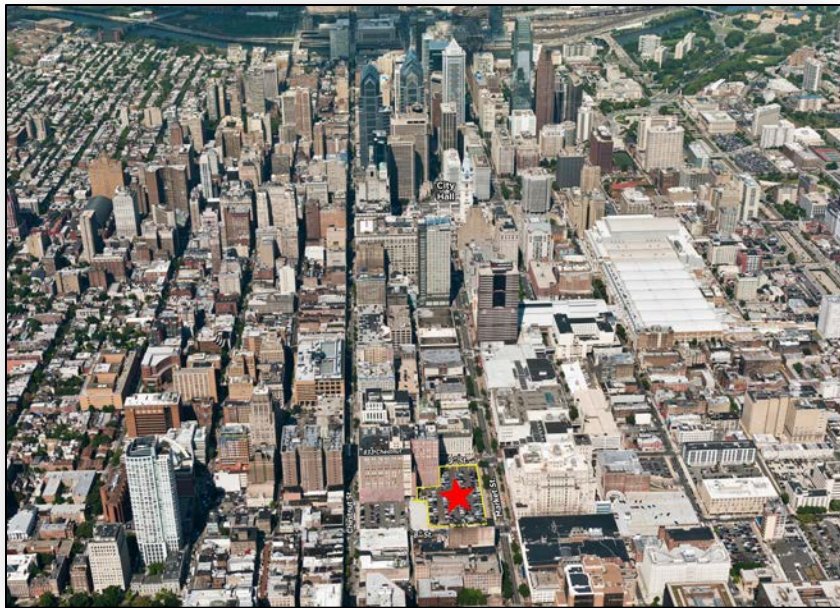




# TRAFFIC IMPACT STUDY



**Market East /  
Center City**

**Philadelphia,  
Pennsylvania**

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MEAS 1201**

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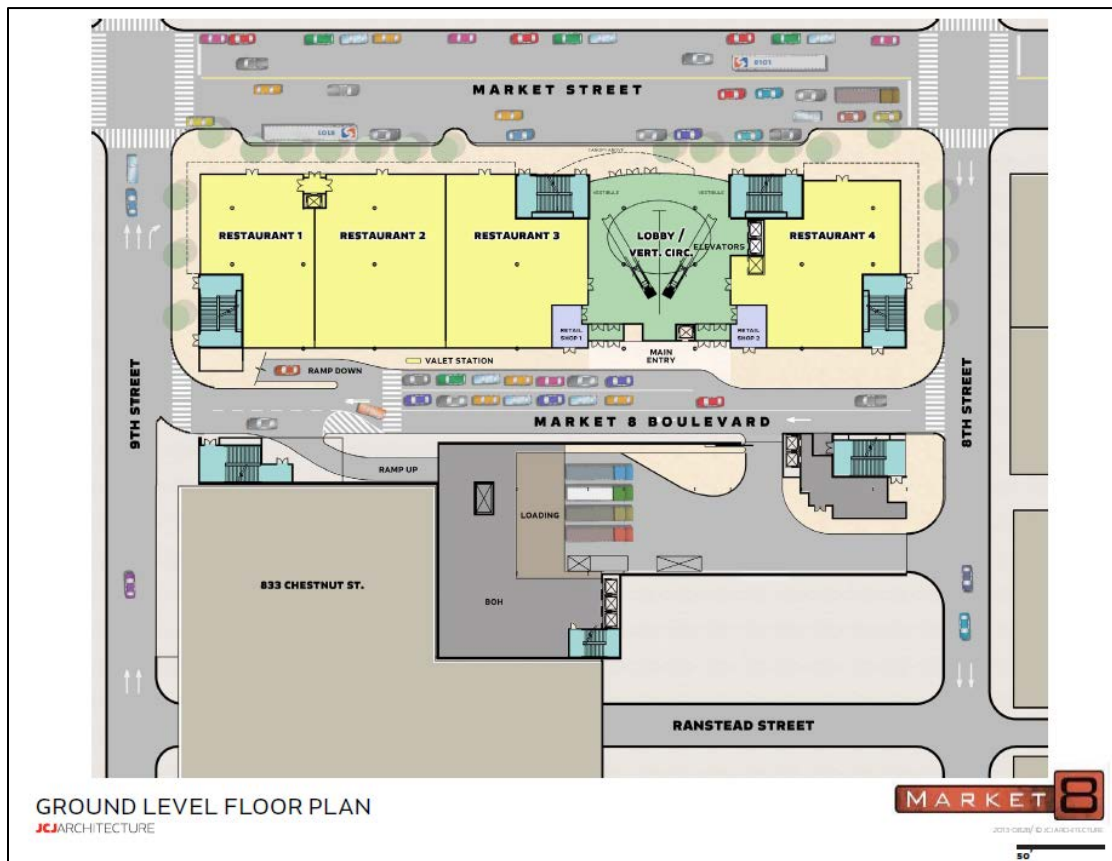
## EXECUTIVE SUMMARY

Market East Associates, L.P. (MEA) has plans to construct a casino complex, MARKET8, along the south side of Market Street (SR 2004) between South 8th Street and South 9th Street in the Market East section of Center City, Philadelphia. The MARKET8 casino and entertainment complex, with two floors of gaming, is anticipated to include:

- 2400 slot machines,
- 82 table games,
- 30 poker tables,
- 1000 space, valet parking garage,
- 168 room hotel,
- Showroom w/ approximately 1200 seats,
- Four (4) quality restaurants at Market Street level,
- Miscellaneous food/beverage venues.

In addition, MARKET8 will provide 340 exclusive parking spaces at 733 Chestnut Street and a further 980 spaces controlled by MEA at various parking facilities to complement the main casino complex's valet parking.

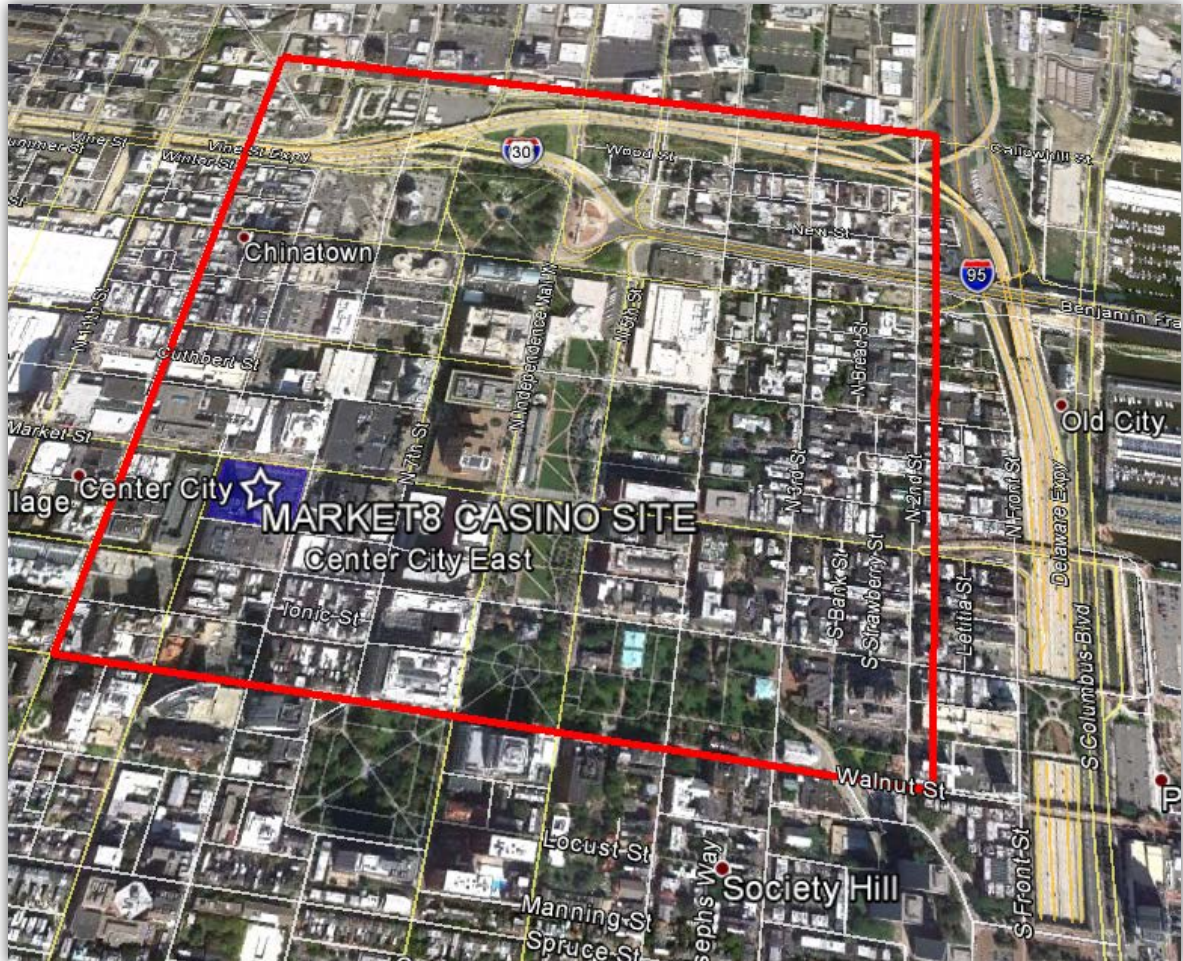
Figure ES-1. Site Access – Street Level



The ingress access for the proposed main casino complex parking garage will be located on the west side of South 8<sup>th</sup> Street; with the corresponding egress onto 9<sup>th</sup> Street (See **Figure ES-1**). The ingress and egress point for the additional parking at 733 Chestnut Street will be located on the east side of South 8<sup>th</sup> Street and the north side of Chestnut Street.

FIGURE ES-2 indicates the primary study area for this proposed casino complex within Center City, Philadelphia.

Figure ES-2. Study Area



Turning movement counts, including heavy vehicles and buses, pedestrians and bicycles were originally conducted on a Friday (October 19, 2012 and January 11, 2013 with schools in session) from 3:00 PM – 8:00 PM and on Saturday (October 20, 2012 and January 12, 2013) from 3:00 PM - 8:00 PM at the following intersections:

- |                                              |                                                          |
|----------------------------------------------|----------------------------------------------------------|
| 1. Market Street and 7 <sup>th</sup> Street; | 4. South 7 <sup>th</sup> Street and Chestnut Street;     |
| 2. Market Street and 8 <sup>th</sup> Street; | 5. South 8 <sup>th</sup> Street and Chestnut Street; and |
| 3. Market Street and 9 <sup>th</sup> Street; | 6. South 9 <sup>th</sup> Street and Chestnut Street.     |

Additional traffic counts were conducted in May 2013 while school was still in session on a Friday from 4:00PM – 6:00PM, Friday from 7:00 – 10:00 PM, and on a Saturday from 6:00PM – 9:00PM at the updated study area intersections.

The updated study area includes the following intersections:



- |                                              |                                                  |
|----------------------------------------------|--------------------------------------------------|
| 1. 2nd Street and Race Street                | 21. 8th Street and Market Street                 |
| 2. 3rd Street and Race Street                | 22. 8th Street and Arch Street                   |
| 3. 4th Street and Race Street                | 23. 8th Street and Race Street                   |
| 4. 5th Street and Market Street              | 24. 8th Street and Walnut Street                 |
| 5. 5th Street and Arch Street                | 25. 8th Street and Vine Street (Eastbound Local) |
| 6. 5th Street and Race Street                | 26. 8th Street and Vine Street (WB Local)        |
| 7. 5th Street and Walnut Street              | 27. 8th Street and Chestnut Street               |
| 8. 5th Street and Chestnut Street            | 28. 9th Street and Vine Street (Eastbound Local) |
| 9. 6th Street and Market Street              | 29. 9th Street and Market Street                 |
| 10. 6th Street and Arch Street               | 30. 9th Street and Walnut Street                 |
| 11. 6th Street and Race Street               | 31. 9th Street and Arch Street                   |
| 12. 6th Street and Walnut Street             | 32. 9th Street and Chestnut Street               |
| 13. 6th Street and Chestnut Street           | 33. 9th Street and Race Street                   |
| 14. 7th Street and Market Street             | 34. 10th Street and Arch Street                  |
| 15. 7th Street and Arch Street               | 35. 10th Street and Market Street                |
| 16. 7th Street and Race Street               | 36. 10th Street and Walnut Street                |
| 17. 7th Street and Walnut Street             | 37. 10th Street and Chestnut Street              |
| 18. 7th Street and Chestnut Street           | 38. Franklin Street and Vine Street (EB)         |
| 19. 7th St and Vine St (SR30/I-676 WB Local) | 39. Site Entrance and 8th Street                 |
| 20. 8th Street and Callowhill Street         | 40. Site Exit and 9th Street                     |

## FINDINGS & RECOMMENDATIONS

### Findings

- The proposed development will comprise:

- |                                     |                                                        |
|-------------------------------------|--------------------------------------------------------|
| • 2400 slot machines,               | • 168 room hotel,                                      |
| • 82 table games,                   | • Showroom w/ approximately 1200 seats,                |
| • 30 poker tables,                  | • Four (4) quality restaurants at Market Street level, |
| • 1000 space, valet parking garage, | • Miscellaneous food/beverage venues.                  |

Projected peak hour trips for the casino for Friday and Saturday evening peak periods are based on research and information obtained from other casino traffic studies within the Philadelphia area and nationally.

