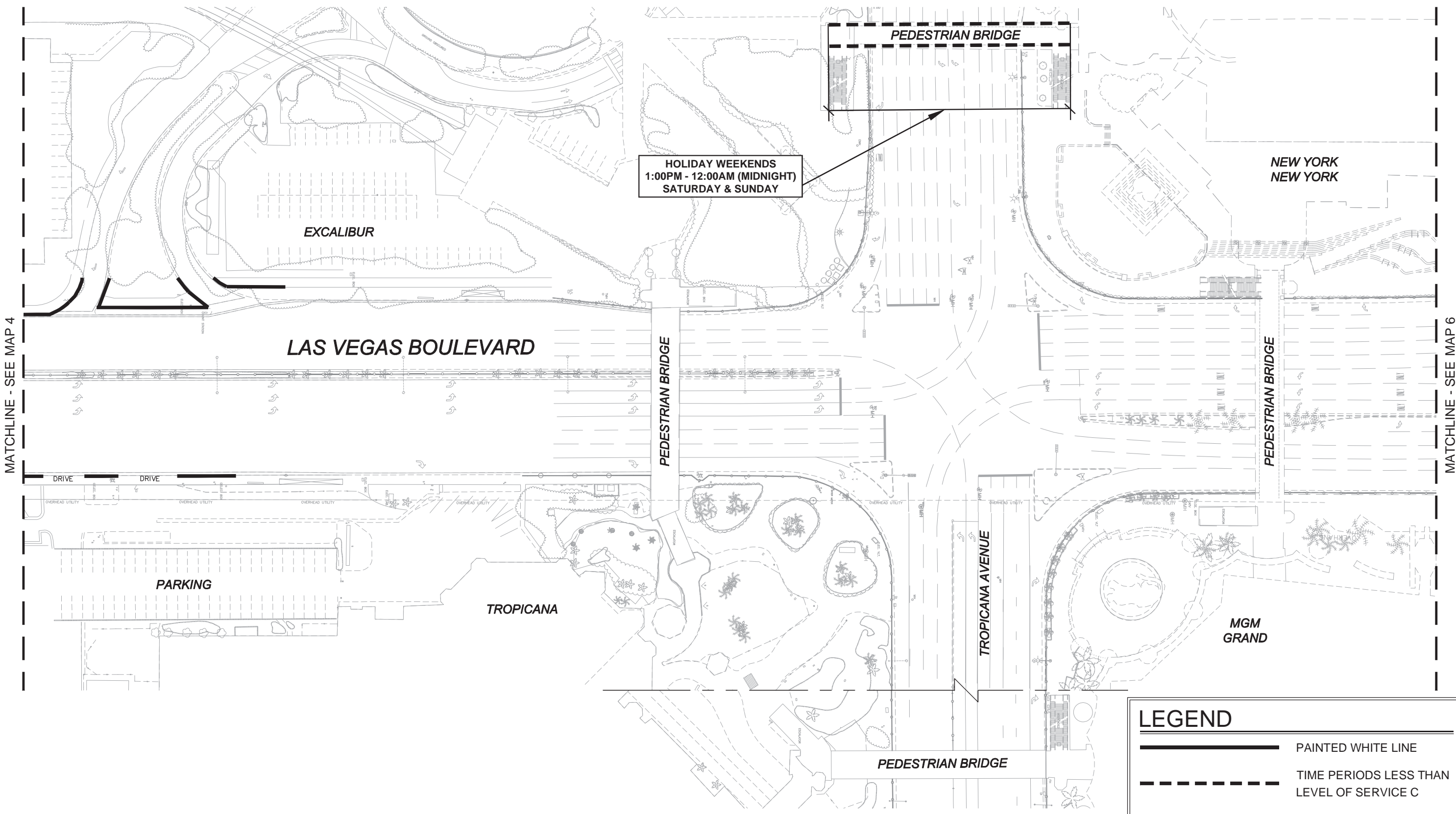
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET: **MAP 4**

SCALE: AS SHOWN

DATE: SEPTEMBER 26, 2014





MATCHLINE - SEE MAP 4

MATCHLINE - SEE MAP 6

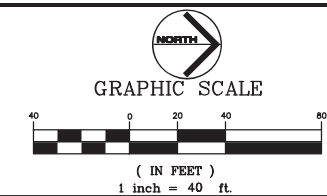
NOTE:
 TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.

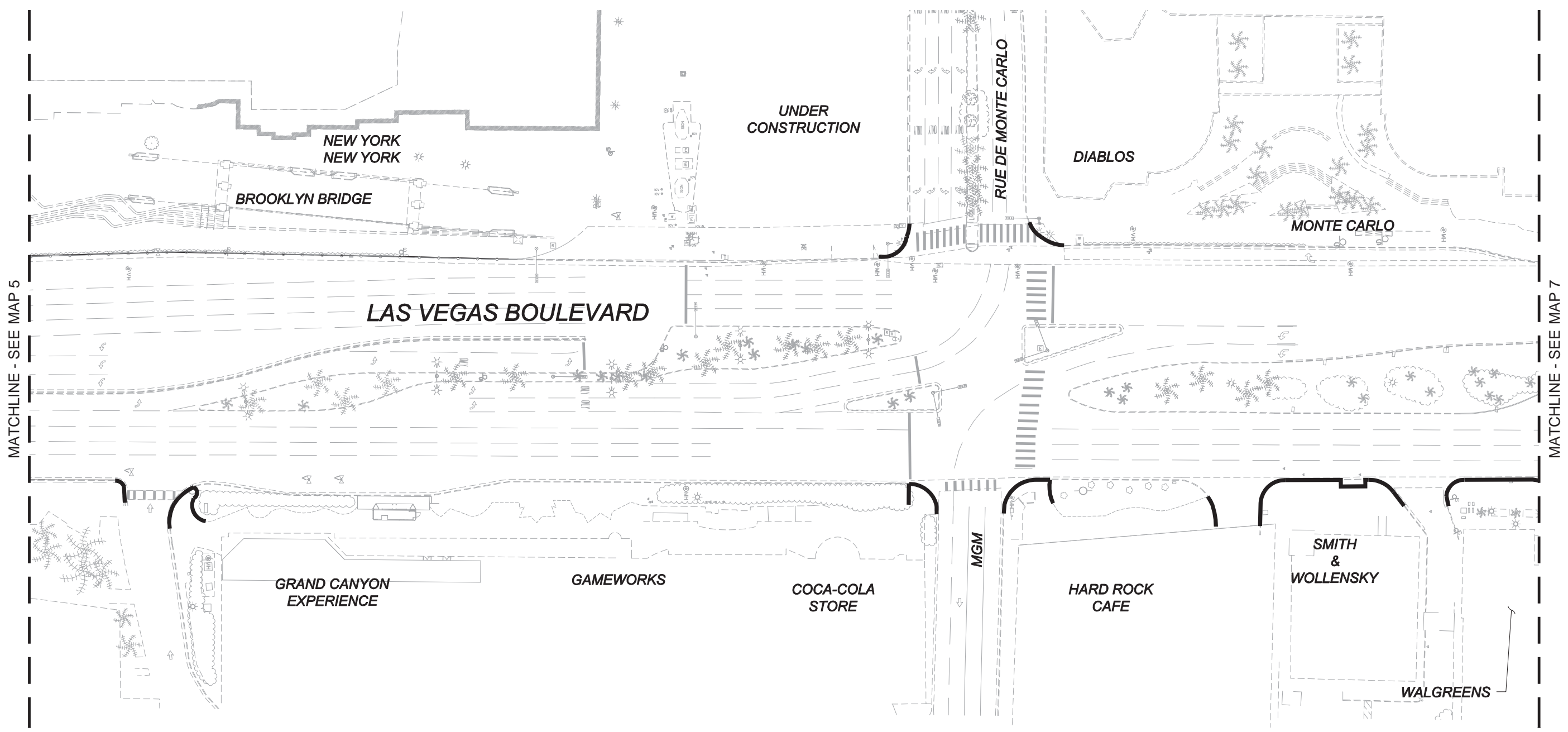


NO OBSTRUCTION ZONES - LAS VEGAS BLVD RUSSELL ROAD TO SAHARA AVENUE

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET:	MAP 5
SCALE:	AS SHOWN
DATE:	SEPTEMBER 26, 2014





LEGEND

———— PAINTED WHITE LINE

----- TIME PERIODS LESS THAN LEVEL OF SERVICE C

NOTE:
 TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.



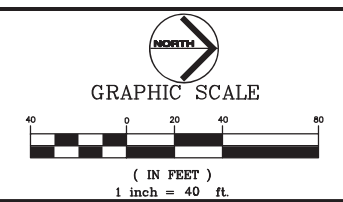
**NO OBSTRUCTION ZONES - LAS VEGAS BLVD
 RUSSELL ROAD TO SAHARA AVENUE**

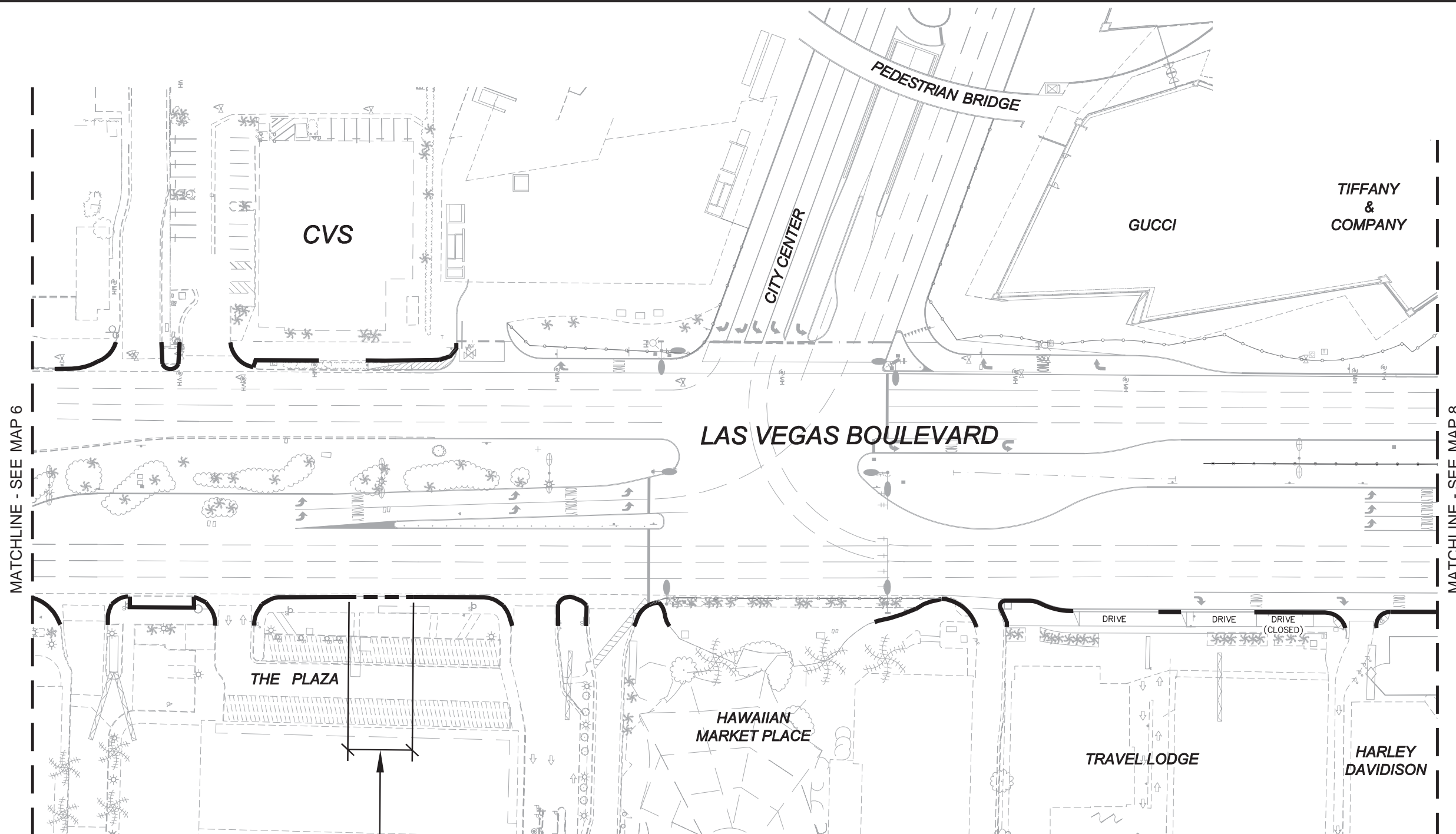
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET: **MAP 6**

SCALE: AS SHOWN

DATE: SEPTEMBER 26, 2014





DAILY 8:00PM - 1:00AM
HOLIDAY WEEKENDS 1:00PM - 1:00AM FRIDAY, SATURDAY, & SUNDAY

LEGEND

— PAINTED WHITE LINE

- - - TIME PERIODS LESS THAN LEVEL OF SERVICE C

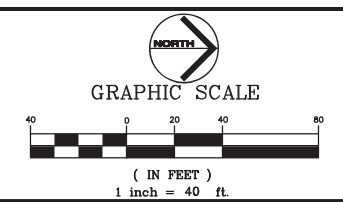
NOTE:
TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.

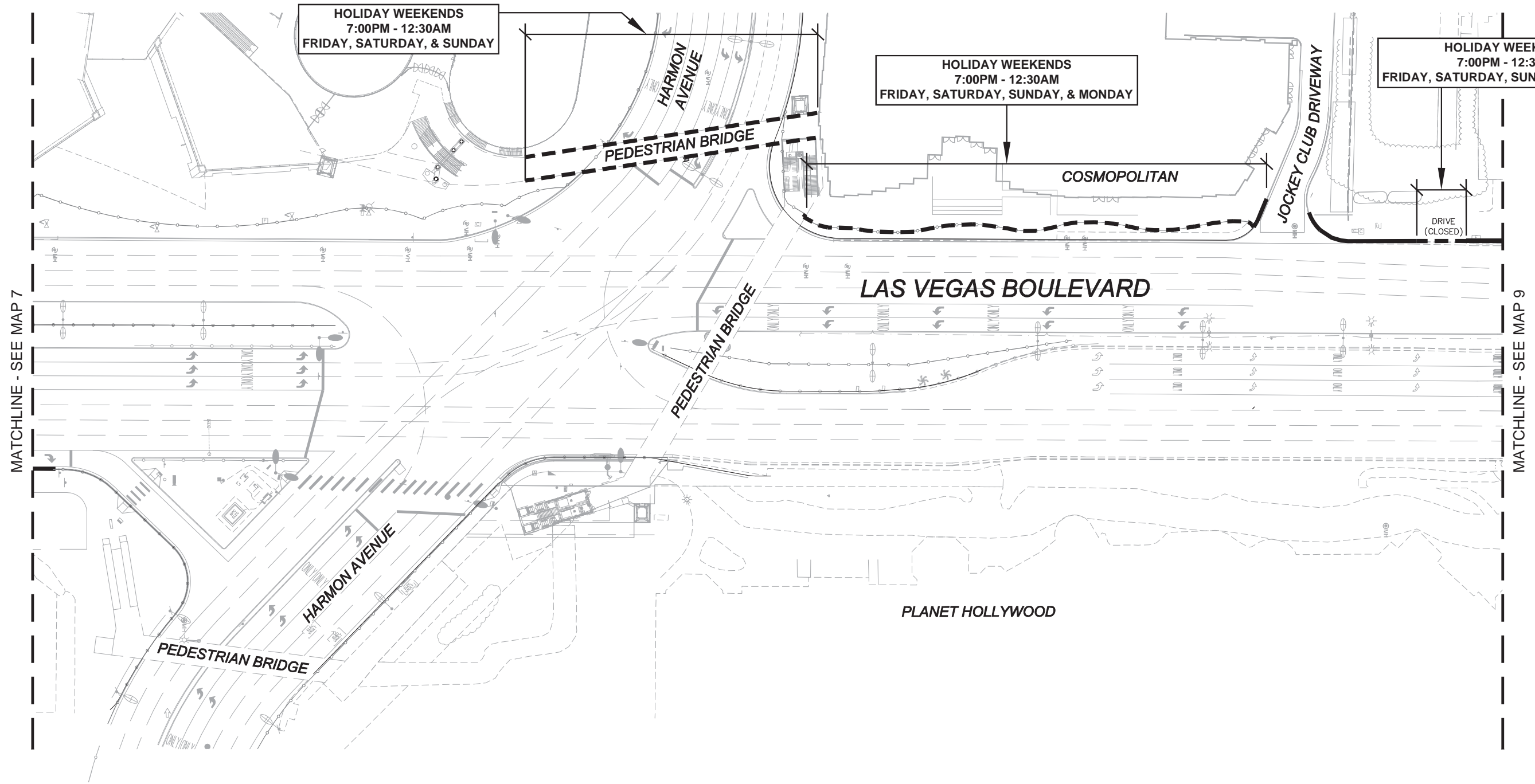


NO OBSTRUCTION ZONES - LAS VEGAS BLVD RUSSELL ROAD TO SAHARA AVENUE



CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET:	MAP 7
SCALE:	AS SHOWN
DATE:	SEPTEMBER 26, 2014





LEGEND

-  PAINTED WHITE LINE
-  TIME PERIODS LESS THAN LEVEL OF SERVICE C

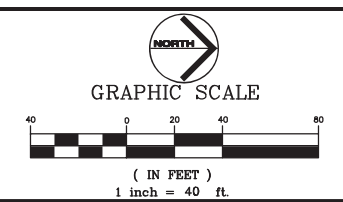
NOTE:
 TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.

