Appendix 34

Provide a local impact report, engineering reports and traffic studies, including details of any adverse impact on transportation, transit access, housing, water and sewer systems, local police and emergency service capabilities, existing tourism, including historical and cultural resources or other municipal service or resource. A copy of the local impact report shall be provided to each political subdivision in which the licensed facility will be located at least seven (7) days prior to the filing of the application for a slot machine license. The applicant shall file a proof of service with the Board.

The Applicant has commissioned the following studies related to our Hollywood Casino Philadelphia to be located at 700 Packer Avenue in Philadelphia:

- Traffic Impact Study
- Phase I Environmental Site Assessment
- Economic and Fiscal Impact Report
- Utility Report and Feasibility Study

Traffic Impact - The facility is located in an area with a highly developed road network that has been designed to accommodate the large concentrated volumes of traffic the area receives due to the many professional sports venues located there. The site is also served by a well developed public transportation system. As such, we believe that traffic volumes associated with the new casino facility will be easily accommodated by the existing transportation facilities and will not cause any significant added disruptions to non-casino related traffic in the area. See attached detailed Traffic Impact Study prepared by Philadelphia based Pennoni Associates, Inc.

Phase I Environmental Site Assessment – A preliminary Phase I environmental assessment was performed on the proposed site by Philadelphia based Pennoni Associates, Inc. The report identifies a few areas requiring further environmental review. Should further review determine remediation is necessary, we do not believe any such requirements would prevent us from developing the site. We also do not believe that any environmental remediation that might be necessary would significantly delay construction of the project. Penn National Gaming Inc, (Penn) would manage construction of this facility. Penn's project development/construction department has significant experience in environmental remediation issues. In fact most of our most recent development projects, as further described in Appendix 26b of the Category 2 Application filed by Penn, required significant environmental remediation (e.g. Toledo, Columbus, Perryville). Such sites were successfully remediated and are now open to the public. See attached Phase I Environmental Report for further details.

Economic and Fiscal Impact Report – An economic and fiscal impact study was completed to determine the economic impact that the proposed casino would have on the region. As indicated in the report, the impact of the facility construction alone will generate a near-term positive economic impact for the Commonwealth of nearly $250 million, with nearly $195 million of that impacting the city of Philadelphia directly. Once open, the ongoing direct and indirect positive economic impact for the State is estimated to be $596 million annually. The facility will generate much needed full and part-time jobs for area residents with most full-time position having full benefits. See attached Economic and Fiscal Impact Report of Hollywood Casino Philadelphia completed by Philadelphia based Urban Partners for more details.

Utility Impact - Due to its location in an already well developed section of Philadelphia, the proposed casino site is currently served by municipal and public utility services for water, sewage, electricity and natural gas. These utilities have the existing capacity nearby to meet the needs of the proposed facility. For additional details, see the attached Utility Availability and Feasibility Report completed for the applicant by Philadelphia based Pennoni Associates.

Emergency Services (Fire and Police) – The applicant will have its own highly trained security staff backed up by a comprehensive fully manned surveillance apparatus and trained emergency medical technicians that will allow it to handle many security/safety/medical related issues using in-house staff. The casino would call on the Philadelphia police and fire departments as needed to respond to matters beyond the capabilities or legal authority of in-house staff. The proposed casino facility is located in a highly developed part of Philadelphia that commonly accommodates a large number of people attending the various sporting, concert and other special events held at one of the area's many sports venues. We believe that any impact on City emergency responders that result from facility activity will be more than offset by the added city revenue generated by the facility through, gaming, property, payroll and other taxes.

Historical and Cultural Resources – We do not believe Hollywood Casino Philadelphia will have any negative impact on city historical and cultural resources and will in fact enhance the Sports District's entertainment options for city residents and visitors alike.

These local impact reports were delivered to the City of Philadelphia on November 8 as evidenced by the attached delivery notification.

APPENDIX 34

TRAFFIC IMPACT STUDY

TRAFFIC IMPACT STUDY

Hollywood Casino

THE CITY OF PHILADELPHIA
Pennsylvania

PENN NATIONAL GAMING INC.

Prepared For:
Penn National Gaming, Inc.
825 Berkshire Boulevard, Suite
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Spencer Slack

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EXECUTIVE SUMMARY

This Study documents the results of an investigation of transportation impacts and parking requirements for the Hollywood Casino proposed on the site of the existing Turf Club (700 Packer Avenue) in the Stadium District of Philadelphia, Pennsylvania. The study has been prepared for Penn National Gaming, Inc. in support of an application to the Pennsylvania Gaming Control Board for a license to operate a casino in Philadelphia.

The casino license would permit operation of a 2,250 slot casino facility with 66 table games and 15 poker tables. The Phase 1 Development Program for the site consists of the following:

- Multi–level, 102,000 SF gaming area with 2,250 slot machines and 81 table games
- 3380 vehicle parking garage (2700 customer spaces, 230 valet spaces, 450 employee spaces)
- 76 vehicle surface lot (70 valet spaces, 6 bus spaces)
- 935 seat restaurant and bar facilities
- 500 SF of retail
- 12,500 SF of multi-purpose space

It is anticipated that the Pennsylvania Gaming Control Board will award the Philadelphia gaming license by the end of 2013 and if awarded a license, Penn National Gaming, Inc. will complete design and construction of the casino within 24 to 36 months following the license award. According to this anticipated timeline, the Hollywood Casino would open in mid-2016.

A master plan has been developed for the site to allow for future expansion of the casino and the addition of a hotel with banquet and conference facilities. It is anticipated that the master plan concepts will be further refined prior to development beyond Phase 1 and therefore, only the planned Phase 1 development has been included in this analysis.

Access

The site is well situated near the Packer Avenue (Exit 350) and Broad Street (Exit 349) Interchanges on Interstate 76 (I-76) and the Broad Street Interchange (17) on Interstate 95 (I-95). These interchanges and the surrounding roadway network have been designed to accommodate peak traffic flows associated with fully attended events at the three major sporting venues, the largest of which houses the Philadelphia Eagles.

The proximity of the Hollywood Casino to major public transit facilities is another attribute of this site. The AT&T Station of SEPTA's Broad Street Line is located approximately ¾ mile from the site. In addition, Bus Route G services Packer Avenue with stops adjacent to the site and several additional bus routes (including Routes 68 and 23) pass in close proximity to the site. The proximity of these transit facilities is expected to be particularly attractive for local employees and also patrons of the casino.

The site will be accessed from South Darien Street and Seventh (7th) Street. Access to the porte cochere is proposed via a one-way entrance driveway on 7th Street and a one-way exit driveway proposed on Darien Street Street. Valet staff will utilize subsurface parking spaces accessed by driveways connected to the porte cochere. The eight-level customer parking garage will be accessed by a one-way entrance driveway located on 7th Street and a one-way exit driveway on Darien Street.

Employees will access their parking facilities via a two-way driveway on South Darien Street. Loading facilities will be located on 7th Street. Bus parking will be located off of South Darien Street. Buses will enter the bus parking utilizing the employee driveway. The bus exiting maneuver will utilize the parking garage exit driveway to access South Darien Street.

Parking

The Hollywood Casino will provide 3,000 patron/guest parking spaces for 2,736 gaming positions which satisfies the requirement of the Philadelphia Code requiring 4 patron/guest parking spaces for every 5 slot machines or gaming positions. The ITE *Parking Generation* manual establishes an average peak parking demand for a

Casino/Video Lottery Establishment (Land Use 473) to be 0.34 vehicles per gaming position. The Hollywood Casino will provide parking spaces for patrons and guests at a rate of 1.09 spaces per gaming position. The rate is consistent with the industry wide parking ratios which range from .75 to 1.59 spaces per gaming position with the median being 1.07 spaces per gaming position.

Land Uses

The existing site at 700 Packer Avenue is comprised of a mixed-use building with associated surface parking. The first floor is occupied and contains office, industrial, and retail uses including the Pennsylvania Lottery Commission, Packer Avenue Foods, and Verifone Transportation Systems. The second floor houses the Turf Club, an off-track betting facility and restaurant.

The site is currently zoned **I-2, Medium Industrial** and is surrounded by a CMX-3 (Neighborhood Commercial Mixed-Use-3) zoned parcel to the west, I-2 (Medium Industrial) zoned parcels to the east/southeast, and Sports Stadium District (SPA-STA) zoned parcels to the south and west. All of these zoning areas include the Airport Hazard Control Overlay District. There are some residential communities to the north and west of the site, all of which are buffered by I-76 or the Hotel and Stadium parking facilities.

Accident History

The five-year accident summary report provided by the City indicates that accident rates are low for the seven (7) study intersections with less than 2 accidents reported per year at all locations. A number of angle accidents occurred on Packer Avenue mostly during daytime hours. Two pedestrian accidents occurred at the intersection of Packer Avenue and 7th Street with one being fatal. There are no discernible patterns for the accidents at the study intersections on Front Street with most occurring during daylight hours.

Casino Trip Estimates and Characteristics

Phase 1 of the Hollywood Casino program includes 2,250 slots, 66 table games, and 15 poker tables for a total of 2,736 gaming positions. The Hollywood Casino will include other auxiliary uses such as food and beverage areas, entertainment, amenity retail, employee facilities, public circulation and support space. These auxiliary uses are not considered to function independently, and as such will not generate any traffic.

The weekday afternoon commuting peak hour (rush hour) of the adjacent road network is established as a key analysis period. The weekday pm peak hour conditions represent the traffic peak on the adjacent roadway network combined with the weekday afternoon peak hour for the casino. According to compiled data on casino time-of-day patterns, Weekday afternoon (4:00 pm – 6:00 pm) hourly volumes on Monday through Thursday represent the peak volumes for the casino. On Fridays, the late evening peak volumes (7:00 pm to 10:00 pm) are slightly higher (1% - 2%) higher than the rush hour volumes (4:00 pm – 6:00 pm).

As noted, the study area is located within Philadelphia's Stadium District which includes three (3) major sporting venues: Lincoln Financial Field, Citizens Bank Park, and the Wells Fargo Center. Because of the attendance numbers and frequency of the Philadelphia Phillies Baseball games at Citizens Bank Park, pre-event conditions for this venue are considered in the analysis. The weekday peak trips generated by the casino were added to the pre-Phillies event traffic volumes in order to evaluate the effects of the casino traffic on roadway operations prior to a large event.

The Saturday peak hour volumes may be on average 25%-50% higher than Weekday rush hour volumes. Actual count data collected at the Sugarhouse Casino in November of 2010 shows peak Saturday evening (9:15 pm to 10:15 pm) volumes to be 50% higher than peak weekday pm hour volumes. For the Hollywood Casino this equates to an estimated additional 500 casino trips that may be added to the adjacent roadway network over Weekday afternoon rush hour conditions. During the Saturday late evening hours, the decrease in background traffic on the adjacent roadway network is greater than the anticipated increase in casino volumes.

The trip estimates for the Hollywood Casino were computed using trip generation rates of .36 trips per gaming position for the weekday pm peak hour and.54 trips per gaming position for the Saturday peak hour. These rates were

developed from a comprehensive review of pertinent published studies and an examination of actual traffic data from the Sugarhouse Casino, a facility with similar demographic and geographic environments.

The Philadelphia Gaming Advisory Task Force prepared a report in 2007 which estimated that approximately 16% of gamers visiting a South Delaware Avenue site will arrive and depart utilizing alternative modes of transportation with 2% to 6% utilizing public transit. The anticipated travel modes were noted as follows:

Drive = 84%
Pedestrian = <1%
Taxi = 6%
Casino Bus = 8%
Public Transit = 2%

The pedestrian rate of <1% applies when there are no events at the adjacent sports complex venues. It is anticipated that when events are held at the sports complex venues some patrons will park in the sports complex lots and walk to the casino prior to attending the event and the utilization may increase. We also anticipate that employees would utilize a higher percentage of alternate modes of transportation that the figures noted above. For the purpose of this evaluation, additional modal split reductions were not taken for the Sporting event pedestrian traffic or employees. To be conservative, the peak trips anticipated to be generated from the Hollywood Casino were reduced by 2% to account for the utilization of public transit

The trips generated by the Hollywood Casino were computed using the trip generation rates noted above with adjustments made for alternate modes of travel. The trip generation for the Pre-Phillies peak period will include an additional adjustment made to account for linked trips and a stay-away factor as identified in the *Philadelphia Sports Complex Management Parking and Traffic Management Plan*. The trips expected to be generated from the Hollywood Casino development are as follows:

Weekday Casino Trips **12,979**
Weekday PM Peak Hour Trips **958**

Saturday Trips **19,924**
Saturday Peak Hour Trips **1451**

Weekday Pre-Phillies Event Peak Hour Trips **670**

The parcel is currently occupied by office, industrial and commercial uses as noted above. The proposed casino will replace the existing uses and therefore, a trip credit equivalent to the observed site activity has been taken in calculating the proposed **NEW** site trips utilized in the capacity analysis of the adjacent roadway network.

The new vehicle trips generated by the proposed Casino will be distributed and assigned to the roadway network based on a combined evaluation of existing traffic patterns, the anticipated characteristics and behavior of the development-generated traffic, and the proposed site access. It is expected that the majority of site traffic generated during the peak periods will use I-95 and I-76. The percentages of site traffic assigned to these roadways are summarized as follows:

Casino Trip Distribution Summary

ENTERING	PM	EXITING	PM
From I-95 NB	13%	To I-95 NB	42%
From I-95 SB	42%	To I-95 SB	13%
From I-76 EB	32%	To I-76 EB	9%
From I-76 WB	9%	To I-76 WB	32%
From Local Streets	4%	To Local Streets	4%

Existing and Future Traffic Operations

The operational analyses of the study intersections under the weekday pm peak and weekday Pre-Phillies event conditions were performed using the *Synchro* Version 8.0 software developed by Trafficware® and the *Highway Capacity Software 2010* developed by McTrans. The levels of service and delays are based on the *2010 Highway Capacity Manual (HCM2010)* published by the Transportation Research Board, Washington D.C. The HCM sets forth nationally accepted standards regarding traffic operations and capacity analysis. A description of the Level of Service Criteria for signalized and unsignalized intersections is provided in the body of the report.

The roadway network in the vicinity of the site has been designed to accommodate traffic for the major sporting venues and, as such, provides sufficient capacity during normal Weekday pm peak conditions. Under existing and future no-build conditions for 2016 (opening day) and 2021 (5 years after opening day), all study intersections are expected to operate at *overall* LOS "D" or better with all traffic movements also operating at LOS "D" or better. **FIGURE 25** illustrates the weekday PM and weekday Pre-Phillies event peak hour level of service results for the 2021 No Build conditions.

Weekday PM Peak Hour Conditions

With the addition of casino traffic, all study intersections are expected to maintain their *overall* levels of service under Weekday pm peak build conditions with the exception of the signalized intersection of the following:

- The signalized intersection of **Packer Avenue and Darien Street** which drops from an overall LOS "C" with 25.2 seconds of delay to an overall LOS "D" with 52.7 seconds of delay due to the increased delay (134.6) on the southbound left turning movement. Minor signal timing adjustments are required to mitigate this level of service drop. The estimated 95th percentile queues at the study intersections for all of the existing and future Weekday pm peak hour conditions are within acceptable limits as none of the queues extend into adjacent intersections.

- The signalized intersection of **Front Street and the I-95 Ramps** which drops from an overall LOS "C" with 28.7 seconds of delay to an overall LOS "D" with 49.4 seconds of delay due to the increased delay (161.2) on the northbound left turning movement. Minor signal timing adjustments are required to mitigate this level of service drop. The estimated 95th percentile queues at the study intersections for all of the existing and future Weekday pm peak hour conditions are within acceptable limits as none of the queues extend into adjacent intersections.

Weekday Pre-Phillies Event Peak Hour Conditions

Capacity analyses at the study intersections prior to a Phillies game indicate that all intersections operate at *overall* LOS "D" or better under existing and no-build weekday event conditions with the exception of the following:

- The signalized intersection of **Packer Avenue and 10th Street** operates at an *overall* LOS "E" with 61.3 seconds of intersection delay. The westbound approach is operating at a LOS "F" with 105.0 seconds of delay as a result of 524 left turns destined for several event parking lots located south on 10th Street. The approach service level is improved to a LOS "D" with the implementation of revised signal phasing providing additional green time to westbound Packer Avenue.

- The signalized intersection of **Packer Avenue and Darien Street** operates at an *overall* LOS "F" with 105.8 seconds of intersection delay. The westbound approach is operating at a LOS "F" with 183.3 seconds of delay as a result of 664 left turns destined for several event parking lots located south on Darien Street. Revised signal phasing providing a protected left turn for westbound Packer Avenue reduces the approach delay to a LOS "D".

- The signalized intersection of **Packer Avenue and 7th Street** operates at an *overall* LOS "C" with 25.2 seconds of intersection delay. The westbound left turn lane operates at a LOS "E" as a result of 444 left turns destined for several event parking lots located south on 7th Street.

With the addition of casino traffic, all study intersections are expected to maintain their *overall* levels of service under build conditions with the exception of the signalized intersection of Packer Avenue and 7th Street which drops from an overall LOS "C" with 25.2 seconds of delay to an overall LOS "D" with 51.0 seconds of delay. Minor signal timing adjustments are required to mitigate this level of service drop.

FIGURE 26 illustrates the weekday PM and weekday Pre-Phillies event peak hour level of service results for the 2021 Build with Improvements conditions.

During the Pre-Phillies Event conditions, the estimated 95th percentile queues on the westbound left-turning movements on Packer Avenue do exceed available storage lengths as a result of heavy left turns destined for several event parking lots.

Recommended Improvements

The following are recommendations to mitigate the impacts of the proposed development on the surrounding roadway network and to enhance pedestrian accommodations:

- Traffic signal timing modifications are recommended for the Packer Avenue/7th Street intersection, the Front Street/I-95 Ramps intersection, and the Packer Avenue/Darien Street intersection to reduce the overall intersection delay. The modifications include adjustments to the traffic signal cycle lengths, splits and offsets.

- New traffic signal controllers are recommended to be installed at the signalized intersections along Packer Avenue (Packer Avenue/10th Street, Packer Avenue/Darien Street and Packer Avenue/7th Street) to allow time based coordination of the signals for improved progression.

- A new sidewalk is recommended to be installed on the east side of Darien Street adjacent to the site to improve pedestrian connectivity to the Stadium District. The sidewalk will extend south from Packer Avenue to the newly constructed sidewalk adjacent to Citizens Bank Park.

- Pedestrian accommodations are recommended to be enhanced at the intersections of Packer Avenue/7th Street and Packer Avenue/Darien Street as follows:

    - Installation of hand/man countdown indications for existing crosswalks at both intersections
    - Implementation of MUTCD compliant pedestrian clearances
    - Installation of ADA compliant handicap ramps at the southeast and southwest corners of the Packer Avenue/Darien Street Intersection

Previously Recommended Improvements to reduce traffic congestion during events

The *Philadelphia Sports Complex Management Parking and Traffic Management Plan* recommends several operational improvements for the area in and around the sports complex intended to reduce traffic congestion related to event traffic. These improvements would also benefit the project intersections during non-event periods. The recommended improvements for the study intersections include:

- Modification of traffic controllers to allow multiple "time of day" programs for Packer Avenue signals
- Development and implementation of pre-event and post-event signal timings for Packer Avenue
- Provide interconnect and coordination of the traffic signals along Packer Avenue
- Develop and implement signal timing changes at signals on Front Street to improve traffic flow

These improvements are not required to mitigate the impacts of the proposed development. However, implementation of the improvements will reduce the traffic congestion experienced during event traffic conditions and will mutually benefit traffic from the proposed development.

INTRODUCTION

Project Description

This report documents the results of an investigation of transportation impacts associated with the Hollywood Casino proposed on the Turf Club site situated on the south side of Packer Avenue between South Darien Street and South Seventh Street. The site is located in the Philadelphia Stadium District with convenient access to Interstate 76 (I-76) and Interstate 95 (I-95). The existing site is comprised of a mixed-use building with associated surface parking. The first floor is occupied and contains office, industrial, and retail uses including the Pennsylvania Lottery Commission, Packer Avenue Foods, and Verifone Transportation Systems. The second floor houses the Turf Club, an off-track betting facility and restaurant. The project area is shown in **FIGURE 1**.

The initial development program (Phase 1) for this site includes construction of a 2,250 slot casino with table games, a small gift shop, and associated food/entertainment facilities. The master plan being developed for the site will allow for future expansion of the casino and the addition of a hotel with banquet and conference facilities. It is anticipated that the master plan concepts will be refined prior to development beyond Phase 1 and therefore, only the planned Phase 1 development has been included in this analysis.

The Phase 1 development program for the Hollywood Casino Project consists of the following:

- Multi–level, 102,000 square foot gaming area with 2,250 slot machines and 81 table games
- 3380 vehicle parking garage (450 employee, 2700 patron, 230 valet)
- 76 vehicle surface lot (70 valet, 6 bus)
- 935 seat restaurant and bar facilities
- 500 square foot of retail
- 12,500 square foot of multi-purpose space

The conceptual site plan for the Hollywood Casino Project is shown in **FIGURE 2**.

The site will be accessed from South Darien Street and Seventh (7^{th}) Street. Access to the porte cochere is proposed via a one-way entrance driveway on 7^{th} Street approximately 200 feet south of Packer Avenue and a one-way exit driveway proposed on South Darien Street approximately 180 feet south of Packer Avenue. Valet staff will utilize subsurface parking spaces accessed by driveways connected to the porte cochere.

The eight-level customer parking garage will be accessed by a one-way entrance driveway located on 7^{th} Street approximately 740 feet south of Packer Avenue and a one-way exit driveway located on South Darien Street approximately 960 feet south of Packer Avenue. Customers exiting the parking garage and the porte cochere will have the option of turning right onto northbound South Darien Street to access I-76 and other northbound destinations. Customers destined for I-95 will be able to turn left from the garage and the porte cochere to travel southbound on South Darien Street to connect to westbound Pattison Avenue to South Broad Street.

Employees will access their parking facilities via a two-way driveway on South Darien Street 400 feet north of Phillies Drive. Loading facilities will be located on 7^{th} Street and will utilize an entrance driveway approximately 390 feet south of Packer Avenue and an exit driveway approximately 140 feet south of the entrance driveway. Six bus parking spots will be located off of South Darien Street. Buses will enter the bus parking utilizing the employee driveway. The bus exiting maneuver will utilize the garage exit driveway to access South Darien Street. The site circulation plans for passenger cars and heavy vehicles are illustrated in **FIGURES 3, 4 and 5**.