- The capacity analyses performed for future casino BUILD conditions indicates that the site traffic will have the greatest Level of Service (LOS) impact on the two (2) intersections immediately bordering the site at 9<sup>th</sup> / Market Street and 8<sup>th</sup> / Market Street. These impacts will be mitigated by capacity and signal timing enhancements. The site driveway exiting onto 9th Street (STOP controlled “right-out-only”) will operate at LOS B. The remaining 38 study area intersections will experience no LOS degradation due to MARKET8 site traffic.
- All study area intersections operate at “acceptable” Levels of Service for future BUILD conditions with mitigation (and without additional “Multi-Modal Trip Reductions”) when utilizing *actual* SugarHouse casino trip generation rates. Overall intersection delays due to casino vehicular traffic are less than 10 seconds beyond “No Build” conditions at all studied intersections. *This 10-second threshold is the acceptable standard utilized by PennDOT for traffic delay degradation associated with new developments.*

- The casino operator has indicated that MARKET8 is anticipated to generate very little charter bus activity. However, charter buses could utilize the Market Street bus “pull-off” in front of MARKET8 as needed and then park at the Callowhill Bus Center (114 Callowhill Street) until patrons are ready for pick-up.
- Comparing the net “As-of-Right” (AOR) vehicle trips to those for the proposed casino, an increase in site traffic would occur if the proposed Market East casino site was developed per existing land use guidelines. In general, at least 50% more AOR traffic may be generated during the typical weekday PM Peak Hour (versus MARKET8 casino traffic) while 0-10% more AOR traffic (versus casino traffic) may be generated during a typical Saturday.
- The City’s Zoning Code (§14-405 SP-ENT Entertainment Special Purpose District - Licensed Gaming Facilities) requires 4 parking spaces for every 5 slot machine or gaming positions provided for patrons and guests. Accordingly, the proposed complex would thus need to accommodate 2,554 parking spaces within and/or immediately adjacent to the site.
- There are currently in excess of 2,800 parking spaces (within a 5-minute walk of the site) available after 5:00 PM on an average Friday and after 6:00 PM on an average Saturday. In addition, MARKET8 has secured 980 parking spaces for “as needed” use by patrons and/or casino complex employees at the following Market East locations:
  - E-Z Park (211 N 9<sup>th</sup> St and 912-916 Arch St)
  - Park Safe System (618 Market St)
  - Operator TBD (615 Chestnut St)
  - LAZ Parking (107 S 10<sup>th</sup> St)

Combined with the 1000 on-site casino complex valet parking spaces, 340 “casino only” parking spaces at 733 Chestnut Street and 980 spaces controlled by MEA at various parking facilities, the proposed entertainment complex will be able to accommodate over 4,000 parked vehicles on an average Friday or Saturday evening; with over 2300 of these dedicated to casino patrons and/or employees.

- Despite a record of vehicle/pedestrian crashes within the study area, Downtown walking accommodations in the vicinity of the site and to/from local parking venues are generally satisfactory; with wide sidewalks, ADA ramps at most intersections and pedestrian signal indications at all signalized intersections.

## Recommendations

The following recommendations will significantly improve the traffic operations within the study area, while allowing safe, unimpeded egress from the casino parking garage:

- Restrict on-street parking along the east side of 9<sup>th</sup> Street 20-feet south of the facility exit drive north to the Market St intersection to provide a separate northbound right turn lane and widen 9<sup>th</sup> Street to 30-feet between the MARKET8 egress drive (Market8 Blvd) and Market St;
- Optimization of the traffic signal splits at 8<sup>th</sup> and Market to accommodate the heavier southbound through traffic approaching the site on 8<sup>th</sup> Street;
- Implement a leading pedestrian interval on the Market Street pedestrian crossings at 8<sup>th</sup> Street and 9<sup>th</sup> Streets. Recommend a leading pedestrian interval of 5 seconds on each of these Market Street crossings.

- 
- Provide a striped, 8-foot shoulder and eliminate parking on 8<sup>th</sup> Street from Market Street to MARKET8 Boulevard to facilitate a more efficient flow of traffic into the site;
  - Enhance trail-blazing signage along regional transportation routes to ensure “positive guidance” to/from the casino complex and primary travel routes for non-local drivers;
  - Encourage greater use of mass transit as an alternative to driving via advertising and/or casino promotions;
  - Work with SEPTA and Center City hotels to increase the frequency of bus and shuttle stops to the casino and/or creating a direct connection to the mass transit hub within the study area ( 8<sup>th</sup> and Market Street); and
  - In addition to some sidewalk, ADA ramp and pavement marking upgrades in the immediate vicinity of the proposed casino, consider “spot” grading adjustments of sidewalks to/from MARKET8 casino, especially brick-sidewalk locations near the proposed site. “Jay walking” enforcement, driver education and pedestrian education are the only recommended actions to improve safety and reduce pedestrian crash rates at downtown CBD locations.

Also, the City of Philadelphia’s Zoning Codes states that “parking provided in this (Special Purpose) District must be adequately served by high-capacity roads or driveways approved by the Streets Department as being adequate to safely serve the ingress and egress of patrons and guests using the facility.” This requirement is clearly met given the close proximity of the proposed casino site to I-95 and the Vine Street Expressway. Suggested parking utilization strategies that would further reduce the need for on-site parking spaces would include:

- Proposed VIP and/or Valet Parking;
- Off-site Parking Accommodation for Casino employees;
- Shuttle bus service to/from the Casino and Center City Parking, Shopping venues, Hotels;
- Promotion of Public Transit; and
- “Real-time” parking management for Casino parking.

Finally, Pennoni would recommend that a “Post-development” Traffic Operations study be performed to verify Trip Generation assumptions and overall operations of the MARKET8 Casino approximately six (6) months after “Opening Day”. This study would be performed to address and mitigate any unanticipated operational deficiencies (e.g., excessive queuing, pedestrian accessibility, etc.) within the study area.

## **Conclusions**

Based on the findings indicated in this traffic impact study:

- MARKET8’s strategic location will draw many casino patrons from the Pennsylvania Convention Center, tourists staying in nearby hotels, local residences and businesses located in downtown Philadelphia; most all of whom will be either walking or arriving by taxi or transit.
- Transit service to the 8th and Market location is extraordinary. The proposed casino is in a prime location to access several transit modes including: buses, subways, and regional rail. As a regional transit hub, the site is well served as a destination, and functions as one of the region’s major points of transfer between transit facilities.





- The MARKET8 casino's Market East site is in a prime location to access I-95, I-676 (Vine Street Expressway) and the Ben Franklin Bridge for regional access by vehicular traffic. Other tourist draws in the vicinity of the proposed site include: Loews Hotel, Reading Terminal Market and the Hard Rock Café.
- If Office/General Retail space were to be developed at the proposed casino site, per "as-of-right" zoning regulations, significantly more traffic would likely be generated during the work week when compared to projected Friday PM casino traffic generation.
- Available parking immediately adjacent to the site, combined with the proposed parking within the site, significantly exceeds the parking requirements of the zoning code. The site, located within the City of Philadelphia's urban core, provides excellent flexibility for development program modifications through maximization strategies for on-site parking and greater utilization rates benefitting nearby, off-site parking facilities.

If those recommendations suggested above are implemented as part of the MARKET8 mixed-use entertainment and casino complex, all study intersections within the surrounding transportation system will operate with *no degradation* in existing ("No Build") levels of service.



## INTRODUCTION

Market East Associates, L.P. (MEA) has plans to construct a casino complex, MARKET8, along the south side of Market Street (SR 2004) between South 8th Street and South 9th Street in the Market East section of Center City, Philadelphia. The MARKET8 casino and entertainment complex, with two floors of gaming, is anticipated to include:

- 2400 slot machines,
- 82 table games,
- 30 poker tables,
- 1000 space, valet parking garage,
- 168 room hotel,
- Showroom w/ approximately 1200 seats,
- Four (4) quality restaurants at Market Street level,
- Miscellaneous food/beverage venues.

In addition, MARKET8 will provide 340 exclusive parking spaces at 733 Chestnut Street and a further 980 spaces controlled by MEA at various parking facilities to complement the main casino complex's valet parking. The proposed site plan is shown in **FIGURE 1**.

### Site Traffic Circulation

The ingress access for the proposed casino complex "valet only" parking garage will be located on the west side of 8<sup>th</sup> Street; with the corresponding egress access onto 9<sup>th</sup> Street (See Figure 2). As 8<sup>th</sup> Street and 9<sup>th</sup> Street are one-way pairs, southbound and northbound, respectively, all casino-related traffic will generally be entering or exiting via the Market Street intersections with S 8<sup>th</sup> and S 9<sup>th</sup> Streets. Valet "drop-off" service will occur on the street level floor (per **FIGURE 1**) for casino, hotel, restaurant and showroom patrons, while Valet "pick-up" will occur one floor-level below ground level in order to facilitate circulation.

Taxi, limousine and Septa bus service will occur along the front of the complex (Market Street) within dedicated pull-off areas, while truck loading docks will be located inside the entrance to the main complex parking garage, opposite the valet pick-up/by-pass. The ingress and egress points for the additional parking at 733 Chestnut Street will be located on the east side of 8<sup>th</sup> Street and the north side of Chestnut Street.

Taxi and bus circulation to/from the MARKET8 site will generally follow the same patterns as determined by the traffic distribution gravity mode described later in this study. Note: To be conservative in our impact analyses contained herein, Pennoni did not remove the estimated 11% of taxis from our calculation of "new" trips, despite the fact that these vehicles are generally included within the existing CBD traffic stream.

Additionally, the casino operator has indicated that MARKET8 is anticipated to generate very little charter bus activity. However, charter buses could utilize the Market Street bus "pull-off" in front of MARKET8 as needed and then park at the Callowhill Bus Center (114 Callowhill Street) until patrons are ready for pick-up.

### Study Approach

This Transportation Impact Study (TIS) addresses the anticipated impact of the proposed **MARKET8** casino complex along the adjacent roadway system, recommends potential improvements, and evaluates sight distance of the proposed access drive(s) onto the existing roadway system. The TIS will establish existing, baseline ("no build" without casino traffic) and "build" (with casino traffic) conditions. The scope of the TIS was developed to satisfy the requirements of the Pennsylvania Gaming Control Board (PGCB) casino license application, Philadelphia Streets Department and the Pennsylvania Department of Transportation (PennDOT) Transportation Impact Study Guidelines.

Based on comments received on behalf of the PGCB, Pennoni studied the Friday and Saturday afternoon/evening periods, analyzing a combination of street peak and casino peak hours. Friday and

Saturday evenings were identified as the peak casino periods by the Philadelphia Gaming Advisory Task Force<sup>1</sup>, while Friday (late afternoon) and Saturday mid-afternoon periods have the highest street traffic. This Peak Hour selection is critical to our analyses as the Peak Hours of Adjacent Street Traffic and Casino Peak Trip Generation do not typically coincide, and most importantly, the peak parking demands for the casino complex will dovetail nicely with Off-Peak Weekday and Saturday parking availability.

According to Cincinnati's Bridging Broadway Study<sup>2</sup> commissioned to study the impact area of a casino in an urban center, "to achieve the level of connectivity required to create a new downtown destination that positively enhances the surrounding area, it is necessary to avoid isolating the casino site. The streets surrounding the site must not act as barriers, and the casino's architectural design must face outward with non-gaming uses exposing the exterior". This TIS shows that **MARKET8** not only address those key connectivity issues noted above, but the proposed venue enhances and complements the vibrant Market East section of Center City, Philadelphia.