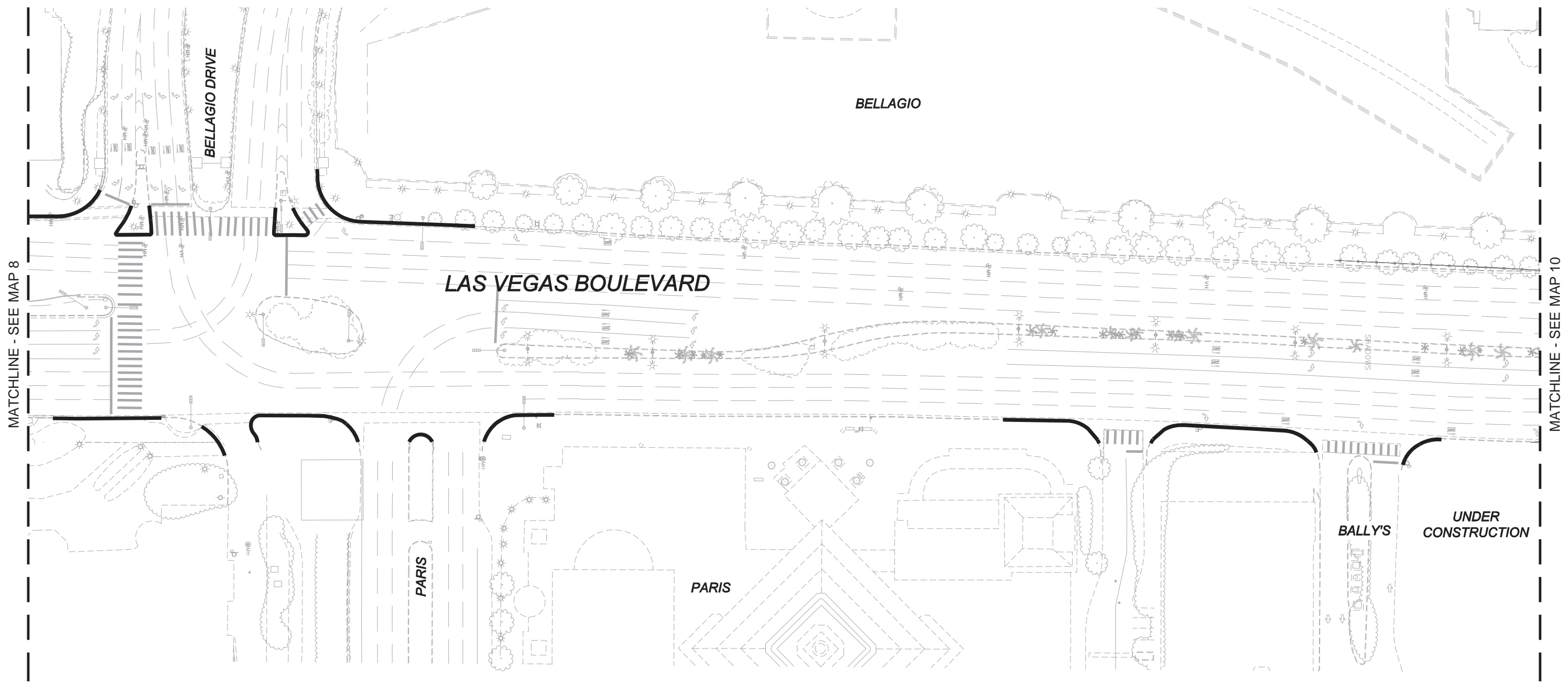


**NO OBSTRUCTION ZONES - LAS VEGAS BLVD
 RUSSELL ROAD TO SAHARA AVENUE**

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET: **MAP 8**
 SCALE: AS SHOWN
 DATE: SEPTEMBER 26, 2014





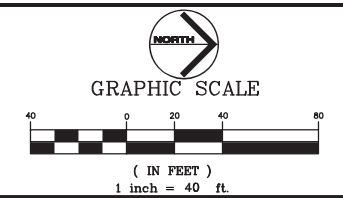
NOTE:
 TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.



NO OBSTRUCTION ZONES - LAS VEGAS BLVD RUSSELL ROAD TO SAHARA AVENUE

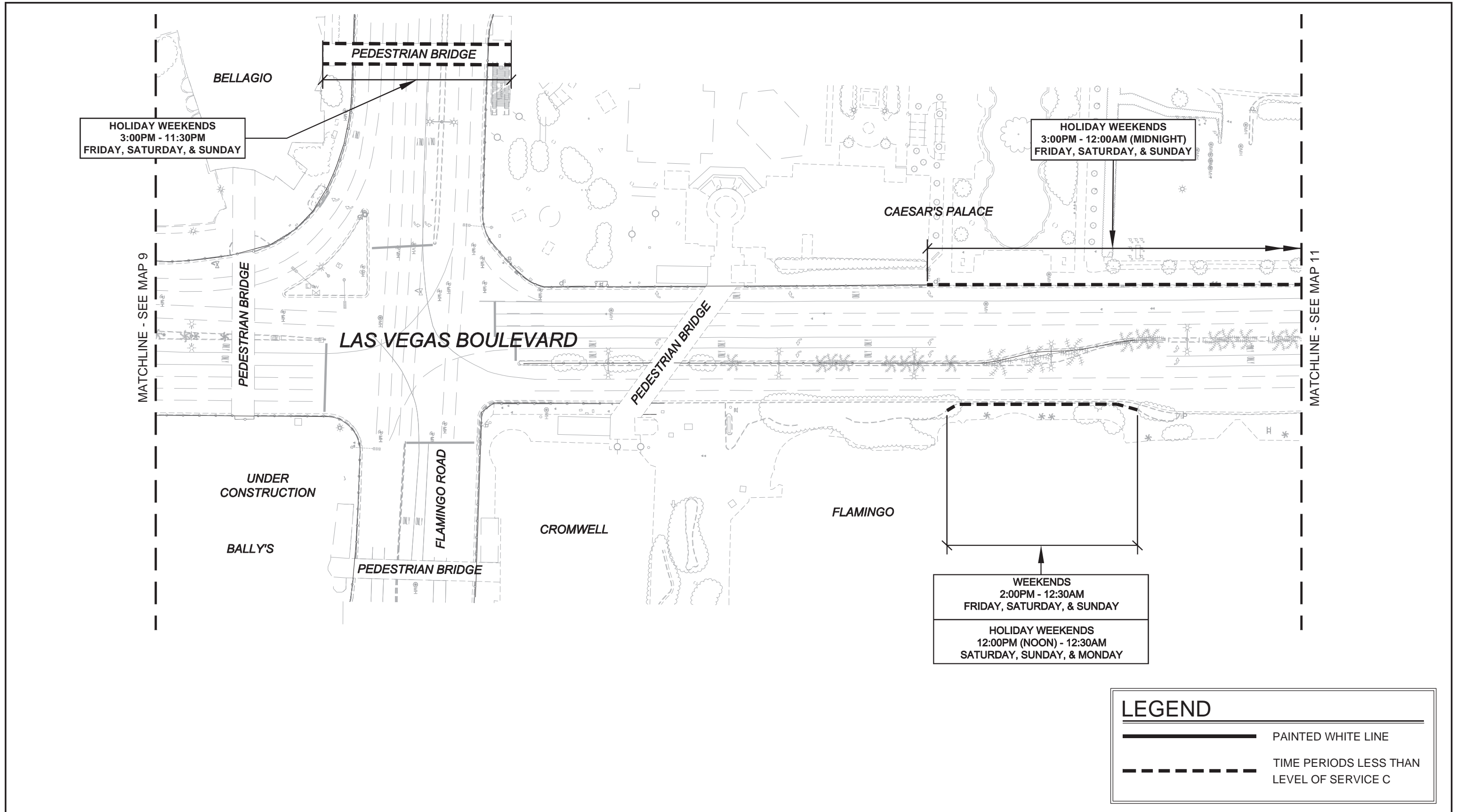
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET: **MAP 9**
 SCALE: AS SHOWN
 DATE: SEPTEMBER 26, 2014



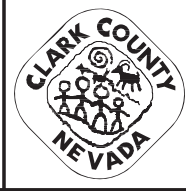
LEGEND

- PAINTED WHITE LINE
- TIME PERIODS LESS THAN LEVEL OF SERVICE C



LEGEND	
	PAINTED WHITE LINE
	TIME PERIODS LESS THAN LEVEL OF SERVICE C

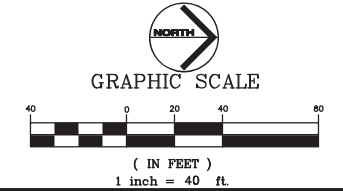
NOTE:
TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.

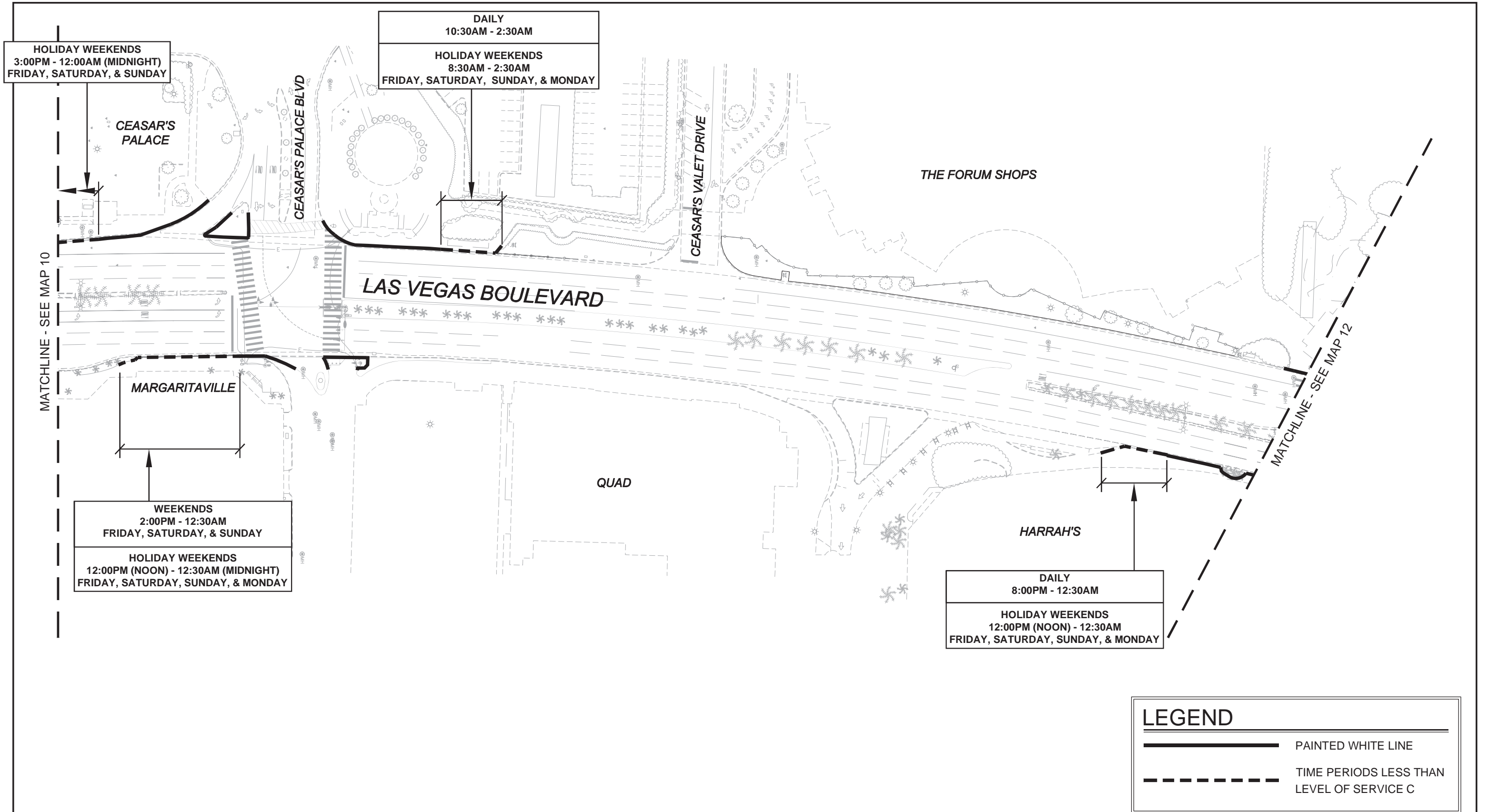


NO OBSTRUCTION ZONES - LAS VEGAS BLVD RUSSELL ROAD TO SAHARA AVENUE

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET:	MAP 10
SCALE:	AS SHOWN
DATE:	SEPTEMBER 26, 2014





NOTE:
TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.



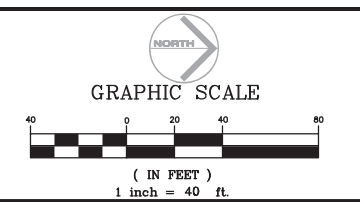
NO OBSTRUCTION ZONES - LAS VEGAS BLVD RUSSELL ROAD TO SAHARA AVENUE

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

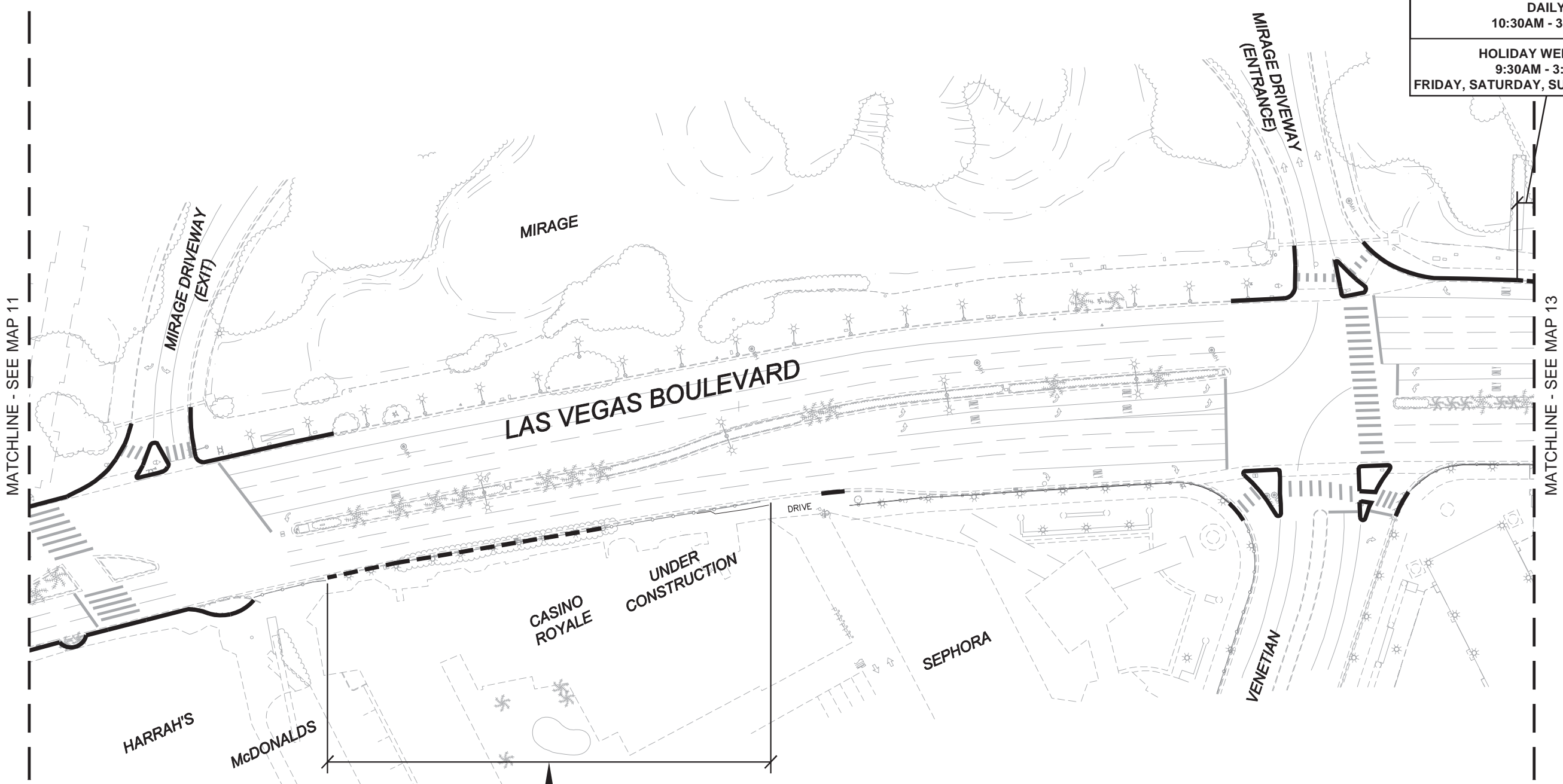
SHEET: **MAP 11**

SCALE: AS SHOWN

DATE: SEPTEMBER 26, 2014



DAILY 10:30AM - 3:00AM
HOLIDAY WEEKENDS 9:30AM - 3:00AM FRIDAY, SATURDAY, SUNDAY, & MONDAY



DAILY 11:30AM - 1:00AM
HOLIDAY WEEKENDS 11:30AM - 1:30AM FRIDAY, SATURDAY, SUNDAY, & MONDAY

LEGEND	
	PAINTED WHITE LINE
	TIME PERIODS LESS THAN LEVEL OF SERVICE C

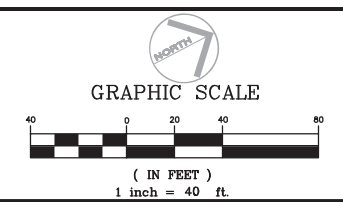
NOTE:
TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.