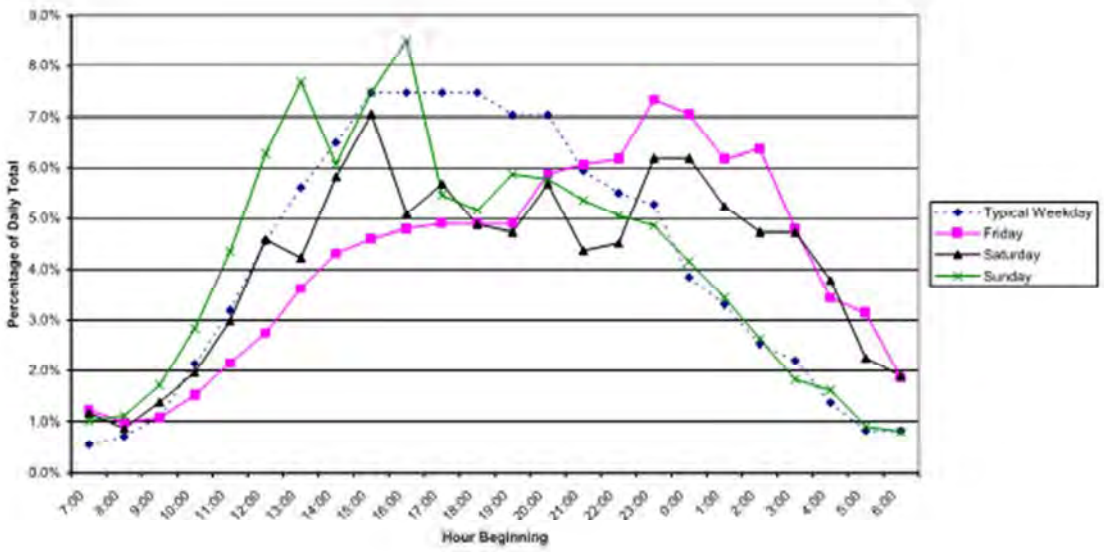
It is anticipated that the Pennsylvania Gaming Control Board will award the Philadelphia gaming license by the end of 2013 and if awarded a license, Penn National Gaming, Inc. will complete design and construction of the casino within 24 to 36 months following the license award. According to this anticipated timeline, the Hollywood Casino would open in mid-2016.

Horizon Year and Analysis Periods

The analysis was conducted in accordance with guidelines presented in Pennsylvania Department of Transportation (PennDOT) *Policies and Procedures for Transportation Impact Studies*, dated January 28, 2009. 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 existing condition analysis provides a baseline for model calibration and a reference point from which future conditions can be assessed. The opening year and horizon year analyses include an assessment of the operational conditions of the study intersections under "no build" and "build" scenarios. 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 on Pages 11 and 12 of this report.

The weekday afternoon commuting peak hour (rush hour) of the adjacent road network is established as a key analysis period. The weekday pm peak hour conditions represent the traffic peak on the adjacent roadway network combined with the weekday afternoon peak hour for the casino. According to compiled data on casino time-of-day patterns, Weekday afternoon (4:00 pm – 6:00 pm) hourly volumes on Monday through Thursday represent the peak volumes for the casino. On Fridays, the late evening peak volumes (7:00 pm to 10:00 pm) are slightly higher (1% - 2%) higher than the rush hour volumes (4:00 pm – 6:00 pm) as indicated in Chart 1 below.

Chart 1
Casino Time of Day Travel Patterns



Source: Casino Niagara in Niagara Falls, Canada, *the Majestic Star Casino, Pittsburgh Transportation and Parking Assessment*, IBI Group, Final Report October 2006.

The highest expected peak hours for casino entering and exiting volumes are anticipated from 1:00 pm to 4:00 pm and from 6:00 pm to 10:00 pm on a typical Saturday based on casino attendance data. The Saturday peak hour volumes may be on average 25%-50% higher than Weekday rush hour volumes[1]. Actual count data collected at the Sugarhouse Casino in November of 2010 shows peak Saturday evening (9:15 pm to 10:15 pm) volumes to be 50% higher than peak weekday pm hour volumes. For the Hollywood Casino this equates to an estimated additional 500 casino trips that may be added to the adjacent roadway network over Weekday afternoon rush hour conditions. During the Saturday late evening hours, the decrease in background traffic on the adjacent roadway network is greater than the anticipated increase in casino volumes.

[1] *Bridgeport Casino Traffic Impacts on the Southwestern Region of Connecticut*, Buckhurst Fish & Jacquemart Inc., July 2001

The study area is located within Philadelphia's Stadium District. There are three (3) major sporting venues within the District: Lincoln Financial Field, Citizens Bank Park, and the Wells Fargo Center. The venues host hundreds of events with attendances ranging from 16,000 for a basketball or hockey game to 65,000 for an Eagles game[2]. The highest attended events are the Philadelphia Eagles Games in Lincoln Financial Field with an attendance of close to 60,000. There are 8 regular season home games at Lincoln Financial field. The event that occurs most frequently is a Philadelphia Phillies Game at Citibank Park which has an attendance of approximately 43,000 spectators arriving in approximately 10,000 vehicles. A Phillies game can occur on any day of the week with the majority scheduled for Weekdays and most having start times of 7:05 PM. The Wells Fargo Center is home to the Philadelphia 76ers, Philadelphia Flyers, and the Philadelphia Wings. The basketball games allow for the highest seating capacity for this facility providing over 21,000 seats.

Because of the attendance numbers and frequency of the Philadelphia Phillies Baseball games at Citizens Bank Park, pre-event conditions for this venue are considered in the analysis. The *Philadelphia Sports Complex Management Parking and Traffic Management Plan* notes that the ingress to the Phillies games start approximately 2 hours prior to the start of the game and can coincide with the adjacent roadway peak period. The weekday peak trips generated by the casino were added to the pre-Phillies event traffic volumes in order to evaluate the effects of the casino traffic on roadway operations prior to a large event.

EXISTING CONDITIONS ASSESSMENT

Study Area Roadways

The site is located in close proximity to the limited access freeways of Interstate 76 (I-76) and Interstate 95 (I-95). Patrons travelling to the site from I-76 eastbound and travelling to and from I-76 westbound/Walt Whitman Bridge are expected to primarily utilize Exit 350 at Packer Avenue but also have the option of Exit 349 Broad Street/Sports Complex which is in close proximity. Outbound trips to I-76 westbound will utilize Exit 349 at Broad Street. The I-76 eastbound on and off ramps intersect with Packer Avenue across from the site at the northern terminus of South Darien Street. The I-76 westbound off-ramp at Packer Avenue intersects with 7th Street just north of Packer Avenue. The I-76 Broad Street interchange is accessed via Packer Avenue.

Access to I-95 northbound and southbound is provided via Interchange 19 Packer Avenue and Interchange 17 Broad Street. The I-95 Packer Avenue Interchange is accessed via Packer Avenue and Front Street just east of the site. The I-95 Broad Street I-17 is accessed via 7th Street, Pattison Avenue and Broad Street southwest of the site. The site access to and from the I-76 and I-95 is illustrated in **FIGURES 6 and 7.**

The following seven (7) intersections were selected as part of the study area:

1. Packer Avenue and S. 10th Street
2. Packer Avenue and I-76 Eastbound Ramps – S. Darien Street
3. Packer Avenue and S. 7th Street
4. Packer Avenue and S. Front Street
5. S. Front Street and I-76 Eastbound On Ramp
6. S. Front Street and I-76 Westbound Off Ramp – I-95 Southbound On Ramp
7. S. Front Street and I-95 Ramps

[2] *Philadelphia Sports Complex Management Parking and Traffic Management Plan,* Philadelphia Industrial Development Corporation, September 2010

A field view of existing conditions at the study intersections was conducted to obtain intersection geometry, traffic controls, operational characteristic, and traffic signal field timings.

Packer Avenue and S. 10th Street

Image 1

The intersection of Packer Avenue and South 10th Street is a four-leg signalized intersection operating under a pre-timed two-phase timing plan with a 90 second cycle length. The eastbound, westbound, northbound and southbound left turns operate under permitted phasing. Crosswalks are provided on all four legs of the intersection. An aerial view of the intersection and approach directions of travel are illustrated in **Image 1**.

West of South 10th Street, Packer Avenue is a local roadway with two lanes of travel in each direction and a left turn lane provided on the eastbound approach to the signalized intersection. Sidewalks are provided on both sides of the roadway. East of South 10th Street, Packer Avenue provides three lanes of travel in each direction with a left turn lane at the signalized intersection. A sidewalk is provided on the southern side of Packer Avenue. The speed limit is posted at 30 miles per hour and there is no on-street parking. South 10th Street is a local roadway with two lanes of travel in each direction and a center turn lane which transitions to exclusive left turns at the intersection. The speed limit is not posted but is assumed to be 25 miles per hour. Sidewalks are provided on both sides of the roadway and there is no on-street parking provided.

The eastbound approach provides a separate left turn lane, a through lane, a shared through/right lane and a bike lane. Across from the eastbound approach are three receiving lanes. The westbound approach provides a separate left turn lane, two through lanes, a shared through/right lane and a bike lane. Across from the westbound approach are three receiving lanes that quickly taper down to two lanes. The northbound approach provides a separate left turn lane, a through lane and a separate right turn lane. Across from the northbound approach are two receiving lanes. The southbound approach contains a separate left turn lane, a through lane and a share through/right turn lane.

Packer Avenue and I-76 Eastbound Ramps – South Darien Street

Image 2

The intersection of Packer Avenue and South Darien Street/I-76 Eastbound ramps is a four-leg signalized intersection operating under a pre-timed three-phase timing plan with a 90 second cycle length. The eastbound left turns operate under protected/permitted phasing while the westbound, northbound and southbound left turns operate under permitted phasing. A crosswalk is provided across the South Damien Street approach only. An aerial view of the intersection and approach directions of travel are illustrated in **Image 2.**

Packer Avenue is a local roadway with three through lanes and a bike lane in each direction and separate left-turning lanes. A sidewalk is provided on the southern side on Packer Avenue. The speed limit is posted at 30 miles per hour and on-street parking is provided on both sides of the roadway. South Darien Street is a local roadway with two through lanes in each direction and a center two-way left turn lane. The speed limit is not posted but is assumed to be 25 miles per hour. There are no sidewalks provided and on-street parking is provided on both sides of the roadway. The I-76 eastbound ramps provide one lane of travel in each direction. The eastbound on-ramp is posted with a 15 mile per hour advisory speed.

The eastbound Packer Avenue approach provides a separate left turn lane, two through lanes, a shared through/right lane, and a bike lane. The westbound approach provides a separate left turn lane, a through lane, a shared through/right lane with a right turn slip ramp and a bike lane. The westbound right turn is controlled by a "Yield" sign. The northbound approach provides a separate left turn lane, a through lane, and a separate right turn lane. The southbound approach provides a left/through lane and a separate right turn lane with a right turn slip ramp. The southbound right turn is controlled by a "Yield" sign.

Packer Avenue and South 7th Street

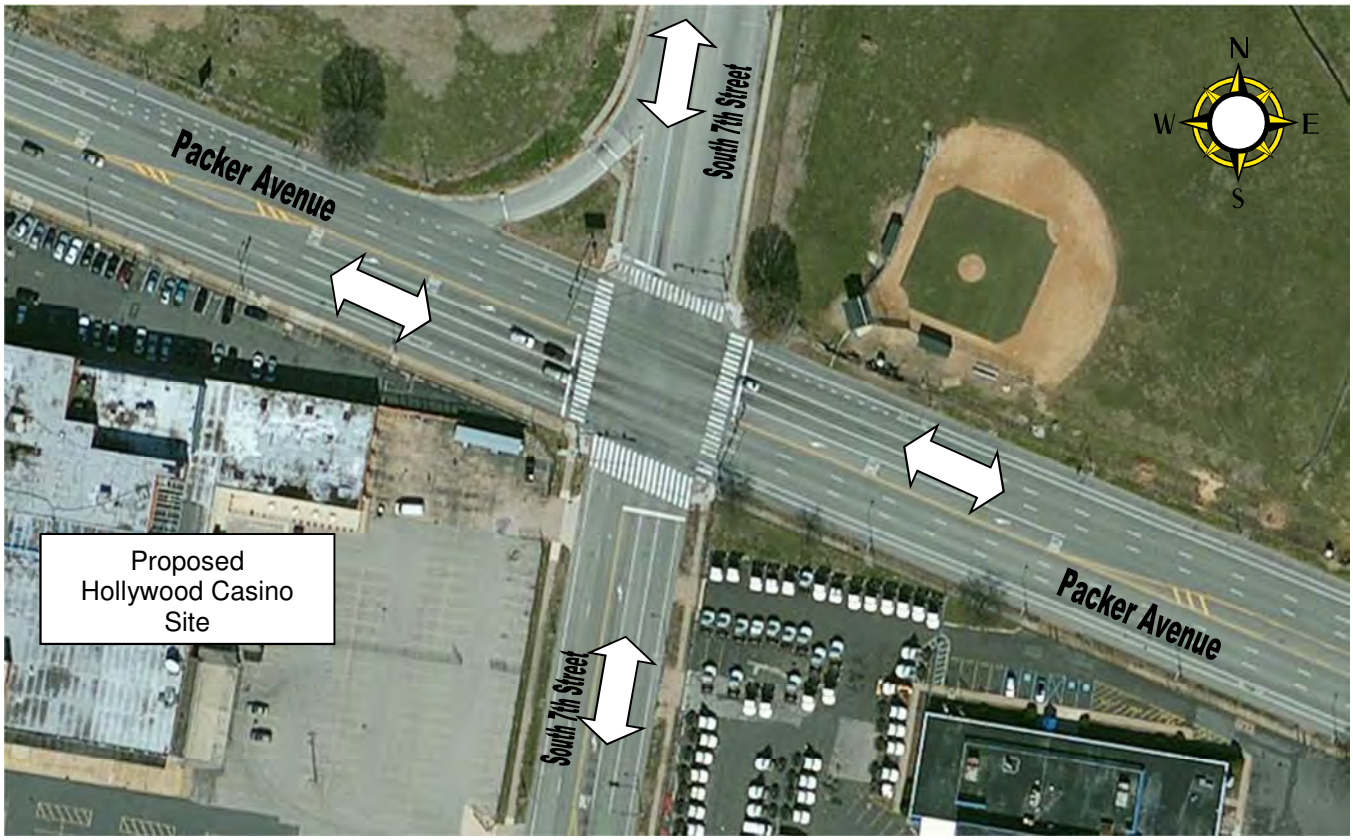


Image 3

The intersection of Packer Avenue and South 7th is a four-leg signalized intersection operating under a pre-timed two-phase timing plan with an 80 second cycle length. The eastbound, westbound, northbound and southbound left turns operate under permitted phasing. Crosswalks are provided on all four legs of the intersection. An aerial view of the intersection and approach directions of travel are illustrated in **Image 3.**

Packer Avenue is a local roadway with three through lanes in each direction, a center two-way left turn lane and a bike lane in each direction. A sidewalk is provided on the southern side on Packer Avenue. The speed limit is posted at 30 miles per hour and on-street parking is provided on both sides of the roadway. South 7th Street is a local roadway with two through lanes in each direction and a center two-way left turn lane. Sidewalks are provided on both sides of the roadway. The speed limit is not posted but is assumed to be 25 miles per hour. Tractor trailers were observed to be parking on both sides of 7th Street south of Packer Avenue.

The eastbound and westbound approaches each provide a separate left turn lane, two through lanes, a shared through/right lane, and a bike lane. The northbound approach provides a separate left turn lane, a through lane, and a shared through/right lane. The southbound approach provides a shared left/through lane, a through lane, and a separate right turn lane with a right turn slip ramp. The southbound right turn is controlled by a "Yield" sign.

Packer Avenue and South Front Street

Image 4

The intersection of Packer Avenue and South Front Street is a three-leg signalized intersection operating under a pre-timed two-phase timing plan with a 90 second cycle length. The eastbound, northbound and southbound left turns operate under permitted phasing. Crosswalks are provided on the western and southern legs of the intersection. An aerial view of the intersection and approach directions of travel are illustrated in **Image 4.**

Packer Avenue is a local roadway with three through lanes in each direction, a center two-way left turn lane, and a bike lane in each direction. A sidewalk is provided on the southern side on Packer Avenue. The speed limit is posted at 30 miles per hour and on-street parking is provided on both sides of the roadway. South Front Street is a local roadway with two lanes of travel in each direction and left turn lanes at the signalized intersections. A sidewalk is provided on the eastern side of South Front Street. The speed limit is posted at 30 miles per hour and on-street parking is provided on both sides of the roadway.

The eastbound approach provides dual left turn lanes, a shared through/right lane, and a bike lane. The northbound approach both provides a separate left turn lane, a through lane, and a shared through/right lane. The southbound approach both provides a separate left turn lane, a through lane, and a shared through/right lane with a right turn slip lane. The southbound right turn is controlled by a “Yield” sign.

South Front Street and I-76 Eastbound On-Ramp

Image 5

The intersection of Front Street and the /I-76 Eastbound on-ramp is a three-leg unsignalized intersection. An aerial view of the intersection and approach directions of travel are illustrated in **Image 5.**

South Front Street is a local roadway with two through lanes in each direction and a center two-way left turn lane. A sidewalk is provided on the eastern side of South Front Street. The speed limit is posted at 30 miles per hour and on-street parking is provided on both sides of the roadway. The I-76 eastbound on-ramp provides access onto Interstate 76 eastbound and has one lane of travel. A 20 mile per hour advisory speed is posted on the ramp. Parking is prohibited on both sides of the roadway.

The northbound approach provides a separate left turn lane and two through lanes. The southbound approach provides a through lane and a share through/right lane. There are no crosswalks.

South Front Street and I-76 Westbound Off-Ramp – I-95 Southbound On-Ramp

Image 6

The intersection of South Front Street and the I-76 westbound off-ramp/I-95 southbound on-ramp is a four-leg signalized intersection operating under a pre-timed three-phase timing plan with a 90 second cycle length. The southbound left turns operate under lagging protected/permitted phasing while the eastbound left turns operate under permitted phasing. There are currently no crosswalks striped on any of the approaches. An aerial view of the intersection and approach directions of travel are illustrated in **Image 6.**

South Front Street is a local roadway with two through lanes in each direction and a center two-way left turn lane. A sidewalk is provided on the eastern side of South Front Street. The speed limit is posted at 30 miles per hour and on-street parking is provided on both sides of the roadway.

The eastbound approach provides a shared left/through lane, a through lane, and a right turn lane with a right turn slip lane. The eastbound right turn is controlled by a "Yield" sign. The northbound approach provides a through lane, a shared through/right lane, and a right turn slip lane. The northbound right turn is controlled by a "Yield" sign. The southbound approach provides a separate left turn lane and two through lanes.

South Front Street and I-95 Ramps

Image 7

The intersection of South Front Street and the I-95 northbound on-ramp/I-95 southbound off-ramp is a three-leg signalized intersection operating under a pre-timed three-phase timing plan with a 90 second cycle length. The northbound left turns operate under lagging protected/permitted phasing while the eastbound and westbound left turns operate under permitted phasing. There is a crosswalk striped across South Front Street to the north of the I-95 Ramps. An aerial view of the intersection and approach directions of travel are illustrated in **Image 7.**

South Front Street is a local roadway with two through lanes in each direction and a center two-way left turn lane. A sidewalk is provided on the eastern side of South Front Street. The speed limit is posted at 30 miles per hour and on-street parking is provided on both sides of the roadway.

The eastbound approach provides a left turn lane and a shared left/through/right lane with a right turn slip lane. The eastbound right turn is controlled by a "Stop" sign. The westbound approach provides a shared left/through/right lane. The northbound approach provides a separate left turn lane, a through lane, and a shared through/right lane. The southbound approach provides a through lane and a shared through/right lane with a with turn slip lane. The southbound right turn is controlled by a "Yield" sign. Southbound left turns are prohibited.

Public Transit Facilities

The proximity of the Hollywood Casino to major public transit facilities is another attribute of this site. The AT&T Station of SEPTA's Broad Street Line is located approximately ¾ mile from the site. In addition, Bus Route G services Packer Avenue with stops adjacent to the site and several additional bus routes (including Routes 68 and 23) pass in close proximity to the site. The proximity of these transit facilities is expected to be particularly attractive for local employees and also patrons of the casino. A conservative modal split reduction of 2% was applied to the trips anticipated to be generated by the Hollywood Casino.

The existing transit facilities within the study area are illustrated in **FIGURE 8**.

Existing Traffic Volumes

Traffic volumes were compiled for the study intersections from available traffic counts. The pm peak hour traffic volumes were obtained from the Delaware Regional Planning Commission database and supplemented with manual turning movement counts conducted on Friday, November 2, 2012 between 4:00 pm and 6:30 pm at select locations. The pre-Phillies event traffic volumes were obtained from *Philadelphia Sports Complex Parking and Traffic Management Plan* prepared by Langan for PIDC, September 21, 2010. The existing traffic volumes for the study area intersections are illustrated in **FIGURES 9** and **10**. Copies of the manual traffic count data are provided in **APPENDIX C**.

Existing Land Uses

The Hollywood Casino Site at 700 Packer Avenue is currently zoned **I-2, Medium Industrial**. Within the immediate vicinity of the project site, the primary land uses to the east and southeast are zoned I-2 (Medium Industrial). The Sports Stadium District (SPA-STA) is located to the south and west. The parcel to the west is zoned CMX-3 (Neighborhood Commercial Mixed-Use-3). All of these zoning areas include the Airport Hazard Control Overlay District.

There are some residential communities to the north and west of the site. Interstate 76 is located between the residential communities to the north and the proposed Hollywood Casino Project site providing a buffer between the site and those residential communities. The residential communities to the west are separated from the casino site by a hotel and a large parking area that services the sports venues.

The zoning classifications of the parcels within the study area are illustrated on **Figure 11**.

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', with Level of Service 'A' representing delays up to ten seconds and Level of Service 'F' indicating delays exceeding eighty seconds. 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.

Levels of Service for unsignalized intersections are defined in terms of delay to vehicles entering from the side road and turning left from a major road. Delay is a function of the capacity of the approach and degree of saturation. The capacity is based on the distribution of gaps in the major street traffic stream, driver judgment in

selecting a gap through which to execute the desired maneuver, and follow-up time required by each driver in a queue. The Level of Service Criteria for signalized and unsignalized intersections is provided in **APPENDIX A**.

The operational analyses of the study intersections under the weekday pm peak and weekday Pre-Phillies event conditions were performed using the *Synchro* Version 8.0 software developed by Trafficware® and the *Highway Capacity Software 2010* developed by McTrans. The levels of service and delays are based on the *2010 Highway Capacity Manual (HCM2010)* published by the Transportation Research Board, Washington D.C. The HCM sets forth nationally accepted standards regarding traffic operations and capacity analysis.

Signal timing for the study area intersections were obtained from existing signal and timing plans, which are included in **APPENDIX D.**

Existing Weekday PM Peak Hour of Adjacent Street:

The roadway network in the vicinity of the site has been designed to accommodate traffic for the major sporting venues and, as such, provides sufficient capacity during normal Weekday afternoon conditions. Under existing conditions, all study intersections operate at *overall* LOS "D" or better with all individual movements also operating at LOS "D" or better. The estimated 95th percentile queues at the study intersections are within acceptable limits as none of the queues extend into adjacent intersections.