## **STUDY METHODOLOGY**

The analysis contained herein will be conducted in accordance with PennDOT guidelines<sup>3</sup>. As required, three analysis years are considered: existing baseline traffic conditions, opening year analysis and design horizon year analysis (5 years after the opening year). The opening year and horizon year analyses include an assessment of the operational conditions of the study intersections under "no build" and "build" scenarios. For this study, these analyses periods are identical, since 0% background traffic growth is projected over the horizon period. Mitigation is assessed for intersections that experience an overall level of service drop and delay increase of more than ten (10) seconds from the "no build" to "build" conditions. *Level of service* is a measure of operating conditions discussed in detail later in this report.

Specific elements included in this study are:

- An inventory of the roadway facilities in the vicinity of this project, including the existing physical and traffic operating characteristics;
- Manual turning movement counts performed at the study intersections during afternoon peak traffic hours;
- Crash analysis of study area intersections – and corresponding mitigation plan;
- Calculation of vehicular trip generation for the proposed casino complex and other planned developments (if applicable) within the study area based on empirical and/or historical data obtained for casino's throughout the United States as well as trip generation rates contained in the Institute of Transportation Engineers (ITE) manual entitled *Trip Generation*, an ITE Information Report (9<sup>th</sup> Edition, 2012)<sup>4</sup>.
- Distribution of development-generated traffic onto the study area roadways in accordance with current travel patterns, empirical data obtained from research of similar facilities and anticipated traffic behavior changes
- Assessment of 2013, 2016 and 2021 traffic conditions based on capacity, level of service and queuing analyses performed for the study intersections.

As the Pennoni team is intimately familiar with the Market Street corridor, we already have an understanding of the existing traffic conditions and travel patterns, and we are familiar with City of Philadelphia and PennDOT TIS and HOP permitting requirements.

Pennoni has performed analyses of the MARKET8 site that reflects logical, yet conservative, multi-modal trip reduction strategies (based on “Mode of Arrival” assumptions from the aforementioned Philadelphia Gaming Advisory Task Force and internet research). The analyses also consider trip reduction resulting from internal trips within the multi-use development. The internal trip reductions were applied using ITE internal trip reduction methodology as outlined in the *Trip Generation Handbook, 2<sup>nd</sup> Edition*<sup>5</sup>.

The study also evaluates parking through a *Parking Utilization* analysis and distribution assessment that addresses the land-use parking requirements per Philadelphia’s Zoning Code. Specifically, the study evaluates available parking through the examination of three adjacent parking facilities (within a 5-minute walking radius of the proposed casino complex).

## **STUDY AREA**

**FIGURE 2** indicates the primary study area within the Market East District of Philadelphia.

Turning movement counts, including heavy vehicles and buses, pedestrians and bicycles were originally conducted on a (non-event) Friday (October 19, 2012 and January 11, 2013 with schools in session) from 3:00 PM – 8:00 PM and on Saturday (October 20, 2012 and January 12, 2013) from 3:00 PM - 8:00 PM at the following intersections:

- Market Street and 7<sup>th</sup> Street;
- Market Street and 8th Street;
- Market Street and 9th Street;
- South 7<sup>th</sup> Street and Chestnut Street;
- South 8th Street and Chestnut Street; and
- South 9th Street and Chestnut Street.

Additional traffic counts were conducted in May 2013 while school was still in session on a Friday from 4:00PM – 6:00PM, Friday from 7:00 – 10:00 PM, and on a Saturday from 6:00PM – 9:00PM at the updated study area intersections. The original traffic counts from October 2012 and January 2013 were seasonally adjusted to reflect May traffic conditions.

The study periods were chosen to coincide with the PM peak traffic period on the adjacent roadway network on a typical Friday and the peak hours of trip generation for a casino complex. The peak hours of trip generation for a casino use typically occur between the hours of 7:00 PM and 10:00 PM on Friday and 6:00 PM and 9:00PM on Saturday evenings.

Finally, existing driveway counts were conducted on Friday, June 28, 2013 from 4:00 PM – 6:00 PM and 7:00 – 10:00 PM, as well as Saturday, June 29th (during a “typical” Casino Saturday Peak Hour) from 6:00 PM - 9:00 PM at the SugarHouse Casino in Philadelphia and the Hollywood Casino in Columbus, OH.

**TABLE 1** lists the study intersections analyzed as part of this TIS.



TABLE 1. STUDY AREA

STUDY INTERSECTION		
2 <sup>nd</sup> Street and Race Street	7 <sup>th</sup> Street and Arch Street	9 <sup>th</sup> Street and Market Street
3 <sup>rd</sup> Street and Race Street	7 <sup>th</sup> Street and Race Street	9 <sup>th</sup> Street and Walnut Street
4 <sup>th</sup> Street and Race Street	7 <sup>th</sup> Street and Walnut Street	9 <sup>th</sup> Street and Arch Street
5 <sup>th</sup> Street and Market Street	7 <sup>th</sup> Street and Chestnut Street	9 <sup>th</sup> Street and Chestnut Street
5 <sup>th</sup> Street and Arch Street	7 <sup>th</sup> Street and Vine Street (SR30/I-676 WB Local)	9 <sup>th</sup> Street and Race Street
5 <sup>th</sup> Street and Race Street	8 <sup>th</sup> Street and Callowhill Street	10 <sup>th</sup> Street and Arch Street
5 <sup>th</sup> Street and Walnut Street	8 <sup>th</sup> Street and Market Street	10 <sup>th</sup> Street and Market Street
5 <sup>th</sup> Street and Chestnut Street	8 <sup>th</sup> Street and Arch Street	10 <sup>th</sup> Street and Walnut Street
6 <sup>th</sup> Street and Market Street	8 <sup>th</sup> Street and Race Street	10 <sup>th</sup> Street and Chestnut Street
6 <sup>th</sup> Street and Arch Street	8 <sup>th</sup> Street and Walnut Street	Franklin Street and Vine Street (EB)
6 <sup>th</sup> Street and Race Street	8 <sup>th</sup> Street and Vine Street (Eastbound Local)	Site Entrance and 8 <sup>th</sup> Street
6 <sup>th</sup> Street and Walnut Street	8 <sup>th</sup> Street and Vine Street (Westbound Local)	Site Exit and 9 <sup>th</sup> Street
6 <sup>th</sup> Street and Chestnut Street	8 <sup>th</sup> Street and Chestnut Street	
7 <sup>th</sup> Street and Market Street	9 <sup>th</sup> Street and Vine Street (Eastbound Local)	

The study area also incorporates a Parking Utilization analysis of those parking facilities within a 5-15 minute walking radius of the proposed casino complex. Hotels within this 5-15 minute walking radius of the site will also be identified in order to support vehicular reductions of “new” trips due to alternate modes of arrival to the proposed MARKET8 complex (e.g., Pedestrians, Hotel Shuttles, etc.). A project area map showing a walking radius up to 15-minutes to/from the proposed casino site is shown in **FIGURE 3**.

Copies of available traffic signal permit plans and signal timings for the signalized study area intersections were obtained from the City of Philadelphia. Existing traffic signal timings “spot checked” in the field (see **APPENDIX A**).



## EXISTING TRAFFIC CONDITIONS

### Regional Transportation Routes



The proposed site is located in the vicinity of the I-95 corridor, I-676 and I-76 limited access highway that run through Philadelphia. The I-95 corridor is a limited access, multi-lane, major arterial that runs in the general north/south direction. The I-95 corridor runs from the New England States to Florida providing access to the site from New York to the north and New Jersey and Delaware to the south. The Vine Street Expressway (I-676) is a limited access, major arterial that runs in a general east/west and provide a direct connection between I-76 (Schuylkill Expressway) and I-95, as well as the Ben Franklin Bridge into New Jersey.

In response to the PGCB's February 2013, MARKET 8 TIS comments, Pennoni prepared a trip distribution gravity model based on "market" studies of where patrons of the casino will be coming from; including local residents, hotel guests and visitors from the Philadelphia suburbs. This gravity model (included in **APPENDIX K**) was used to support Pennoni's distribution of both ingress and egress casino (vehicular) traffic.

### Primary Ingress Routes

Based on the aforementioned gravity model and Pennoni's experience with traffic patterns among major corridors within the City of Philadelphia – the result of many traffic impact studies performed – we have determined that the primary inbound routes for casino vehicular traffic would be:

From I-95

- Southbound I-95 to the Callowhill Street exit.
- West on Callowhill Street (6 blocks) to 8<sup>th</sup> Street.
- South on 8<sup>th</sup> Street (6 blocks) to the proposed site.
- Northbound I-95 to the Callowhill Street exit.
- West on Callowhill Street (5 blocks) to 8<sup>th</sup> Street.
- South on 8<sup>th</sup> Street (6 blocks) to the proposed site.

From I-76 via I-676

- Eastbound on I-676 to the 8<sup>th</sup> Street exit.
- South on 8<sup>th</sup> Street (5 blocks) to the proposed site.

From I-676 from New Jersey (Ben Franklin Bridge)

- West on I-676 to the 8<sup>th</sup> Street exit.
- South on 8<sup>th</sup> Street (5 blocks) to the proposed site.

These routes have been driven by Pennoni staff as part of this TIS and the proposed casino facility is located within minutes from each major facility during "off peak" periods.

### Primary Egress Routes

Alternatively, outbound routes for vehicular traffic would likely be:

To I-95

- From the proposed site, north on 9<sup>th</sup> Street (5 blocks) to Vine Street.

- East on Vine Street to 7<sup>th</sup> Street.
- North on 7<sup>th</sup> Street to I-676 to north bound I-95.
- From the proposed site, north on 9<sup>th</sup> Street (5 blocks) to Vine Street.
- East on Vine Street to 7<sup>th</sup> Street.
- North on 7<sup>th</sup> Street to I-676 to south bound I-95.

#### To I-76 via I-676

- From the proposed site, north on 9<sup>th</sup> Street (5 blocks) to Vine Street.
- East on Vine Street to Franklin Street.
- North to the West bound I-676 entrance.
- I-676 west to I-76 east or west bound.

#### To I-676 to New Jersey (Ben Franklin Bridge)

- From the proposed site, north on 9<sup>th</sup> Street (4 blocks) to Race Street.
- East Race Street (3 blocks) to the I-676 entrance and the Benjamin Franklin Bridge.

The ingress and egress routes to the proposed site to and from the regional transportation routes are illustrated on **FIGURE 4** and **FIGURE 5**, respectively. In addition to the aforementioned gravity model prepared by Pennoni, these routes were checked with various GPS mobile mapping tools/apps to identify directions which would be provided to patrons traveling from surrounding areas.

### Public Transportation



In the vicinity of the site, multiple modes of public transportation can be utilized by casino patrons to access the proposed site. This access is provided by the regional public transportation providers.

#### *Subway and Light Rail*

South Eastern Pennsylvania Transportation Authority (SEPTA) provides public transportation services to the southeastern portion of Pennsylvania, which included Philadelphia and the surrounding five counties. Service within Philadelphia and to the surrounding counties is provided by SEPTA's regional rail line and light rail lines. Service within Philadelphia is also provided by means of the SEPTA's subway lines and bus routes. The regional rail lines within Center City, Philadelphia are accessible at the three Center City stations, 30<sup>th</sup> Street Station, Suburban Station and Market East Station. There are multiple accesses to the SEPTA subway line along Market Street. Access to the surface bus routes are provided along multiple bus stops along Market Street.

The regional rail lines run in a general east/west direction to and from the three Center City stations, 30<sup>th</sup> Street Station, Suburban Station and Market East Station. Within the study area, access to the regional rail line would be via the Market East Station, located at 11<sup>th</sup> Street and Market Street. Access to the Market East station can also be made through the Gallery Mall (nearest entrance located at 10<sup>th</sup> Street and Market Street) and the 8<sup>th</sup> Street Station, located at 8<sup>th</sup> Street and Market Street.

The Market Frankford Subway Line (MFL) runs in a general east/west direction along Market Street from Front Street to 30<sup>th</sup> Street, and beyond providing service to and from the northern and western sections of the city. Access to the MFL, within the vicinity of the site can be made at the 8<sup>th</sup> Street and Market Street Station. From this same location access is possible to the Broad-Ridge Spur and the PATCO High Speed

Line. The PATCO high speed line provides regional rail service between Philadelphia, Pennsylvania and Camden, New Jersey via the Benjamin Franklin Bridge. Service runs from the bridge north/south along 8<sup>th</sup> Street to Locust Street and east/west from 8<sup>th</sup> Street to 15<sup>th</sup>/16<sup>th</sup> Street. As previously stated, access to PACTO from the site can be made at the 8<sup>th</sup> Street and Market Street station.