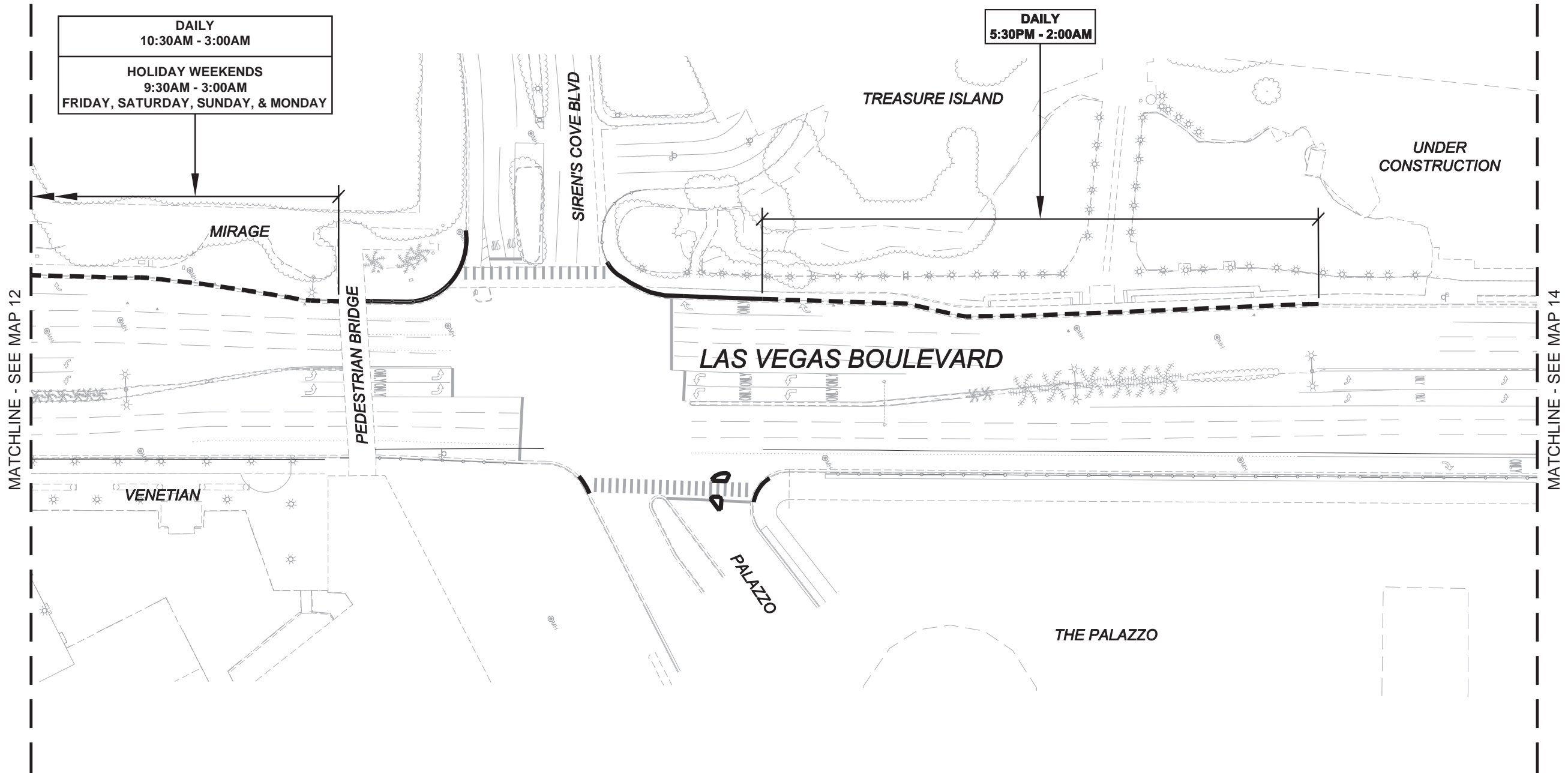


NO OBSTRUCTION ZONES - LAS VEGAS BLVD RUSSELL ROAD TO SAHARA AVENUE

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET: **MAP 12**
SCALE: AS SHOWN
DATE: SEPTEMBER 26, 2014





DAILY
10:30AM - 3:00AM

HOLIDAY WEEKENDS
9:30AM - 3:00AM
FRIDAY, SATURDAY, SUNDAY, & MONDAY

DAILY
5:30PM - 2:00AM

LEGEND

———— PAINTED WHITE LINE

----- TIME PERIODS LESS THAN LEVEL OF SERVICE C

NOTE:
TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.



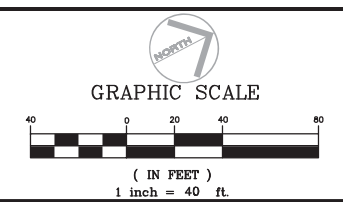
**NO OBSTRUCTION ZONES - LAS VEGAS BLVD
RUSSELL ROAD TO SAHARA AVENUE**

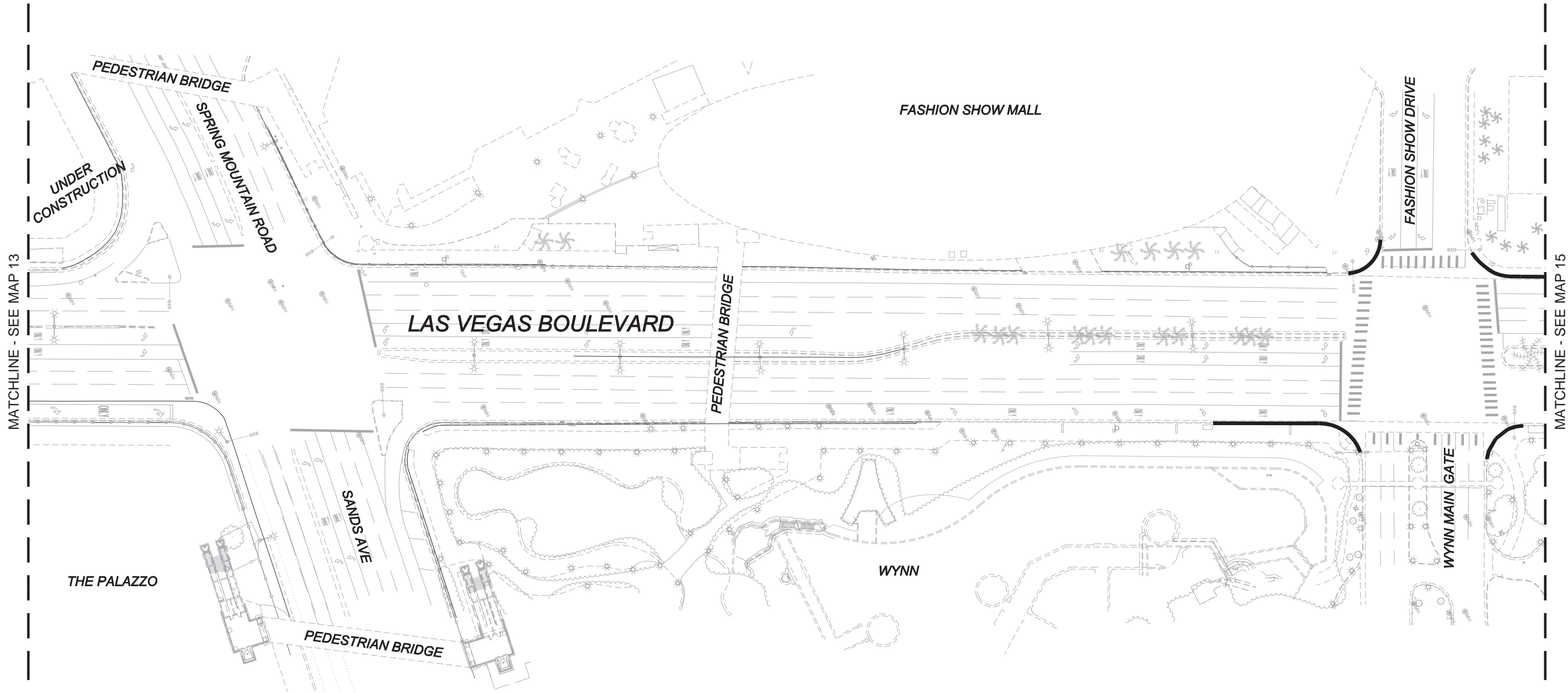
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET: **MAP 13**



SCALE: AS SHOWN

DATE: SEPTEMBER 26, 2014





LEGEND

	PAINTED WHITE LINE
	TIME PERIODS LESS THAN LEVEL OF SERVICE C

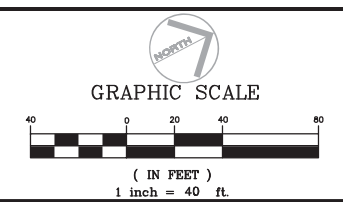
NOTE:
 TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.



**NO OBSTRUCTION ZONES - LAS VEGAS BLVD
 RUSSELL ROAD TO SAHARA AVENUE**

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET:	MAP 14
SCALE:	AS SHOWN
DATE:	SEPTEMBER 26, 2014



UNDER CONSTRUCTION

LAS VEGAS BOULEVARD

WYNN

WYNN

WYNN LAS VEGAS

WYNN BLVD

MATCHLINE - SEE MAP 14

MATCHLINE - SEE MAP 16

LEGEND

-  PAINTED WHITE LINE
-  TIME PERIODS LESS THAN LEVEL OF SERVICE C

NOTE:
TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.



NO OBSTRUCTION ZONES - LAS VEGAS BLVD RUSSELL ROAD TO SAHARA AVENUE

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET:

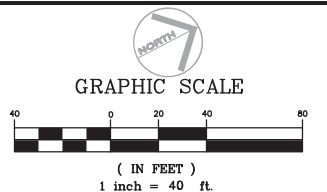
MAP 15

SCALE:

AS SHOWN

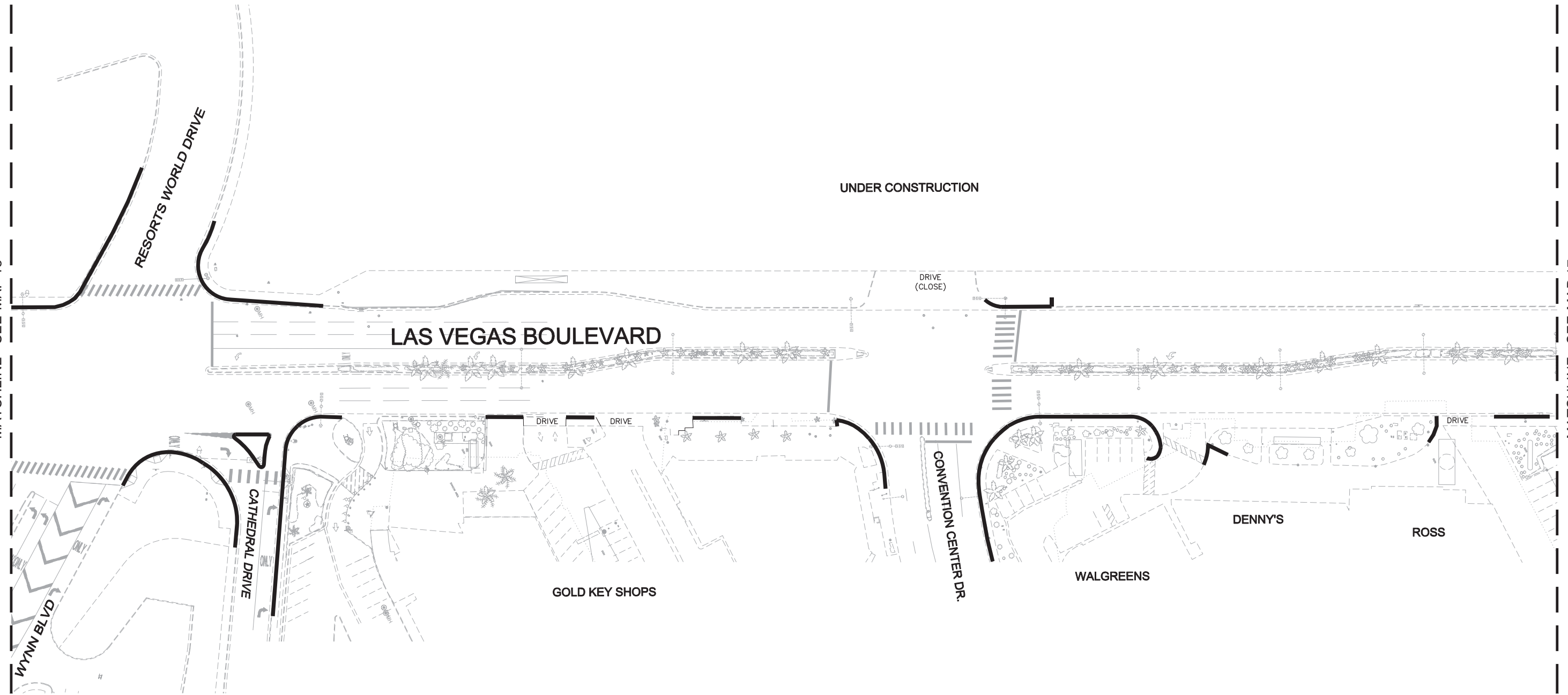
DATE:

SEPTEMBER 26, 2014



MATCHLINE - SEE MAP 15

MATCHLINE - SEE MAP 17



LEGEND

———— PAINTED WHITE LINE

- - - - - TIME PERIODS LESS THAN LEVEL OF SERVICE C

NOTE:
 TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.