Note - *the southbound approach to the signalized intersection of Packer Avenue and Darien Street is striped with a shared left/through lane with permitted phasing. Both the Synchro 8 and HCS 2010 software packages produce the following warning: "*the HCS 2010 methodology procedure for modeling permitted left turns opposed by 2+ lanes (one of which is a shared L+T lane) produces results that are too conservative in many cases. The Highway Capacity and Quality of Service (HCQS) committee is working on a solution*." The northbound and southbound approaches of Darien Street fit that description. The southbound Darien Street approach is 20' wide and has the capability of operating as two short separate left and thru lanes. If analyzed with the modified configuration, the HCM methodology produces results that more accurately represent the existing conditions. For the purposes of this and all other scenarios, the southbound approach will be modeled with separate left and through lanes with 75' of queue storage.*

Existing Weekday Pre-Phillies Event Peak Hour:

Capacity analyses at the study intersections prior to a Phillies game indicate that all intersections operate at *overall* LOS "D" or better with the exception of the following:

- The signalized intersection of **Packer Avenue and 10th Street** operates at an *overall* LOS "E" with 61.3 seconds of intersection delay. The westbound approach is operating at a LOS "F" with 105.0 seconds of delay as a result of 524 left turns destined for several event parking lots located south on 10th Street. The approach service level is improved to a LOS "D" with the implementation of revised signal phasing providing additional green time to westbound Packer Avenue.

- The signalized intersection of **Packer Avenue and Darien Street** operates at an *overall* LOS "F" with 105.8 seconds of intersection delay. The westbound approach is operating at a LOS "F" with 183.3 seconds of delay as a result of 664 left turns destined for several event parking lots located south on Darien Street. Revised signal phasing providing a protected left turn for westbound Packer Avenue reduces the approach delay to a LOS "D".

- The signalized intersection of **Packer Avenue and 7th Street** operates at an *overall* LOS "C" with 25.2 seconds of intersection delay. The westbound left turn lane operates at a LOS "E" as a result of 444 left turns destined for several event parking lots located south on 7th Street.

During the Pre-Phillies Event conditions, the estimated 95th percentile queues on the westbound left-turning movements on Packer Avenue do exceed available storage lengths as a result of heavy left turns destined for several event parking lots. The detailed level of service and capacity analysis reports are provided in **APPENDIX H**. Queue analysis worksheets are provided in **APPENDIX I.** The levels of service and queues are summarized in tables provided in **APPENDIX A** and **APPENDIX B**.

Crash Analysis

Crash histories for the length of the affected area were requested from the City of Philadelphia Streets Department. The City data represents the five-year period from 2007 to 2011 and is the most recent data available from City at the time of preparation of this report. The City provided data for the following study intersections:

1. Packer Avenue and S. 10th Street
2. Packer Avenue and I-76 Eastbound Ramps – S. Darien Street
3. Packer Avenue and S. 7th Street
4. Packer Avenue and S. Front Street
5. S. Front Street and I-76 Eastbound On Ramp
6. S. Front Street and I-76 Westbound Off Ramp – I-95 Southbound On Ramp
7. S. Front Street and I-95 Ramps

The engineering extract summary classifies accident data into various categories. Accidents are broken down by year, roadway conditions, time-of-day, type of vehicle, severity of the accident, 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. An itemization of all City of Philadelphia Streets Department reportable accidents by location, type and severity is provided in **APPENDIX G.**

The accident summary report provided by the City indicates that accident rates are low for the seven (7) study intersections with less than 2 accidents per year at all locations. At the study intersections on Packer Avenue, the highest percentage of accidents were angle accidents and most occurred during daytime hours. Two pedestrian accidents occurred at the intersection of Packer Avenue and 7th Street with one being fatal. Based on the information provided in the report, there is no discernible pattern for the accidents at the study intersections on Front Street with most occurring during daylight hours. However, some of the accidents at the intersection of South Front Street at I-76 WB off-ramp/I-95 SB on-ramp (Ramp E-DE) appear to be attributed to the traffic signal lag phasing on the northbound Front Street approach.

FUTURE NO-BUILD TRAFFIC CONDITIONS

Pre-Development Traffic Volumes

In order to account for general traffic growth in the area, an annual background growth rate is 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 roads in the study area. Due to the proximity of the site to the old Philadelphia Navy Yard, which is experiencing significant growth, an annual growth rate factor of 1% was applied to the background traffic. At the time this study was conducted, there are no other developments in the immediate vicinity of the study area which would contribute additional traffic to the roadway network.

For the Weekday Pre- Phillies Event scenario, it is assumed that the traffic volumes consist predominantly of event traffic related to the capacity of the stadiums and will remain constant through the future analysis scenarios. As such, there will be no growth factor applied to the background traffic for the 2016 and 2021 Pre-Phillies Event scenarios.

Description of the Analyzed Pre-Development Scenarios

The following are the two pre-development scenarios which are included for analysis for opening day in 2016 and the 5-year horizon in 2021.

- **2016 Opening Day Weekday PM Peak No-Build Conditions.** This condition is based on the existing configuration of study area roadways and traffic patterns. A background annual traffic growth of 1% is applied to all existing volumes to represent the increase of traffic from 2012 existing conditions. The 2016 Opening Day PM Peak No-Build traffic volumes are illustrated in **FIGURE 12**.

- **2016 Opening Day Pre-Phillies Event No-Build Conditions.** This condition is based on the existing configuration of study area roadways and traffic patterns observed prior to a Phillies game. A background annual traffic growth of 0% is applied to all existing volumes to represent the increase of traffic from 2012 existing conditions. The 2016 Opening Day Pre-Phillies Event traffic volumes are illustrated in **FIGURE 13.**

- **5-Year 2021 Weekday PM Peak No-Build Conditions.** This condition is based on the existing configuration of study area roadways and traffic patterns. A background annual traffic growth of 1% is applied to all existing volumes to represent the increase of traffic from 2012 existing conditions. The 2021 5-Year Horizon Weekday PM Peak No-Build traffic volumes are illustrated in **FIGURE 14**.

- **5-Year 2021 Weekday PM Pre-Phillies Event No-Build Conditions.** This condition is based on the existing configuration of study area roadways and traffic patterns. A background annual traffic growth of 0% is applied to all existing volumes to represent the increase of traffic from 2012 existing conditions. The 2021 5-Year Horizon No-Build Pre-Phillies Event traffic volumes are illustrated in **FIGURE 15**.

Pre-Development Levels of Service/Queue Analysis

Traffic operations for the future pre-development conditions were evaluated at the study intersections for the analyzed peak hours. The assessment of the pre-development scenarios was conducted for the purpose of identifying any future traffic operational issues which are anticipated to arise without the presence of the proposed Hollywood Casino.

2016 Opening Day Weekday PM Peak No-Build Conditions:

Capacity analyses at the study intersections indicate that all intersections will continue to operate at *overall* LOS "D" or better with all movements also operating at LOS "D" or better. The estimated 95th percentile queues at the study intersections are within acceptable limits as none of the queues are expected to extend into adjacent intersections.

2021 Horizon Weekday PM Peak No-Build Conditions:

Capacity analyses at the study intersections for the 2021 weekday pm no-build scenario indicate that all intersections will continue to operate at *overall* LOS "D" or better with all movements also operating at LOS "D" or better. The estimated 95th percentile queues at the study intersections are within acceptable limits as none of the queues are expected to extend into adjacent intersections.

2016 Opening Day & 2021 Horizon Weekday Pre-Phillies Event No-Build Condition:

Because the background growth factor was not applied to the base volumes for the Pre-Phillies Event scenarios, the 2016 and 2021 No-Build scenarios share the same traffic volumes. The capacity analysis results for the 2016 and 2021 No-Build scenarios are identical to each other and existing conditions. The capacity analyses at the study intersections indicate that all intersections continue to operate at existing service levels. All intersections operate at *overall* LOS "D" or better with the exception of the following:

- The signalized intersection of **Packer Avenue and 10th Street** operates at an overall LOS "E" with 61.3 seconds of intersection delay. The westbound approach operates at a LOS "F" with 105.0 seconds of delay and the westbound left turn movement operates at a LOS "F" with 154.9 seconds of delay as a result of 524 left turns destined for several event parking lots located south on 10th Street.

- The signalized intersection of **Packer Avenue and Darien Street** operates at an *overall* LOS "F" with 105.8 seconds of intersection delay. The westbound approach operates at a LOS "F" as a result of 664 left turns destined for several event parking lots located south on Darien Street. The left turn lane operates at a LOS "F" with 313 seconds of delay.

- The signalized intersection of **Packer Avenue and 7th Street** operates at an *overall* LOS "C" with 25.2 seconds of intersection delay. The westbound left turn lane operates at a LOS "E" as a result of 444 left turns destined for several event parking lots located south on 7th Street.

The estimated 95th percentile queues on the westbound left-turning movements on Packer Avenue do exceed available storage lengths as a result of heavy left turns destined for several event parking lots. The detailed level of service and capacity analysis reports are provided in **APPENDIX H**. Queue analysis worksheets are provided in **APPENDIX I.** The levels of service and queues are summarized in tables provided in **APPENDIX A** and **APPENDIX B**. The Pre-development levels of service are illustrated in **FIGURE 25**.

TRIP GENERATION

Developing the Trip Generation Rates

The standard reference utilized to estimate traffic generated by new developments is the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th Edition*. However, the *Trip Generation Manual* provides limited information for full service casinos. The *Trip Generation Manual* provides a trip generation rate for Land Use Code (LUC) 472 "Casino/Video Lottery Establishment" derived from gaming sites in South Dakota that do not provide full-service food. The data provided by the *Trip Generation Manual* does not sufficiently represent an urban full-service casino, which includes food service and entertainment, as proposed at the Hollywood Casino site.

As such, in order to develop an accurate estimate of trips generated by a proposed gaming facility, the trips estimated and generated at a similar facility with similar demographic and geographic environments were examined. In September, 2010, the Sugarhouse Casino was opened on Delaware Avenue approximately 4 miles north of the proposed Hollywood Casino site. The Sugarhouse Casino includes full-service food and bar facilities with similar seating capacity to the Hollywood Casino. The traffic impact study prepared for the Sugarhouse Casino utilized a weekday rate of .32 trips per gaming position for the interim facility (1500 gaming position) and .28 trips per gaming position for the Phase 1 Casino (3000 positions).

Traffic data was collected on Friday, November 19, 2010 and Saturday, November 20, 2010 at the Sugarhouse Casino, with 1600 slot machines and 40 table games in place. It was assumed that each table game represents 6 gaming positions and therefore, 1840 gaming positions were in place at the time of the data collection. The counts indicate a total of 519 trips during the peak weekday afternoon (3:00 pm to 7:00 pm) and 787 trips during the Saturday late evening peak hours (9:00 pm to 11:00 pm) which resulted in unadjusted trip generation rates of .28 and .43 trips per gaming position respectively.

The Institute of Transportation article *Gaming Casino Traffic* [3] identifies monthly variations in casino traffic based on economic reports. The article identified May, July and August as peak gaming months for St. Louis casinos and provided multipliers to expand to seasonal peak volumes as noted in Table 1 below:

[3] *Gaming Casino Traffic,* Paul Box and William Bunte, published ITE Journal March 1998

TABLE 1
Monthly Trip Variation in Casino Traffic

	Month	Multiplier to Expand to Seasonal Peak	Month	Multiplier to Expand to Seasonal Peak
	January	1.1	July	1.0
	February	1.3	August	1.0
	March	1.1	September	1.1
	April	1.1	October	1.2
	May	1.0	November	1.2
	June	1.1	December	1.2

Source: *Gaming Casino Traffic*, Paul Box and William Bunte, published ITE Journal March 1998

As indicated in this table, Casino volumes may vary from as much as 30% from month to month depending on the type of facility and its location. The 2011/2012 monthly revenue reports for the Sugarhouse Casino show a similar monthly variation. Therefore, the Sugarhouse Casino trip generation rates were adjusted to peak gaming months, using a factor of 1.2 (20% increase) resulting in adjusted rates of .34 and .52 for weekday pm peak of adjacent street and Saturday evening peak hour of the generator respectively.

The traffic data collected at the Sugarhouse Casino and subsequent computed trip rates include a reduction in generated trips resulting from patrons and employees utilizing alternate forms of transportation. The Philadelphia Gaming Advisory Task Force prepared a report in 2007 which estimated that approximately 22% of gamers visiting a North Delaware site such as Sugarhouse will arrive and depart using alternative modes of transportation. The transportation modes were categorized as follows:

Drive = 78%
Pedestrian = <1%
Taxi = 7%
Casino Bus = 9%
Public Transit = 6%

Patrons utilizing taxis and casino buses are accounted for in the calculated trip rates noted above as those vehicles were recorded entering/exiting the casino. Modes of transportation such as walking and public transit are not included in the calculated rate. Adjusting the calculated trip rate to account for the 6% of gamers using public transit, results in an adjusted Weekday pm of adjacent street rate of .36 trips per gaming position and Saturday peak hour of generator rate of .54 trips per gaming position.

Traffic Generated by Existing Site Uses

The parcel is currently occupied by office, industrial and commercial uses including: an office of the Pennsylvania Lottery Commission, Verifone Transportation Systems (a company that maintains meters in taxi cabs), Packer Avenue Foods, and the Philadelphia Turf Club (which offers off-track betting with food services and a bar). The site is fenced with access on 7th Street and Darien Street. Traffic counts were performed at each site access on November 2, during the afternoon peak period. The traffic counts indicate that there were 139 trips entering/exiting the site on Darien Street for the Turf Club and 39 trips entering/exiting at 7th Street for the commercial/office uses. The proposed casino will replace the existing uses and therefore a trip credit equivalent to the observed site activity will be taken in calculating the proposed **NEW** site trips.

Modal Split, Transit Facility and Charter Buses Utilization

The proposed Hollywood Casino Project is to be located near public transit services, however, to be conservative, a limited utilization of public transit has been applied to reduce the trip generation rate. The AT&T Station of SEPTA's Broad Street is located approximately ¾ mile from the site. In addition, several bus routes, including the G route which has stops at 7th and Packer, run in close proximity to the site. Casino and Franchise buses are commonly utilized by many casinos. Although it is not anticipated that charter buses would figure significantly in the operation of the Hollywood Casino Project.

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The Philadelphia Gaming Advisory Task Force prepared a report in 2007[4] which estimated that approximately 16% of gamers visiting a South Delaware Avenue site will arrive and depart utilizing alternative modes of transportation as follows:

Drive	= 84%
Pedestrian	= <1%
Taxi	= 6%
Casino Bus	= 8%
Public Transit	= 2%

According to the report, Public Transit mode of transportation trips range from 2% to 6%. However, to be conservative the trips anticipated to be generated from the Hollywood Casino will be reduced by 2% to account for the gamers utilizing public transit. The pedestrian rate of <1% applies when there are no events at the adjacent sports complex venues. It is anticipated that when events are held at the sports complex venues some patrons will park in the sports complex lots and walk to the casino prior to attending the event and the utilization may increase. We also anticipate that employees would utilize a higher percentage of alternate modes of transportation that the figures noted above. For the purpose of this evaluation, additional modal split reductions were not taken for the Sporting event pedestrian traffic or employees.

Hollywood Casino Trip Generation

The trips generated by the Hollywood Casino were computed using the trip generation rates noted above. Per the Hollywood Casino Program, there will be 2,250 slots, 66 table games, and 15 poker tables for a total of 2,736 gaming positions. The Hollywood Casino will include other auxiliary uses such as food and beverage areas, entertainment, amenity retail, employee facilities, public circulation and support space. These auxiliary uses are not considered to function on their own, and as such will not generate any traffic independently (e.g., the concession stand in a movie theater, or a dedicated parking garage).

The PM peak hour site-generated traffic projections are summarized in **TABLE 2** below:

TABLE 2
Trip Generation Summary (Weekday PM Peak Hour of Adjacent Street)

Weekday PM base trip rate (trips/gaming position)	0.36
Modal Trip Adjustment	-2%
Adjusted trip rate (trips/gaming position)	0.35
Hollywood Casino Gaming positions	2736
Hollywood Casino Base Trips	958
Existing Site trips (Turf Club- weekday 5-6 PM)	-159
Existing Site trips (Commercial- weekday 5-6 PM)	-39
New Hollywood Casino Trips	**760**

[4] *Interim Report of Findings,* Philadelphia Gaming Advisory Task Force, unpublished

The trip generation for the Pre-Phillies peak period will include an additional adjustment made to account for linked trips and a stay-away factor as identified in the *Philadelphia Sports Complex Management Parking and Traffic Management Plan*. The linked trips will be patrons who will be attending the casino prior to the event and are therefore already included in the pre-event background traffic. The Stay-away factor accounts for patrons who will avoid the area as a result of the traffic conditions related to the event. Both of these factors are 15% for a Phillies game. These rates were also applied to the existing driveway volumes of the Turf Club but were not applied to the commercial traffic at existing site.

The peak hour site-generated traffic estimate with adjustments made for the modal split and existing site are contained in **TABLE 3** below:

TABLE 3
Trip Generation Summary (Weekday Pre-Phillies Event Peak)

Weekday PM base trip rate (trips/gaming position)	0.36
Modal Trip Adjustment	-2%
Adjusted trip rate (trips/gaming position)	0.35
Hollywood Casino Gaming positions	2736
Hollywood Casino Base Trips	958
Casino/Event Linked Trip Adjustment (-15%)	-144
Casino/Event Stay-Away Adjustment (-15%)	-144
Existing Site trips (Turf Club- weekday PM)	-159
Turf Club/Event Linked Trip Adjustment (-15%)	24
Turf Club/Event Stay-Away Adjustment (-15%)	24
Existing Site trips (Commercial- weekday PM)	-39
New Hollywood Casino Trips	**520**

A summary worksheet of the trip generation for the Weekday and Saturday total casino trips is provided in **APPENDIX F**. The trip generation for the site is summarized as follows:

Weekday Casino Trips	**12,979**
Weekday PM Peak Hour Trips	**958**
Saturday Trips	**19,924**
Saturday Peak Hour Trips	**1451**
Weekday Pre-Phillies Event Peak Hour Trips	**670**

Trip Distribution and Assignment

The new vehicle trips generated by the proposed Casino will be distributed and assigned to the roadway network based on a combined evaluation of existing traffic patterns, the anticipated characteristics and behavior of the development-generated traffic, and the proposed site access.

It is expected that the majority of site traffic generated during the peak periods will use I-95 and I-76. In addition, the trips generated by the proposed Hollywood Casino will also use local roadways such as Packer Avenue, Front Street, Pattison Avenue, and Broad Street. The percentages of site traffic assigned to these roadways are summarized in **TABLE 4**.

TABLE 4
Trip Distribution Summary

I-95					
ENTERING	**Via:**	**PM**	**EXITING**	**Via:**	**PM**
From South	I-95 N Off-Ramp to Broad Street	9%	To North	Broad Street to I-95 N On-Ramp	14%
From South	I-95 N Off-Ramp to Packer Avenue	4%	To North	Front Street to I-95 N On-Ramp	28%
From North	I-95 S Off-Ramp to Front Street	28%	To South	Broad Street to I-95 S On-Ramp	9%
From North	I-95 S Off-Ramp to Broad Street	14%	To South	Front Street to I-95 S On-Ramp	4%
I-76					
ENTERING	**Via:**	**PM**	**EXITING**	**Via:**	**PM**
From West	I-76 E Off-Ramp to Packer Avenue	32%	To West	Broad Street to I-76 W On-Ramp	32%
From East	I-76 W Off-Ramp to Front Street	9%	To East	Packer Avenue to I-76 E On-Ramp	9%
Local Streets					
ENTERING	**Via:**	**PM**	**EXITING**	**Via:**	**PM**
From North	7th Street	.5%	To North	7th Street	.5%
From North	Darien Street	.5%	To North	Darien Street	.5%
From North	10th Street	.5%	To North	10th Street	.5%
From North	Front Street	.5%	To North	Front Street	.5%
From East	Pattison Avenue.	1%	To East	Pattison Avenue.	1%
From West	Packer Avenue	.5%	To West	Packer Avenue	.5%
From North	Broad Street	.5%	To North	Broad Street	.5%

FIGURES 16-18 illustrate the anticipated distribution of project traffic and the assignment of the new trips to the roadway network in the vicinity of the project. A summary worksheet of future traffic volume assignments are provided in **APPENDIX F**. The site generated traffic volumes are illustrated in **FIGURES 19 and 20**.

PARKING

All parking for the Hollywood Casino will be self-contained on-site. An eight level 2700 space customer parking garage structure will be constructed on the southerly portion of the site as indicated on the site plan. The proposed parking garage will be accessible from site driveways on 7th Street and Darien Street. The 450 employee spaces are located in a lot under the casino and accessible from a driveway on Darien Street. The 300 valet spaces are also located under the casino with access to and from the Porte Cochere whose entry/exit driveways are located on Darien Street and 7th Street respectively. There are 6 bus spaces located in a surface lot on the southwest corner of the site which are accessible from Darien Street.

The Hollywood casino will provide 3,000 patron/guest parking spaces for 2,736 gaming positions which satisfies the requirement of the Philadelphia Code requiring 4 patron/guest parking spaces for every 5 slot machines or gaming positions. The ITE *Parking Generation*[5] manual establishes an average peak parking demand for a

[5] *Parking Generation, 4th Edition*, Institute of Transportation Engineers, 2010

Casino/Video Lottery Establishment (Land Use 473) to be 0.34 vehicles per gaming position. The Hollywood Casino will provide parking spaces for patrons and guests at a rate of 1.09 spaces per gaming position. The rate is consistent with the industry wide parking ratios which range from .75 to 1.59 spaces per gaming position with the median being 1.07 spaces per gaming position[6].

FUTURE TRAFFIC CONDITIONS

In this section, the impact of the Hollywood Casino traffic on the adjacent roadway network will be analyzed.

Description of the Analyzed Post-Development Scenarios

As previously discussed, the three post-development scenarios considered in the analysis are:

- **2016 Opening Day Weekday PM Peak No-Build Conditions.** This condition is based on the existing configuration of study area roadways and traffic patterns with the trips generated by proposed Hollywood Casino integrated. A background annual traffic growth of 1% is applied to all existing volumes to represent the increase of traffic from 2012 existing condition. The 2016 Opening Day Build traffic volumes are illustrated in **FIGURE 21**.

- **2016 Opening Day Pre-Phillies Event Conditions.** This condition is based on the existing configuration of study area roadways and traffic patterns observed prior to a Phillies game with the trips generated by proposed Hollywood Casino integrated. A background annual traffic growth of 0% is applied to all existing volumes to represent the increase of traffic from 2012 existing condition. The 2016 Opening Day No-Build traffic volumes are illustrated in **FIGURE 22**.

- **2021 Horizon Weekday PM Peak Build Conditions.** This condition is based on the existing configuration of study area roadways and traffic patterns with the trips generated by proposed Hollywood Casino integrated. A background annual traffic growth of 1% is applied to all existing volumes to represent the increase of traffic from 2012 existing condition. The 2021 5-Year Horizon No-Build traffic volumes are illustrated in **FIGURE 23**.

- **2021 Horizon Weekday Pre-Phillies Event Build Conditions.** This condition is based on the existing configuration of study area roadways and traffic patterns with the trips generated by proposed Hollywood Casino integrated. A background annual traffic growth of 0% is applied to all existing volumes to represent the increase of traffic from 2012 existing condition. The 2021 5-Year Horizon No-Build traffic volumes are illustrated in **FIGURE 24**.