#### *Surface Transportation*

SEPTA provides bus transportation along Market Street in the east and west bound directions, south bound along 8<sup>th</sup> Street and northbound along 9<sup>th</sup> Street. Additionally, north and southbound bus routes are provided on 7<sup>th</sup> Street (northbound), 11th Street (northbound) and 12<sup>th</sup> Street (southbound) within the 5-minute to ten-minute walking radii of the proposed site. Chestnut Street and Walnut Street (to the south) and Arch Street (to the north) have bus routes that run in the general east and west bound directions.

While not directly accessible from the site or within walking distance, the Amtrak 30<sup>th</sup> Street Station is located within a mile and a half of the proposed site. Access to the site can be made from the SETPA Market Frankford Subway Line, the Regional Rail Lines, bus and taxi.

New Jersey Transit also provides surface bus route service to Center City from New Jersey via the Benjamin Franklin Bridge. Service is provided from 6<sup>th</sup> Street along Market Street to Broad Street with multiple stops in the westbound direction only, within the vicinity of the proposed site.

Additionally, sightseeing tour routes are provided by the Philadelphia Phlash bus, Philadelphia Trolley Works (which runs Trolley and the Big Bus tour) through the Center City district. While these tours do not have designed stops along Market Street, there are stops within five and ten minute walking distances to the proposed casino.

The schedules for the surface transportation (buses), subway and light rail (regional rail) were reviewed to obtain the number of transit trips, directional of travel, and frequency (in minutes) that passes directly adjacent to the site or within the 5 and 10 minutes walking radii. The specific public transportation routes that were reviewed are as follows:

#### SEPTA

- Market Street Bus Routes.
- Chestnut Street/Walnut Street Bus Routes.
- 7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> Street Bus Routes.
- Market Frankford Subway Line.
- Broad Ridge Spur Subway Line.
- Regional Rail Routes.

#### New Jersey Transit

- Market Street Bus Routes.

#### PATCO

- High Speed Line Subway.

From the route schedules, it was determined that there are approximately 177 buses during the Weekday PM peak period and 53 buses during the Saturday PM peak period that pass directly adjacent to the proposed site via Market, Chestnut, 8<sup>th</sup> and 9<sup>th</sup> Streets. Accessible from the 8<sup>th</sup> Street Station, located at the corner of Market Street and 8<sup>th</sup> Street, there are approximately 67 subway trains (during the Weekday PM peak period) and 24 subway trains (during the Weekday PM and Saturday PM peak periods), that run on the Market Frankford Subway, Broad Ridge Spur Subway and PATCO High Speed Lines.





The SEPTA Market East regional rail station is located at Market Street and 11<sup>th</sup> Street and is within the 10-minute walking radius to the proposed site. There are approximately 56 trains during the weekday PM peak period and 26 trains during the Saturday PM peak periods that pass through the Market East Station to and from the Philadelphia suburbs via the SEPTA regional rail system.

In total there are approximately 300 and 103 transit options, by various modes (surface transportation, subway and light rail) that are directly accessible from the proposed site or within the 10 minute walking radius, during the Weekday PM and Saturday PM peak periods, respectively. A summary of the Transit Trips are provided in **TABLE 2**. The SEPTA, PATCO, and Amtrak service routes in relation to the proposed site are illustrated in **FIGURE 6**. SEPTA, PATCO, and tour route maps are provided in **APPENDIX B**.

**TABLE 2: TRANSIT TRIPS  
PUBLIC TRANSPORTATION SERVICE PROVIDERS**

Service Provider	Street / Service Line	Type	Route Number(s)	TRANSIT TRIPS (In vicinity of the proposed Site)				
				Weekday PM Peak Hour		Saturday PM Peak Hour		
				# Of Trips, Direction	Frequency In Minutes	# Of Trips, Direction	Frequency In Minutes	
SEPTA	Market Street	Bus	17	15 OB/15 IB	4	3 OB/3 IB	20	
			33	10 OB/9 IB	6	4 OB/3 IB	15/20	
			44	6 OB/6 IB	10	-/-	-	
			48	8 OB/8 IB	8	3 OB/3 IB	20	
			62	2 OB/-	30/-	-/-	-	
	8th / 9th Streets		47m	-/2 IB	-/30	-/-	-	
	8th / 7th Streets		61	5 OB/6 IB	12/10	2 OB/2 IB	30	
			47	11 OB/10 IB	6	3 OB/3 IB	20	
	Chestnut / Walnut Streets		9	5 OB/5 IB	12	2 OB/2 IB	30	
			21	7 OB/8 IB	8	2 OB/3 IB	30/20	
			38	4 OB/3 IB	15/20	3 OB/2 IB	20/30	
			42	7 OB/7 IB	8	3 OB/2 IB	20/30	
	Market Frankford Line		Subway	NA	15 OB/16 IB	4	6 OB/5 IB	10/12
	Broad Ridge Spur			NA	8 OB/9 IB	7	3 OB/3 IB	20
PATCO	High Speed Line	Subway	NA	13 OB/6 IB	5/10	4 OB/3 IB	15/20	
NJ Transit	Market Street	Bus	406	2 OB/4 IB	30/15	1	60	
			409, 417, 418	3 OB/2 IB	20/30	1	60	
			401, 402, 410, 412	5 OB/2 IB	12/30	3	20	
SEPTA	Regional Rail	Light Rail	Varies	38 OB/18 IB	2/3	13 OB/13 IB	5	

Note: Direction = IB – In-bound (Toward Study Area), Out-Bound (Away from Study Area)



### Existing Roadway Facilities

**Market Street (SR 2004)** is a two-way, primary arterial that runs in a general east/west direction, with three eastbound and two westbound through lanes. The eastbound and westbound right turn lanes are designated as buses/bicycles and right turns only. There is no on-street parking on Market Street and the posted speed limit is 25 miles per hour.

**Chestnut Street (SR 3008)** is a one-way roadway that runs in the general eastbound direction with two travel lanes and one parallel parking lane on the northern side of the roadway. The southern travel lane of Chestnut Street is a dedicated bus/bicycle-only lane. The posted speed limit on Chestnut Street is 25 mph.

**Walnut Street (SR 3006)** is a one-way roadway that runs in the general westbound direction, with two travel lanes. On-street parking is permitted on the south side of Walnut Street. The posted speed limit on Walnut Street is 25 mph.

**Arch Street (SR 3007)** is a one-way roadway that runs in the general westbound direction, with two travel lanes. On-street parking is permitted on both sides of Arch Street through the majority of the study area. The posted speed limit on Arch Street is 25 mph.

**Race Street** is a one-way roadway that runs in the general eastbound direction, with two to five travel lanes through the study area. On-street parking is permitted along both sides of Race Street through the majority of the study area. The posted speed limit on Race Street is 25 mph.

**Vine Street (SR 2676)** is a two-way divided roadway with two to three travel lanes in each direction. On-street parking is permitted on portions of Vine Street throughout the study area. The posted speed limit on Vine Street is 25 mph.

**Callowhill Street** is a one-way roadway that runs in the general eastbound direction, with two to five travel lanes. On-street parking is permitted on portions of the north side of Callowhill Street. The posted speed limit on Callowhill Street is 25 mph.

**2<sup>nd</sup> Street** is a one-way roadway that runs in the general southbound direction, with two travel lanes. On-street parking is permitted on the west side of the roadway. The posted speed limit on 2<sup>nd</sup> Street is 25 mph.

**3<sup>rd</sup> Street** is a one-way roadway that runs in the general northbound direction, with two travel lanes. On-street parking is permitted on the east side of the roadway. The posted speed limit on 3<sup>rd</sup> Street is 25 mph.

**4<sup>th</sup> Street** is a one-way roadway that runs in the general southbound direction, with two travel lanes. On-street parking is permitted on the west side of the roadway. The posted speed limit on 4<sup>th</sup> Street is 25 mph.

**5<sup>th</sup> Street (SR 2003)** is a one-way roadway that runs in the general northbound direction, with two travel lanes. On-street parking is permitted on the west side of the roadway. The posted speed limit on 5<sup>th</sup> Street is 25 mph.

**6<sup>th</sup> Street (SR 2005)** is a one-way roadway that runs in the general southbound direction, with two travel lanes. On-street parking is permitted on the west side of the roadway. The posted speed limit on 6<sup>th</sup> Street is 25 mph.

**7<sup>th</sup> Street** is a one-way, local roadway that runs in the general northbound direction, with two through lanes. On-street parking is permitted on the west side of 7<sup>th</sup> Street, from Chestnut Street to Market Street. The speed limit on 7<sup>th</sup> Street, in the vicinity of the proposed site, is not posted.

**8<sup>th</sup> Street** is a one-way, local roadway that runs in the general southbound direction, with two through lanes. On-street parking is permitted on the west side of 8<sup>th</sup> Street, from Market Street and Ranstead Street and parking is prohibited from Ranstead Street to Chestnut Street. The speed limit on 8<sup>th</sup> Street, in the vicinity of the proposed site, is not posted.

**9<sup>th</sup> Street** is a one-way, local roadway that runs in the general northbound direction, with two through lanes. On-street parking is permitted on the east side of 9<sup>th</sup> Street, from Chestnut Street to Market Street. The speed limit on 9<sup>th</sup> Street, in the vicinity of the proposed site, is not posted.

**10<sup>th</sup> Street** is a one-way roadway that runs in the general southbound direction, with two travel lanes. On-street parking is permitted along the west side of the roadway. The posted speed limit on 10<sup>th</sup> Street is 25 mph.

**APPENDIX C** contains a “street view” photo inventory of each of the study area intersections.

### Existing Traffic Volumes

According to Pennsylvania Department of Transportation, 2011 Traffic Volume Map (dated November 2012) for Philadelphia County, the two-directional Annual Average Daily Traffic volume on state route numbered roadways in the study area is as follows:

- Market Street (SR 2004) - 16,000 vehicles per day
- Walnut Street (SR 3006) – 9,100 vehicles per day
- Chestnut Street (SR 3008) – 5,700 vehicles per day
- Arch Street (SR 3007) – 7,900 vehicles per day
- Vine Street (SR 2676) – 16,000 (EB) vehicles per day, 10,000 (WB) vehicles per day
- Vine Street Expressway (SR 0676) – 64,000 vehicles per day
- 6<sup>th</sup> Street (SR 2005) – 16,000 vehicles per day
- 5<sup>th</sup> Street (SR 2003) – 11,000 vehicles per day

The existing turning movement traffic volumes for the intersections within the study area are illustrated on **FIGURES 7** and **8**. Copies of the manual traffic count data are provided in **APPENDIX D**.

### Existing Levels of Service/Queue Analysis

The performance of the study intersections under existing conditions was evaluated through a qualitative measure of operating conditions called Levels of Service. Six levels of Service (LOS) are defined with letter designations from ‘A’ to ‘F’. Level of Service ‘C’ or better is considered acceptable, with a threshold of Level of Service ‘D’ in urban areas. Levels of Service are determined through analysis procedures outlined in the 2010 *Highway Capacity Manual* (Transportation Research Board, Washington, D.C.).

Levels of Service for signalized intersections are based on average delay experienced by motorists passing the intersection. The delay is based on the results of the capacity analysis (rate of demand flow to capacity) and other important variables such as quality of progression, cycle length, and ratio of green time. Level of Service Criteria is provided in **APPENDIX E**. It should be noted that all intersections included in this study are signalized intersections, with the exception of the MARKET8 site access driveways. Field observations were conducted, at the study intersections, to verify the signal timing and record residual vehicle queue data.

The operational analyses of the study intersections under all conditions were performed using *Synchro* (Version 8.0, build 804) software. There are currently several known limitations with the HCM 2010 procedures when evaluating signalized intersections containing certain lane configurations which produce

results which do not reflect actual conditions. It is our understanding that TRB currently has a clarification/correction pending which would address these issues in the HCM 2010. For intersections in the study area which HCM 2010 procedures produced unreliable results, the HCM 2000 analysis methods and output was utilized.

Based upon the output of the *Synchro* analyses, all of the study intersections currently operate at an overall intersection level of service of C or better during the Friday Street PM peak, Friday Casino PM peak, and Saturday Casino PM peak periods with the exception of the Vine Street (EB) / Vine Street Expressway EB off-ramp and 8<sup>th</sup> Street intersection which operates at LOS E with 57.3 seconds of delay in the Friday PM peak hour of street traffic.