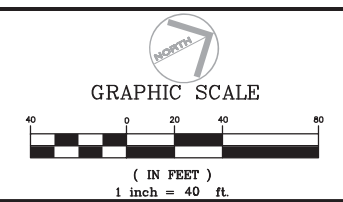
**NO OBSTRUCTION ZONES - LAS VEGAS BLVD
 RUSSELL ROAD TO SAHARA AVENUE**

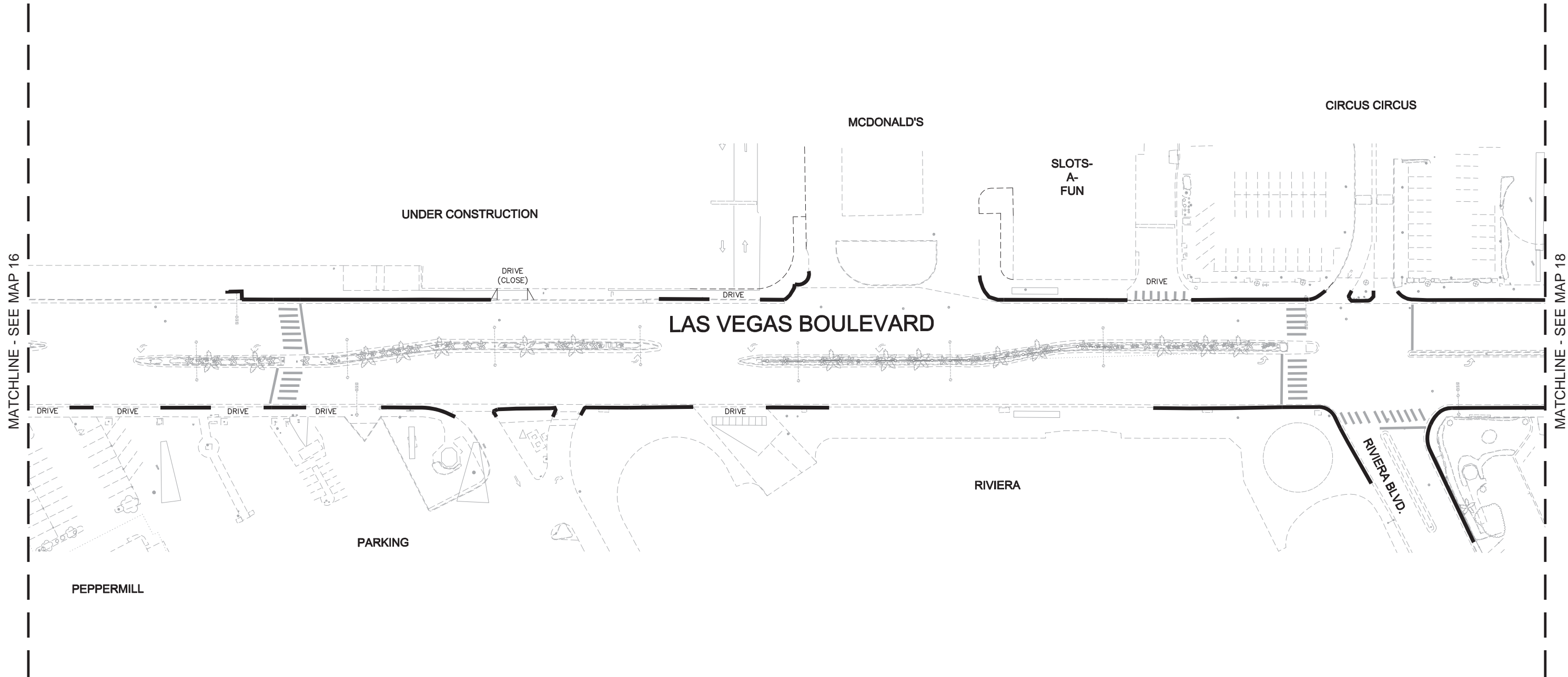
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET: **MAP 16**

SCALE: AS SHOWN

DATE: SEPTEMBER 26, 2014





LEGEND

———— PAINTED WHITE LINE

- - - - - TIME PERIODS LESS THAN LEVEL OF SERVICE C

NOTE:
 TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.



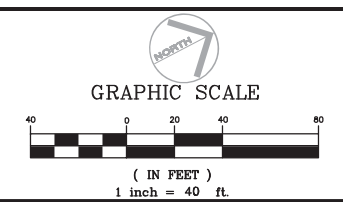
**NO OBSTRUCTION ZONES - LAS VEGAS BLVD
 RUSSELL ROAD TO SAHARA AVENUE**

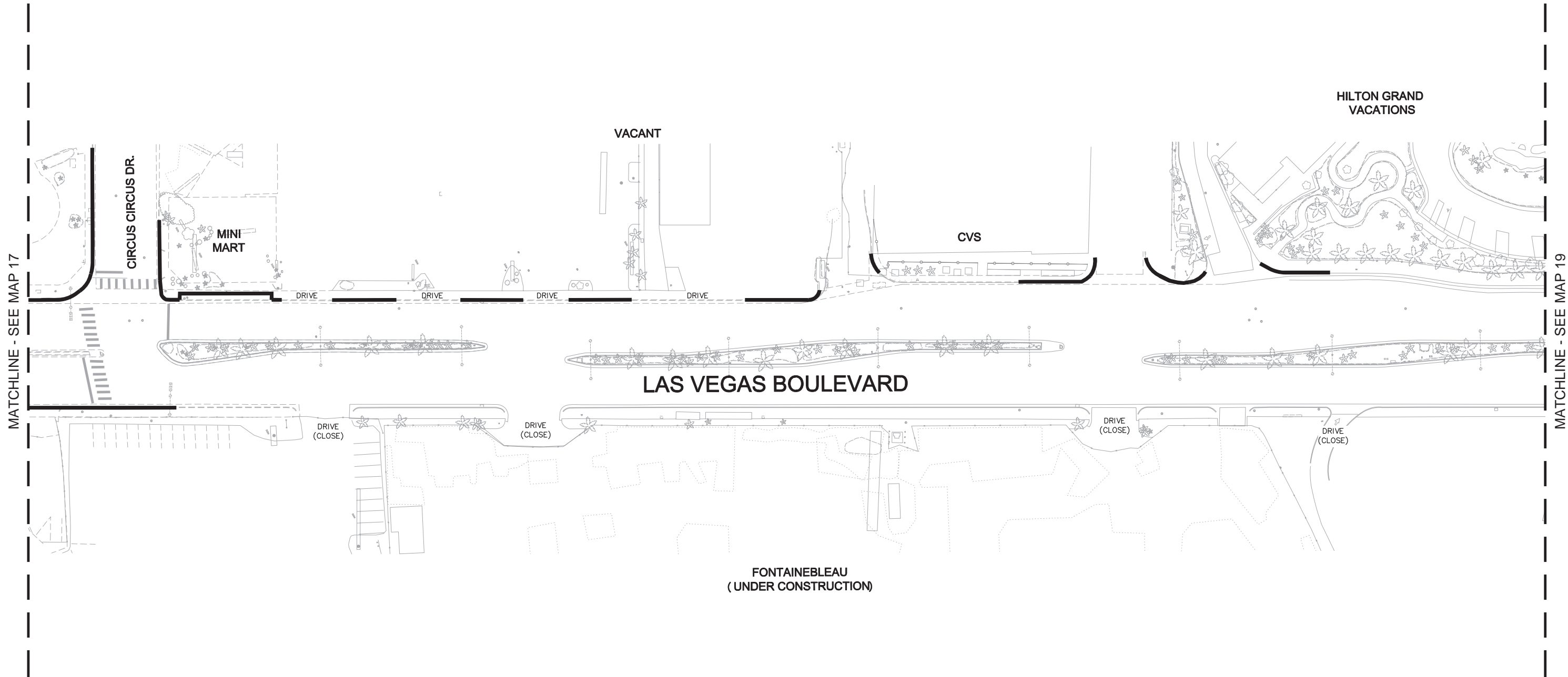
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET: **MAP 17**

SCALE: AS SHOWN

DATE: SEPTEMBER 26, 2014





LEGEND

———— PAINTED WHITE LINE

- - - - - TIME PERIODS LESS THAN LEVEL OF SERVICE C

NOTE:
 TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.



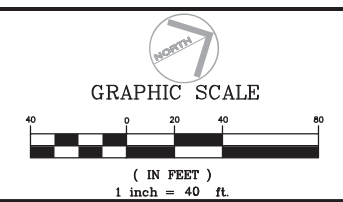
**NO OBSTRUCTION ZONES - LAS VEGAS BLVD
 RUSSELL ROAD TO SAHARA AVENUE**

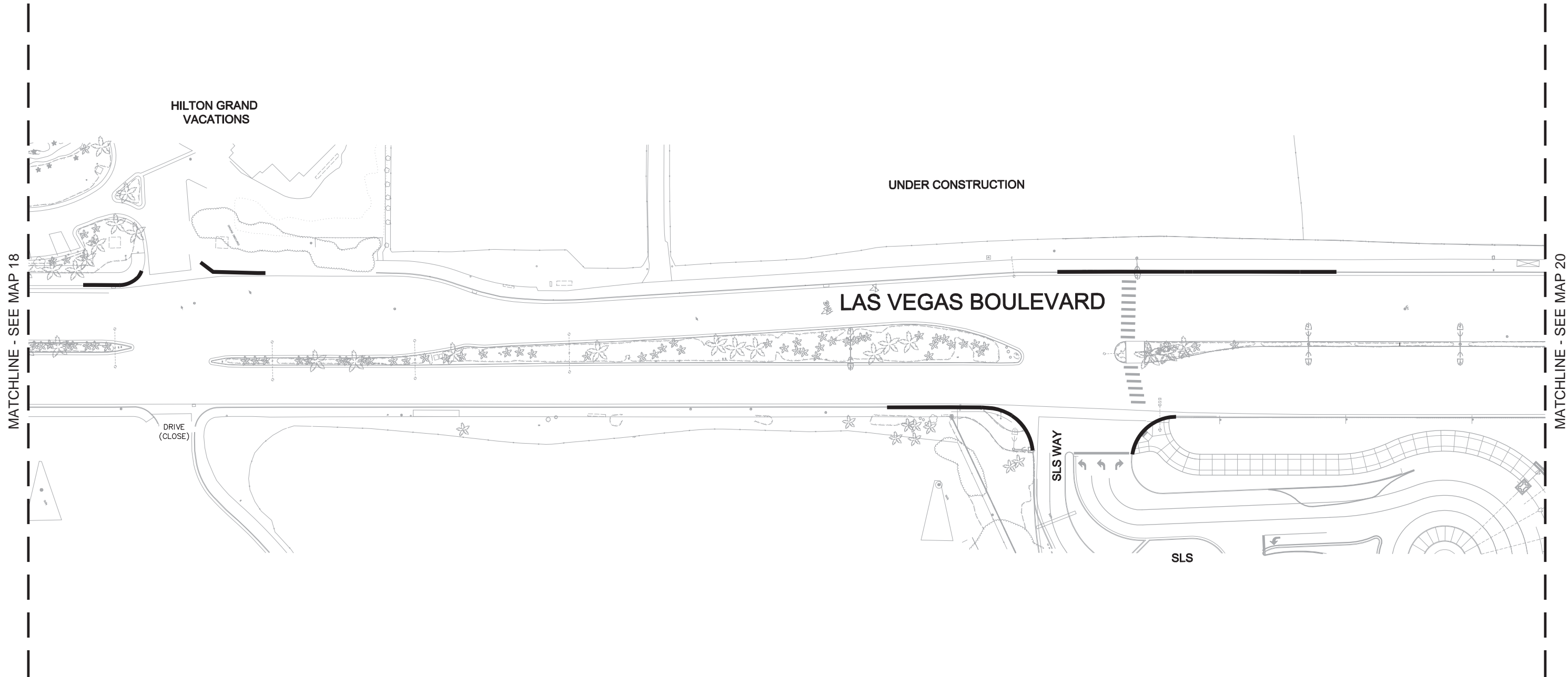
CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET: **MAP 18**



SCALE: AS SHOWN

DATE: SEPTEMBER 26, 2014





LEGEND

-  PAINTED WHITE LINE
-  TIME PERIODS LESS THAN LEVEL OF SERVICE C

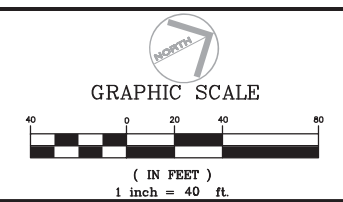
NOTE:
 TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.

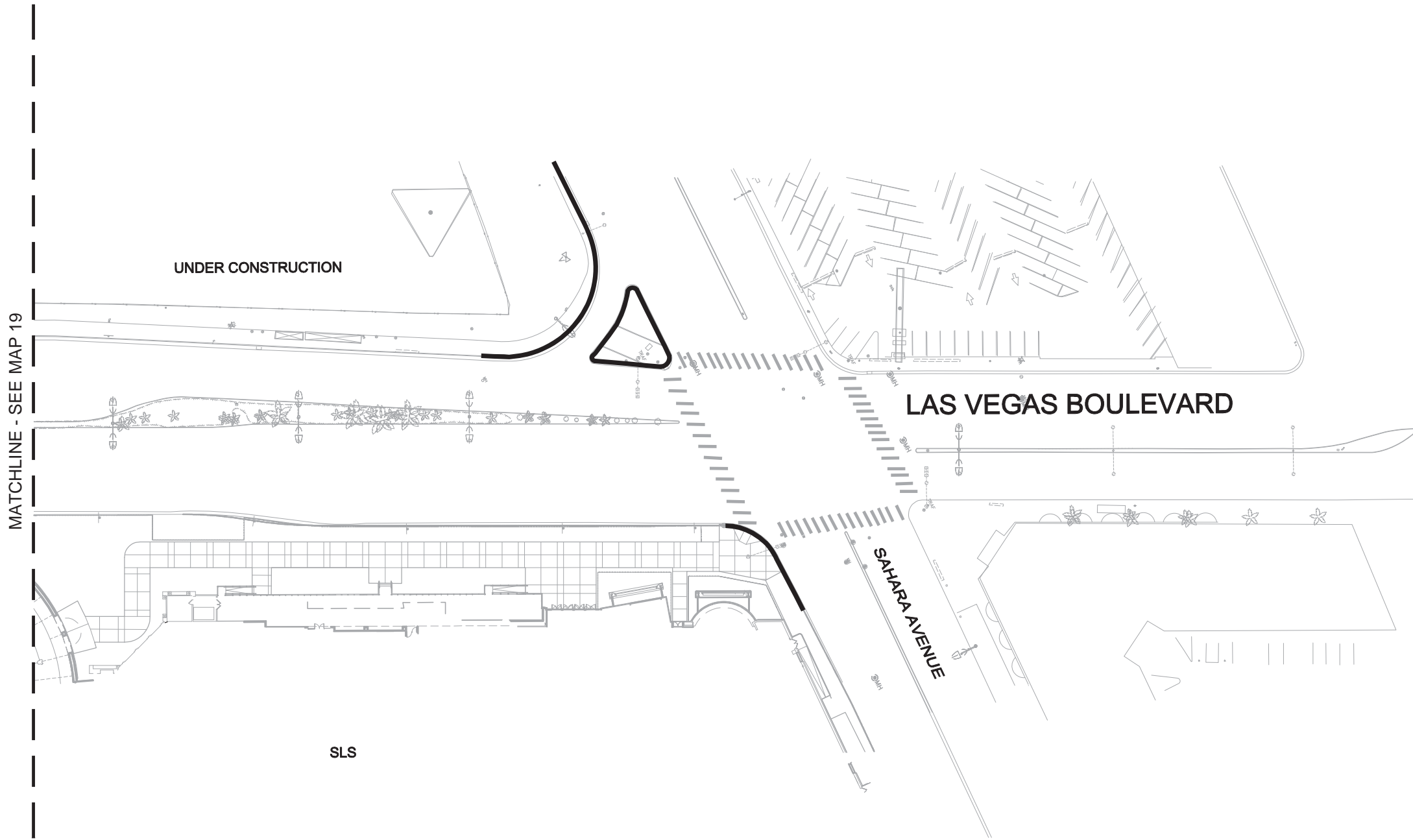


NO OBSTRUCTION ZONES - LAS VEGAS BLVD RUSSELL ROAD TO SAHARA AVENUE



CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET:	MAP 19
SCALE:	AS SHOWN
DATE:	SEPTEMBER 26, 2014





LEGEND

-  PAINTED WHITE LINE
-  TIME PERIODS LESS THAN LEVEL OF SERVICE C

NOTE:
 TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WAS DEVELOPED BASED ON A SEARCH OF BEST AVAILABLE RECORDS AND INFORMATION. LOCATIONS AND CONDITION OF IMPROVEMENTS SHOWN ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD.