Post-Development Levels of Service

Traffic operations for the future post-development conditions are evaluated at the study intersections during the analyzed peak hours. The comparison of the pre-development and the post development conditions were conducted for the purpose of identifying any issues which may arise due to the presence of the proposed Hollywood Casino Project. The results of the capacity analyses will be utilized to formulate recommended mitigation efforts.

2016 Opening Day Weekday PM Peak Build Conditions:
All intersections maintained their No-Build *overall* Level of Service with the exception of the following:

- The signalized intersection of **Packer Avenue and Darien Street** drops from an overall LOS "C" with 24.2 seconds of delay to an overall LOS "D" with 46.8 seconds of delay due to the increased

6 *"Parking and Profits in Indian Country"*, James M. Klas, Indian Gaming, October 2010

delay (114.2 seconds) on the northbound left turning movement. The drop in Level of Service exceeds PennDOT's 10-second threshold indicating that mitigation is required.

- The signalized intersection of **Front Street and I-95 Ramps** drops from an overall LOS "C" with 27.4 seconds of delay to an overall LOS "D" with 42.7 seconds of delay due to the increased delay (125.2 seconds) on the northbound left turning movement. The drop in Level of Service exceeds PennDOT's 10-second threshold indicating that mitigation is required.

The estimated 95th percentile queues at the study intersections are within acceptable limits as none of the queues extend into adjacent intersections.

2021 Horizon Weekday PM Peak Build Conditions:
All intersections maintained their No-Build *overall* Level of Service with the exception of the following:

- The signalized intersection of **Packer Avenue and Darien Street** drops from an overall LOS "C" with 25.2 seconds of delay to an overall LOS "D" with 52.7 seconds of delay due to the increased delay (134.6 seconds) on the northbound left turning movement. The drop in Level of Service exceeds PennDOT's 10-second threshold indicating that mitigation is required.

- The signalized intersection of **Front Street and I-95 Ramps** drops from an overall LOS "C" with 28.7 seconds of delay to an overall LOS "D" with 49.4 seconds of delay due to the increased delay (161.2) on the northbound left turning movement. The drop in Level of Service exceeds PennDOT's 10-second threshold indicating that mitigation is required.

The estimated 95th percentile queues at the study intersections are within acceptable limits as none of the queues extend into adjacent intersections.

2016 Opening Day & 2021 Horizon Weekday Pre-Phillies Event Build Condition:
A background growth factor was not applied to the base volumes for the Pre-Phillies Event scenarios and therefore, the 2016 and 2021 build scenarios share the same traffic volumes.

All intersections maintained their No-Build *overall* Levels of Service with the exception of the following:

- The signalized intersection of **Packer Avenue and 7th Street** drops from an overall LOS "C" with 25.2 seconds of delay to an overall LOS "D" with 51 seconds of delay. The drop in Level of Service exceeds PennDOT's 10-second threshold indicating that mitigation is required.

The estimated 95th percentile queues on the westbound left-turning movements on Packer Avenue do exceed available storage lengths as a result of heavy left turns destined for several event parking lots.

The detailed level of service and capacity analysis reports are provided in **APPENDIX H**. Queue analysis worksheets are provided in **APPENDIX I.** The levels of service and queues are summarized in tables provided in **APPENDIX A** and **APPENDIX B**. Post-development level of service is illustrated **in FIGURE 26**.

RECOMMENDATIONS

Recommended Improvements to Mitigate the Impact of the Proposed Development

The Hollywood Casino will result in additional traffic on the surrounding roadway network. The analysis of build conditions identified locations where the overall level of service drops and the increase in delay exceeds PennDOT's 10 second threshold. The following are recommendations to mitigate the impacts of the proposed development on the surrounding roadway network and to enhance pedestrian accommodations:

- Traffic signal timing modifications are recommended for the Packer Avenue/7th Street intersection, the Front Street/I-95 Ramps intersection, and the Packer Avenue/Darien Street intersection to reduce the overall intersection delay. The modifications include adjustments to the traffic signal cycle lengths, splits and offsets.

- New traffic signal controllers are recommended to be installed at the signalized intersections along Packer Avenue (Packer Avenue/10th Street, Packer Avenue/Darien Street and Packer Avenue/7th Street) to allow time based coordination of the signals for improved progression.

- A new sidewalk is recommended to be installed on the east side of Darien Street from Packer Avenue south to the newly constructed sidewalk adjacent to Citizens Bank Park to improve pedestrian connectivity to the Stadium District.

- Pedestrian accommodations are recommended to be enhanced at the intersections of Packer Avenue/7th Street and Packer Avenue/Darien Street. The recommended pedestrian improvements include:

    - Installation of hand/man countdown indications for existing crosswalks at both intersections
    - Implementation of MUTCD compliant pedestrian clearances
    - Installation of ADA compliant handicap ramps at the southeast and southwest corners of the Packer Avenue/Darien Street Intersection

Previously Recommend Improvements to reduce traffic congestion

The *Philadelphia Sports Complex Management Parking and Traffic Management Plan*[7] recommended several operational improvements for the area in and around the sports complex intended to reduce traffic congestion related to event traffic. These improvements would also benefit the project intersections during non-event periods. The recommended improvements for the study intersections include:

- Modification of traffic controllers to allow multiple "time of day" programs for Packer Avenue signals
- Development and implementation of pre-event and post-event signal timings for Packer Avenue
- Provide interconnect and coordination of the traffic signals along Packer Avenue
- Develop and implement signal timing changes at signals on Front Street to improve traffic flow

These improvements are not required to mitigate the impacts of the proposed development. However, implementation of the improvements will reduce the traffic congestion experienced during event traffic conditions and will mutually benefit traffic from the proposed development.

[7] *Philadelphia Sports Complex Management Parking and Traffic Management Plan,* Philadelphia Industrial Development Corporation, September 2010

APPENDIX A

LEVEL OF SERVICE CRITERIA AND RESULTS TABLE

Level of Service Criteria: Automobile Mode – Signalized Intersections

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio[a]	
	≤1.0	>1.0
≤10	A	F
>10-20	B	F
>20-35	C	F
>35-55	D	F
>55-80	E	F
>80	F	F

Source: Exhibit 18-4 (2010 HCM)

Level of Service Criteria: Automobile Mode – Unsignalized Intersections

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio[a]	
	≤1.0	>1.0
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

Source: Exhibit 19-1 (2010 HCM)

TABLE A
INTERSECTION LEVEL OF SERVICE RESULTS - WEEKDAY PM PEAK HOUR

Intersection	Approach (Movement)	Existing 2012 Traffic Conditions		2016 No Build Traffic Conditions		2016 Build Traffic Conditions		2016 Build Traffic Conditions with Improvements		2021 No Build Traffic Conditions		2021 Build Traffic Conditions		2021 Build Traffic Conditions with Improvements	
		PM Peak		PM Peak		PM Peak		PM Peak		PM Peak		PM Peak		PM Peak	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Packer Avenue and 10th Street	EB	B	15.3	B	15.4	B	15.8	B	13	B	15.5	B	16	B	11.8
	(EBL)	B	17.7	B	18.1	B	19.7	B	15.8	B	18.4	C	20.1	B	14.4
	(EBT)	B	14.3	B	14.3	B	14.4	B	11.9	B	14.4	B	14.4	B	10.8
	(EBR)	B	14.4	B	14.4	B	14.4	B	12	B	14.4	B	14.5	B	10.9
	WB	B	15.4	B	15.5	B	16.2	B	13.3	B	15.6	B	16.3	B	12.1
	(WBL)	B	14.7	B	14.7	B	14.7	B	12.1	B	14.8	B	14.8	B	11
	(WBT)	B	15.3	B	15.4	B	16	B	13.2	B	15.5	B	16.1	B	11.9
	(WBR)	B	15.6	B	15.7	B	16.5	B	13.6	B	15.9	B	16.6	B	12.3
	NB	B	15.7	B	15.8	B	15.8	B	16.5	B	15.8	B	15.8	B	17.7
	(NBL)	B	16.5	B	16.7	B	16.7	B	17.4	B	16.8	B	16.8	B	18.8
	(NBT)	B	15.2	B	15.2	B	15.2	B	15.9	B	15.2	B	15.2	B	17
	(NBR)	A	0	A	0	A	0	A	0	A	0	A	0	A	0
	SB	B	16.9	B	17	B	17	B	17.7	B	17.1	B	17.1	B	19.2
	(SBL)	B	17.5	B	17.7	B	17.7	B	18.4	B	17.9	B	17.9	B	20
	(SBT)	B	15.3	B	15.3	B	15.3	B	15.9	B	15.3	B	15.3	B	17.1
	(SBR)	B	16	B	16.1	B	16.1	B	16.7	B	16.2	B	16.2	B	18
	Overall	B	15.8	B	15.9	B	16.3	B	14.3	B	16	B	16.4	B	13.7
Packer Avenue and Darien Street	EB	B	11.8	B	11.8	B	11.8	B	19.1	B	11.9	B	11.9	C	21.5
	(EBL)	B	13.5	B	13.6	B	13.6	C	237	B	13.7	B	13.7	C	26.5
	(EBT)	B	10.5	B	10.5	B	10.6	B	15.7	B	10.6	B	10.6	B	17.8
	(EBR)	B	10.6	B	10.6	B	10.6	B	15.8	B	10.6	B	10.7	B	18
	WB	C	20.9	C	21	C	21	C	27.4	C	21.2	C	21.2	C	30.9
	(WBL)	B	19.4	B	19.4	B	19.7	C	25.6	B	19.4	B	19.8	C	28.4
	(WBT)	C	21.1	C	21.2	C	21.2	C	27.7	C	21.4	C	21.4	C	31.3
	NB	B	19.9	B	20	C	23.5	B	14.7	C	20	C	23.6	B	13
	(NBL)	C	20.3	C	20.3	C	24.9	B	15.6	C	20.4	C	25.1	B	13.8
	(NBT)	B	19.9	B	19.9	C	20.6	B	13.1	C	20	C	20.7	B	11.6
	(NBR)	B	19.4	B	19.4	C	23.7	B	14.7	B	19.5	C	23.8	B	13
	SB	C	34.7	D	36.4	F	109.7	C	34.1	D	39.2	F	129.1	C	31.3
	(SBL)	D	35.4	D	37.2	F	114.2	D	35.2	D	40.1	F	134.6	C	32.3
	(SBT)	B	18.9	B	18.9	B	19	B	12.2	B	18.9	B	19	B	10.8
	Overall	C	23.6	C	24.2	D	46.8	C	24	C	25.2	D	52.7	C	23.8
Packer Avenue and South 7th Street	EB	B	15.3	B	15.5	B	15.9	B	11.9	B	15.8	B	16.2	B	12.1
	(EBL)	B	19.2	B	19.7	C	20	B	14.8	C	20.5	C	20.8	B	15.3
	(EBT)	B	13.3	B	13.4	B	14.5	B	10.9	B	13.4	B	14.6	B	11
	(EBR)	B	13.5	B	13.6	B	15.1	B	11.4	B	13.7	B	15.2	B	11.5
	WB	B	13.4	B	13.5	B	15.8	B	11.9	B	13.6	B	15.9	B	12
	(WBL)	B	14.7	B	14.9	C	23	B	16.8	B	15.1	C	23.5	B	17.2
	(WBT)	B	13.2	B	13.3	B	13.3	B	10.2	B	13.4	B	13.4	B	10.2
	(WBR)	B	13.6	B	13.6	B	13.7	B	10.4	B	13.7	B	13.8	B	10.5
	NB	B	14.5	B	14.5	B	14.6	B	18.4	B	14.6	B	14.7	B	18.5
	(NBL)	B	15	B	15	B	15.3	B	19.3	B	15.1	B	15.4	B	19.4
	(NBT)	B	14.2	B	14.2	B	14.2	B	17.9	B	14.3	B	14.3	B	17.9
	(NBR)	B	14.3	B	14.3	B	14.3	B	18	B	14.3	B	14.3	B	18
	SB	B	14.3	B	14.3	B	14.5	B	18.2	B	14.3	B	14.5	B	18.2
	(SBL)	B	14.3	B	14.3	B	14.5	B	18.2	B	14.3	B	14.5	B	18.2
	(SBT)	B	14.3	B	14.3	B	14.5	B	18.2	B	14.3	B	14.5	B	18.2
	Overall	B	14.5	B	14.7	B	15.7	B	12.8	B	14.8	B	15.9	B	12.9
Front Street and Packer Avenue	EB	C	25.9	C	26.5	C	30.7	---	---	C	21.9	C	24.9	---	---
	(EBL)	C	26.9	C	27.6	C	31.9	---	---	C	22.4	C	25.6	---	---
	(EBTR)	B	17.3	B	17.4	B	17.4	---	---	B	17.5	B	17.5	---	---
	WB	B	16.4	B	16.4	B	16.4	---	---	B	16.4	B	16.4	---	---
	(WBLTR)	B	16.4	B	16.4	B	16.4	---	---	B	16.4	B	16.4	---	---
	NB	B	12.9	B	12.9	B	12.9	---	---	B	13	B	13	---	---
	(NBL)	B	13.7	B	13.8	B	13.8	---	---	B	13.9	B	13.9	---	---
	(NBT)	B	12.7	B	12.8	B	12.8	---	---	B	12.8	B	12.8	---	---
	(NBR)	B	12.7	B	12.8	B	12.8	---	---	B	12.8	B	12.8	---	---
	SB	B	13	B	13	B	13.1	---	---	B	13.1	B	13.1	---	---
	(SBL)	B	13	B	13.1	B	13.1	---	---	B	13.1	B	13.1	---	---
	(SBT)	B	13	B	13	B	13.1	---	---	B	13.1	B	13.1	---	---
	Overall	C	20.9	C	21.3	C	25	---	---	B	18.5	C	21	---	---
Front Stret and I-76 EB On Ramp	(NBL)	A	9.6	A	9.9	B	10.5	---	---	B	10.3	B	10.5	---	---
	Overall	A		A		A		---	---	A		A		---	---
Front Street and I-76 WB Off Ramp & I-95 SB On Ramp	EB	C	34.6	D	36	D	36	---	---	D	38.3	D	38.3	---	---
	(EBL)	C	23.6	C	23.7	C	23.7	---	---	C	23.8	C	23.8	---	---
	(EBLT)	D	36.9	D	38.6	D	38.6	---	---	D	41.4	D	41.4	---	---
	NB	C	20.4	C	20.5	C	22.3	---	---	C	20.8	C	22.6	---	---
	(NBTR)	C	20.4	C	20.5	C	22.3	---	---	C	20.8	C	22.6	---	---
	SB	B	10.6	B	10.8	B	11.7	---	---	B	11.2	B	12.1	---	---
	(SBL)	C	21.1	C	21.5	C	24.8	---	---	C	22.1	C	25.5	---	---
	(SBT)	A	9.8	A	10	B	10.8	---	---	B	10.3	B	11.2	---	---
	Overall	B	20	C	20.5	C	20.9	---	---	C	21.4	C	21.8	---	---
Front Street and I-95 Ramps	EB	C	30.2	C	31.2	C	31.2	D	39.1	C	32.1	C	32.1	D	40.8
	(EBLT)	C	30.2	C	31.2	C	31.2	D	39.1	C	32.1	C	32.1	D	40.8
	WB	C	21.1	C	21.1	C	21.1	C	25.2	C	21.1	C	21.1	C	25.2
	(WBLTR)	C	21.1	C	21.1	C	21.1	C	25.2	C	21.1	C	21.1	C	25.2
	NB	C	22	C	23.6	E	73.6	C	31.1	C	25.4	F	93.1	D	35
	(NBL)	D	41.3	D	44.8	F	125.2	D	51.7	D	48.9	F	161.2	E	59.1
	(NBTR)	A	7.5	A	7.6	A	7.6	A	4.8	A	7.6	A	7.6	A	4.8
	SB	C	25.7	C	26.9	C	26.9	C	28.5	C	28.1	C	28.8	C	29.9
	(SBLT)	C	25.7	C	26.9	C	26.9	C	28.5	C	28.1	C	28.8	C	29.9
	Overall	C	26.2	C	27.4	D	42.7	C	32.5	C	28.7	D	49.4	C	34.8
South 7th Street and Porte Cochere Entance	(NBL)	---	---	---	---	A	8	---	---	---	---	A	8.1	---	---
	Overall	---	---	---	---	A	0.3	---	---	---	---	A	0.2	---	---
South 7th Street and Garage Entrance	(NBL)	---	---	---	---	A	8.1	---	---	---	---	A	8.1	---	---
	Overall	---	---	---	---	A	0.8	---	---	---	---	A	0.8	---	---
Darrien Street and Porte Cochere Exit	(WBLR)	---	---	---	---	B	11.7	---	---	---	---	B	11.8	---	---
	Overall	---	---	---	---	A	0.9	---	---	---	---	A	0.9	---	---
Darrien Street and Employee Driveway	(WBLR)	---	---	---	---	B	12	---	---	---	---	B	12	---	---
	(SBL)	---	---	---	---	A	8.6	---	---	---	---	B	8.6	---	---
	Overall	---	---	---	---	A	1.3	---	---	---	---	A	1.3	---	---
Darrien Street and Garage Exit	(WBLR)	---	---	---	---	B	12.5	---	---	---	---	B	13.4	---	---
	Overall	---	---	---	---	A	6.4	---	---	---	---	A	6.2	---	---

TABLE B
INTERSECTION LEVEL OF SERVICE RESULTS - WEEKDAY PRE-PHILLIES EVENT PEAK HOUR

Intersection	Approach (Movement)	Existing 2012 Traffic Conditions		2016 No Build Traffic Conditions		2016 Build Traffic Conditions		2016 Build Traffic Conditions with Improvements		2021 No Build Traffic Conditions		2021 Build Traffic Conditions		2021 Build Traffic Conditions with Improvements	
		Event Peak		Event Peak		Event Peak		Event Peak		Event Peak		Event Peak		Event Peak	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Packer Avenue and 10th Street	EB	B	15.8	B	15.8	B	15.9	A	7.9	B	15.8	B	15.9	A	7.9
	(EBL)	B	16.6	B	16.6	B	17.6	A	8.4	B	16.6	B	17.6	A	8.4
	(EBT)	B	15.2	B	15.2	B	15.2	A	7.6	B	15.2	B	15.2	A	7.6
	(EBR)	B	16.5	B	16.5	B	16.5	A	8.3	B	16.5	B	16.5	A	8.3
	WB	F	105	F	105	F	95.8	D	39.6	F	105	F	95.8	D	39.6
	(WBL)	F	154.9	F	154.9	F	155.6	F	63.5	F	154.9	F	155.6	F	63.5
	(WBT)	B	15	B	15	B	15.4	A	7.6	B	15	B	15.4	A	7.6
	(WBR)	A	0	A	0	A	0	B	0	A	0	A	0	B	0
	NB	B	15.9	B	15.9	B	15.9	C	19.8	B	15.9	B	15.9	C	19.8
	(NBL)	B	17.5	B	17.5	B	17.5	B	21.8	B	17.5	B	17.5	B	21.8
	(NBT)	B	15.1	B	15.1	B	15.1	B	18.8	B	15.1	B	15.1	B	18.8
	(NRR)	B	15.3	B	15.3	B	15.3	C	19	B	15.3	B	15.3	C	19
	SB	B	16.9	B	16.9	B	16.9	C	21.2	B	16.9	B	16.9	C	21.2
	(SBL)	B	17.5	B	17.5	B	17.5	C	21.9	B	17.5	B	17.5	C	21.9
	(SBT)	B	16.6	B	16.6	B	16.6	C	20.7	B	16.6	B	16.6	C	20.7
	(SBR)	B	16.6	B	16.6	B	16.6	C	20.7	B	16.6	B	16.6	C	20.7
	Overall	E	61.3	E	61.3	E	58.8	C	27.8	E	61.3	E	58.8	C	27.8
Packer Avenue and Darien Stret	EB	B	12.2	B	12.2	B	12.2	A	7.6	B	12.2	B	12.2	A	7.6
	(EBL)	B	14	B	14	B	14	B	12.9	B	14	B	14	B	12.9
	(EBT)	B	10.8	B	10.8	B	10.8	A	6.3	B	10.8	B	10.8	A	6.3
	(EBR)	B	12.7	B	12.7	B	12.7	A	7.4	B	12.7	B	12.7	A	7.4
	WB	F	183.3	F	183.3	F	190.3	F	128.2	F	183.3	F	190.3	F	128.2
	(WBL)	F	313	F	313	F	324	F	219.2	F	313	F	324	F	219.2
	(WBT)	C	24	C	24	C	24	B	15.1	C	24	C	24	B	15.1
	NB	C	27.2	C	27.2	D	37.7	D	47.3	C	27.2	D	37.7	D	47.3
	(NBL)	D	35	D	35	E	55.2	E	71.9	D	35	E	55.2	E	71.9
	(NBT)	B	19.2	B	19.2	B	19.6	C	22.8	B	19.2	B	19.6	C	22.8
	(NBR)	C	21	C	21.1	C	24.7	C	28.7	C	21	C	24.7	C	28.7
	SB	C	25.3	C	25.3	C	28.6	C	33.5	C	25.3	C	28.6	C	33.5
	(SBL)	C	25.2	C	25.2	C	32.1	D	37.8	C	25.2	C	32.1	D	37.8
	(SBT)	C	25.3	C	25.3	C	26	C	30.2	C	25.3	C	26	C	30.2
	Overall	F	105.8	F	105.8	F	102.7	E	76	F	105.8	F	102.7	E	76
Packer Avenue and South 7th Street	EB	B	15.8	B	15.8	B	15.7	A	9.2	B	15.8	B	15.7	A	9.2
	(EBL)	C	23.3	C	23.3	C	23.6	B	13.1	C	23.3	C	23.6	B	13.1
	(EBT)	B	12.8	B	12.8	B	13.4	A	8	B	12.8	B	13.4	A	8
	(EBR)	B	13.5	B	13.5	B	14.8	B	8.8	B	13.5	B	14.8	B	8.8
	WB	C	30.1	C	30.1	F	82.6	D	44.9	C	30.1	F	82.6	D	44.9
	(WBL)	E	56.9	E	56.9	F	193.7	F	104.2	E	56.9	F	193.7	F	104.2
	(WBT)	B	15.7	B	15.7	B	15.7	A	9.2	B	15.7	B	15.7	A	9.2
	(WBR)	B	16.5	B	16.5	B	16.5	A	9.7	B	16.5	B	16.5	A	9.7
	NB	B	19.2	B	19.2	B	19.4	C	28.1	B	19.2	B	19.4	C	28.1
	(NBL)	C	27.1	C	27.1	C	27.6	D	40.4	C	27.1	C	27.6	D	40.4
	(NBT)	B	14.3	B	14.3	B	14.3	C	20.5	B	14.3	B	14.3	C	20.5
	(NBR)	B	14.4	B	14.4	B	14.4	C	20.6	B	14.4	B	14.4	C	20.6
	SB	C	21.4	C	21.4	C	21.7	C	31.4	C	21.4	C	21.7	C	31.4
	(SBL)	C	20.9	C	20.9	C	21.7	C	30.7	C	20.9	C	21.7	C	30.7
	(SBT)	C	22	C	22	C	22.4	C	32.3	C	22	C	22.4	C	32.3
	Overall	C	25.2	C	25.2	D	51	C	31.4	C	25.2	D	51	C	31.4
Front Street and Packer Avenue	EB	C	21.4	C	21.4	C	23.6	---	---	C	21.4	C	23.6	---	---
	(EBL)	C	21.5	C	21.5	C	23.7	---	---	C	21.5	C	23.7	---	---
	(EBLT)	B	15.2	B	15.2	B	15.2	---	---	B	15.2	B	15.2	---	---
	WB	B	15.2	B	15.2	B	15.2	---	---	B	15.2	B	15.2	---	---
	(WBLTR)	B	15.2	B	15.2	B	15.2	---	---	B	15.2	B	15.2	---	---
	NB	B	15.5	B	15.5	B	15.5	---	---	B	15.5	B	15.5	---	---
	(NBL)	C	28.5	C	28.5	C	28.6	---	---	C	28.5	C	28.6	---	---
	(NBT)	B	12.5	B	12.5	B	12.5	---	---	B	12.5	B	12.5	---	---
	(NBR)	B	12.5	B	12.5	B	12.5	---	---	B	12.5	B	12.5	---	---
	SB	B	19.7	B	19.7	B	19	---	---	B	19.7	B	19	---	---
	(SBL)	B	12.8	B	12.8	B	12.8	---	---	B	12.8	B	12.8	---	---
	(SBT)	B	19.8	B	19.8	B	19.9	---	---	B	19.8	B	19.9	---	---
	Overall	B	19.7	B	19.7	C	20.6	---	---	B	19.7	C	20.6	---	---
Front Stret and I-76 EB On Ramp	(NBL)	C	23.9	C	23.9	D	26.2	---	---	C	23.9	D	26.2	---	---
	Overall	A		A	0	A		---	---	A	0	A	0	---	---
Front Street and I-76 WB Off Ramp & I-95 SB On Ramp	EB	D	38.1	D	38.1	D	38.1	---	---	D	38.1	D	38.1	---	---
	(EBL)	C	21.6	C	21.6	C	21.6	---	---	C	21.6	C	21.6	---	---
	(EBLT)	D	43.7	D	43.7	D	43.7	---	---	D	43.7	D	43.7	---	---
	NB	C	25.5	C	25.5	C	27.4	---	---	C	25.5	C	27.4	---	---
	(NBTR)	C	25.5	C	25.5	C	27.4	---	---	C	25.5	C	27.4	---	---
	SB	C	27.7	C	27.7	C	35.5	---	---	C	27.7	C	35.5	---	---
	(SBL)	C	27.7	C	27.7	D	30.6	---	---	C	27.7	D	30.6	---	---
	(SBT)	C	27.7	C	27.7	C	35.9	---	---	C	27.7	C	35.9	---	---
	Overall	C	30.4	C	30.4	C	34.7	---	---	C	30.4	C	34.7	---	---
Front Street and I-95 Ramps	EB	D	36.5	D	36.5	D	36.5	---	---	D	36.5	D	36.5	---	---
	(EBLT)	D	36.5	D	36.5	D	36.5	---	---	D	36.5	D	36.5	---	---
	WB	C	24.6	C	24.6	C	24.6	---	---	C	24.6	C	24.6	---	---
	(WBLTR)	C	24.6	C	24.6	C	24.6	---	---	C	24.6	C	24.6	---	---
	NB	A	8.7	A	8.7	B	12.4	---	---	A	8.7	B	12.4	---	---
	(NBL)	C	21.8	C	21.8	C	27.3	---	---	C	21.8	C	27.3	---	---
	(NBTR)	A	4.6	A	4.6	A	4.7	---	---	A	4.6	A	4.7	---	---
	SB	B	17.4	B	17.4	B	17.4	---	---	B	17.4	B	17.4	---	---
	(SBLT)	B	17.4	B	17.4	B	17.4	---	---	B	17.4	B	17.4	---	---
	Overall	C	20.5	C	20.5	C	21.2	---	---	C	20.5	C	21.2	---	---
South 7th Street and Porte Cochere Entance	(NBL)	---	---	---	---	B	13.7	---	---	---	---	B	13.7	---	---
	Overall	---	---	---	---	A	0.1	---	---	---	---	A	0.1	---	---
South 7th Street and Garage Entrance	(NBL)	---	---	---	---	B	14.1	---	---	---	---	B	14.1	---	---
	Overall	---	---	---	---	A	0.3	---	---	---	---	A	0.3	---	---
Darrien Street and Porte Cochere Exit	(WBLR)	---	---	---	---	B	13.2	---	---	---	---	B	13.2	---	---
	Overall	---	---	---	---	A	0.3	---	---	---	---	A	0.3	---	---
Darrien Street and Employee Driveway	(WBLR)	---	---	---	---	B	13.8	---	---	---	---	B	13.8	---	---
	(SBL)	---	---	---	---	A	8.5	---	---	---	---	A	8.5	---	---
	Overall	---	---	---	---	A	0.4	---	---	---	---	A	0.4	---	---
Darrien Street and Garage Exit	(WBLR)	---	---	---	---	B	13.1	---	---	---	---	B	13.1	---	---
	Overall	---	---	---	---	A	1.8	---	---	---	---	A	1.8	---	---