The intersection of 8<sup>th</sup> Street and Market Street currently operates at an overall LOS B during peak hours with lane group LOS C on the 8<sup>th</sup> Street approach. Existing 95% queues range from 215 to 308 feet on the 8<sup>th</sup> Street approach.

The intersection of 9<sup>th</sup> Street and Market Street currently operates at an overall LOS A or B during the peak hours with an existing LOS D on the northbound 9<sup>th</sup> Street thru/right lane group during the Friday PM street peak hour. Existing 95% queues range from 128 to 278 feet on the 9<sup>th</sup> Street approach.

A summary of the Existing Condition Levels of Service data and the 95<sup>th</sup> percentile queue lengths of all the study intersections are provided in **APPENDIX F** and illustrated in **FIGURE 9**. Detailed outputs of the 2013 "Existing" conditions analyses are provided in **APPENDIX F**.

### Crash Analysis

Crash histories, engineering extracts, summary and resume pages for the length of the affected area were requested from PennDOT's Bureau of Highway Safety and Traffic Engineering and the City of Philadelphia for the entire MARKET8 study area. The PennDOT data represents the five year period from 2008 to 2012 inclusive. The City data represents the five year period from June 2009 to June 2013. Both of these sets represent the most recent data available from both agencies at the time of preparation of this report.

The engineering extract summary from PennDOT classifies crash data into various categories. Crashes are broken down by year, roadway conditions, time of day, type of vehicle, severity of the crash, month and probable cause among many other categories. For each category, data is presented by number of vehicles per year and by the percentage of total vehicles in the time frame. A resume of all PennDOT reportable crashes by location, type and severity is provided in **APPENDIX G**.

The engineering extract summaries from the City of Philadelphia provide similar information to PennDOT, but in a different format. Philadelphia also includes Non-Reportable crashes (minor property damage only – no death, injury or towing required). The non-reportable crashes were not analyzed as part of this study. The City of Philadelphia data did not include a resume of crashes. The City's data has codes to detail the primary cause of the crash, such as "PED-DEPARK – Pedestrian Accident – Car leaving parked position," however these codes were not used in any of the extract summaries received. As a result, the primary cause for each pedestrian crash is "Unknown" and unfortunately it is not possible to draw any scientific conclusion from this data.

The crash analysis was performed primarily with PennDOT's data and focused on Pedestrian crashes. Primary causes of Pedestrian crashes were analyzed for all intersections in the study area that data was available for. The analysis shows that nearly half (48%) of all Pedestrian crashes are a result of driver error, such as too fast for conditions, running red light, driver distracted and improper turning. Environmental conditions (daylight/dark, dry/wet etc.) generally were not reported as contributing factors. The primary cause

of other half of the Pedestrian crashes is classified as “Unknown” (26%) or “No Contributing Action” (25%). Unfortunately these are vague descriptors and it is not possible to draw a scientific conclusion from such data.

There were some noteworthy patterns in the PennDOT data. First, nearly one-tenth of all Pedestrian crashes involved buses and most of these were classified as “No Contributing Action.” Second, there were no Pedestrian crashes reported along Vine Street. Finally, it appeared that the greatest concentration of Pedestrian crashes appeared to be around the study area which prompted further analysis.

More than half (56%) of the Pedestrian crashes occurred within a 5 minute walking distance of the site. Pedestrian crashes within 5, 10 and 15 minute walking distances were separated and their causes were analyzed. The frequency of the primary cause remained unchanged in each radius – nearly half of all crashes were a result of driver error; the remainders were “Unknown” and “No Contributing Action” and occurred at similar rates as the entire study area. The data shows that while the concentration of Pedestrian crashes has the highest volume within a 5 minute walking distance of the site, the primary cause occurs at the same rate. See **TABLE 3** below for a detailed breakdown.

**TABLE 3: CRASH DATA ANALYSIS**

Primary Cause	All Intersections		5-Min Walking Radius		10-Min Walking Radius		15-Min Walking Radius	
	#	%	#	%	#	%	#	%
Driver Error	46	48.4%	25	47.2%	19	50.0%	2	50.0%
Unknown	25	26.3%	16	30.2%	8	21.1%	1	25.0%
No Contributing Action	24	25.3%	12	22.6%	11	28.9%	1	25.0%
Total	95		53		38		4	

### Safe Walking Routes Audit

At the request of PennDOT, pedestrian accessibility to/from the following Parking garages was observed:

- NE Corner of Chestnut St / South 8<sup>th</sup> Street
- SW Corner of Chestnut St / South 9<sup>th</sup> Street
- Market East Parking at The Gallery along 8<sup>th</sup> and 9<sup>th</sup> Streets
- SE Corner of Arch St/North 8<sup>th</sup> Street

Pennoni’s audit of these routes revealed that each of the Walking Route’s observed were “pretty good” when rated according to criteria developed by USDOT and Pennsylvania’s “Safe Routes to School Program”. The traffic signals appear to be timed correctly for pedestrian crossings despite the fact that the MUTCD<sup>6</sup> recently reduced the pedestrian walking times from 4 feet/second to 3.5 feet/second. Given that the downtown traffic signals are pre-timed, there generally is adequate WALK time provided in both directions of a signalized intersection. Pavement markings and handicapped accessible ramps are generally in fair condition, however in need of rehabilitation or upgrade at some locations along the indicated walking routes.

All intersections surrounding the MARKET8 Casino site had records of pedestrian crashes over the past five years, but no specific information is provided within the PennDOT Crash History reports (see “Crash Analysis” section above). In addition to some sidewalk, ADA ramp and pavement marking upgrades in the immediate

vicinity of the proposed casino, “Jay walking” enforcement, driver education and pedestrian education are the only recommended actions to improve safety and reduce pedestrian crash rates at these downtown locations.

A summary of Pennoni’s Walking Route Audit is included in **APPENDIX H**.

## **FUTURE NO BUILD TRAFFIC CONDITIONS**

### **Programmed Roadway Improvements**

For the purposes of this study, and based on recent traffic studies performed by Pennoni in close proximity of the proposed casino site, it is our assumption for this TIS that there are no Programmed Roadway Improvements projects within the study area.

### **No Build Traffic Volumes**

In order to account for general traffic growth in the area, an annual background growth rate is typically applied to existing traffic volumes on the study area roadways. An annual background growth rate of 0% per year has been established by PennDOT’s *Bureau of Planning and Research* for urban, non-interstate roadways in the study area. A copy of the documentation on annual growth rates is provided in **APPENDIX I**.

Traffic volumes associated with specific developments in the study area are typically added to the background traffic to determine the opening year (2016) and horizon (2021) “pre-development” traffic volumes. According to information from the Philadelphia Planning Commission, there are no planned developments within the study area. Therefore, given PennDOT’s 0% annual growth rate, results for analysis of the 2016 and 2021 No Build conditions are identical and are reported concurrently.

The 2016 and 2021 No Build peak hour traffic volumes are illustrated in **FIGURES 10** and **11**.

### **No Build Levels of Service/Queue Analysis**

Operations of the study intersections during the peak hours were evaluated for the No Build traffic scenario. It should be noted that because of the 0% growth within the City of Philadelphia, the outputs for the 2016 No Build condition are the same as the 2021 No Build condition. Based upon the output of the *Synchro* analyses, all of the study intersections will continue to operate at an overall intersection level of service of C or better during the analyzed peak hours under future no build conditions with the exception of the Vine Street (EB) and 8<sup>th</sup> Street intersection which will continue to operate at LOS E.

The LOS summary table and detailed outputs of the 2016 and 2021 “No Build” conditions analyses are provided in **APPENDIX J**. LOS results for the No Build analysis are illustrated on **FIGURE 12**.

## **FUTURE BUILD TRAFFIC CONDITIONS**

As 8<sup>th</sup> Street and 9<sup>th</sup> Street are one-way pairs, southbound and northbound, respectively, all casino-related traffic, including valet and trucks, will be entering or exiting via the Market Street intersections with 8<sup>th</sup> and 9<sup>th</sup> Streets. The ingress and egress points for the additional parking at 733 Chestnut Street will be located on the east side of 8<sup>th</sup> Street and the north side of Chestnut Street. As 8<sup>th</sup> Street is one-way southbound, the majority of casino-related traffic using the 8<sup>th</sup> Street/Chestnut Street garage will be entering via the Market Street intersection with 8<sup>th</sup> Street. As Chestnut Street is one-way eastbound, the majority of traffic exiting the parking at 733 Chestnut Street will be exiting via 8<sup>th</sup> Street and Chestnut Street to 7<sup>th</sup> Street to Market Street.



**Trip Generation**

Development trips were generated for the site based on the following components: 80,000 GSF Casino (with 3192 gaming positions, buffet, 1200 seat (approx.) Showroom), 168 room hotel and approximately 30,000 GSF of fine dining. The number of planned gaming positions for the MARKET8 casino is broken down as follows:

2400 slot machines @ 1 seat/slot           => 2400 gaming positions  
 30 poker tables @ 10 seats/table           => 300 gaming positions  
 82 table games (6 seats/table)           => 492 gaming positions  
**Total Gaming Positions = 3192**

Projected peak hour trips (per gaming position) for the casino’s Friday and Saturday evening peak periods are based on research and information obtained from other casino traffic studies; as well as actual traffic counts at the Hollywood Casino in Columbus, OH and the SugarHouse Casino in Philadelphia. We have also compared these rates to ITE’s latest Trip Generation manual for Casino/Video Lottery Establishments (Land Use Code 473); however, ITE’s Land Use description does not exactly match that of this development. For this project, Pennoni recommends using the “SugarHouse” Trip Generation Rates for each proposed gaming position. (See APPENDIX K).

A summary of empirical trip generation data and research for various casinos is shown in TABLE 4.

**TABLE 4: CASINO TRIP GENERATION COMPARISONS**

Source	CASINO TRIP GENERATION / GAMING POSITION								
	FRIDAY PM - STREET			FRIDAY PM - CASINO			SATURDAY PM - CASINO		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
<i>SugarHouse Casino* (Philadelphia, PA)*</i>	46%	54%	0.2675	51%	49%	0.3224	48%	52%	0.3947
Hollywood Casino* (Columbus, OH)	50%	50%	0.2155	50%	50%	0.2793	42%	58%	0.3663
Casino St Charles (St. Louis, MO) <sup>7</sup>	44%	56%	0.4300	54%	46%	0.5400	53%	47%	0.6400
<b>AVERAGE</b>	47%	53%	0.2327	52%	48%	0.2906	48%	52%	0.3603
<b>USE:</b>	<b>46%</b>	<b>54%</b>	<b>0.268</b>	<b>51%</b>	<b>49%</b>	<b>0.322</b>	<b>48%</b>	<b>52%</b>	<b>0.395</b>

\* Based on actual count data obtained by Pennoni, June 2013

**Multi-Use Development Internal Trip Reductions**

The overall trip generation for the site considers trip reduction resulting from internal trips within the multi-use development. The internal trip reductions were applied using ITE internal trip reduction methodology as





outlined in the *Trip Generation Handbook*. In particular, this study has considered the internal trip generation between the Casino gaming and Hotel, Quality Restaurant and Live Theatre uses. These internal trips will reduce the number of external trips entering and exiting the proposed site. Based on the aforementioned ITE *Trip Generation Handbook* guidelines, the internal trip reduction analysis generally yields internal capture rates of approximately 10% for Friday and the Saturday peak hours.