**NO OBSTRUCTION ZONES - LAS VEGAS BLVD
 RUSSELL ROAD TO SAHARA AVENUE**

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

SHEET: **MAP 20**
 SCALE: AS SHOWN
 DATE: SEPTEMBER 26, 2014

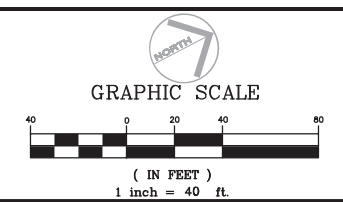
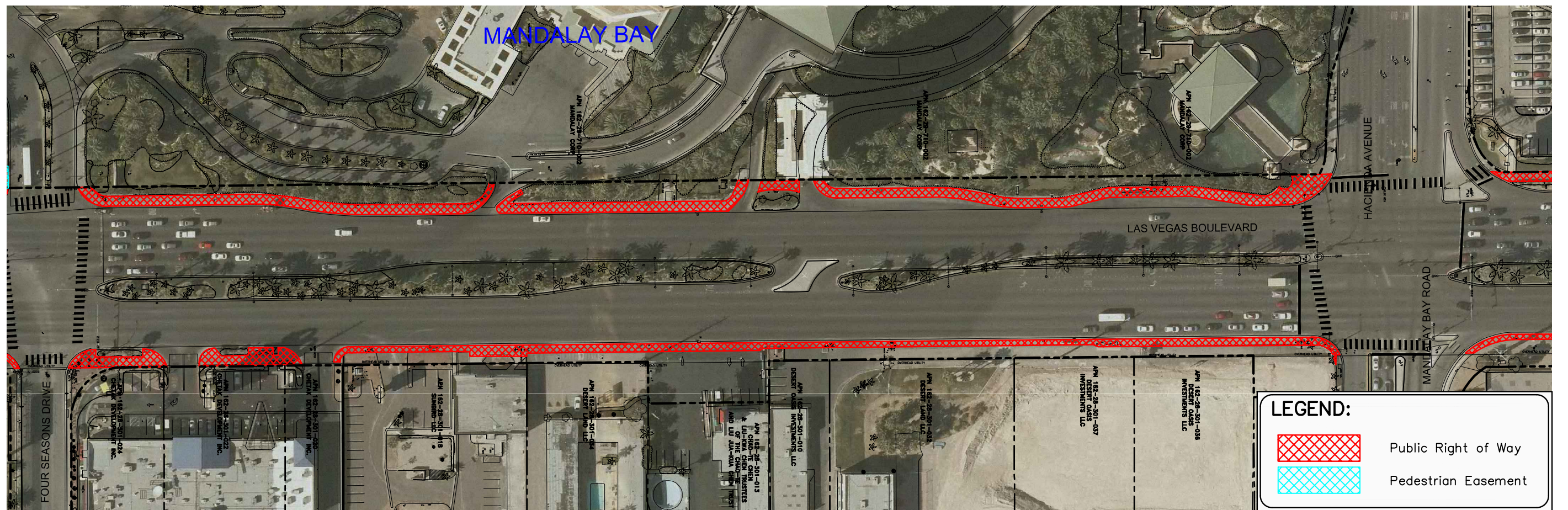
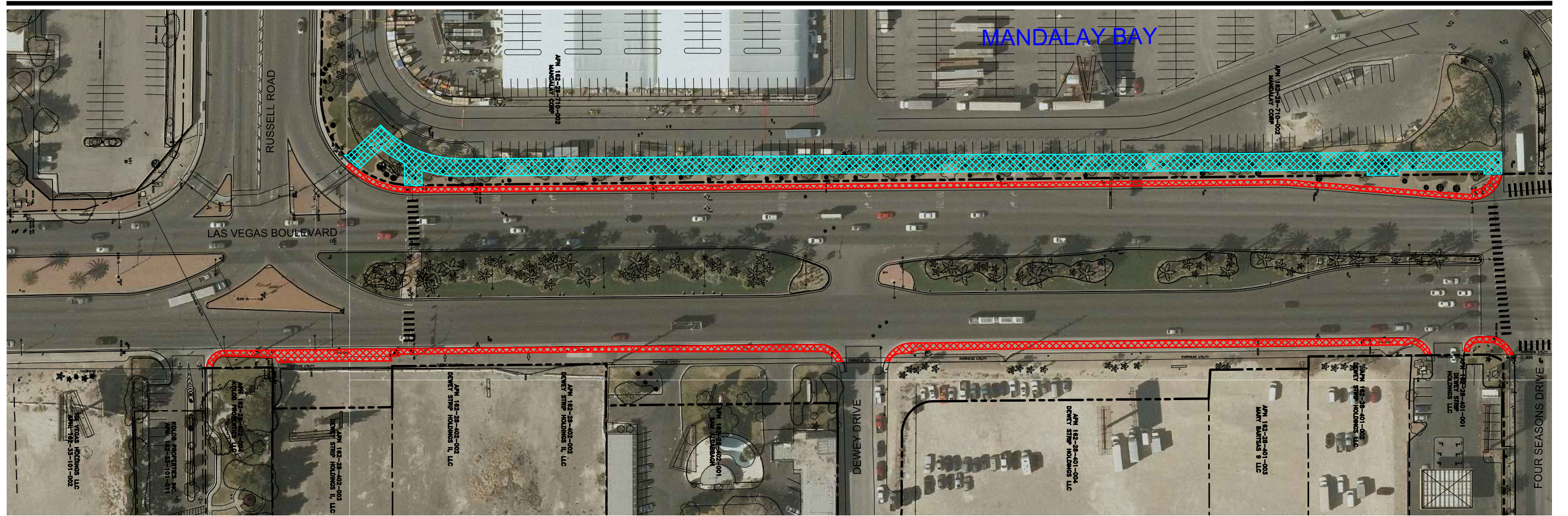


EXHIBIT B
RIGHT-OF-WAY/PEDESTRIAN EASEMENT EXHIBITS

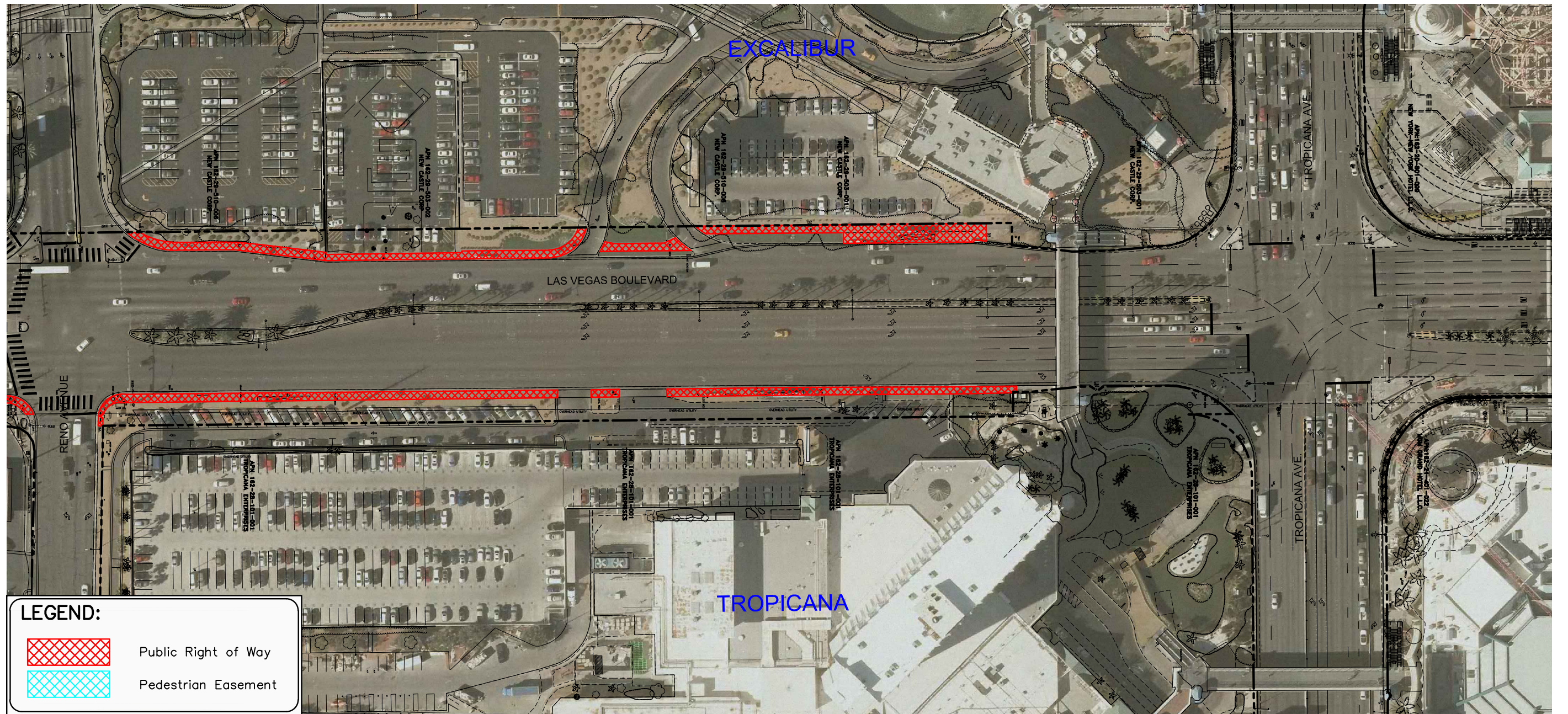
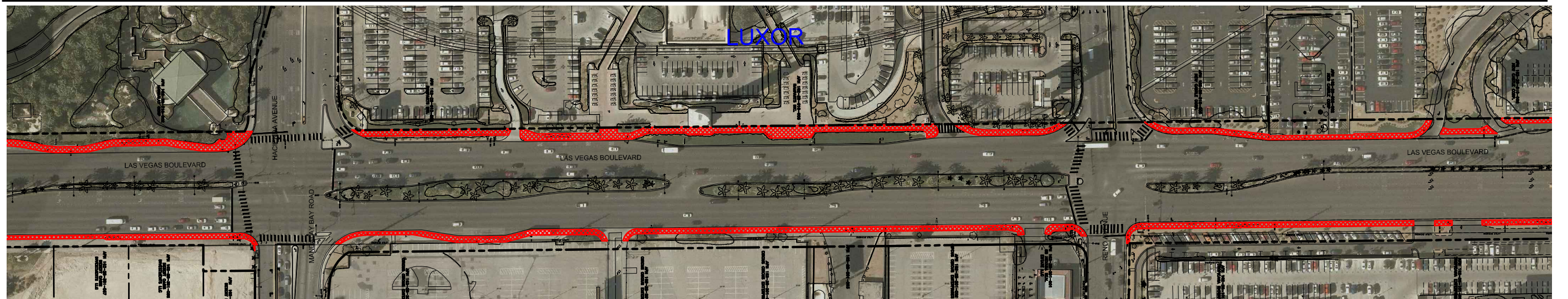


LEGEND:

 Public Right of Way

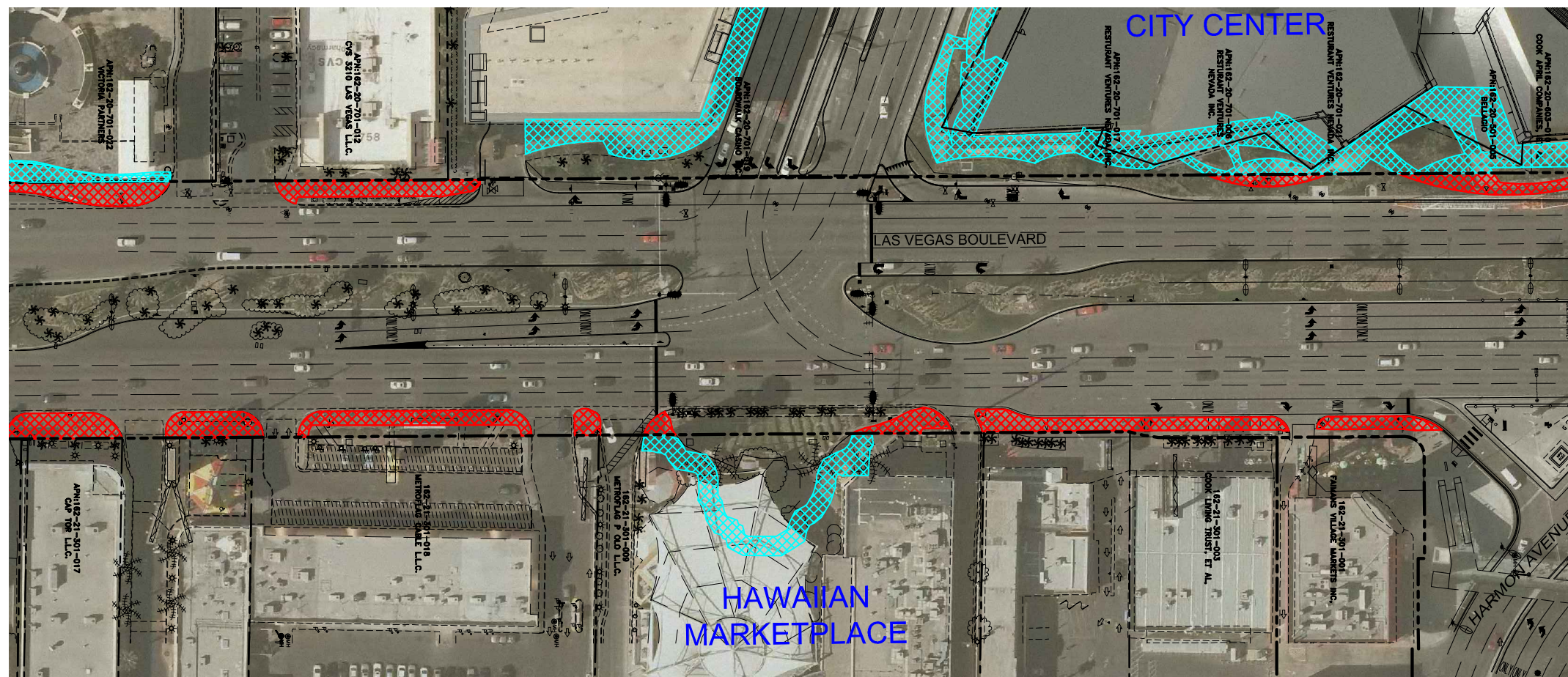
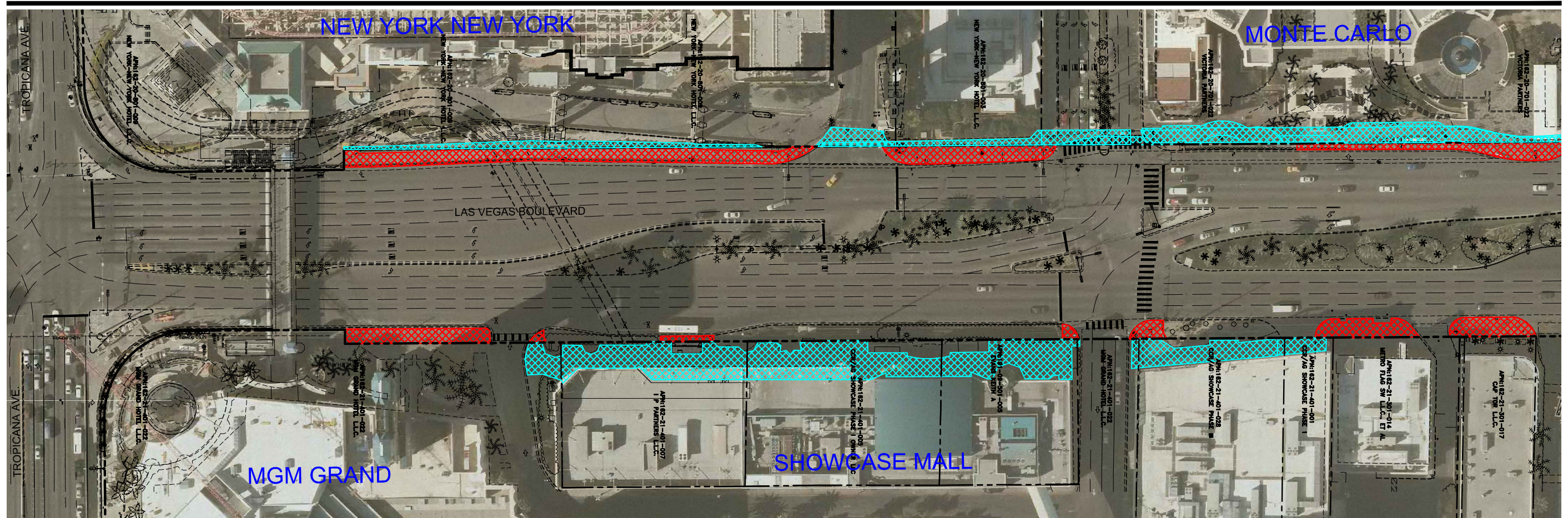
 Pedestrian Easement







LEGEND:

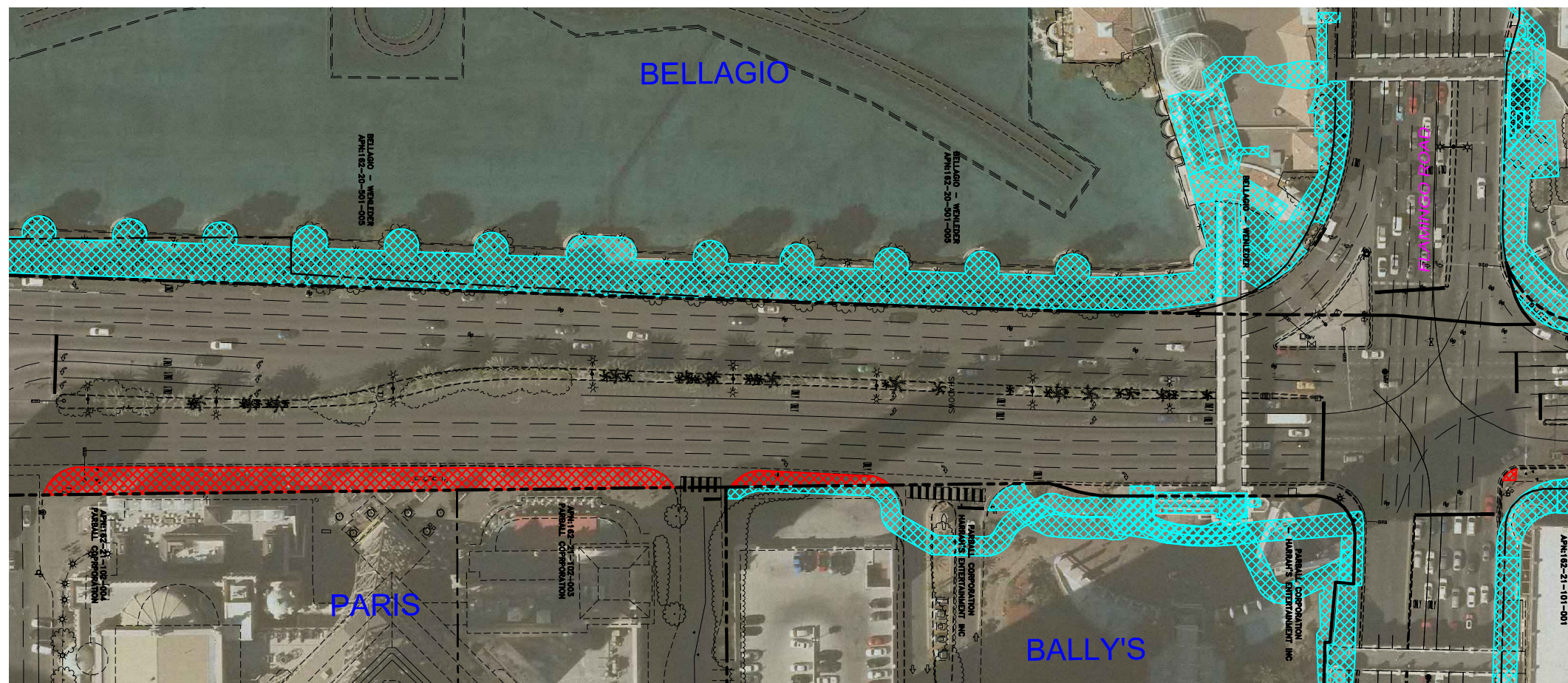
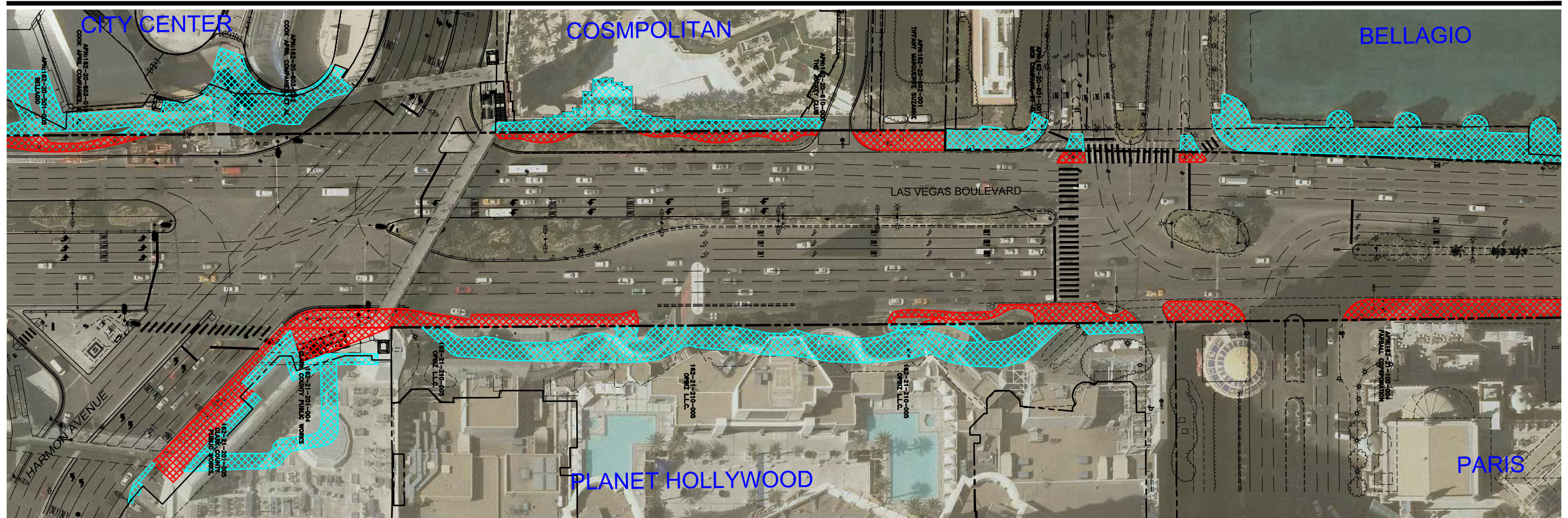
	Public Right of Way
	Pedestrian Easement





LEGEND:

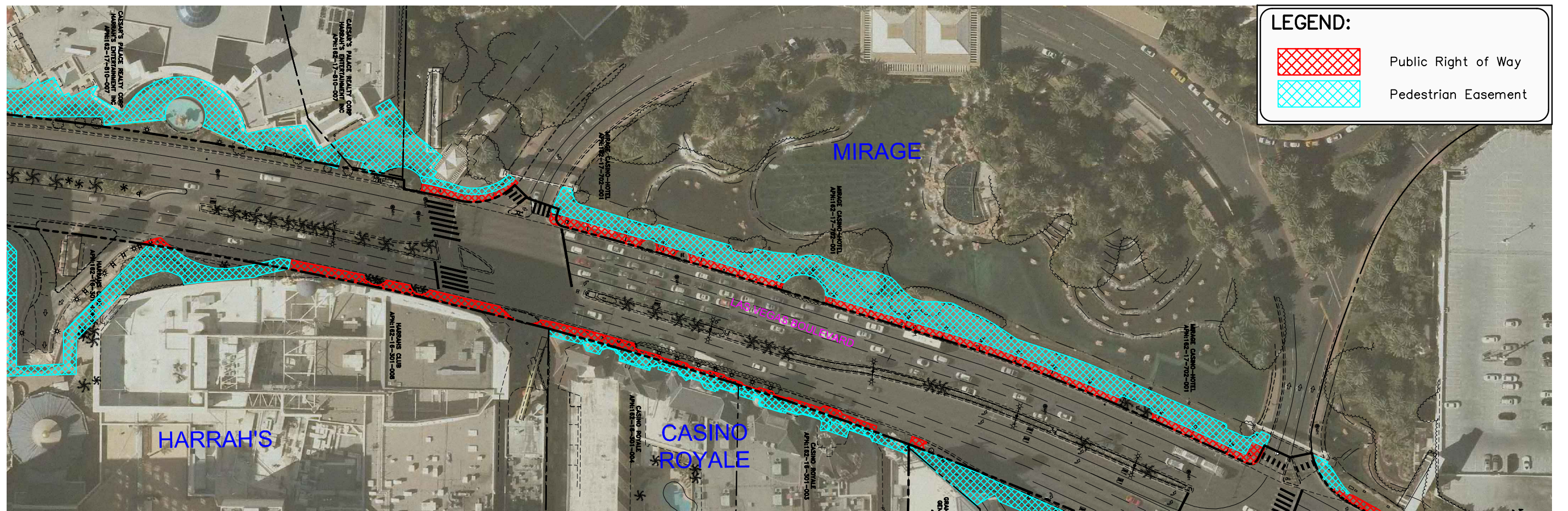
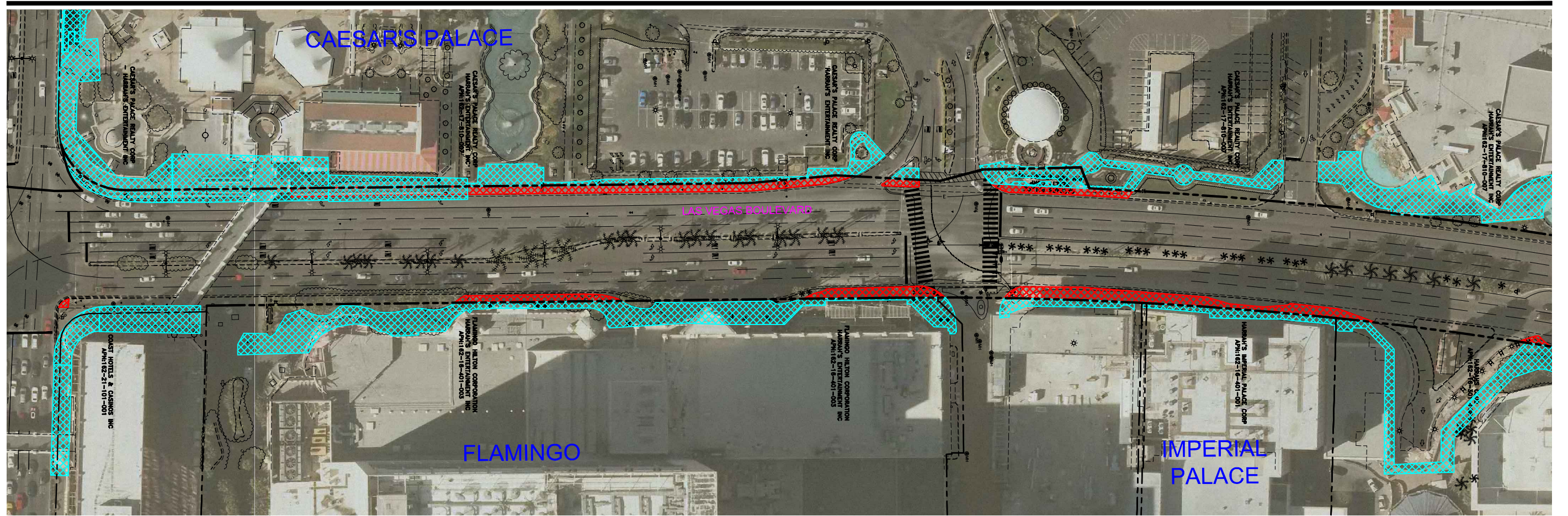
 Public Right of Way

 Pedestrian Easement



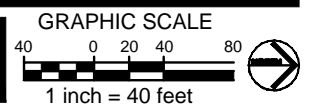
LEGEND:

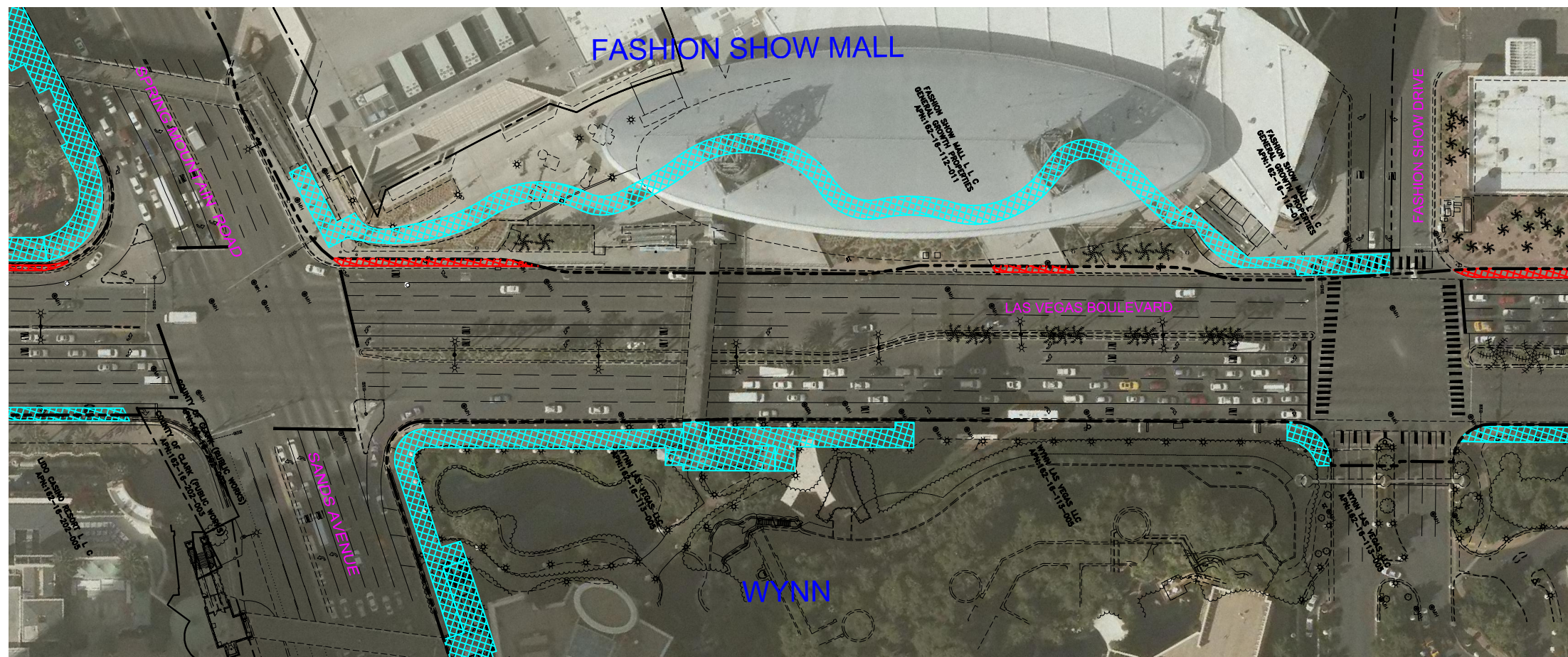
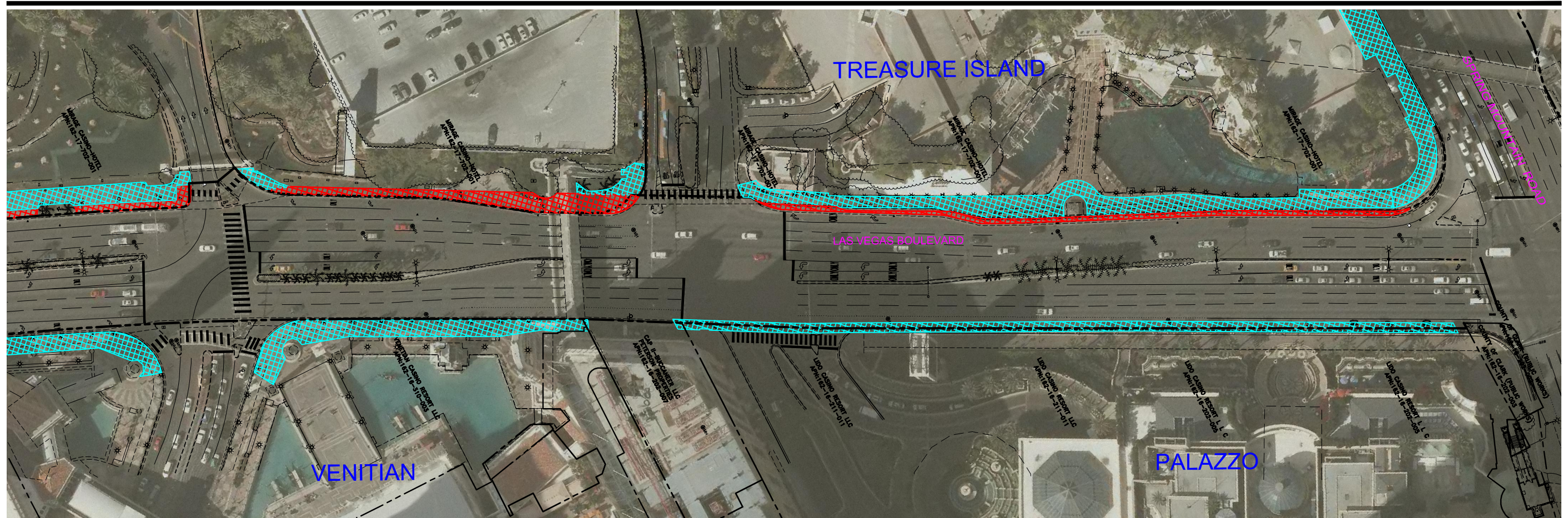
	Public Right of Way
	Pedestrian Easement



LEGEND:

	Public Right of Way
	Pedestrian Easement

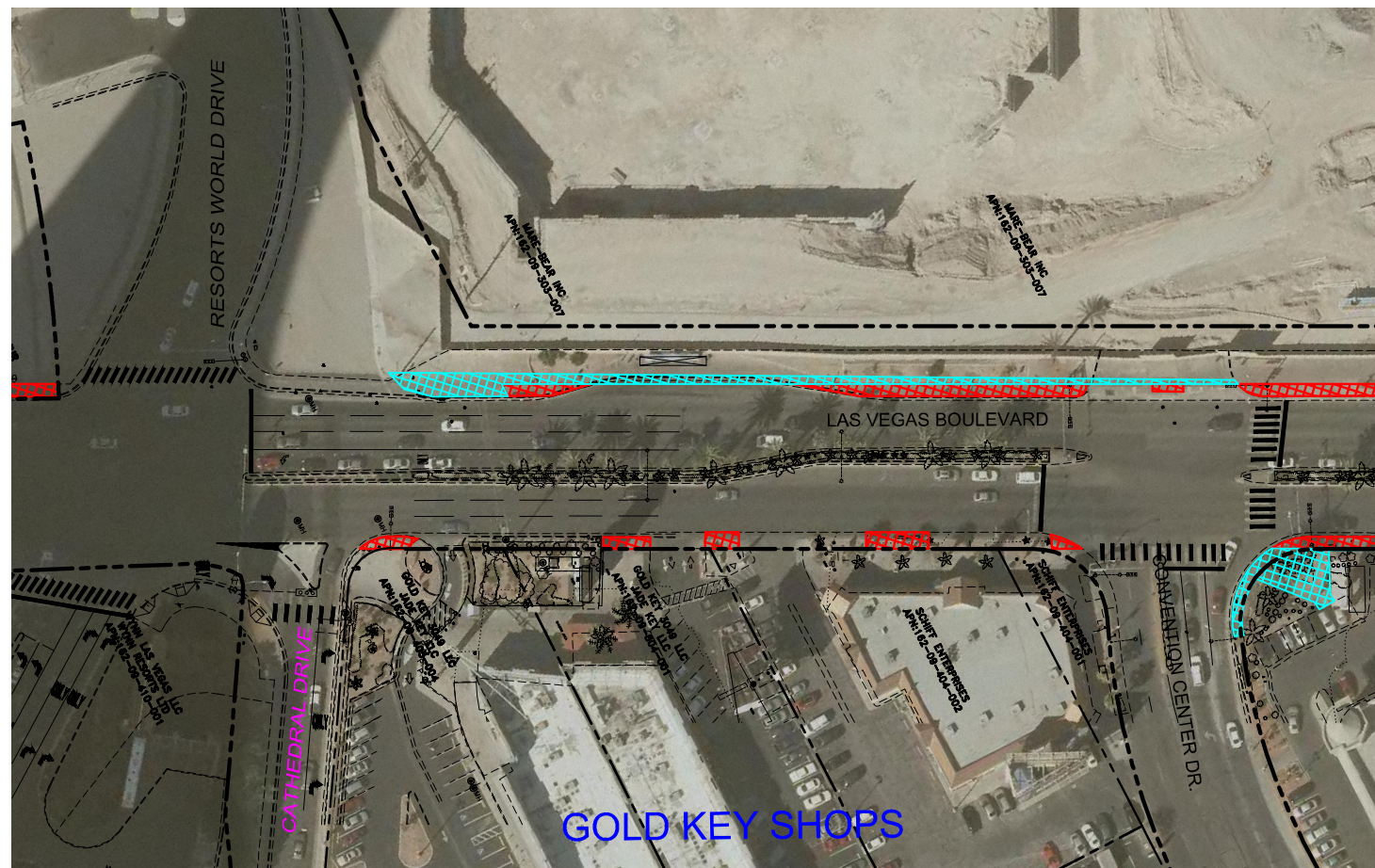
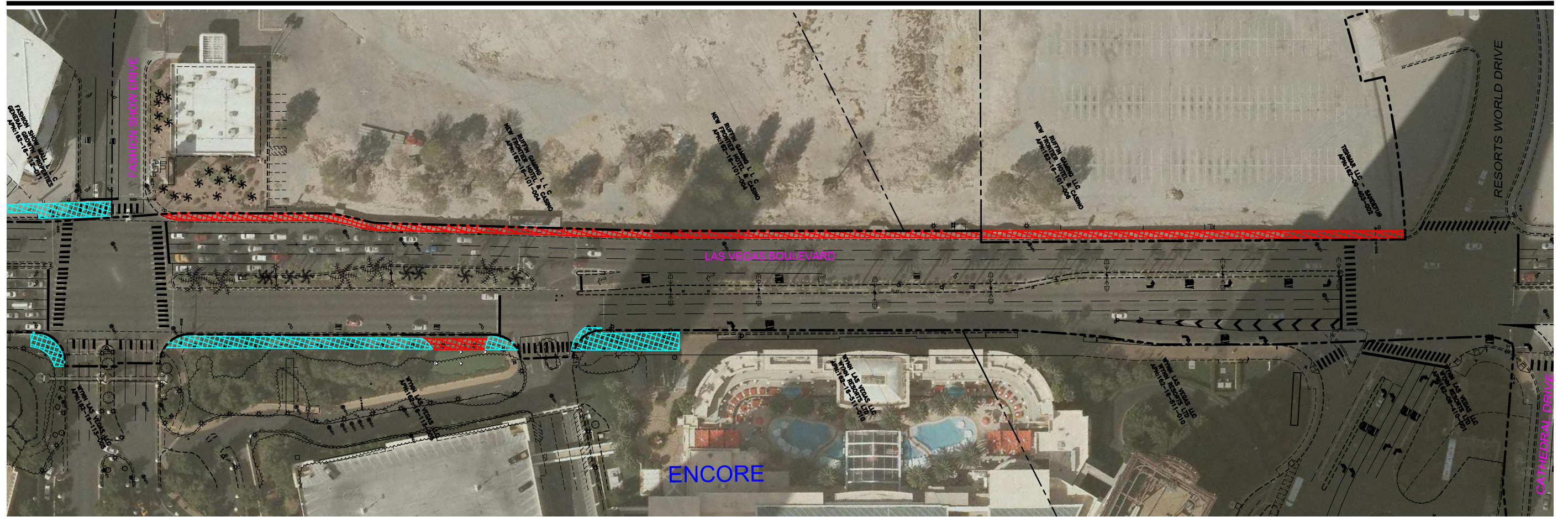






LEGEND:

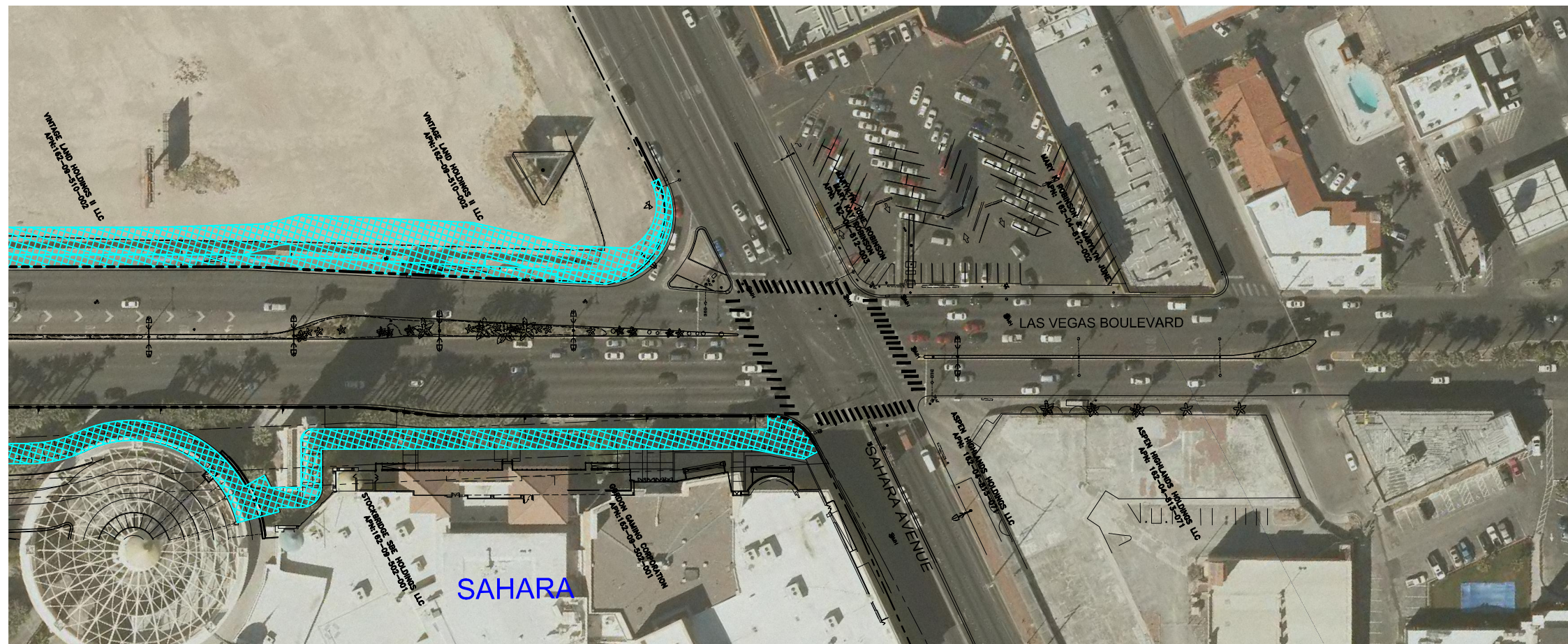
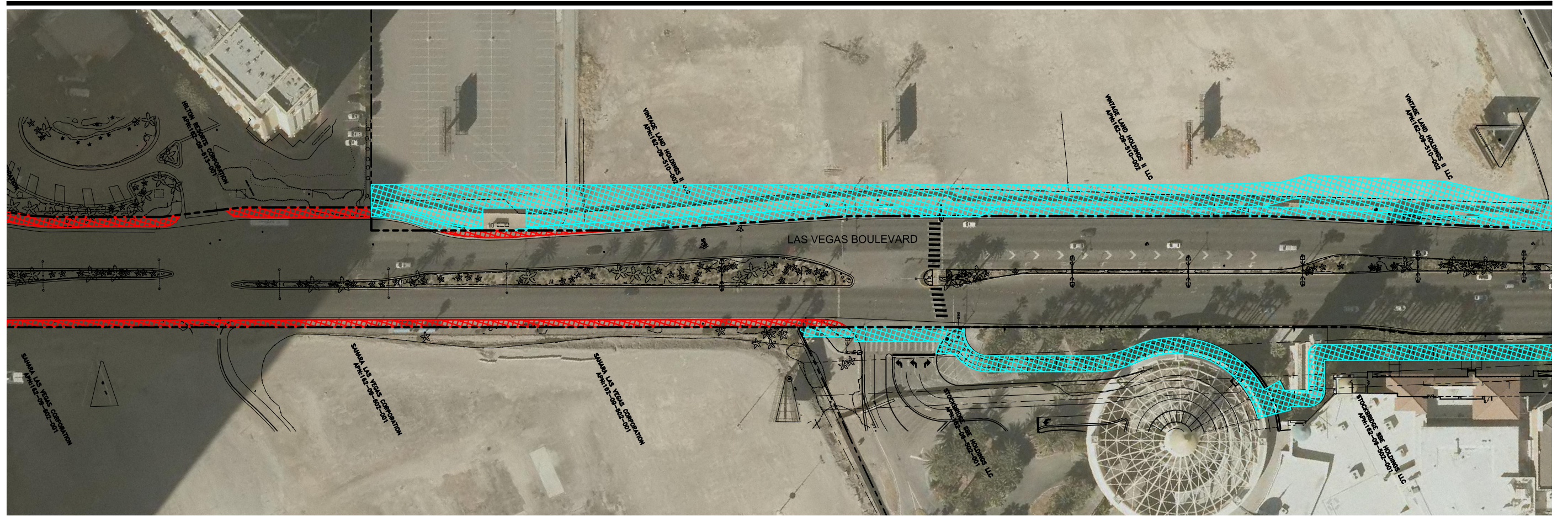
	Public Right of Way
	Pedestrian Easement





LEGEND:

	Public Right of Way
	Pedestrian Easement



LEGEND:



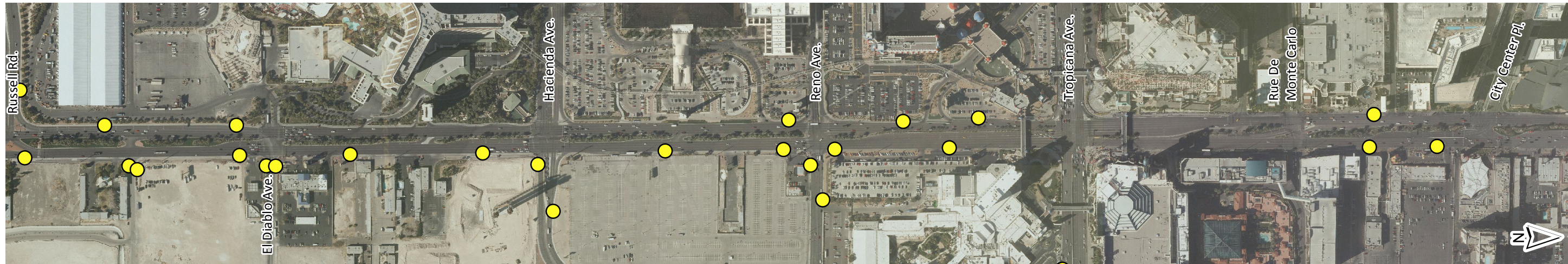
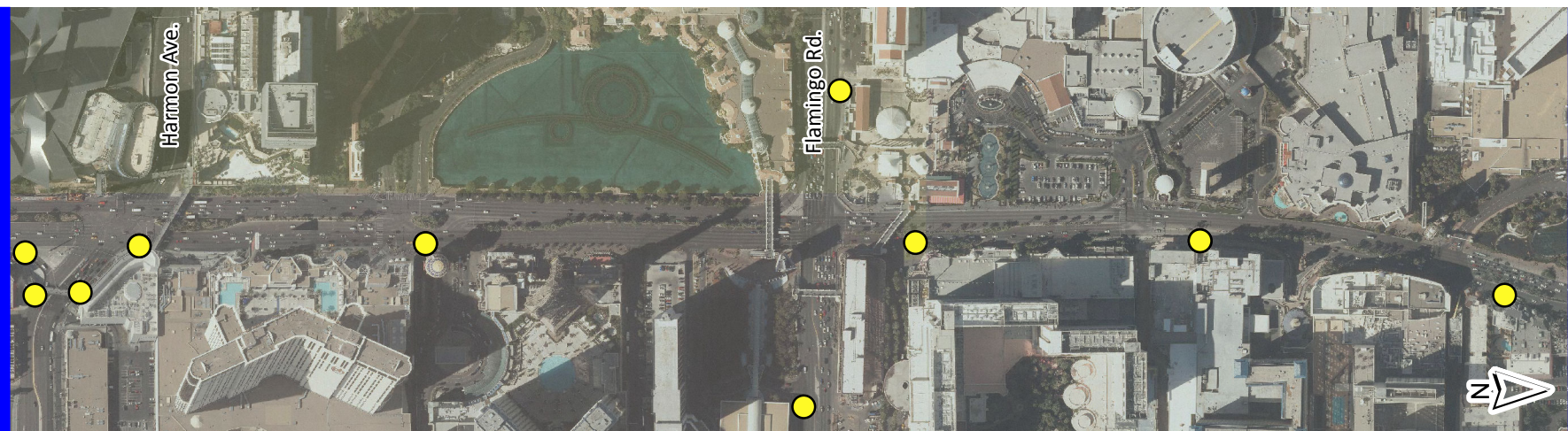
	Public Right of Way
	Pedestrian Easement

EXHIBIT C
NEWSRACK MEDALLION LOCATIONS



SEE BELOW LEFT

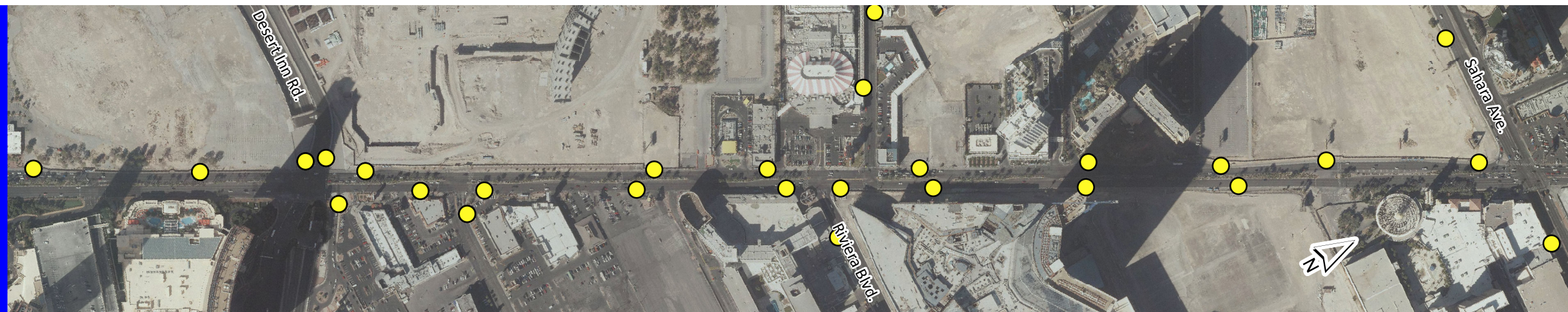


SEE ABOVE RIGHT

SEE RIGHT
SEE LEFT



SEE BELOW LEFT



SEE ABOVE RIGHT

Legend

- Medallion Locations

2015 NEWSRACK MEDALLION LOCATIONS

Exhibit C

EXHIBIT D
CLARK COUNTY MUNICIPAL CODE CHAPTER 16.11 – OBSTRUCTIVE
USES OF PUBLIC SIDEWALK

Chapter 16.11 - OBSTRUCTIVE USES OF PUBLIC SIDEWALKS

Sections:

- 16.11.010 - Purpose.
- 16.11.020 - General definitions.
- 16.11.030 - Establishment of the resort district.
- 16.11.035 - County policy against obstructive uses of public sidewalks.
- 16.11.038 - Notice in the resort district.
- 16.11.040 - Prohibition of obstructive uses.
- 16.11.050 - Designation of "No Obstruction Zones.
- 16.11.060 - Structures.
- 16.11.070 - Storing and unloading materials on public sidewalks.
- 16.11.080 - Removal of "No Obstruction Zone" designations.
- 16.11.090 - Penalty for violation.
- 16.11.100 - Private enforcement.
- 16.11.110 - Severability.