APPENDIX B

QUEUE ANALYSIS RESULTS TABLE

TABLE C
QUEUE ANALYSIS RESULTS - WEEKDAY PM PEAK HOUR

Intersection	Movement	2012 Existing Traffic Conditions	2016 No Build Traffic Conditions	2016 Build Traffic Conditions	2016 Build with Improvements Traffic Conditions	2021 No Build Traffic Conditions	2021 Build Traffic Conditions	2021 Build with Improvements Traffic Conditions	Storage length
		PM Peak	PM Peak	PM Peak	PM Peak	PM Peak	PM Peak	PM Peak	
Packer Avenue and South 10th Street	EBL	69	70	70	68	74	70	64	150
	EBT	81	82	83	85	80	86	81	+1,000
	EBTR	34	44	45	43	36	39	42	+1,000
	WBL	8	6	6	7	5	9	12	250
	WBT	70	65	112	106	75	106	108	590
	WBTR	40	44	50	102	42	46	44	590
	NBL	22	22	19	42	21	26	23	150
	NBT	28	31	28	23	38	29	29	+1,000
	NBR	0	0	0	29	0	0	0	+1,000
	SBL	99	93	112	109	100	104	95	250
	SBT	33	27	28	29	27	28	28	870
	SBTR	64	64	61	67	77	71	66	870
Packer Avenue and I-76 Eastbound Ramps - Darien Street	EBL	65	65	77	104	71	101	87	200
	EBT	47	46	54	55	48	57	52	590
	EBTR	38	39	43	46	41	54	54	590
	WBL	34	41	46	56	37	59	59	225
	WBT	133	121	121	150	126	165	160	560
	NBL	68	66	144	139	63	117	123	150
	NBT	75	88	141	96	86	105	94	+1,000
	NBR	52	49	88	79	58	77	79	+1,000
	SBLT	309	326	342	319	315	336	332	560
	SBR	111	126	130	133	132	116	136	300
Packer Avenue and South 7th Street	EBL	145	150	139	120	150	151	138	200
	EBT	92	93	115	101	96	117	113	560
	EBTR	88	95	135	114	79	145	152	560
	WBL	40	29	141	112	34	147	115	275
	WBT	76	71	75	67	82	64	58	+1,000
	WBTR	69	76	80	68	78	68	68	+1,000
	NBL	42	43	45	38	52	39	40	225
	NBT	38	35	40	43	10	38	39	+1,000
	NBTR	50	48	53	43	56	49	51	+1,000
	SBLT	64	62	62	62	62	69	63	+1,000
	SBT	12	21	51	52	16	67	68	+1,000
	SBR	0	0	0	0	0	0	0	+1,000
Front Street and Packer Avenue	EBL	220	252	279	289	222	315	279	+1,000
	EBTR	75	90	79	77	75	75	75	+1,000
	WBLTR	26	23	27	27	18	31	33	---
	NBL	30	32	33	37	35	39	33	100
	NBT	83	86	89	87	88	97	94	+1,000
	NBTR	19	24	37	23	55	49	23	+1,000
	SBL	25	34	24	28	32	23	18	100
	SBT	111	110	102	103	107	127	128	980
	SBTR	183	197	169	169	217	200	190	980
Front Street and I-76 Eastbound On Ramp	NBL	116	125	137	136	129	152	134	180
	SBTR	53	73	104	84	58	116	99	590
Front Street and I-76 Westbound Off Ramp - I-95 Southbound On Ramp	EBL	145	138	107	110	102	130	136	+1,000
	EBLT	297	312	299	287	318	309	317	+1,000
	EBR	58	105	117	76	126	121	99	240
	NBT	221	227	290	261	257	320	313	980
	NBTR	181	197	259	244	212	264	281	980
	SBL	89	97	51	60	101	55	57	240
	SBT	276	261	335	385	357	328	181	540
Front Street and I-95 Ramps	EBL	313	313	377	283	301	370	382	760
	EBLTR	281	271	365	257	254	359	376	760
	WBLTR	14	9	13	10	7	8	0	---
	NBL	206	218	229	214	237	249	243	250
	NBT	95	83	91	48	73	89	45	540
	NBTR	96	102	47	42	1	51	54	540
	SBT	328	341	348	341	353	342	343	650
	SBTR	364	377	376	368	380	365	358	650
South 7th Street and Porte Cochere Entance	NBLT	---	---	19	15	---	20	23	---
South 7th Street and Garage Entrance	NBLT	---	---	34	37	---	37	34	---
Darrien Street and Porte Cochere Exit	WBLR	---	---	52	55	---	55	50	---
Darrien Street and Employee Driveway	WBLR	---	---	59	50	---	53	50	---
	SBL	---	---	29	24	---	33	31	---
Darrien Street and Garage Exit	WBLR	---	---	110	109	---	121	121	---

TABLE D
QUEUE ANALYSIS RESULTS - WEEKDAY PRE-PHILLIES EVENT PEAK HOUR

Intersection	Movement	2012 Existing Traffic Conditions	2016 No Build Traffic Conditions	2016 Build Traffic Conditions	2016 Build with Improvements Traffic Conditions	2021 No Build Traffic Conditions	2021 Build Traffic Conditions	2021 Build with Improvements Traffic Conditions	Storage length
		Event Peak	Event Peak	Event Peak	Event Peak	Event Peak	Event Peak	Event Peak	
Packer Avenue and South 10th Street	EBL	54	54	50	42	54	50	42	150
	EBT	79	79	87	51	79	87	51	+1,000
	EBTR	153	153	157	104	153	157	104	+1,000
	WBL	366	366	359	206	366	359	206	250
	WBT	596	596	513	43	596	513	43	590
	WBTR	371	371	187	11	371	187	11	590
	NBL	29	29	33	32	29	33	32	150
	NBT	18	18	18	23	18	18	23	+1,000
	NBR	26	26	28	33	26	28	33	+1,000
	SBL	95	95	107	146	95	107	146	250
	SBT	105	105	102	150	105	102	150	870
	SBTR	88	88	81	140	88	81	140	870
Packer Avenue and I-76 Eastbound Ramps - Darien Street	EBL	50	50	46	45	50	46	45	200
	EBT	54	54	49	50	54	49	50	590
	EBTR	101	101	112	105	101	112	105	590
	WBL	326	326	325	365	326	325	365	225
	WBT	613	613	651	750	613	651	750	560
	NBL	146	146	183	190	146	183	190	150
	NBT	67	67	245	305	67	245	305	+1,000
	NBR	66	66	96	96	66	96	96	+1,000
	SBLT	368	368	336	358	368	336	358	560
	SBR	232	232	331	281	232	331	281	300
Packer Avenue and South 7th Street	EBL	91	91	97	120	91	97	120	200
	EBT	55	55	68	85	55	68	85	560
	EBTR	87	87	124	164	87	124	164	560
	WBL	466	466	434	471	466	434	471	275
	WBT	1563	1563	1453	1017	1563	1453	1017	+1,000
	WBTR	775	775	736	276	775	736	276	+1,000
	NBL	73	73	70	88	73	70	88	225
	NBT	46	46	38	41	46	38	41	+1,000
	NBTR	54	54	53	53	54	53	53	+1,000
	SBLT	745	745	752	563	745	752	563	+1,000
	SBT	643	643	694	825	643	694	825	+1,000
	SBR	649	649	644	804	649	644	804	+1,000
Front Street and Packer Avenue	EBL	258	258	291	319	258	291	319	+1,000
	EBTR	40	40	38	43	40	38	43	+1,000
	WBLTR	13	13	15	22	13	15	22	---
	NBL	72	72	86	88	72	86	88	100
	NBT	119	119	108	114	119	108	114	+1,000
	NBTR	43	43	35	38	43	35	38	+1,000
	SBL	29	29	27	40	29	27	40	100
	SBT	273	273	252	276	273	252	276	980
	SBTR	398	398	392	390	398	392	390	980
Front Street and I-76 Eastbound On Ramp	NBL	136	136	145	187	136	145	187	180
	SBTR	409	409	511	221	409	511	221	590
Front Street and I-76 Westbound Off Ramp - I-95 Southbound On Ramp	EBL	205	205	124	183	205	124	183	+1,000
	EBLT	317	317	330	316	317	330	316	+1,000
	EBR	226	226	111	231	226	111	231	240
	NBT	169	169	308	200	169	308	200	980
	NBTR	139	139	258	173	139	258	173	980
	SBL	115	115	40	131	115	40	131	240
	SBT	356	356	285	362	356	285	362	540
Front Street and I-95 Ramps	EBL	468	468	395	481	468	395	481	760
	EBLTR	478	478	515	176	478	515	176	760
	WBLTR	57	57	60	56	57	60	56	---
	NBL	138	138	159	208	138	159	208	250
	NBT	68	68	53	62	68	53	62	540
	NBTR	55	55	48	56	55	48	56	540
	SBT	278	278	288	266	278	288	266	650
	SBTR	304	304	326	289	304	326	289	650
South 7th Street and Porte Cochere Entance	NBLT	---	---	28	37	---	28	37	---
South 7th Street and Garage Entrance	NBLT	---	---	47	50	---	47	50	---
Darrien Street and Porte Cochere Exit	WBLR	---	---	53	105	---	53	105	---
Darrien Street and Employee Driveway	WBLR	---	---	46	53	---	46	53	---
	SBL	---	---	23	22	---	23	22	---
Darrien Street and Garage Exit	WBLR	---	---	99	107	---	99	107	---

APPENDIX C

TRAFFIC COUNT DATA

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL MAM INTERVAL COUNTS

COUNTY: PHILADELPHIA
MUNICIPALITY: PHILADELPHIA

INTERSECTION: North-South Street & East-West Street
STREETS: DARIEN ST / I-76 EB OFF RAMP PACKER AVE

DATE: 8/3/10
DAY: TUESDAY
WEATHER: FAIR

FILE NUMBER: 43AM

AM INTERVAL COUNTS

	DARIEN ST / I-76 EB OFF RAMP								PACKER AVE										
STARTING	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
6:00 6:15	2	1	2	5	38	6	3	47	2	10	2	14	10	24	20	54	52	68	120
6:15 6:30	0	2	1	3	52	7	4	63	7	19	3	29	4	24	25	53	66	82	148
6:30 6:45	3	2	2	7	48	11	4	63	9	12	2	23	18	45	9	72	70	95	165
6:45 7:00	6	3	6	15	66	10	3	79	9	18	5	32	16	26	10	52	94	84	178
7:00 7:15	7	2	5	14	49	8	1	58	8	16	2	26	9	39	14	62	72	88	160
7:15 7:30	6	0	5	11	59	5	3	67	13	31	6	50	16	40	15	71	78	121	199
7:30 7:45	10	2	2	14	71	10	2	83	15	33	4	52	14	38	12	64	97	116	213
7:45 8:00	8	5	1	14	89	10	11	110	16	28	3	47	12	44	14	70	124	117	241
8:00 8:15	9	1	6	16	60	8	6	74	6	28	5	39	11	49	9	69	90	108	198
8:15 8:30	12	1	12	25	65	17	4	86	8	21	6	35	8	44	5	57	111	92	203
8:30 8:45	8	1	6	15	50	12	1	63	14	22	3	39	19	35	14	68	78	107	185
8:45 9:00	14	4	6	24	60	21	0	81	15	21	4	40	13	53	15	81	105	121	226
9:00 9:15	15	2	12	29	42	17	5	64	8	29	3	40	23	31	11	65	93	105	198
9:15 9:30	13	3	9	25	48	11	3	62	7	20	5	32	21	37	18	76	87	108	195
TOTALS	113	29	75	217	797	153	50	1000	137	308	53	498	194	529	191	914	1217	1412	2629

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL MAM INTERVAL COUNTS

COUNTY: PHILADELPHIA
MUNICIPALITY: PHILADELPHIA

INTERSECTION: North-South Street & East-West Street
STREETS: DARIEN ST / I-76 EB OFF RAMP PACKER AVE

DATE: 8/3/10
DAY: TUESDAY
WEATHER: FAIR

FILE NUMBER: 43AM

AM INTERVAL COUNTS

STARTING TIME		DARIEN ST / I-76 EB OFF RAMP 1-NORTHBOUND				2-SOUTHBOUND				PACKER AVE 3-EASTBOUND				4-WESTBOUND				N-S	E-W	
		L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
11:00	11:15	16	8	2	26	58	20	2	80	17	22	10	49	7	56	5	68	106	117	223
11:15	11:30	13	3	5	21	76	9	10	95	9	22	15	46	18	53	13	84	116	130	246
11:30	11:45	10	6	2	18	75	8	6	89	11	29	10	50	26	48	11	85	107	135	242
11:45	12:00	20	6	4	30	67	12	6	85	9	18	11	38	24	46	17	87	115	125	240
12:00	12:15	13	7	13	33	54	13	3	70	7	31	12	50	18	64	17	99	103	149	252
12:15	12:30	14	15	5	34	55	11	10	76	10	39	16	65	17	76	20	113	110	178	288
12:30	12:45	17	9	6	32	77	6	11	94	19	43	9	71	20	66	18	104	126	175	301
12:45	1:00	12	7	7	26	63	9	7	79	18	37	11	66	15	71	22	108	105	174	279
TOTALS		115	61	44	220	525	88	55	668	100	241	94	435	145	480	123	748	888	1183	2071
P.H. am																				
P.H. pm																				

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL M AM INTERVAL COUNTS

COUNTY: PHILADELPHIA
MUNICIPALITY: PHILADELPHIA

INTERSECTION: North-South Street & East-West Street
STREETS: DARIEN ST / I-76 EB OFF RAMP PACKER AVE

DATE: 8/3/10
DAY: TUESDAY
WEATHER: FAIR

FILE NUMBER: 43PM

PM INTERVAL COUNTS

	DARIEN ST / I-76 EB OFF RAMP								PACKER AVE										
STARTING	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
3:00 3:15	17	20	9	46	87	9	24	120	13	21	6	40	10	64	24	98	166	138	304
3:15 3:30	44	12	7	63	65	10	10	85	19	50	6	75	5	47	11	63	148	138	286
3:30 3:45	10	12	9	31	103	7	10	120	16	16	8	40	11	57	14	82	151	122	273
3:45 4:00	10	15	9	34	77	3	7	87	17	12	7	36	15	71	21	107	121	143	264
4:00 4:15	17	16	14	47	94	3	7	104	17	21	5	43	6	79	23	108	151	151	302
4:15 4:30	11	19	13	43	75	2	10	87	20	25	8	53	12	86	22	120	130	173	303
4:30 4:45	27	27	12	66	74	3	10	87	22	17	7	46	8	75	20	103	153	149	302
4:45 5:00	13	15	7	35	77	6	12	95	20	24	4	48	4	66	18	88	130	136	266
5:00 5:15	17	22	10	49	81	2	7	90	23	21	1	45	8	68	19	95	139	140	279
5:15 5:30	15	10	8	33	72	2	4	78	23	12	6	41	13	73	17	103	111	144	255
5:30 5:45	14	15	4	33	64	2	5	71	11	15	1	27	8	67	15	90	104	117	221
5:45 6:00	14	17	5	36	62	10	2	74	19	27	9	55	13	56	11	80	110	135	245
6:00 6:15	19	12	3	34	75	4	8	87	17	10	7	34	12	51	16	79	121	113	234
6:15 6:30	10	7	4	21	57	5	9	71	12	14	6	32	8	51	13	72	92	104	196
6:30 6:45	4	5	2	11	58	4	14	76	10	15	5	30	9	43	14	66	87	96	183
6:45 7:00	5	5	3	13	49	5	11	65	7	11	4	22	7	37	12	56	78	78	156
TOTALS	247	229	119	595	1170	77	150	1397	266	311	90	667	149	991	270	1410	1992	2077	4069

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL MAM INTERVAL COUNTS

COUNTY: PHILADELPHIA
MUNICIPALITY: PHILADELPHIA

INTERSECTION: North-South Street & East-West Street
STREETS: FRONT ST I-76 EB OFF RAMP / I-95 SB ON RAMP

DATE: 8/10/10
DAY: TUESDAY
WEATHER: FAIR

FILE NUMBER: 45AM

AM INTERVAL COUNTS

	FRONT ST								I-76 EB OFF RAMP / I-95 SB ON RAMP										
STARTING	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
6:00 6:15	0	22	3	25	15	63	0	78	31	129	18	178	0	0	0	0	103	178	281
6:15 6:30	0	88	10	98	23	119	0	142	36	258	22	316	0	0	0	0	240	316	556
6:30 6:45	0	32	2	34	12	101	0	113	27	144	16	187	0	0	0	0	147	187	334
6:45 7:00	0	52	4	56	13	86	0	99	10	129	6	145	0	0	0	0	155	145	300
7:00 7:15	0	49	3	52	25	140	0	165	42	212	27	281	0	0	0	0	217	281	498
7:15 7:30	0	100	11	111	47	205	0	252	31	279	10	320	0	0	0	0	363	320	683
7:30 7:45	0	134	22	156	30	142	0	172	30	240	15	285	0	0	0	0	328	285	613
7:45 8:00	0	80	13	93	18	115	0	133	35	171	15	221	0	0	0	0	226	221	447
8:00 8:15	0	99	14	113	34	135	0	169	29	212	4	245	0	0	0	0	282	245	527
8:15 8:30	0	115	27	142	47	165	0	212	46	228	6	280	0	0	0	0	354	280	634
8:30 8:45	0	89	15	104	30	140	0	170	32	211	13	256	0	0	0	0	274	256	530
8:45 9:00	0	95	19	114	18	173	0	191	27	155	12	194	0	0	0	0	305	194	499
9:00 9:15	0	123	21	144	39	185	0	224	37	175	8	220	0	0	0	0	368	220	588
9:15 9:30	0	96	11	107	25	103	0	128	21	110	5	136	0	0	0	0	235	136	371
TOTALS	0	1174	175	1349	376	1872	0	2248	434	2653	177	3264	0	0	0	0	3597	3264	6861