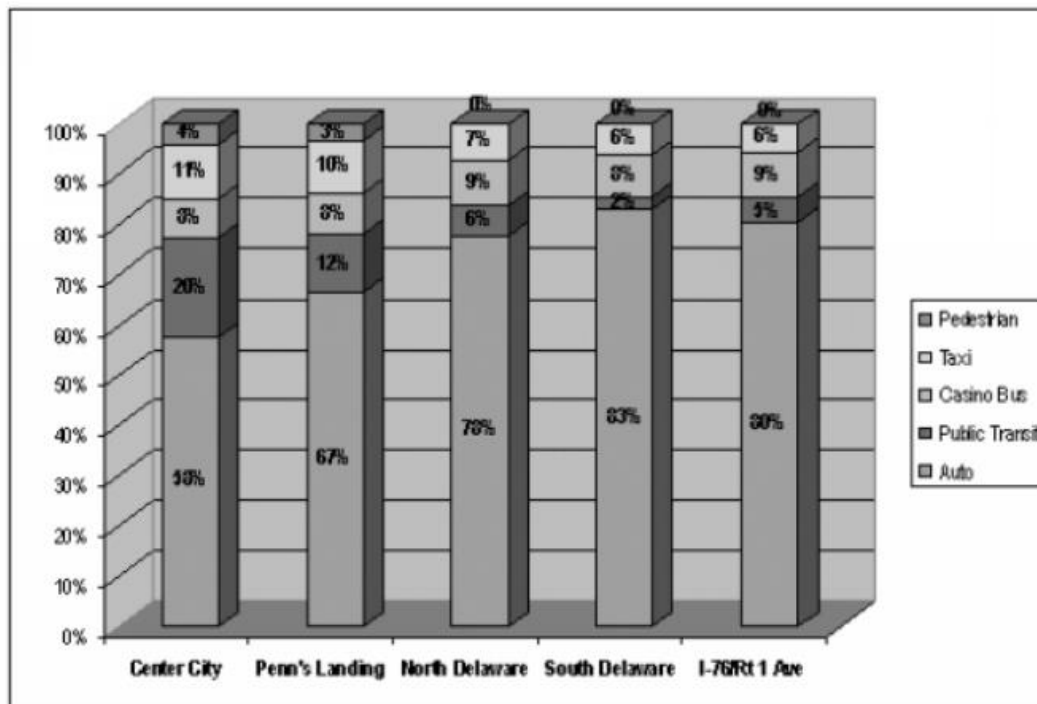
**Multi-Modal Trip Reductions**

A reduction in trips was applied to account for increased multi-modal (i.e., Pedestrian, Bus, Transit) accessibility due the site’s Market East location. Based on Pennoni’s research and traffic counts of similar-sized casino establishments, the “SugarHouse” casino would most emulate projected trips for **MARKET8** when compared to the other casinos listed in **TABLE 4**; casino’s that for the most part are outside of Central Business District limits (e.g., Columbus’ Hollywood Casino and St. Louis’ Casino St. Charles) and/or have limited multi-modal accessibility. Subsequently, Pennoni would suggest that the following Multi-Modal splits will generally occur during Weekday PM Peak periods for the MARKET8 site:

- 57% Auto/Limo
- 20% Public Transit (Subway, Light Rail, Bus)
- 11% Taxi
- 8% Private Charter + Casino/Hotel Shuttle
- 4% Pedestrian Traffic (Hotels, Local Venues).

These splits are consistent with those projected “Modes of Arrival” contained within the Philadelphia Gaming Advisory Task Force’s “Interim Report of Findings” shown in the graphic below:

GRAPH 2: Mode of Arrival



Source: Innovation Group





According to the aforementioned “Interim Report of Findings” a Center City (i.e., Market East) casino location was projected to generate approximately 25% LESS automobile trips than a “North Delaware” (i.e. SugarHouse) location and approximately 13% LESS automobile trips than a “Penn’s Landing” (i.e., Wynn Philadelphia) site.

For Saturdays, Pennoni suggests a slightly lower non-vehicular trip reduction as more patrons would tend to drive into the City for leisure activities and transit service is typically less frequent during weekends. For Saturday, the multi-modal split will be assumed to be:

- 65% Auto/Limo
- 10% Public Transit (Subway, Light Rail, Bus)
- 11% Taxi
- 10% Private Charter + Casino/Hotel Shuttle
- 4% Pedestrian Traffic (Hotels, Local Venues).

Subsequently, Pennoni assumed an additional 20% and (conservative) 10% reduction in overall vehicular Trip Generation for Friday PM and Saturday PM Peaks, respectively, when compared to actual trip generation for the SugarHouse casino. Further note that most all Center City “Taxi” trips are already in the existing traffic stream and would not typically be counted as “new” trips. Therefore, Pennoni believes the multi-modal split reductions assumed for the MARKET8 casino are generally conservative and “new” vehicular trips will likely be much less than projected. These vehicular trip reduction assumptions for MARKET8 are reflected in **TABLE 5**.

These reductions account for an assumed increase in pedestrian and subway traffic due to the CBD location of the proposed facility and closer proximity to Transit hubs and hotels. As noted in a recent Transportation & Access study<sup>8</sup> commissioned by the Center City District and Central Philadelphia Development Corporation, “The combined average weekday number of passengers traveling to and from Center City by SEPTA, PATCO and NJ Transit in 2011 increased to the highest number in over a decade”.

As noted in the aforementioned “Existing Conditions” section of this study:

- There are approximately 126 bus and 87 buses that pass directly adjacent to the proposed site, via Market, Chestnut, 8<sup>th</sup> and 9<sup>th</sup> Streets, during the Weekday PM and Saturday PM peak periods, respectively.
- Transit accessibility from the 8<sup>th</sup> Street Station, located at the corner of Market Street and 8<sup>th</sup> Street, is robust given the approximately 52 subway trains (during the Weekday PM peak period) and 22 subway trains (during the Weekday PM peak period), that run on the Market Frankford Subway, Broad Ridge Spur Subway and PATCO High Speed Lines.
- Within a 10 minute walking radius to the proposed site, there are 72 and 80 trains that pass through the Market East station to and from the Philadelphia suburbs via the SEPTA regional rail system, during the Weekday PM and Saturday PM peak periods, respectively.
- In total there are approximately 218 and 124 transit options, by various modes (surface transportation, subway and light rail) that are directly accessible from the proposed site or within the 10 minute walking radius, during the Weekday PM and Saturday PM peak periods, respectively.

As the proposed Market East location for MARKET8 is a Transit hub, and includes 16 hotels within a fifteen-minute walking distance of the complex, these trip reduction assumptions are conservative and less “new”



vehicle trips will likely be generated for the proposed casino complex. **TABLE 5** summarizes the anticipated peak hour trips to/from the proposed casino during the Weekday PM, Friday Casino and Saturday Casino PM Peaks and outlines the reductions in trips due to internal capture and assumed multi-modal split.

**TABLE 5: SITE TRIP GENERATION**

LAND USE DESCRIPTION	TRIP GENERATION (VEHICLES)								
	WEEKDAY PM PEAK			FRIDAY PM CASINO PEAK			SATURDAY PM CASINO PEAK		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
<i>MARKET8 CASINO – GAMING</i>									
3192 Gaming Positions @ 0.268 Trips/Gaming Position	393	462	855	---	---	---	---	---	---
3192 Gaming Positions @ 0.322 Trips/Gaming Position	---	---	---	524	504	1028	---	---	---
3192 Gaming Positions @ 0.395 Trips/Gaming Position	---	---	---	---	---	---	605	656	1261
<i>Trip Reduction due to Non-Vehicular Modes of Travel (-20% Weekday PM / -10% Saturday PM)</i>	<i>-79</i>	<i>-92</i>	<i>-171</i>	<i>-105</i>	<i>-101</i>	<i>-206</i>	<i>-60</i>	<i>-66</i>	<i>-126</i>
<i>MARKET8 CASINO – ANCILLARY USES</i>									
ITE Land Use #932 – Quality Restaurants @ 30,000 GSF*	18	9	27	62	38	100	127	90	217
ITE Land Use #310 – Hotel @ 168 Rooms	28	29	57	3	2	5	2	3	5
ITE Land Use #441 – Live Theater	20	0	20	0	20	20	10	10	20
<i>Multi-Use Internal Trip Reductions (GAMING/ANCILLARY) (Say -10% Wkday PM / -10% Friday Casino / Saturday PM)</i>	<i>-39</i>	<i>-46</i>	<i>-85</i>	<i>-52</i>	<i>-50</i>	<i>-102</i>	<i>-60</i>	<i>-66</i>	<i>-126</i>
<b>NET ESTIMATED MARKET8 CASINO TRIPS</b>	<b>331</b>	<b>362</b>	<b>693</b>	<b>432</b>	<b>413</b>	<b>845</b>	<b>624</b>	<b>627</b>	<b>1251</b>

\* Per ITE Trip Generation Manual, 9<sup>th</sup> Edition (2012) – 44% Pass-by Trips / PM Pk Hr of Adjacent Street Traffic. Also assumed 50% internal trips between Quality Restaurant / Hotel and Quality Restaurant / Live Theater - these trips will be EXISTING Casino patrons. Entry/Exit Trips for Quality Restaurant “reversed” for Casino Peak.

**Pedestrian Trips**

In addition to the net estimated new vehicular trips generated by the site there will be pedestrian trips generated to/from the site due to the walkability of the Center City location and the accessibility to regional transit. As referenced in the Philadelphia Gaming Advisory Task Force’s “Interim Report of Findings” it can be expected that up to 25% of all patrons will travel by foot or transit and will therefore add additional pedestrian traffic in the area immediately surrounding the site, particularly along Market Street corridor between 8<sup>th</sup> and 9<sup>th</sup> Streets. Using the trip generation established above and the multi modal splits presented in the “Interim Report of Findings” it is estimated that the site will generate an additional 398 pedestrian trips during the Friday street peak hour, 513 pedestrian trips during the Friday casino peak hour, and 676 pedestrian trips during the Saturday casino peak hour.



Pedestrian level of service (LOS) at crosswalks in the study area was evaluated using 2010 HCM methodology. The additional pedestrians expected to be generated by the site under build conditions were distributed to the sidewalk network in the vicinity of the casino in order to evaluate the impact of additional site generated pedestrians on pedestrian LOS. The crosswalks at the intersections of 8<sup>th</sup> and Market and 9<sup>th</sup> and Market are expected to experience the largest increase in pedestrians and were evaluated in detail in the analyses contained in **APPENDIX H**. Results of the pedestrian level of service analysis indicate that all crosswalks will continue to operate at LOS C or better under Build conditions.

The City may wish to consider implementing a leading pedestrian interval phase to provide additional crossing time for pedestrians and improve pedestrian safety at the signalized intersections of Market and 8<sup>th</sup> and Market and 9<sup>th</sup>. The leading pedestrian intervals will enable pedestrians to establish priority in the crosswalks before vehicles turning from 8<sup>th</sup> Street or 9<sup>th</sup> Street can interfere with their movement. The 2009 MUTCD provides the following guidance related to leading pedestrian intervals:

*Guidance:*

22 *If a leading pedestrian interval is used, it should be at least 3 seconds in duration and should be timed to allow pedestrians to cross at least one lane of traffic or, in the case of a large corner radius, to travel far enough for pedestrians to establish their position ahead of the turning traffic before the turning traffic is released.*

23 *If a leading pedestrian interval is used, consideration should be given to prohibiting turns across the crosswalk during the leading pedestrian interval.*

*Support:*

24 *At intersections with pedestrian volumes that are so high that drivers have difficulty finding an opportunity to turn across the crosswalk, the duration of the green interval for a parallel concurrent vehicular movement is sometimes intentionally set to extend beyond the pedestrian clearance time to provide turning drivers additional green time to make their turns while the pedestrian signal head is displaying a steady UPRAISED HAND (symbolizing DONT WALK) signal indication after pedestrians have had time to complete their crossings.*

Source: FHWA 2009 MUTCD

### As - Of - Right Trip Generation Comparison

In order to assess the potential traffic impact from a trip generation perspective in comparison to the proposed casino use, we have generated trips for the site based on the current zoning and potential build out. Given the allowable land uses for this zoning, this site would have the potential to develop approximately 1,250,000 SF of office space and 60,000 SF of retail space.

Comparing the net "As-of-Right" (AOR) vehicle trips to those for the proposed casino, an increase in site traffic would occur if the proposed Market East casino site was developed per existing land use guidelines. In general, at least 50% more AOR traffic may be generated during the typical weekday PM Peak Hour (versus MARKET8 casino traffic) while 0-10% more AOR traffic (versus casino traffic) may be generated during a typical Saturday. **Table 6** below shows potential site trip generation if the site was developed with office and retail uses instead of the proposed Casino.