16.11.010 - Purpose.

The board finds that due to vehicle congestion, long delays and increasing costs, it has become increasingly more attractive for residents and visitors to use the public sidewalks on Las Vegas Boulevard South (the Strip) rather than to drive or to ride. Since, traditionally, the major emphasis along the Strip has been on automobile transportation and not on pedestrians, the existing pedestrian environment is inadequate as a transportation system and lacking in many safety features. Moreover, a great number of persons are engaged in uses of the public sidewalks which create undue obstruction, hindrance, blockage, hampering, and interference with pedestrian travel. Large numbers of pedestrians are walking in the streets when the public sidewalks become congested and many pedestrians are crossing against the traffic signal indications. In recognition of the need for improvement of the pedestrian environment and the need for accessible public sidewalks, it is necessary to enact the following regulations.

(Ord. 1617 § 1 (part), 1994)

16.11.020 - General definitions.

- (a) "Pedestrian travel" includes nonvehicular travel by persons on foot, as well as vehicular travel by persons with disabilities in wheelchairs or similar devices.
- (b) "Level of service" or "LOS" means a series of measures that define the relative degree of convenience for different pedestrian traffic volumes and densities, as determined by
- (c) "Crosswalk" means any above or below grade structure or surface portion of a roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by signs, lines or other markings on the surface.
- (d) "Public sidewalk" means that portion of a highway between the curb lines, or the lateral lines of a roadway, and the adjacent property lines, intended for use of pedestrians, and shall also include crosswalks, medians and traffic islands. For the purposes of this chapter, "public sidewalk" shall include private property upon which a limited easement of public access has been granted. However, no provision of this chapter shall be construed to limit any right of the private property owner to restrict or limit the use of that private property.
- (e) "Obstructive use" means:
 - (1) Placing, erecting or maintaining an unpermitted table, chair, booth or other structure upon the public sidewalk, if the placing, erecting, or maintaining of the table, chair, or booth is not protected by the First Amendment or if the placing, erecting, or maintaining of the table, chair, or booth is protected by the First Amendment but is actually obstructive;
 - (2) Forming a cordon or line of persons across the public sidewalk;

- (3) Carrying banners or signs, upon the public sidewalk which actually causes an obstruction on the sidewalk;
 - (4) Placing or storing equipment, materials, parcels, containers, packages, bundles or other property upon the public sidewalk which actually causes an obstruction on the sidewalk;
 - (5) Placing, erecting or maintaining an unpermitted fixed sign upon the public sidewalk;
 - (6) Sleeping upon the public sidewalk;
 - (7) Obstructing, delaying, hindering, blocking, hampering or interfering with pedestrian passage, including passage to or from private property; or
 - (8) Any use of the public sidewalk that causes the LOS for the public sidewalk to decline below LOS C, as determined by the methodology used in Chapter 13 of the Highway Capacity Manual and Las Vegas Boulevard South Pedestrian Walkway Study.
- (f) "LOS C" means a pedestrian flow on a sidewalk of less than or equal to ten pedestrians per minute per foot as specified and defined in the Highway Capacity Manual, Special Report 209, a copy of which is filed with the office of the county clerk.
 - (g) "Permitted obstructive use" means:
 - (1) Any obstructive use of the public sidewalk by public safety equipment, including but not limited to, street signs, traffic signals, fire hydrants, utility poles and street and sidewalk lighting; and
 - (2) Any obstructive use of the public sidewalk for purposes of construction, maintenance or repair of the public safety equipment, right-of-way (or equipment therein) or adjoining private property, conducted by or pursuant to a valid construction permit issued by the Clark County department of public works, Clark County building department or Nevada Department of Transportation;
 - (3) Any obstructive use of the public sidewalk resulting from:
 - (A) An encroachment or structure constructed pursuant to the ordinances, rules, regulations or laws of the United States, the state of Nevada or Clark County, or
 - (B) The construction, modification, addition or attraction upon abutting private property occurring or in place before May 1, 1994;
 - (4) Any newsrack licensed pursuant to Clark County Code Chapter 16.08 unless such newsrack causes a degradation of the LOS to LOS C or less as provided in Section 16.11.040(e);
 - (5) Any conduct "arguably protected" by the National Labor Relations Act until or unless such conduct is determined to be unprotected pursuant to a decision of the National Labor Relations Board;
 - (h) "Arguably protected" as used in subsection (g)(5) of this section has the same meaning as in San Diego Building Trades Council v. Garmon, 359 U.S. 236, 79 S. Ct. 773 (1959).
 - (i) "Street performer" is a member of the general public who engages in any performing act or the playing of any musical instrument, singing or vocalizing, with or without musical accompaniment, and whose performance is not an official part of a sponsored event.

(Ord. 3626 § 1, 2008; Ord. 1617 § 1 (part), 1994)

(Ord. No. 3916, § 1, 11-16-2010; Ord. No. 3986, § 9, 10-4-2011)

16.11.030 - Establishment of the resort district.

For purposes of this chapter a resort district is established as Sections 9, 10, 15, 16, 17, 18, 20, 21, 22, 27, 28, and 29 of Township 21 South, Range 61 East, Mount Diablo Meridian, Clark County, Nevada.

(Ord. 3626 § 1, 2008; Ord. 1617 § 1 (part), 1994)

16.11.035 - County policy against obstructive uses of public sidewalks.

It is the policy of Clark County that no obstructive use, other than a permitted obstructive use, shall be permitted upon any public sidewalk of the resort district of the Las Vegas Valley if the obstructive use, if allowed to occur, would:

- (a) Cause the LOS for the sidewalk to decline below LOS C; or
- (b) Result in a significant threat to or degradation of the safety of pedestrians.

(Ord. 1617 § 1 (part), 1994)

16.11.038 - Notice in the resort district.

Signs shall be posted at least every quarter of a mile in the resort district and the statement **"RESORT DISTRICT: NO OBSTRUCTIVE USES PERMITTED ON PUBLIC SIDEWALKS AT LOCATIONS DESIGNATED BY A WHITE STRIPE, PURSUANT TO CLARK COUNTY CODE CHAPTER 16.11."**

(Ord. 1617 § 1 (part), 1994)

16.11.040 - Prohibition of obstructive uses.

No obstructive use shall be permitted on public sidewalks in the following areas, which areas shall be designated by the placement of pavement markings on the public sidewalks or signs designating the limits of the no obstruction zones, or plaques, monuments or medallions placed in the public sidewalks:

- (a) On or within any crosswalk, including but not limited to all portions of a public sidewalk located in or on a median, traffic island or other structure within, across or over or under a public street or roadway;
- (b) (1) In or within one hundred fifty feet of any mid-block crosswalk, as measured from the crosswalk parallel to the sidewalk curb toward the direction of approaching vehicular traffic, and
(2) In or within fifty feet of any mid-block crosswalk as measured from the crosswalk parallel to the sidewalk curb away from the direction of approaching vehicular traffic;
- (c) (1) In or within one hundred feet of any crosswalk located at an intersection of streets or highways, as measured parallel to the sidewalk curb in the direction of approaching vehicular traffic from the point of curvature of the curb or the marked edge of the crosswalk, whichever is less, and
(2) In or within fifty feet of a crosswalk located at an intersection of streets or highways, as measured parallel to the sidewalk curb away from the direction of approaching vehicular traffic from the point of curvature of the curb or the marked edge of the crosswalk, whichever is less;
- (d) In or within fifty feet of any driveway providing ingress into or egress from any private or non-public property, as measured parallel to the sidewalk curb outward from the point of the curb cut;
- (e) On or within any section of the public sidewalk which has been determined to have an average LOS of C or below, during the hours at which LOS declines below LOS C, as determined by a traffic study conducted by a registered professional engineer or the Clark County department of public works according to the methodology set forth in the Las Vegas Boulevard South Pedestrian Walkway Study.

(Ord. 1617 § 1 (part), 1994)

16.11.050 - Designation of "No Obstruction Zones."

" The board of county commissioners shall adopt a map, to be prepared by the Clark County department of public works, of the H-I zoning district which clearly sets forth those portions of the public sidewalks where obstructive uses, other than permitted obstructive uses, shall be prohibited based upon the factors set forth in Section 16.11.040, above.

- (a) These areas shall be designated "NO OBSTRUCTION ZONES" and shall be clearly marked by the county by the placement of pavement markings on the public sidewalks or signs designating the limits of the no obstruction zones, or plaques, monuments or medallions placed in the public sidewalks, by declaring same.
- (b) Pavement markings on the public sidewalk or signs designating the limits of the "No Obstruction" zone, or plaques, monuments or medallions placed in the public sidewalk marking areas deemed to be no obstruction zones on the basis of LOS, as set forth in Section 16.11.020, shall also specify the hours during which the area is a no obstruction zone.
- (c) No person shall be in violation of this chapter for obstructive use of a no obstruction zone if the no obstruction zone is not designated.

(Ord. 1617 § 1 (part), 1994)

16.11.060 - Structures.

No person shall erect, place or maintain any building, booth, structure, table, chair or other object in whole or in part, upon any public sidewalk unless such use is a permitted obstructive use as set forth in this chapter.

(Ord. 1617 § 1 (part), 1994)

16.11.070 - Storing and unloading materials on public sidewalks.

(a) No equipment, materials, parcels, containers, packages, bundles or other property may be stored, placed or abandoned in or on the public sidewalk. This provision shall not apply to materials or property held or stored in a carry bag or pack which is actually carried by a pedestrian or items such as a musical instrument case or a backpack which is temporarily placed next to a street performer for that street performer's use unless said musical instrument case or backpack actually obstructs the sidewalk in violation of this chapter;

(b) Except in designated loading zones, vehicles may not stop in traffic lanes to load or unload equipment, materials, parcels, containers, packages, bundles or other property onto the public sidewalk.

(Ord. 1617 § 1 (part), 1994)

(Ord. No. 3916, § 1, 11-16-2010)

16.11.080 - Removal of "No Obstruction Zone" designations.

No unauthorized person shall willfully remove, alter, cover or otherwise harm a pavement marking, sign, plaque, monument or medallion marking a no obstruction zone.

(Ord. 1617 § 1 (part), 1994)

16.11.090 - Penalty for violation.

Any person who violates any of the provisions of this chapter is guilty of a misdemeanor and upon conviction shall be punished by imprisonment in the county jail for a term not to exceed six months or by a fine not to exceed one thousand dollars, or by both such fine and imprisonment.

(Ord. 1617 § 1 (part), 1994)

16.11.100 - Private enforcement.

The owner of private property abutting the public sidewalk may use any remedy available at law or equity to enforce the provisions of this chapter.

(Ord. 1617 § 1 (part), 1994)

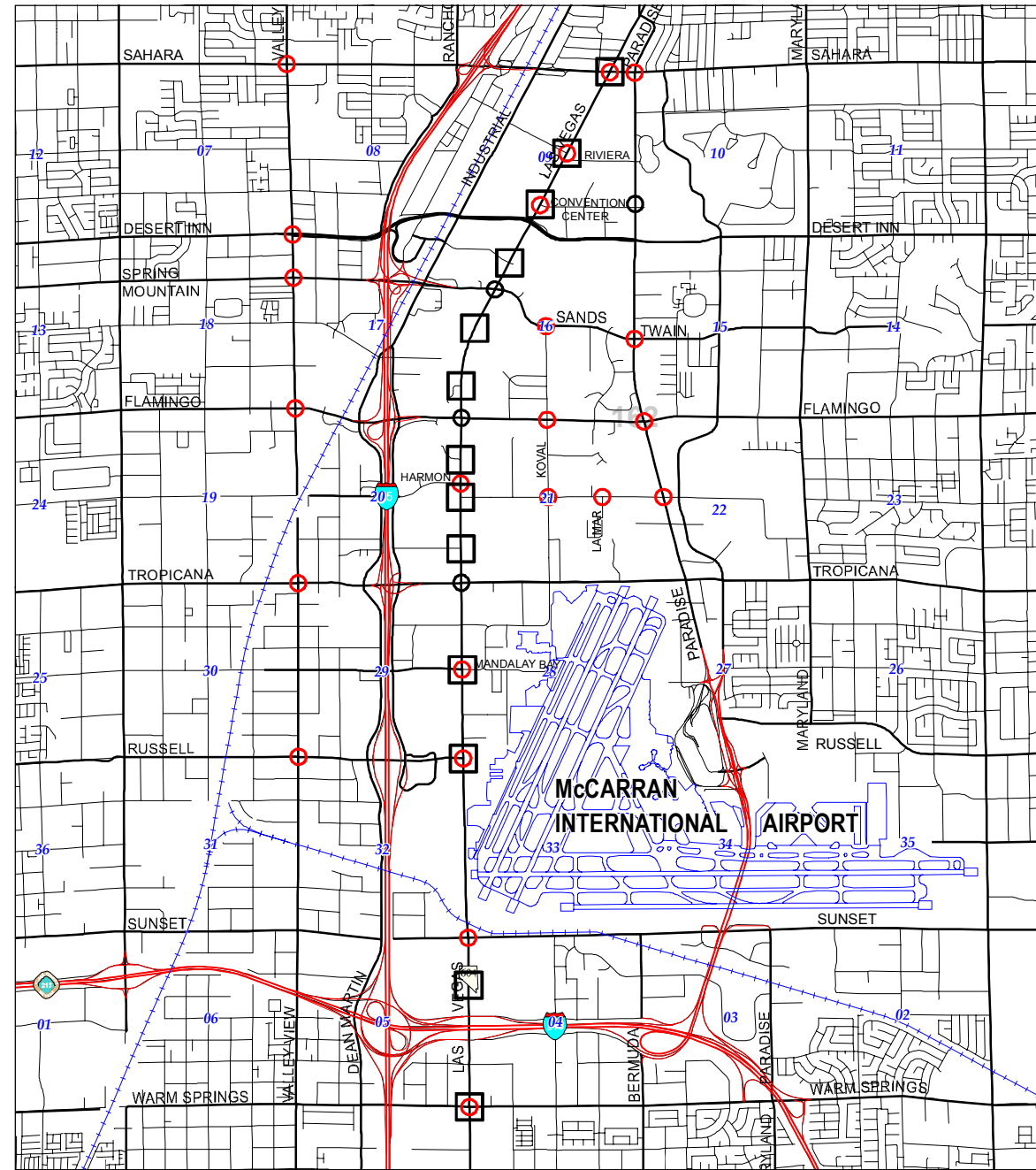
16.11.110 - Severability.

If any section of this chapter or portion thereof is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such holding shall not invalidate the remaining parts of this chapter.

(Ord. 1617 § 1 (part), 1994)

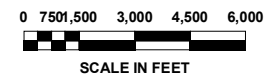
EXHIBIT E
PEDESTRIAN VOLUME RAW DATA
SEE CD AT BACK OF REPORT

EXHIBIT F
TRANSPORTATION ELEMENT OF CLARK COUNTY
MASTER PLAN – PEDESTRIAN CROSSING MAP






Transportation Element

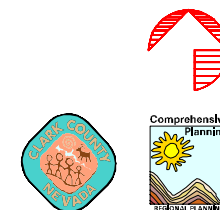
**Map 13
Public Pedestrian
Grade Separations
and Transit Stations**



Map Created On: February 23, 2009

*This information is for display purposes only.
No liability is assumed as to the accuracy
of the data delineated hereon.*

-  Existing Public Pedestrian Grade Separations
-  Planned Public Pedestrian Grade Separations
-  Future Transit Stations - General Locations





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