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL MAM INTERVAL COUNTS

COUNTY: PHILADELPHIA
MUNICIPALITY: PHILADELPHIA

INTERSECTION: North-South Street & East-West Street
STREETS: FRONT ST I-76 EB OFF RAMP / I-95 SB ON RAMP

DATE: 8/10/10
DAY: TUESDAY
WEATHER: FAIR

FILE NUMBER: 45AM

AM INTERVAL COUNTS

	FRONT ST								I-76 EB OFF RAMP / I-95 SB ON RAMP										
STARTING	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
11:00 11:15	0	127	9	136	11	163	0	174	31	89	1	121	0	0	0	0	310	121	431
11:15 11:30	0	148	14	162	13	187	0	200	48	91	3	142	0	0	0	0	362	142	504
11:30 11:45	0	130	6	136	20	135	0	155	27	138	7	172	0	0	0	0	291	172	463
11:45 12:00	0	101	7	108	29	150	0	179	23	82	6	111	0	0	0	0	287	111	398
12:00 12:15	0	85	5	90	28	151	0	179	37	94	4	135	0	0	0	0	269	135	404
12:15 12:30	0	128	1	129	7	150	0	157	32	103	1	136	0	0	0	0	286	136	422
12:30 12:45	0	145	7	152	18	182	0	200	48	172	11	231	0	0	0	0	352	231	583
12:45 1:00	0	178	10	188	24	218	0	242	35	151	2	188	0	0	0	0	430	188	618
TOTALS	0	1042	59	1101	150	1336	0	1486	281	920	35	1236	0	0	0	0	2587	1236	3823
P.H. am																			
P.H. pm																			

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL M AM INTERVAL COUNTS

COUNTY: PHILADELPHIA
MUNICIPALITY: PHILADELPHIA

INTERSECTION: North-South Street & East-West Street
STREETS: FRONT ST I-76 EB OFF RAMP / I-95 SB ON RAMP

DATE: 8/10/10
DAY: TUESDAY
WEATHER: FAIR

FILE NUMBER: 45PM

PM INTERVAL COUNTS

	FRONT ST												I-76 EB OFF RAMP / I-95 SB ON RAMP						
STARTING	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
3:00 3:15	0	28	0	28	11	53	0	64	12	36	3	51	0	0	0	0	92	51	143
3:15 3:30	0	186	3	189	38	270	0	308	26	117	11	154	0	0	0	0	497	154	651
3:30 3:45	0	37	1	38	4	134	0	138	17	48	7	72	0	0	0	0	176	72	248
3:45 4:00	0	66	9	75	11	118	0	129	13	108	8	129	0	0	0	0	204	129	333
4:00 4:15	0	33	2	35	0	105	0	105	5	37	6	48	0	0	0	0	140	48	188
4:15 4:30	0	114	2	116	14	179	0	193	24	104	10	138	0	0	0	0	309	138	447
4:30 4:45	0	75	2	77	8	150	0	158	24	126	3	153	0	0	0	0	235	153	388
4:45 5:00	0	105	7	112	31	216	0	247	24	95	3	122	0	0	0	0	359	122	481
5:00 5:15	0	121	3	124	20	181	0	201	22	153	29	204	0	0	0	0	325	204	529
5:15 5:30	0	199	2	201	46	392	0	438	33	273	29	335	0	0	0	0	639	335	974
5:30 5:45	0	69	2	71	18	240	0	258	30	143	14	187	0	0	0	0	329	187	516
5:45 6:00	0	119	2	121	27	444	0	471	23	169	78	270	0	0	0	0	592	270	862
6:00 6:15	0	158	1	159	25	595	0	620	23	213	73	309	0	0	0	0	779	309	1088
6:15 6:30	0	127	8	135	34	705	0	739	25	189	99	313	0	0	0	0	874	313	1187
6:30 6:45	0	89	1	90	22	419	0	441	21	139	63	223	0	0	0	0	531	223	754
6:45 7:00	0	101	3	104	31	427	0	458	11	101	41	153	0	0	0	0	562	153	715
TOTALS	0	1627	48	1675	340	4628	0	4968	333	2051	477	2861	0	0	0	0	6643	2861	9504

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL MAM INTERVAL COUNTS

COUNTY: PHILADELPHIA
MUNICIPALITY: PHILADELPHIA

INTERSECTION: North-South Street & East-West Street
STREETS: FRONT ST I-95 NB ON/ SB OFF RAMPS

DATE: 8/12/10
DAY: THURSDAY
WEATHER: FAIR

FILE NUMBER: 44AM

AM INTERVAL COUNTS

	FRONT ST								I-95 NB ON/ SB OFF RAMPS										
STARTING	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
6:00 6:15	12	17	0	29	0	17	20	37	13	0	17	30	0	0	0	0	66	30	96
6:15 6:30	26	62	0	88	0	64	53	117	60	0	35	95	0	0	0	0	205	95	300
6:30 6:45	31	68	0	99	0	125	80	205	150	0	74	224	0	0	0	0	304	224	528
6:45 7:00	24	87	0	111	0	101	59	160	101	0	60	161	0	0	0	0	271	161	432
7:00 7:15	20	61	0	81	0	69	35	104	65	0	36	101	0	0	0	0	185	101	286
7:15 7:30	31	51	0	82	0	79	45	124	69	0	22	91	0	0	0	0	206	91	297
7:30 7:45	18	33	0	51	0	73	50	123	86	0	37	123	0	0	0	0	174	123	297
7:45 8:00	30	32	0	62	0	63	56	119	71	0	27	98	0	0	0	0	181	98	279
8:00 8:15	38	41	0	79	0	79	60	139	85	0	24	109	0	0	0	0	218	109	327
8:15 8:30	55	45	0	100	0	103	69	172	96	0	31	127	0	0	0	0	272	127	399
8:30 8:45	55	43	0	98	0	67	42	109	96	0	21	117	0	0	0	0	207	117	324
8:45 9:00	40	46	0	86	0	74	77	151	67	0	15	82	0	0	0	0	237	82	319
9:00 9:15	46	48	0	94	0	97	71	168	71	0	26	97	0	0	0	0	262	97	359
9:15 9:30	43	45	0	88	0	85	74	159	69	0	42	111	0	0	0	0	247	111	358
TOTALS	469	679	0	1148	0	1096	791	1887	1099	0	467	1566	0	0	0	0	3035	1566	4601

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL M AM INTERVAL COUNTS

COUNTY: PHILADELPHIA
MUNICIPALITY: PHILADELPHIA

INTERSECTION: North-South Street & East-West Street
STREETS: FRONT ST I-95 NB ON/ SB OFF RAMPS

DATE: 8/9/10
DAY: MONDAY
WEATHER: FAIR

FILE NUMBER: 44PM

PM INTERVAL COUNTS

	FRONT ST								I-95 NB ON/ SB OFF RAMPS										
STARTING	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
3:00 3:15	17	41	0	58	0	151	67	218	73	0	35	108	0	0	0	0	276	108	384
3:15 3:30	30	47	0	77	0	215	54	269	160	0	47	207	0	0	0	0	346	207	553
3:30 3:45	33	29	0	62	0	154	99	253	120	0	25	145	0	0	0	0	315	145	460
3:45 4:00	83	45	0	128	0	244	83	327	149	0	33	182	0	0	0	0	455	182	637
4:00 4:15	37	54	0	91	0	178	120	298	178	0	45	223	0	0	0	0	389	223	612
4:15 4:30	53	62	0	115	0	156	77	233	121	0	37	158	0	0	0	0	348	158	506
4:30 4:45	36	40	0	76	0	119	55	174	60	0	20	80	0	0	0	0	250	80	330
4:45 5:00	38	61	0	99	0	168	60	228	125	0	24	149	0	0	0	0	327	149	476
5:00 5:15	30	40	0	70	0	114	42	156	128	0	29	157	0	0	0	0	226	157	383
5:15 5:30	51	65	0	116	0	111	70	181	166	0	37	203	0	0	0	0	297	203	500
5:30 5:45	55	66	0	121	0	190	81	271	122	0	28	150	0	0	0	0	392	150	542
5:45 6:00	31	81	0	112	0	163	73	236	159	0	51	210	0	0	0	0	348	210	558
6:00 6:15	36	96	0	132	0	207	72	279	118	0	31	149	0	0	0	0	411	149	560
6:15 6:30	16	42	0	58	0	87	43	130	97	0	21	118	0	0	0	0	188	118	306
6:30 6:45	12	43	0	55	0	106	32	138	90	0	15	105	0	0	0	0	193	105	298
6:45 7:00	16	25	0	41	0	123	75	198	81	0	8	89	0	0	0	0	239	89	328
TOTALS	574	837	0	1411	0	2486	1103	3589	1947	0	486	2433	0	0	0	0	5000	2433	7433

Pennoni Associates, Inc.

3001 Market Street
Philadelphia, PA 19104

7th Street and Packer Avenue

File Name : 7th and packer
Site Code : 00000002
Start Date : 11/2/2012
Page No : 1

Groups Printed- Cars - Trucks/Buses

	7th Street Northbound						7th Street Southbound						Packer Avenue Eastbound						Packer avenue Westbound						
Start Time	Right on Red	Right	Thru	Left	Peds	App. Total	Right on Red	Right	Thru	Left	Peds	App. Total	Right on Red	Right	Thru	Left	Peds	App. Total	Right on Red	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	8	14	10	0	32	0	34	18	7	0	59	0	1	92	46	0	139	8	18	58	4	0	88	318
04:15 PM	1	5	6	12	0	24	0	27	7	3	1	38	3	2	94	42	2	143	8	16	52	10	0	86	291
04:30 PM	2	4	9	6	2	23	0	23	14	6	1	44	0	7	100	43	0	150	8	13	83	4	0	108	325
04:45 PM	0	0	15	5	2	22	0	30	9	6	1	46	2	3	56	41	0	102	9	18	73	4	0	104	274
Total	3	17	44	33	4	101	0	114	48	22	3	187	5	13	342	172	2	534	33	65	266	22	0	386	1208
Grand Total	3	17	44	33	4	101	0	114	48	22	3	187	5	13	342	172	2	534	33	65	266	22	0	386	1208
Apprch %	3	16.8	43.6	32.7	4		0	61	25.7	11.8	1.6		0.9	2.4	64	32.2	0.4		8.5	16.8	68.9	5.7	0		
Total %	0.2	1.4	3.6	2.7	0.3	8.4	0	9.4	4	1.8	0.2	15.5	0.4	1.1	28.3	14.2	0.2	44.2	2.7	5.4	22	1.8	0	32	
Cars	3	12	44	32	4	95	0	113	44	22	3	182	5	12	322	172	2	513	33	65	251	19	0	368	1158
% Cars	100	70.6	100	97	100	94.1	0	99.1	91.7	100	100	97.3	100	92.3	94.2	100	100	96.1	100	100	94.4	86.4	0	95.3	95.9
Trucks/Buses	0	5	0	1	0	6	0	1	4	0	0	5	0	1	20	0	0	21	0	0	15	3	0	18	50
% Trucks/Buses	0	29.4	0	3	0	5.9	0	0.9	8.3	0	0	2.7	0	7.7	5.8	0	0	3.9	0	0	5.6	13.6	0	4.7	4.1

	7th Street Northbound						7th Street Southbound						Packer Avenue Eastbound						Packer avenue Westbound						
Start Time	Right on Red	Right	Thru	Left	Peds	App. Total	Right on Red	Right	Thru	Left	Peds	App. Total	Right on Red	Right	Thru	Left	Peds	App. Total	Right on Red	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 04:00 PM																									
04:00 PM	0	**8**	14	10	0	**32**	0	**34**	**18**	**7**	0	**59**	0	1	92	**46**	0	139	8	**18**	58	4	0	88	318
04:15 PM	1	5	6	**12**	0	24	0	27	7	3	**1**	38	**3**	2	94	42	**2**	143	8	16	52	**10**	0	86	291
04:30 PM	**2**	4	9	6	**2**	23	0	23	14	6	1	44	0	**7**	**100**	43	0	**150**	8	13	**83**	4	0	**108**	**325**
04:45 PM	0	0	**15**	5	2	22	0	30	9	6	1	46	2	3	56	41	0	102	**9**	18	73	4	0	104	274
Total Volume	3	17	44	33	4	101	0	114	48	22	3	187	5	13	342	172	2	534	33	65	266	22	0	386	1208
% App. Total	3	16.8	43.6	32.7	4		0	61	25.7	11.8	1.6		0.9	2.4	64	32.2	0.4		8.5	16.8	68.9	5.7	0		
PHF	.375	.531	.733	.688	.500	.789	.000	.838	.667	.786	.750	.792	.417	.464	.855	.935	.250	.890	.917	.903	.801	.550	.000	.894	.929

Pennoni Associates, Inc.

3001 Market Street
Philadelphia, PA 19104

Intersection: Packer Ave & S 10th Street
Day: Friday, Nov 2, 2012
Counter: Deb

File Name : 10th and Packer
Site Code : 00000001
Start Date : 11/2/2012
Page No : 1

Groups Printed- Passenger Cars - Trucks and Busses

	S 10th Street Southbound				Packer Avenue Westbound				S 10th Street Northbound				Packer Avenue Eastbound				
Start Time	Right	Thru	Left	RTOR	Right	Thru	Left	RTOR	Right	Thru	Left	RTOR	Right	Thru	Left	RTOR	Int. Total
04:00 PM	16	6	24	11	15	66	0	8	0	5	4	0	2	24	15	3	199
04:15 PM	15	4	32	5	20	65	1	12	0	2	2	0	0	38	11	2	209
04:30 PM	9	4	28	10	16	78	0	15	0	3	2	0	1	23	7	2	198
04:45 PM	12	3	36	8	20	81	1	12	0	5	2	0	2	30	13	0	225
Total	52	17	120	34	71	290	2	47	0	15	10	0	5	115	46	7	831
Grand Total	52	17	120	34	71	290	2	47	0	15	10	0	5	115	46	7	831
Apprch %	23.3	7.6	53.8	15.2	17.3	70.7	0.5	11.5	0	60	40	0	2.9	66.5	26.6	4	
Total %	6.3	2	14.4	4.1	8.5	34.9	0.2	5.7	0	1.8	1.2	0	0.6	13.8	5.5	0.8	
Passenger Cars	43	17	119	30	71	283	2	47	0	15	9	0	5	112	44	4	801
% Passenger Cars	82.7	100	99.2	88.2	100	97.6	100	100	0	100	90	0	100	97.4	95.7	57.1	96.4
Trucks and Busses	9	0	1	4	0	7	0	0	0	0	1	0	0	3	2	3	30
% Trucks and Busses	17.3	0	0.8	11.8	0	2.4	0	0	0	0	10	0	0	2.6	4.3	42.9	3.6

	S 10th Street Southbound					Packer Avenue Westbound					S 10th Street Northbound					Packer Avenue Eastbound					
Start Time	Right	Thru	Left	RTOR	App. Total	Right	Thru	Left	RTOR	App. Total	Right	Thru	Left	RTOR	App. Total	Right	Thru	Left	RTOR	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	**16**	**6**	24	**11**	57	15	66	0	8	89	0	**5**	**4**	0	**9**	**2**	24	**15**	**3**	44	199
04:15 PM	15	4	32	5	56	**20**	65	**1**	12	98	0	2	2	0	4	0	**38**	11	2	**51**	209
04:30 PM	9	4	28	10	51	16	78	0	**15**	109	0	3	2	0	5	1	23	7	2	33	198
04:45 PM	12	3	**36**	8	**59**	20	**81**	1	12	**114**	0	5	2	0	7	2	30	13	0	45	**225**
Total Volume	52	17	120	34	223	71	290	2	47	410	0	15	10	0	25	5	115	46	7	173	831
% App. Total	23.3	7.6	53.8	15.2		17.3	70.7	0.5	11.5		0	60	40	0		2.9	66.5	26.6	4		
PHF	.813	.708	.833	.773	.945	.888	.895	.500	.783	.899	.000	.750	.625	.000	.694	.625	.757	.767	.583	.848	.923

Pennoni Associates, Inc.

3001 Market Street
Philadelphia, PA 19104

Intersection: Darien St & Turf Club Driv
Day: Friday, Nov 2, 2012
Counter: Deb

File Name : Darien and Turf Club Drwy - Holiday Inn Drwy
Site Code : 00000003
Start Date : 11/2/2012
Page No : 1

Groups Printed- Passenger Cars - Trucks and Busses

	Darien Street Southbound				Turf Club Driveway Westbound					Darien Street Northbound				Holiday Inn Driveway Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	NJ Plates	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
05:00 PM	5	6	14	25	17	0	0	0	17	0	69	2	71	1	1	6	8	121
05:15 PM	1	8	7	16	32	0	0	0	32	0	78	1	79	0	0	14	14	141
05:30 PM	5	6	14	25	17	0	0	4	21	1	32	1	34	0	0	3	3	83
05:45 PM	3	6	13	22	17	0	1	1	19	1	19	0	20	0	1	4	5	66
Total	14	26	48	88	83	0	1	5	89	2	198	4	204	1	2	27	30	411
06:00 PM	5	5	23	33	15	0	0	0	15	0	29	2	31	2	0	3	5	84
Grand Total	19	31	71	121	98	0	1	5	104	2	227	6	235	3	2	30	35	495
Apprch %	15.7	25.6	58.7		94.2	0	1	4.8		0.9	96.6	2.6		8.6	5.7	85.7		
Total %	3.8	6.3	14.3	24.4	19.8	0	0.2	1	21	0.4	45.9	1.2	47.5	0.6	0.4	6.1	7.1	
Passenger Cars	19	30	71	120	98	0	1	5	104	2	225	6	233	3	2	30	35	492
% Passenger Cars	100	96.8	100	99.2	100	0	100	100	100	100	99.1	100	99.1	100	100	100	100	99.4
Trucks and Busses	0	1	0	1	0	0	0	0	0	0	2	0	2	0	0	0	0	3
% Trucks and Busses	0	3.2	0	0.8	0	0	0	0	0	0	0.9	0	0.9	0	0	0	0	0.6

	Darien Street Southbound				Turf Club Driveway Westbound					Darien Street Northbound				Holiday Inn Driveway Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	NJ Plates	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 06:00 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 05:00 PM																		
05:00 PM	**5**	6	**14**	**25**	17	0	0	0	17	0	69	**2**	71	**1**	**1**	6	8	121
05:15 PM	1	**8**	7	16	**32**	0	0	0	**32**	0	**78**	1	**79**	0	0	**14**	**14**	**141**
05:30 PM	5	6	14	25	17	0	0	**4**	21	**1**	32	1	34	0	0	3	3	83
05:45 PM	3	6	13	22	17	0	**1**	1	19	1	19	0	20	0	1	4	5	66
Total Volume	14	26	48	88	83	0	1	5	89	2	198	4	204	1	2	27	30	411
% App. Total	15.9	29.5	54.5		93.3	0	1.1	5.6		1	97.1	2		3.3	6.7	90		
PHF	.700	.813	.857	.880	.648	.000	.250	.313	.695	.500	.635	.500	.646	.250	.500	.482	.536	.729

Pennoni Associates, Inc.

3001 Market Street
Philadelphia, PA 19104

Intersection: 7th St & Site Driveway
Day: Friday, Nov 2, 2012
Counter: SDS

File Name : 7TH and Site Drwy
Site Code : 00000003
Start Date : 11/2/2012
Page No : 1

Groups Printed- Passenger Cars - Trucks and Busses

	7th Street Northbound			7th Street Southbound			Site Driveway Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
05:00 PM	0	0	0	3	0	0	0	0	4	7
05:15 PM	0	0	0	5	0	0	0	0	6	11
05:30 PM	0	0	1	4	0	0	0	0	7	12
05:45 PM	0	0	0	4	0	0	1	0	4	9
Total	0	0	1	16	0	0	1	0	21	39
*** BREAK ***										
Grand Total	0	0	1	16	0	0	1	0	21	39
Apprch %	0	0	100	100	0	0	4.5	0	95.5	
Total %	0	0	2.6	41	0	0	2.6	0	53.8	
Passenger Cars	0	0	1	16	0	0	1	0	21	39
% Passenger Cars	0	0	100	100	0	0	100	0	100	100
Trucks and Busses	0	0	0	0	0	0	0	0	0	0
% Trucks and Busses	0	0	0	0	0	0	0	0	0	0

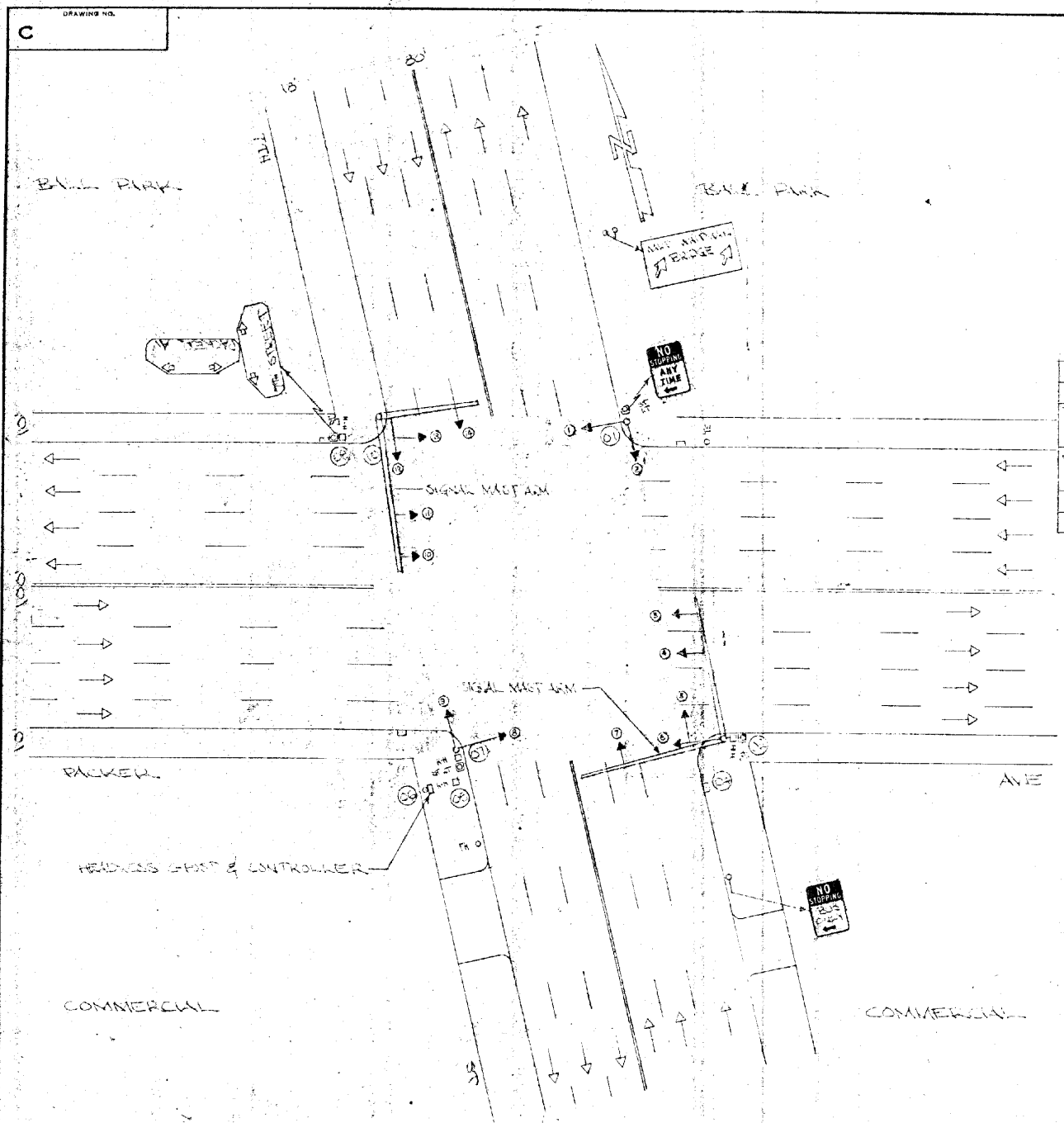
	7th Street Northbound				7th Street Southbound				Site Driveway Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 06:00 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	0	0	0	3	0	0	3	0	0	4	4	7
05:15 PM	0	0	0	0	**5**	0	0	**5**	0	0	6	6	11
05:30 PM	0	0	**1**	**1**	4	0	0	4	0	0	**7**	**7**	**12**
05:45 PM	0	0	0	0	4	0	0	4	**1**	0	4	5	9
Total Volume	0	0	1	1	16	0	0	16	1	0	21	22	39
% App. Total	0	0	100		100	0	0		4.5	0	95.5		
PHF	.000	.000	.250	.250	.800	.000	.000	.800	.250	.000	.750	.786	.813

APPENDIX D

EXISTING SIGNAL PLANS/TIMINGS

DRAWING NO.