TABLE 6: AS - OF - RIGHT TRIP GENERATION COMPARISON

LAND USE DESCRIPTION	TRIP GENERATION					
	WEEKDAY PM PEAK			SATURDAY PM PEAK		
	IN	OUT	TOTAL	IN	OUT	TOTAL
ITE Land Use #710 - General Office (1,250,000 sf)	251	1227	1478	290	248	538
ITE Land Use #820 - Shopping Center (60,000 sf)	204	221	425	326	301	627
<i>Total Estimated As-of-Right Trip Generation</i>	<i>455</i>	<i>1448</i>	<i>1903</i>	<i>616</i>	<i>549</i>	<i>1165</i>
Trip Reduction due to Non-Vehicular Modes of Travel (- 20% Friday PM / -10% Saturday PM)	-91	-289	-380	-62	-55	-117
<i>Total External Trips After External Trip Reductions</i>	<i>364</i>	<i>1159</i>	<i>1523</i>	<i>554</i>	<i>494</i>	<i>1048</i>
Multi-Use Internal Trip Reductions (-34% Friday PM / 37% Saturday PM)	-8	-8	-16	0	0	0
<i>Total External Trips After Internal Trip Reductions</i>	<i>356</i>	<i>1151</i>	<i>1507</i>	<i>554</i>	<i>494</i>	<i>1048</i>
Pass-by Trips - ITE Land Use #820 - Shopping Center (-34% Friday PM / 37% Saturday PM)	-54	-59	-113	-108	-101	-209
<b>NET Estimated As-of-Right External Vehicle Trips</b>	<b>302</b>	<b>1092</b>	<b>1394</b>	<b>446</b>	<b>393</b>	<b>839</b>

Note: No reduction was applied for internal trips as internal capture rate is negligible for these uses/size ratios per ITE methodology.

### Trip Distribution and Assignment

The new vehicle trips generated by the site development were distributed and assigned to the roadway network based on the aforementioned gravity model, existing count data, regional traffic routing per GPS and other mapping tools and existing travel patterns. Detailed traffic distribution percentages and volumes for the proposed development are illustrated in **FIGURE 13**.

A generalized summary of the anticipated distribution of site traffic entering and exiting is shown in **TABLE 7**. The gravity model used to develop the distribution is provided in **APPENDIX K**.

TABLE 7: ENTER/EXIT DISTRIBUTION OF SITE TRAFFIC

Direction of Approach	
From the North on 8 <sup>th</sup> Street	63%
From the West on Market Street	8%
From the East on Market Street	7%
From the West on Chestnut Street	4%
From the East on Walnut Street	7%
From the South on 7 <sup>th</sup> Street	5%
From the South on 9 <sup>th</sup> Street	6%
Direction of Departure	
To the North on 9 <sup>th</sup> Street	55%
To the North on 7 <sup>th</sup> Street	15%
To the West on Market Street	8%
To the East on Market Street	10%
To the East on Chestnut Street	4%
To the South on 8 <sup>th</sup> Street	8%

### Build Traffic Volumes

The traffic volumes generated by the proposed site were added to the 2016 and 2021 No Build traffic volumes to provide the Build traffic volumes. These traffic volumes are illustrated on **FIGURES 14** and **15** for the weekday morning and afternoon peak hours, respectively. As PENNDOT has established a 0% per year growth rate in Philadelphia County, volumes for the 2016 and 2021 Build conditions are identical and are reported concurrently.

### Build Levels of Service/Queue Analysis

Based upon the output of the Synchro 8.0 analysis, it is predicted that all of the study intersections will operate at an overall intersection level of service of C or better during the 2016 and 2021 Build peak period conditions with the exception of the following intersections:

- 8<sup>th</sup> and Market Street – Projected to operate at overall LOS D with 49.9 seconds of vehicle delay under Build conditions during the Saturday Casino peak hour.
- 9<sup>th</sup> and Market Street – Projected to operate at overall LOS D with 50.9 seconds of vehicle delay under Build conditions during the Saturday Casino peak hour.
- 8<sup>th</sup> Street and Vine Street (EB) – Projected to operate at overall LOS E with 58.2 seconds of vehicle delay under Build conditions during the Friday PM Street peak. Note that this intersection operates at LOS E with 57.3 seconds of delay under existing conditions; therefore impact from site traffic is minimal.



Results of the 2016 and 2021 Build conditions analysis for the impacted intersections identified above are summarized in **TABLE 8**.

**TABLE 8: LEVEL OF SERVICE SUMMARY - 2016, 2021 BUILD CONDITIONS**

		Friday PM Street Peak			Friday Casino Peak			Saturday Casino Peak		
		LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)
<b>8th Street &amp; Market Street</b>	<b>Overall</b>	<b>C</b>	<b>22.0</b>	<b>-</b>	<b>C</b>	<b>34.0</b>	<b>-</b>	<b>D</b>	<b>50.0</b>	<b>-</b>
	EB Thru	A	0.9	10.0	A	0.5	7.5	A	0.6	7.5
	EB Right	A	3.0	20.0	A	1.6	12.5	A	3.3	25.0
	WB Thru	B	15.6	177.5	B	14.8	142.5	B	14.5	125.0
	SB Left/Thru	D	52.9	452.5	F	80.8	647.5	F	118.6	880.0
	SB Thru/Right	D	45.9	335.0	E	58.7	450.0	F	84.7	585.0
<b>9th Street &amp; Market Street</b>	<b>Overall</b>	<b>D</b>	<b>51.0</b>	<b>-</b>	<b>C</b>	<b>20.8</b>	<b>-</b>	<b>E</b>	<b>59.7</b>	<b>-</b>
	EB Thru	A	0.5	5.0	A	0.3	2.5	A	0.2	2.5
	WB Thru	A	1.5	15.0	A	1.2	12.5	A	0.6	7.5
	WB Thru/Right	A	1.8	15.0	A	1.3	15.0	A	0.7	7.5
	NB Left/Thru	F	136.2	872.5	E	57.5	500.0	F	130.0	927.5
	NB Thru/Right	F	143.5	543	D	52.9	295.0	F	116.0	475.0

It is worth noting that Pennoni performed “Sensitivity Analyses” of each of the study periods to see what the traffic impacts of MARKET8 would be utilizing actual SugarHouse trip generation rates. Subsequently, study area intersections would continue to operate at “acceptable” Levels of Service for future BUILD condition without additional “Multi-Modal Trip Reductions” from SugarHouse casino trip generation rates as assumed (see “Multi-Modal Trip Reductions” section).

In order to offset the impact of the proposed site and mitigate vehicle delay, we recommend the following mitigation measures.

- Traffic signal timing optimization (adjustments to split times, offset revisions if needed to maintain traffic progression).
- Restrict on-street parking along the east side of 9<sup>th</sup> Street to provide a separate northbound right turn lane at the intersection with Market Street for approximately 100 feet. This will require widening 9<sup>th</sup> Street from 26-feet to 30-feet to provide three 10-foot travel lanes at the Market Street approach.
- Restrict pm-street parking and provide a striped, 8-foot shoulder and eliminate parking on 8<sup>th</sup> Street from Market Street to MARKET8 Boulevard to facilitate a more efficient flow of traffic into the site.
- Implement a leading pedestrian interval for the Market Street pedestrian crossings at 8<sup>th</sup> Street and 9<sup>th</sup> Street.

Results of the 2016 and 2021 Build conditions analysis are illustrated on **FIGURE 16**. Detailed outputs of the 2016 and 2021 “Build” conditions analyses are provided in **APPENDIX L**.



**Build with Mitigation Levels of Service/Queue Analysis**

Results of the 2016 and 2021 Build with mitigation conditions analysis for the impacted intersections identified above are summarized in **TABLE 9**.

**TABLE 9: LEVEL OF SERVICE SUMMARY - 2016, 2021 BUILD CONDITIONS w/ MITIGATION**

		Friday PM Street Peak			Friday Casino Peak			Saturday Casino Peak		
		LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)
<b>8th Street &amp; Market Street</b>	<b>Overall</b>	<b>C</b>	<b>23.7</b>	<b>-</b>	<b>B</b>	<b>18.0</b>	<b>-</b>	<b>C</b>	<b>21.1</b>	<b>-</b>
	EB Thru	C	21.3	247.5	A	6.7	70.0	A	8.0	82.5
	EB Right	C	23.7	215.0	B	10.8	72.5	C	27.9	157.5
	WB Thru	B	19.3	185.0	C	20.2	152.5	C	20.5	140.0
	SB Left/Thru	C	28.6	355.0	C	26.8	397.5	C	28.2	435.0
	SB Thru/Right	C	27.9	277.5	C	25.2	325.0	C	26.2	352.5
<b>9th Street &amp; Market Street</b>	<b>Overall</b>	<b>B</b>	<b>15.8</b>	<b>-</b>	<b>B</b>	<b>11.3</b>	<b>-</b>	<b>C</b>	<b>20.3</b>	<b>-</b>
	EB Thru	A	0.9	10.0	A	0.3	2.5	A	0.2	2.5
	WB Thru	B	19.0	217.5	A	1.2	12.5	A	0.6	7.5
	WB Thru/Right	B	19.3	205.0	A	1.3	15.0	A	0.7	7.5
	NB Left/Thru	C	29.1	272.5	C	27.0	240.0	C	29.1	270.0
	NB Thru/Right	-	-	-	-	-	-	-	-	-
	NB Thru	C	27.3	252.5	C	25.8	222.5	C	27.3	247.5
NB Right	D	35.9	212.5	D	39.5	210.0	E	75.5	345.0	

Detailed outputs of the 2016 and 2021 “Build w/Mitigation” conditions analyses are provided in **APPENDIX M**.

**TURN LANE WARRANT ANALYSIS**

Turn lane warrants at the site entrance on 8<sup>th</sup> Street and the site exit at 9<sup>th</sup> and Market Street were evaluated according to PennDOT Publication 46 guidelines. Results of this warrant analysis indicate that the site entrance on 8<sup>th</sup> Street meets warrants for a right turn deceleration lane on 8<sup>th</sup> Street approaching the site entrance. The warrant analysis also indicates the 9<sup>th</sup> Street approach to Market Street meets the warrants for a separate right turn lane on 9<sup>th</sup> Street at Market Street. The capacity analysis confirms the need for an additional lane on the 9<sup>th</sup> Street approach; however no remarkable improvements in delay are realized for an exclusive lane at the site ingress. It is suggested that the removal of parking along both these approaches, and striping of an 8-foot shoulder along South 8<sup>th</sup> Street between Market Street and the casino entrance, will improve operational performance at both locations. Turn lane analysis worksheets are included in **APPENDIX N**.

**DRIVEWAY SIGHT DISTANCE ANALYSIS**

All turning movements exiting the site will be required to make a right-turn and travel north toward Market Street since 9<sup>th</sup> Street is a one way northbound street. Per PennDOT standards, the recommended safe sight distance for passenger cars exiting driveways onto a two lane four to six lane *unsignalized* roadway is 250 feet looking to



the left. Adequate sight distance exists to see from the proposed site driveway to the adjacent traffic signal at the intersection of 9<sup>th</sup> Street and Chestnut Street.

It should be noted that the adjacent traffic signal at 9<sup>th</sup> Street/Chestnut will “meter” traffic by providing gaps in the traffic stream to exiting the site. The proposed driveway will be approximately 200 feet south of the 9<sup>th</sup> Street and Market Street intersection.

## **PARKING UTILIZATION ASSESSMENT**

Below is a summary of those public parking facilities within 5, 10 and 15-minute walking radii of the proposed casino complex. The following total existing parking spaces within these walking times to/from the proposed casino location are as follows:

- 5-Minute Walk: 5,416 spaces,
- 10-Minute Walk: 11,719 spaces,
- 15-Minute Walk: 20,277 spaces.

An analysis of the available three (3) public parking garages in the immediate vicinity surrounding the project site was conducted to determine the parking utilization during the peak hours of the proposed development. Parking vacancy counts were performed on Friday, October 26, 2012 on every hour from 3:00 PM to 8:00 PM and on Saturday, October 27, 2012 on every half-hour from 5:00 PM to 8:00 PM. The following events were being held at the Philadelphia Convention Center during this weekend:

- “Call to Action”: A conference on Black-on-Black violence;
- “Magic – the Gathering” Philly Gaming Conference;
- Pennsylvania Building & Construction Trades Council.

A total of 6000 attended these events according to the Events Coordinator at Philadelphia’s Pennsylvania Convention Center.

The total amount of vacant spaces at each garage was counted for each time period. The counts were conducted at the parking garages located at 801 Filbert Street, at 781 Chestnut Street and on the southeast corner of the Chestnut Street & 9<sup>th</sup> Street intersection.

**FIGURE 17** indicates the location of the three parking garages where vacancy counts were conducted. The three parking garages analyzed have a total capacity of 2,337 spaces. **FIGURE 17** also indicates the location of the parking facilities which total 20,277 spaces within the Center City urban area surrounding the proposed site. **TABLE 10** summarizes the total capacity for each garage included in Pennoni’s analysis.