C



PHASE	A			B			FLASH
INTERVAL	1	2	3	4	5	6	
7TH ST SIGNALS 2, 5, 7, 8, 12, 14	G	Y	R	R	LR	R	R
PACKER AVE SIGNALS 1, 3, 4, 6, 9, 10, 11, 13	R	R	R	G	Y	R	Y
TIME	34	4	2	34	4	2	
%	42	5	3	42	5	3	

SIGNAL FACES

ALL

7TH ST & PACKER AVE

CONDITION DIAGRAM

TRAFFIC ENGINEERING DIVISION
DEPARTMENT OF STREETS
CITY OF PHILADELPHIA

DRAWN BY WJS	SCALE 1" = 20'		
CHECKED BY JMO	REVISIONS 10-22-76	DRAWING NO. C	
DATE 3-15-73			

APPROVED

APPROVED

77 2426 DIETZGEN 12227

PRESCRIBED TIMING SEQUENCE

7TH STREET & PACKER AVENUE

ESTABLISHED 6/2/82

STILL IN EFFECT

80 Second Cycle

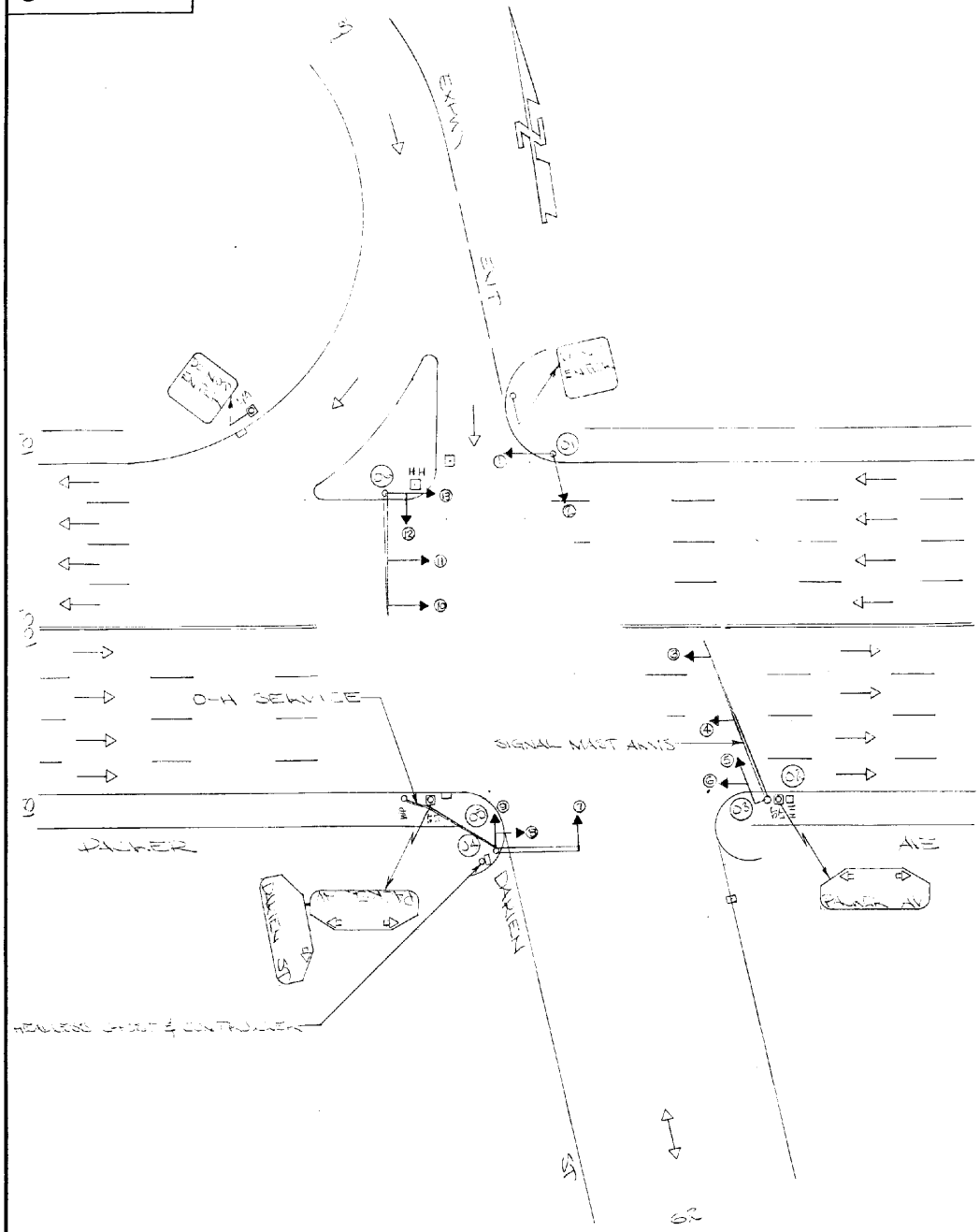
Packer	G	Y	R	R	R	R
7th	R	R	R	G	Y	R
Seconds	34.4	4.0	1.6	35.2	3.2	1.6
%	43	5	2	44	4	2

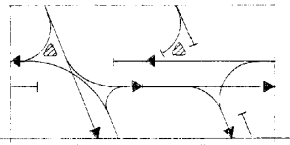
mm/2:88(February 1992)

Prescribed Timing Sequence
10th & Packer Avenue
Established 6/2/82

Packer Avenue	G	Y	R	R	R	R
10th Street	R	R	R	G	Y	R
Seconds	34.4	4.0	1.6	35.2	3.2	1.6

C





PHASE	A			B			TRAIL
INTERVAL	1	2	3	4	5	6	
SIGNALS 2,12	G	Y	R	L	R	R	R
SIGNAL 5,7,9	G	Y	R	R	R	R	R
SIGNALS 1,3,4,6,8,10,11,13	R	R	R	G	Y	R	Y
TIME	21	4	1.5	48	4	1.5	
%	26	5	2	60	5	2	

SIGNAL FACES

= ALL

APPROVED

APPROVED

DARIEN ST & PACKER AVE

CONDITION DIAGRAM

TRAFFIC ENGINEERING DIVISION
DEPARTMENT OF STREETS
CITY OF PHILADELPHIA

DRAWN BY	SCALE			
WJ	1"=25'			
CHECKED BY	REVISIONS		DRAWING NO.	
JMD	10-22-76			
DATE			C	
3-15-78				

77-242C DIETZGEN 12227

WORK ORDER
S11100

Front St & Delaware exp Ramp E & F

Traffic District #1

SIGNAL

Prepared by Charles Denny — Date 6/30/09
Approved by Charles J. Denny C Denny 7/3/09 — Date 6/30/09
WORK COMPLETED by — Date 3-31-10
INSPECTED by — Date
Release date

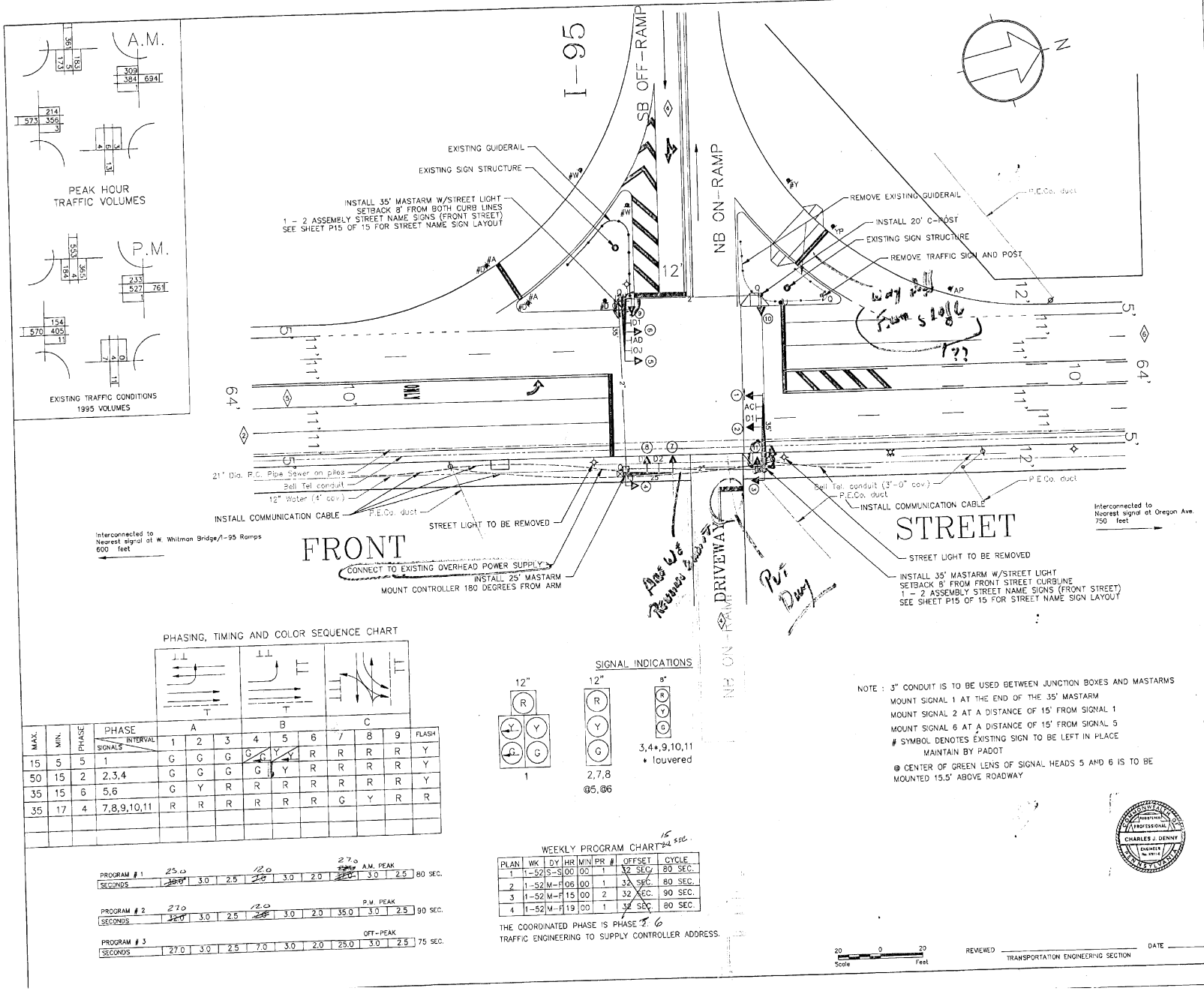
		2 + 6			2 + 5			4 + 8							Minimums			Max
#	PHASE intervals	1	2	3	4	5	6	7	9	10	11	12	13	14	flash	G	M	FH
2	NB Front St	G	G	G	G	Y	R	R	R	R					y	21		
5	Left turn to I 95 on	G	G	G	<-G/6	<-Y/4	R	R	R	R					off	7		
6	SB Front St	G	Y	R	R	R	R	R	R	R					y	21		
1																		
4	Off Ramp	R	R	R	R	R	R	G	Y	R					R	21		
7																		
8	driveway	R	R	R	R	R	R	G	Y	R					R	21		
3																		
P2																		
P6																		
P4																		
P8																		
															secs			
	#1	35	4	2	12	4	2	25	4	2					90			
	#2	35	4	2	12	4	2	35	4	2					100			
	#3	37	4	2	35	4	2	30	4	2					120			
															0			

PN	Day	Time	Prog	cycle	off
1	S-S	0:00	1	90	77
2	M-F	7:00	1	90	77
3	M-F	15:00	2	100	87
4	M-F.	19:00	1	90	77
pre			1	90	77
post			3	120	107

Instructions:

Change timings and off sets

MSB



PHASING, TIMING AND COLOR SEQUENCE CHART

MAX.	MIN.	PHASE	PHASE / INTERVAL / SIGNALS	A 1	A 2	A 3	B 4	B 5	B 6	/	C 8	C 9	FLASH
15	5	5	1	G	G	G	G	Y	R	R	R	R	Y
50	15	2	2,3,4	G	G	G	G	Y	R	R	R	R	Y
35	15	6	5,6	G	Y	R	R	R	R	R	R	R	Y
35	17	4	7,8,9,10,11	R	R	R	R	R	R	G	Y	R	R

SIGNAL INDICATIONS

NOTE : 3" CONDUIT IS TO BE USED BETWEEN JUNCTION BOXES AND MASTARMS
MOUNT SIGNAL 1 AT THE END OF THE 35' MASTARM
MOUNT SIGNAL 2 AT A DISTANCE OF 15' FROM SIGNAL 1
MOUNT SIGNAL 6 AT A DISTANCE OF 15' FROM SIGNAL 5
SYMBOL DENOTES EXISTING SIGN TO BE LEFT IN PLACE
MAINTAIN BY PADOT
@ CENTER OF GREEN LENS OF SIGNAL HEADS 5 AND 6 IS TO BE MOUNTED 15.5' ABOVE ROADWAY

PROGRAM # 1 — SECONDS: 25.0 | 3.0 | 2.5 | 12.0 | 3.0 | 2.0 | 27.0 | 3.0 | 2.5 — A.M. PEAK — 80 SEC.

PROGRAM # 2 — SECONDS: 27.0 | 3.0 | 2.5 | 12.0 | 3.0 | 2.0 | 35.0 | 3.0 | 2.5 — P.M. PEAK — 90 SEC.

PROGRAM # 3 — SECONDS: 27.0 | 3.0 | 2.5 | 7.0 | 3.0 | 2.0 | 25.0 | 3.0 | 2.5 — OFF-PEAK — 75 SEC.

WEEKLY PROGRAM CHART (15 SEC. / 24 SEC.)

PLAN	WK	DY	HR	MIN	PR #	OFFSET	CYCLE
1	1-52	S-S	00	00	1	32 SEC.	80 SEC.
2	1-52	M-F	06	00	1	32 SEC.	80 SEC.
3	1-52	M-F	15	00	2	32 SEC.	90 SEC.
4	1-52	M-F	19	00	1	32 SEC.	80 SEC.

THE COORDINATED PHASE IS PHASE 2 & 6
TRAFFIC ENGINEERING TO SUPPLY CONTROLLER ADDRESS.

Scale 20 0 20 Feet

REVIEWED _____ DATE _____
TRANSPORTATION ENGINEERING SECTION

DIST	COUNTY	ROUTE	SECT	SHEET
6-0	PHILADELPHIA			S3 OF 6

CITY OF PHILADELPHIA

NO.	REVISION	DATE	BY

APPROVED Charles J. Denny TRAFFIC ENGINEERING DIVISION DATE 5/16/97

DESIGN REVIEW Douglas Gray PENNDOT TRAFFIC ENGINEER DATE 5/16/97

MATERIAL LIST

1	EA	170 TYPE CONTROLLER
220	LF	TRAFFIC CONDUIT 2-INCH
25	LF	TRAFFIC CONDUIT 3-INCH
6	EA	CONDUIT ELBOW 2-INCH
6	EA	CONDUIT ELBOW 3-INCH
1	EA	TRAFFIC C-POST 20'
5	EA	SIGNAL HEAD 8-INCH, 3-SECTION
5	EA	SIGNAL HEAD 12-INCH, 3-SECTION (OVERHEAD)
1	EA	SIGNAL HEAD 12-INCH, 5-SECTION
330	LF	TRAFFIC SIGNAL CABLE, 5-CONDUCTOR
65	LF	TRAFFIC SIGNAL CABLE, 7-CONDUCTOR
270	LF	TRAFFIC SIGNAL CABLE, 20-CONDUCTOR
100	LF	ELECTRICAL SERVICE WIRE- 2 CONDUCTOR 10AWG
12	EA	TRAFFIC SIGNS
3	EA	TRAFFIC SIGN CHANNEL POST
2	EA	STREET NAME SIGN, 2-SIGN ASSEMBLY
3	EA	OVERHEAD STREET NAME SIGNS
3	EA	TRAFFIC JUNCTION BOXES, 12" X 18"
3	EA	TRAFFIC MASTARM FOUNDATION
1	EA	TRAFFIC MASTARM, 25' (CONTROLLER HUB (A) 180')
2	EA	TRAFFIC MASTARM, 35' W/STREET LIGHT
2	EA	STREET LIGHT LUMINAIRE, 200 W HPS
2	EA	STREET LIGHT DAVIT 6' ON MASTARM

LEGEND

- Existing Mast Arm, Length / New Mast Arm, Length
- Existing C-Post / New C-Post
- Controller
- Existing Signal Head And Number / New Signal Head And Number
- Existing 2" Conduit / Existing Conduit and Size / New Conduit and Size
- Phase number
- New curb ramp
- Existing curb ramp
- Existing Tree
- Existing grate inlet
- Existing inlet
- Existing street light
- New street light
- Existing fire hydrant
- Existing mail box
- Junction Box
- Existing wood pole

SIGN TABULATION

QUAN	SYM	SERIES	SIZE	LEGEND
1	A	R1-1	30 X 30	STOP
1	AC	R10-12	30 X 30	LEFT TURN YIELD ON GREEN
1	AB	R10-2	30 X 36	OPPOSING TRAFFIC HAS EXTENDED GREEN
1	AP	W11-2A	36 X 36	PEDESTRIAN CROSSING SIGN
1	D	R5-1	30 X 30	DO NOT ENTER (Mounted on Pole 2e)
2	D1			I-95 NORTH (SEE SHEET P15 OF 15)
1	D2			FRONT STREET (SEE SHEET P15 OF 15)
2	J	R3-3	24 X 24	NO TURNS
1	OJ	R3-3	36 X 36	NO TURNS
4	O	R9-3	18 X 18	NO PEDESTRIAN CROSSING
1	OL	R10-6L	24 X 30	STOP HERE ON RED
1	V	R5-9	36 X 24	WRONG WAY (Mounted on Pole 2e)
1	Y	R1-2	36 X 36	YIELD
1	YP	R1-5	24 X 18	YIELD TO PED IN CROSSWALK

CITY OF PHILADELPHIA
TRAFFIC CONTROL SYSTEM

FRONT STREET & I-95 RAMPS (NORTH)

APPROX. 750' S. OF OREGON AVE.