**TABLE 10: STUDY AREA PARKING GARAGE SUMMARY**

Parking Garage	Location	Capacity
A	801 Filbert Street	1,222
B	781 Chestnut Street	383
C	Chestnut Street & 9 <sup>th</sup> Street	732
<b>Total</b>		<b>2,337</b>







During the Friday survey period, the peak occupancy for the parking supply was 65% (1,527 total vehicles parked and 810 spaces available) occurring from 3:00 PM to 4:00 PM. The parking occupancy rates decreased throughout the period. The average occupancy was 48% (1,116 total vehicles and 1,221 spaces available). During the Saturday period, the peak occupancy for the parking supply was 56% (1,303 total vehicles parked and 1,034 spaces available) occurring from 5:00 PM to 5:30 PM. The parking occupancy rates decreased throughout the period. The average occupancy was 47% (1,089 total vehicles and 1,248 spaces available).

Although Pennoni feels that a good portion of Casino patrons will be not require “existing” parking, either because they traveled to the site via transit, walking, casino shuttle or taxi, statistical data is not readily available to support any specific reduction in *parking* generation for a Central Business District casino venue. As indicated in **FIGURE 18**, the Center City area of Philadelphia contains numerous hotels (approximately 9,678 hotel rooms) and it is anticipated that many patrons of these hotels can and will visit MARKET8 at some point during their stay. As detailed in the “Multi-Modal Trip Reductions” section of this report (See **FUTURE BUILD TRAFFIC CONDITONS**), however, it can be assumed that of the total number of casino patrons visiting the complex on a Friday or Saturday evening, approximately 55-60%, respectively, will be arriving via automobile or limo.

The City’s Zoning Code (*§14-405 SP-ENT Entertainment Special Purpose District - Licensed Gaming Facilities*) requires 4 parking spaces for every 5 slot machine or gaming positions provided for patrons and guests. Accordingly, the proposed complex would thus need to accommodate 2,554 parking spaces.

Pennoni’s Parking Utilization analysis would indicate that there are currently in excess of 2,600 parking spaces within a 5 minute walk of the site (available after 5:00 PM on an average (non-event) Friday and on an average (non-event) Saturday after 6:00 PM). Combined with the 1000 main casino complex parking spaces and the additional proposed 340 spaces at 733 Chestnut Street, the proposed complex can accommodate approximately 4,000 vehicles, immediately adjacent to the site, on an average Friday or Saturday evening. This translates into approximately 1.25 spaces per gaming position.

Extrapolating Pennoni’s Parking Utilization analysis to those parking facilities within 5, 10 and 15-minute walking distances of MARKET8, the Center City area of Philadelphia will have more than adequate parking capacity to accommodate a proposed urban casino locale (See **TABLE 11**).

**TABLE 11: WEEKEND PEAK HOUR PARKING AVAILABILITY WITH PROPOSED SITE**

Walking Distance to Parking	Parking Capacity* (spaces)	Parking Availability (spaces)
5 Minutes	4,972 +1000 – 293 = 5,679	3,480
10 Minutes	11,982+	6,821+
15 Minutes	17,412+	9,699+
Req’d Spaces/Zoning:	2,554	2,554
<b>Total Excess Capacity Within 15-min Walk:</b>	<b>14,858+</b>	<b>7,145+</b>

After 5:00 PM on Fridays and 6:00 PM on Saturdays, based on avg. occupancy of 47% for existing facilities per Pennoni Parking Utilization study. Source: www.philapark.org, www.philadelphia.bestparking.com and www.parkme.com/philadelphia-parking.





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In addition, MARKET8 has secured 980 parking spaces for “as needed” use by patrons and/or casino complex employees at the following Market East locations:

- E-Z Park (211 N 9<sup>th</sup> St and 912-916 Arch St)
- Park Safe System (618 Market St)
- Operator TBD (615 Chestnut St)
- LAZ Parking (107 S 10<sup>th</sup> St)

Combined with the 1000 on-site casino complex valet parking spaces and 340 “casino only” parking spaces at 733 Chestnut Street over 2300 of these available parking spaces will be dedicated to casino patrons and/or employees.

Suggested strategies that would further mitigate the need for an additional parking “immediately adjacent” to the site might include:

- “Real-time” parking management for casino parking;
- Shuttle bus service to/from MARKET8 and Center City Parking and/or Hotel Venues; and
- Off-site Parking Accommodation for Casino employees.

As noted, based on the approximate 50% availability of the three facilities studied herein, available parking for casino patrons will not be problematic. The available parking immediately adjacent to the site combined with the proposed underground parking within the site, and the additional proposed 340 spaces at 733 Chestnut Street exceeds the parking requirements of the zoning code.

Count data used in the parking assessment can be found in **Appendix O**.

## FINDINGS & RECOMMENDATIONS

### Findings

➤ The proposed development will comprise:

- 2400 slot machines,
- 82 table games,
- 30 poker tables,
- 1000 space, valet parking garage,
- 168 room hotel,
- Showroom w/ approximately 1200 seats,
- Four (4) quality restaurants at Market Street level,
- Miscellaneous food/beverage venues.

Projected peak hour trips for the casino for Friday and Saturday evening peak periods are based on research and information obtained from other casino traffic studies within the Philadelphia area and nationally.

- The capacity analyses performed for future casino BUILD conditions indicates that the site traffic will have the greatest Level of Service (LOS) impact on the two (2) intersections immediately bordering the site at 9<sup>th</sup> / Market Street and 8<sup>th</sup> / Market Street. These impacts will be mitigated by capacity and signal timing enhancements. The site driveway exiting onto 9th Street (STOP controlled “right-out-only”) will operate at LOS B. The remaining 38 study area intersections will experience no LOS degradation due to MARKET8 site traffic.
- All study area intersections operate at “acceptable” Levels of Service for future BUILD conditions with mitigation (and without additional “Multi-Modal Trip Reductions”) when utilizing *actual* SugarHouse casino trip generation rates. Overall intersection delays due to casino vehicular traffic are less than 10 seconds beyond “No Build” conditions at all studied intersections. *This 10-second threshold is the acceptable standard utilized by PennDOT for traffic delay degradation associated with new developments.*
- The casino operator has indicated that MARKET8 is anticipated to generate very little charter bus activity. However, charter buses could utilize the Market Street bus “pull-off” in front of MARKET8 as needed and then park at the Callowhill Bus Center (114 Callowhill Street) until patrons are ready for pick-up.
- Comparing the net “As-of-Right” (AOR) vehicle trips to those for the proposed casino, an increase in site traffic would occur if the proposed Market East casino site was developed per existing land use guidelines. In general, at least 50% more AOR traffic may be generated during the typical weekday PM Peak Hour (versus MARKET8 casino traffic) while 0-10% more AOR traffic (versus casino traffic) may be generated during a typical Saturday.
- The City’s Zoning Code (§14-405 SP-ENT Entertainment Special Purpose District - Licensed Gaming Facilities) requires 4 parking spaces for every 5 slot machine or gaming positions provided for patrons and guests. Accordingly, the proposed complex would thus need to accommodate 2,554 parking spaces within and/or immediately adjacent to the site.
- There are currently in excess of 2,800 parking spaces (within a 5-minute walk of the site) available after 5:00 PM on an average Friday and after 6:00 PM on an average Saturday. In addition, MARKET8 has secured 980 parking spaces for “as needed” use by patrons and/or casino complex employees at the following Market East locations:
  - E-Z Park (211 N 9<sup>th</sup> St and 912-916 Arch St)
  - Park Safe System (618 Market St)



- Operator TBD (615 Chestnut St)
- LAZ Parking (107 S 10<sup>th</sup> St)

Combined with the 1000 on-site casino complex valet parking spaces, 340 “casino only” parking spaces at 733 Chestnut Street and 980 spaces controlled by MEA at various parking facilities, the proposed entertainment complex will be able to accommodate over 4,000 parked vehicles on an average Friday or Saturday evening; with over 2300 of these dedicated to casino patrons and/or employees.

- Despite a record of vehicle/pedestrian crashes within the study area, Downtown walking accommodations in the vicinity of the site and to/from local parking venues are generally satisfactory; with wide sidewalks, ADA ramps at most intersections and pedestrian signal indications at all signalized intersections.

## Recommendations

The following recommendations will significantly improve the traffic operations within the study area, while allowing safe, unimpeded egress from the casino parking garage.

- Restrict on-street parking along the east side of 9<sup>th</sup> Street 20-feet south of the facility exit drive north to the Market St intersection to provide a separate northbound right turn lane and widen 9<sup>th</sup> Street to 30-feet between the MARKET8 egress drive (Market8 Blvd) and Market St;
- Optimization of the traffic signal splits at 8<sup>th</sup> and Market to accommodate the heavier southbound through traffic approaching the site on 8<sup>th</sup> Street;
- Provide a striped, 8-foot shoulder and eliminate parking on 8<sup>th</sup> Street from Market Street to MARKET8 Boulevard to facilitate a more efficient flow of traffic into the site;
- Enhance trail-blazing signage along regional transportation routes to ensure “positive guidance” to/from the casino complex and primary travel routes for non-local drivers;
- Encourage greater use of mass transit as an alternative to driving via advertising and/or casino promotions;
- Work with SEPTA and Center City hotels to increase the frequency of bus and shuttle stops to the casino and/or creating a direct connection to the mass transit hub within the study area ( 8<sup>th</sup> and Market Street); and
- In addition to some sidewalk, ADA ramp and pavement marking upgrades in the immediate vicinity of the proposed casino, consider “spot” grading adjustments of sidewalks to/from MARKET8 casino, especially brick-sidewalk locations near the proposed site. “Jay walking” enforcement, driver education and pedestrian education are the only recommended actions to improve safety and reduce pedestrian crash rates at downtown CBD locations.

Also, the City of Philadelphia’s Zoning Codes states that “parking provided in this (Special Purpose) District must be adequately served by high-capacity roads or driveways approved by the Streets Department as being adequate to safely serve the ingress and egress of patrons and guests using the facility.” This requirement is clearly met given the close proximity of the proposed casino site to I-95 and the Vine Street Expressway. Suggested parking utilization strategies that would further reduce the need for on-site parking spaces would include:



- Proposed VIP and/or Valet Parking;
- Off-site Parking Accommodation for Casino employees;
- Shuttle bus service to/from the Casino and Center City Parking, Shopping venues, Hotels;
- Promotion of Public Transit; and
- “Real-time” parking management for Casino parking.

Finally, Pennoni would recommend that a “Post-development” Traffic Operations study be performed to verify Trip Generation assumptions and overall operations of the MARKET8 Casino approximately six (6) months after “Opening Day”. This study would be performed to address and mitigate any unanticipated operational deficiencies (e.g., excessive queuing, pedestrian accessibility, etc.) within the study area.

## Conclusions

Based on the findings indicated in this traffic impact study:

- MARKET8’s strategic location will draw many casino patrons from the Pennsylvania Convention Center, tourists staying in nearby hotels, local residences and businesses located in downtown Philadelphia; most all of whom will be either walking or arriving by taxi or transit.
- Transit service to the 8th and Market location is extraordinary. The proposed casino is in a prime location to access several transit modes including: buses, subways, and regional rail. As a regional transit hub, the site is well served as a destination, and functions as one of the region’s major points of transfer between transit facilities.
- The MARKET8 casino’s Market East site is in a prime location to access I-95, I-676 (Vine Street Expressway) and the Ben Franklin Bridge for regional access by vehicular traffic. Other tourist draws in the vicinity of the proposed site include: Loews Hotel, Reading Terminal Market and the Hard Rock Café.
- If Office/General Retail space were to be developed at the proposed casino site, per “as-of-right” zoning regulations, significantly more traffic would likely be generated during the work week when compared to projected Friday PM casino traffic generation.
- Available parking immediately adjacent to the site, combined with the proposed parking within the site, significantly exceeds the parking requirements of the zoning code. The site, located within the City of Philadelphia’s urban core, provides excellent flexibility for development program modifications through maximization strategies for on-site parking and greater utilization rates benefitting nearby, off-site parking facilities.

If those recommendations suggested above are implemented as part of the MARKET8 mixed-use entertainment and casino complex, all study intersections within the surrounding transportation system will operate with *no degradation* in existing (“No Build”) levels of service.



## **REFERENCES**

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4. Trip Generation: An ITE Information Report, Institute of Transportation Engineers (ITE), 9th Edition (2012).
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6. Manual on Uniform Traffic Control Devices for Streets & Highways, 2009 Edition, Federal Highway Administration (Rev. 1 and 2, May 2012).
7. "Gaming Casino Traffic", Paul Box and William Bunte, published ITE Journal (March 1998).
8. "Transportation & Access Study", commissioned by the Center City District and Central Philadelphia Development Corporation (2012).



## FIGURES

**APPENDICES  
(See CDROM)**