T940703 April 25, 1997 S3 OF 6

11099

work order

Front St & Delaware exp Ramp H & K

Traffic District #1

SIGNAL

Prepared by Charles Denny — Date 6/30/09

Approved by Charles J. Denny — Date 6/30/09 7/3/09

WORK COMPLETED by — Date 3-31-10

INSPECTED by — Date

Release date

2 + 6 | 2 + 5 | 4 + 8

#	PHASE intervals	1	2	3	4	5	6	7	9	10	11	12	13	14
2	NB Front St	G	Y	R	R	R	R	R	R	R				
5														
6	SB Front St	G	G	G	G	Y	R	R	R	R				
1	Left turn to I 95 on	G	G	G	<-G/G	<-Y/Y	R	R	R	R				
4	Whitman Off	R	R	R	R	R	R	G	Y	R				
7														
8														
3														
P2														
P6														
P4														
P8														
	#1	25	4	2	12	4	2	35	4	2				
	#2	35	4	2	12	4	2	35	4	2				
	#3	62	4	2	10	4	2	30	4	2				

	Minimums			Max
flash	G	M	FH	
y	21			
y	21			
off	7			
R	21			

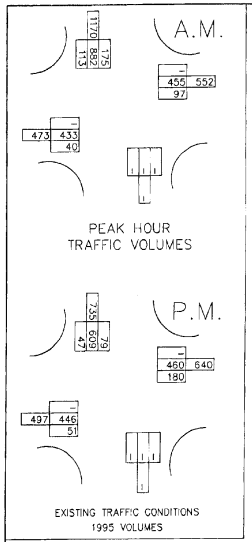
	secs
	90
	100
	120
	0

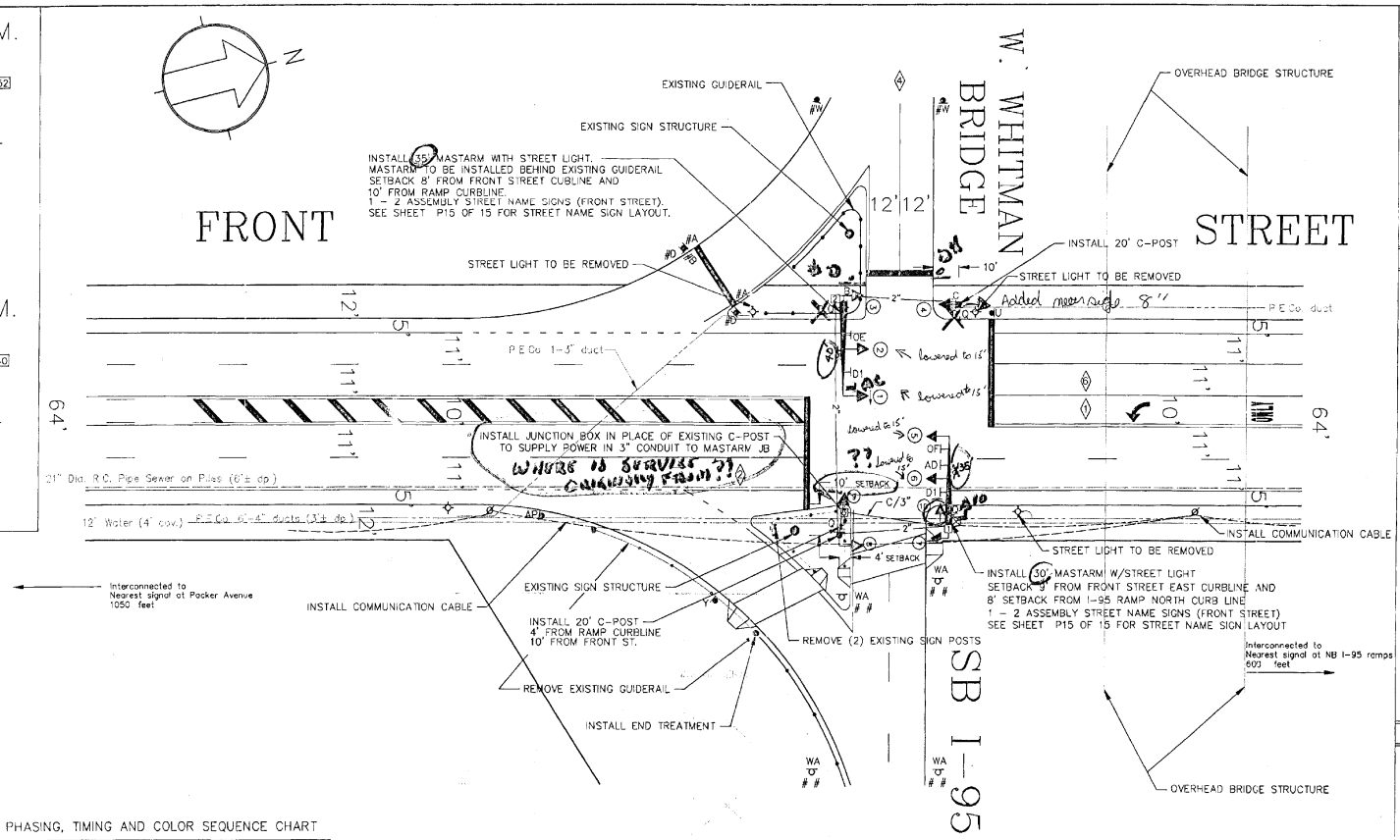
PN	Day	Time	Prog	cycle	off
1	S-S	0:00	1	90	54
2	M-F	7:00	1	90	54
3	M-F	15:00	2	90	64
4	M-F	19:00	1	90	54
pre			1	90	54
post			3	120	84

Instructions:

Change timings and off sets

MSB

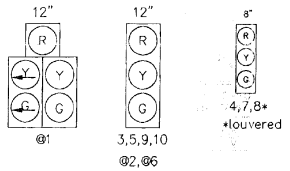




PHASING, TIMING AND COLOR SEQUENCE CHART

MAX.	MIN.G	PHASE	INTERVAL / SIGNALS	A 1	A 2	A 3	B 4	B 5	B 6	C 7	C 8	C 9	FLASH
20	5	1	1	G	G	G	G	Y	R	R	R	R	Y
60	15	6	2,3	G	G	G	Y	R	R	R	R	R	Y
40	15	2	4,5,6,7,8	G	Y	R	R	R	R	R	R	R	Y
35	17	4	9,10,11	R	R	R	R	R	R	G	Y	R	R

SIGNAL INDICATIONS



NOTE : 3" CONDUIT IS TO BE USED BETWEEN JUNCTION BOXES AND MASTARMS MOUNT SIGNALS 2 AND 6 OVER CENTER OF RESPECTIVE LANE.

SYMBOL DENOTES AN EXISTING SIGN TO BE LEFT IN PLACE MAINTAINED BY PORT AUTHORITY.

SYMBOL DENOTES SIGN TO BE MAINTAINED BY PENNDOT. SIGNS TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

@ CENTER OF GREEN LENS FOR SIGNAL HEADS 1, 2 AND 6 ARE TO BE MOUNTED 15.5' ABOVE ROADWAY.

PROGRAM # 1 — 200 — 110 — A.M. PEAK

SECONDS	24.0	3.0	1.8	7.0	3.0	2.0	34.0	3.0	2.2	80 SEC.

PROGRAM # 2 — 320 — 110 — P.M. PEAK

SECONDS	38.0	3.0	1.8	7.0	3.0	2.0	32.0	3.0	2.2	90 SEC.

PROGRAM # 3 — OFF-PEAK

SECONDS	22.0	3.0	1.8	7.0	3.0	2.0	31.0	3.0	2.2	75 SEC.

WEEKLY PROGRAM CHART

PLAN	WK	DY	HR	MIN	PR #	OFFSET	CYCLE
1	1-52	S-S	00	00	1,0	34 SEC.	80 SEC.
2	1-52	M-F	06	00	1,0	34 SEC.	80 SEC.
3	1-52	M-F	15	00	2,0	24 SEC.	90 SEC.
4	1-52	M-F	19	00	1,0	14 SEC.	80 SEC.

THE COORDINATED PHASE IS PHASE 2.

TRAFFIC ENGINEERING TO SUPPLY CONTROLLER ADDRESS.

Scale 20 0 20 Feet

REVIEWED _____ DATE _____
TRANSPORTATION ENGINEERING SECTION

DIST	COUNTY	ROUTE	SECT	SHEET
6-0	PHILADELPHIA			S2 OF 6

CITY OF PHILADELPHIA

NO.	REVISION	DATE	BY

APPROVED _____ DATE 5/6/97
TRAFFIC ENGINEERING DIVISION

DESIGN REVIEW _____ DATE 5/16/97
PENNDOT TRAFFIC ENGINEER

MATERIAL LIST

1	EA	170 TYPE CONTROLLER
200	LF	TRAFFIC CONDUIT 2-INCH
60	LF	TRAFFIC CONDUIT 3-INCH
6	EA	CONDUIT ELBOW 2-INCH
6	EA	CONDUIT ELBOW 3-INCH
2	EA	TRAFFIC C-POST 20'
3	EA	SIGNAL HEAD 8-INCH, 3-SECTION
1	EA	SIGNAL HEAD 12-INCH, 3-SECTION (OVERHEAD)
5	EA	SIGNAL HEAD 12-INCH, 3-SECTION (POLE MOUNTED)
1	EA	SIGNAL HEAD 12-INCH, 5-SECTION
270	LF	TRAFFIC SIGNAL CABLE, 5-CONDUCTOR
60	LF	TRAFFIC SIGNAL CABLE, 7-CONDUCTOR
230	LF	TRAFFIC SIGNAL CABLE, 15-CONDUCTOR
75	LF	ELECTRICAL SERVICE WIRE- 2 CONDUCTOR 10AWG
12	EA	TRAFFIC SIGNS
5	EA	TRAFFIC SIGN CHANNEL POST
2	EA	STREET NAME SIGN, 2-SIGN ASSEMBLY
2	EA	OVERHEAD STREET NAME SIGNS
3	EA	TRAFFIC JUNCTION BOXES, 12" X 18"
2	EA	TRAFFIC MASTARM FOUNDATION
1	EA	TRAFFIC MASTARM, 40' W/STREET LIGHT
1	EA	TRAFFIC MASTARM, 35' W/STREET LIGHT
2	EA	STREET LIGHT LUMINAIRE, 200 W HPS
2	EA	STREET LIGHT DAVIT 6' ON MASTARM

LEGEND

- 35' Existing Mast Arm, Length
- 35' New Mast Arm, Length
- Existing C-Post
- New C-Post
- Controller
- Existing Signal Head And Number
- New Signal Head And Number
- Existing 2" Conduit
- Existing Conduit and Size
- New Conduit and Size
- Phase Number
- New curb ramp
- Existing curb ramp
- Existing Tree
- Existing grate inlet
- Existing inlet
- Existing street light
- New street light
- Existing fire hydrant
- Existing mail box
- Junction Box
- Existing wood pole

SIGN TABULATION

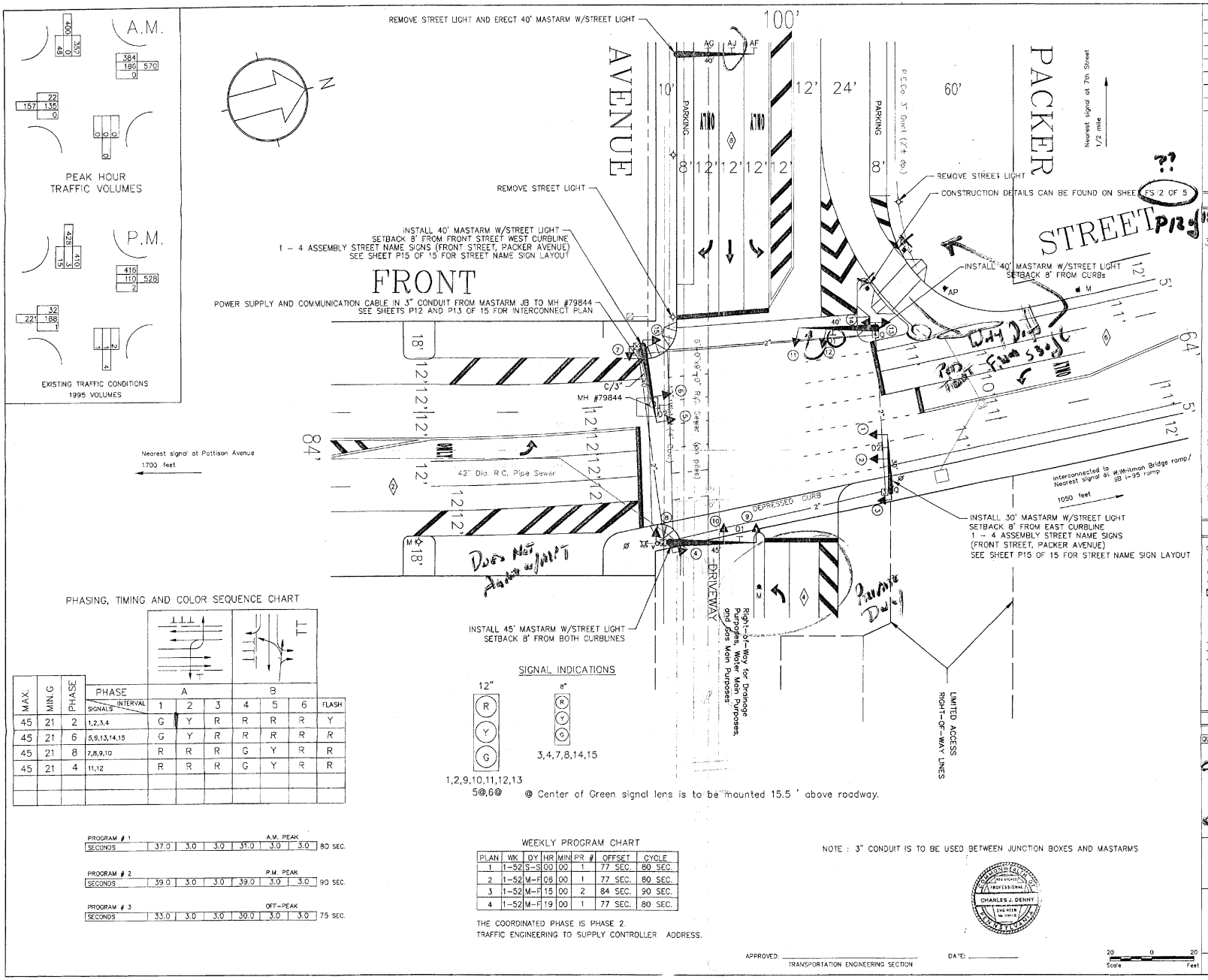
QUAN	SYM	SERIES	SIZE	LEGEND
4	WA	W4-2L	36 X 36	PAVE'T WIDTH TRANS.-LEFT LANE ENDS
1	A	R1-1	30 X 30	STOP
1	AD	R10-2	30 X 36	OPPOSING TRAFFIC HAS EXTENDED GREEN
1	AP	W11-2A	36 X 36	PEDESTRIAN CROSSING SIGN
1	B	R6-1L	36 X 12	ONE WAY LEFT ARROW
1	C	R6-1R	36 X 12	ONE WAY RIGHT ARROW
2	D	R5-1	30 X 30	DO NOT ENTER
2	D1			I-95 SOUTH (SEE PLAN P15 OF 15)
1	DE	R6-2L	30 X 36	ONE WAY LEFT ARROW
1	DF	R6-2R	30 X 36	ONE WAY RIGHT ARROW
4	O	R9-3	18 X 18	NO PEDESTRIAN CROSSING
1	U	R10-6L	24 X 30	STOP HERE ON RED
	W	R5-9	36 X 24	WRONG WAY (~~MAINT. BY PRPA~~)
1	Y	R1-2	36 X 36	YIELD

CHARLES J. DENNY — REGISTERED PROFESSIONAL ENGINEER — PENNSYLVANIA

CITY OF PHILADELPHIA
TRAFFIC CONTROL SYSTEM

FRONT STREET & I-95 RAMP (SOUTH)/ W. WHITMAN BRIDGE RAMP
APPROX. 1050' N. OF PACKER AVE.

T940702	April 25, 1997	S2 OF 6



PHASING, TIMING AND COLOR SEQUENCE CHART

MAX.	MIN. G	PHASE	PHASE / SIGNALS / INTERVAL	A 1	A 2	A 3	B 4	B 5	B 6	FLASH
45	21	2	1,2,3,4	G	Y	R	R	R	R	Y
45	21	6	5,6,13,14,15	G	Y	R	R	R	R	Y
45	21	8	7,8,9,10	R	R	R	G	Y	R	R
45	21	4	11,12	R	R	R	G	Y	R	R

SIGNAL INDICATIONS

12" R Y G — 1,2,9,10,11,12,13

8" R Y G — 3,4,7,8,14,15

5@,6@ @ Center of Green signal lens is to be mounted 15.5 ' above roadway.

PROGRAM #							
1 — A.M. PEAK	37.0	3.0	3.0	31.0	3.0	3.0	80 SEC.
2 — P.M. PEAK	39.0	3.0	3.0	39.0	3.0	3.0	90 SEC.
3 — OFF-PEAK	33.0	3.0	3.0	30.0	3.0	3.0	75 SEC.

WEEKLY PROGRAM CHART

PLAN	WK	DY	HR	MIN	PR #	OFFSET	CYCLE
1	1-52	S-S	00	00	1	77 SEC.	80 SEC.
2	1-52	M-F	06	00	1	77 SEC.	80 SEC.
3	1-52	M-F	15	00	2	84 SEC.	90 SEC.
4	1-52	M-F	19	00	1	77 SEC.	80 SEC.

THE COORDINATED PHASE IS PHASE 2.
TRAFFIC ENGINEERING TO SUPPLY CONTROLLER ADDRESS.

NOTE : 3" CONDUIT IS TO BE USED BETWEEN JUNCTION BOXES AND MASTARMS

CHARLES J. DENNY — REGISTERED PROFESSIONAL ENGINEER

APPROVED: _____ TRANSPORTATION ENGINEERING SECTION DATE: _____

Scale 20 0 20 Feet

DIST	COUNTY	ROUTE	SECT	SHEET
6-0	PHILADELPHIA			S1 OF 6

CITY OF PHILADELPHIA

NO.	REVISION	DATE	BY

APPROVED _____ TRAFFIC ENGINEERING DIVISION DATE 5-6-97

DESIGN REVIEW _____ PENNDOT TRAFFIC ENGINEER DATE 5/6/97

MATERIAL LIST

1	EA	170 TYPE CONTROLLER
325	LF	TRAFFIC CONDUIT 2-INCH
60	LF	TRAFFIC CONDUIT 3-INCH
6	EA	CONDUIT ELBOW 2-INCH
10	EA	CONDUIT ELBOW 3-INCH
6	EA	SIGNAL HEAD 8-INCH, 3-SECTION
8	EA	SIGNAL HEAD 12-INCH, 3-SECTION (OVERHEAD)
1	EA	SIGNAL HEAD 12-INCH, 3-SECTION (POLE MOUNTED)
520	LF	TRAFFIC SIGNAL CABLE 5-CONDUCTOR
325	LF	TRAFFIC SIGNAL CABLE 15-CONDUCTOR
75	LF	ELECTRICAL SERVICE WIRE-2 CONDUCTOR 10AWG
12	EA	TRAFFIC SIGNS
5	EA	TRAFFIC SIGN CHANNEL POST
2	EA	STREET NAME SIGN, 4-SIGN ASSEMBLY
4	EA	OVERHEAD STREET NAME SIGNS
4	EA	TRAFFIC JUNCTION BOXES, 12" X 18"
5	EA	TRAFFIC MASTARM FOUNDATION
1	EA	TRAFFIC MASTARM, 30' W/STREET LIGHT
3	EA	TRAFFIC MASTARM, 40' W/STREET LIGHT
1	EA	TRAFFIC MASTARM, 45' W/STREET LIGHT
5	EA	STREET LIGHT LUMINAIRE, 200 W HPS
5	EA	STREET LIGHT 6' DAVIT ON MASTARM

LEGEND

- Existing Mast Arm, Length
- New Mast Arm, Length
- Existing C-Post
- New C-Post
- Controller
- Existing Signal Head And Number
- New Signal Head And Number
- Existing 2" Conduit
- Existing Conduit and Size
- New Conduit and Size
- Phase Number
- New curb ramp
- Existing curb ramp
- Existing Tree
- Existing grate inlet
- Existing inlet
- Existing street light
- New street light
- Existing fire hydrant
- Existing mail box
- Junction Box
- Existing wood pole

SIGN TABULATION

QUAN	SYM	SERIES	SIZE	LEGEND
1	AF	R3-5L	30 X 36	LEFT TURN SIGN
1	AG	R3-5R	30 X 36	RIGHT TURN SIGN
1	AJ	R3-5S	30 X 36	INHIBITOR
2	AP	W11-2A	36 X 36	PEDESTRIAN CROSSING
2	D1			FRONT STREET (SEE SHEET P15 OF 15)
2	D2			PACKER AVENUE (SEE SHEET P15 OF 15)
2	Q	R9-3	18 X 18	NO PEDESTRIAN CROSSING
1	Y	R1-2	36 X 36	YIELD
3	M	R3-7L	30 X 30	LEFT LANE MUST TURN LEFT
2	U	R5-1	30" X 30"	DO NOT ENTER

CITY OF PHILADELPHIA
TRAFFIC CONTROL SYSTEM

FRONT STREET & PACKER AVENUE

T940701 | APRIL 25, 1997 | S1 OF 6

WORK ORDER
S11098

Front St & Packer

Traffic District #1

SIGNAL

Prepared by Charles Denny — Date 6/30/09

Approved by Charles J. Denny — Date 6/30/09 7/3/09

WORK COMPLETED by — Date 3-31-10

INSPECTED by — Date

Release date

2 + 6 4 + 8

#	PHASE	intervals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Minimums flash	G	M	FH	Max
2	NB Front St		G	Y	R	R	R	R									y	21			
5																					
6	SB Front St		G	Y	R	R	R	R									y	21			
1																					
4	Packer		R	R	R	G	Y	R									R	21			
7																					
8	driveway		R	R	R	G	Y	R									R	21			
3																					
P2																					
P6																					
P4																					
P8																					
																	secs				
	#1		38	4	3	38	4	3									90				
	#2		43	4	3	43	4	3									100				
	#3		53	4	3	53	4	3									120				
																	0				

PN	Day	Time	Prog	cycle	off
1	S-S	0:00	1	90	24
2	M-F	7:00	1	90	24
3	M-F	15:00	2	100	34
4	M-F	19:00	1	90	24
pre			1	90	0
post			3	120	74

Instructions: Change timings and off sets

MSB

APPENDIX E

TRIP GENERATION

Sugarhouse Casino

Date	Trips		Gaming Positions	Trips/Position		
	In	Out		In	Out	Total
Weekday Evening (Nov 2010)	219	300	1840	0.12	0.16	0.28
	42%	58%				
Saturday Evening (Nov 2010)	352	435	1840	0.19	0.24	0.43
	45%	55%				

The Sugarhouse Casino rate includes a modal split which is estimated to be as much as 6 % based on information contained in the Interim Report of Findings of the Philadelphia Gaming Advisory Task Force (2007)

Utilizing ate developed from Sugarhouse Casino counts to develop base trip rate for proposed site

	Weekday	Saturday
Sugarhouse Trips (weekday PM peak hour of generator)	519	787
Sugarhouse Gaming Positions	1840	1840
Rate	0.28	0.43
Seasonal Adjustment	20%	20%
Modal Trip Adjustment	6%	6%
Adjusted base trip rate rate (trips/gaming position)	0.36	0.54

Hollywood casino Trip Generation (Non-Event PM Peak)

	Weekday	Saturday
Weekday PM base trip rate (trips/gaming position)	0.36	0.54
Modal Trip Adjustment	-2%	-2%
Adjusted trip rate (trips/gaming position)	0.35	0.53
Hollywood Casino Gaming positions	2736	2736
Hollywood Casino Base Trips	958	1450
Existing Site trips (Turf Club- weekday 5-6 PM)	159	159
Existing Site trips (Commercial- weekday 5-6 PM)	39	39
New Hollywood Casino Trips	**760**	**1252**

Hollywood casino Trip Generation (Event PM Peak)

	Weekday	Saturday
Weekday PM base trip rate (trips/gaming position)	0.36	0.54
Modal Trip Adjustment	-2%	-2%
Adjusted trip rate (trips/gaming position)	0.35	0.53
Hollywood Casino Gaming positions	2736	2736
Hollywood Casino Base Trips	958	1450
Casino/Event Linked Trip Adjustment (-15%)	-144	-218
Casino/Event Stay-Away Adjustment (-15%)	-144	-218
Existing Site trips (Turf Club- weekday PM)	159	159
Turf Club/Event Linked Trip Adjustment (-15%)	-24	-24
Turf Club/Event Stay-Away Adjustment (-15%)	-24	-24
Existing Site trips (Commercial- weekday PM)	39	39
New Hollywood Casino Trips	**520**	**865**

Weekday Distribution

	In - 42%	Out - 58%
Base	402	555
New (non-event)	319	441
New (pre-event)	218	302

Weekday Daily Total

	In - 42%	Out - 58%
Base	402	555
% daily Traffic	0.078	0.071
Daily Traffic	5156	7823
Weekday Total	12979	

Saturdayy Distribution

	In - 45%	Out - 55%
Base	653	798
New (non-event)	563	689
New (pre-event)	363	502

Saturday Daily Total

	In - 45%	Out - 55%
Base	653	798
% daily Traffic	0.078	0.069
Daily Traffic	8366	11559
Saturday Total	19924	

Traffic Count Summary at Sugarhouse Casino
Friday, November 19, 2010 and Saturday November 13, 2010

Time Period		South Casino Driveway			Main Casino Driveway			North Casino Driveway			Casino Total		
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Friday 11-19-10	3:00	1	2	3	27	18	45	39	46	85	67	66	133
	3:15	0	3	3	20	18	38	28	29	57	48	50	98
	3:30	2	3	5	27	21	48	32	53	85	61	77	138
	3:45	2	5	7	20	18	38	36	54	90	58	77	135
	4:00	0	1	1	18	31	49	31	46	77	49	78	127
	4:15	0	4	4	20	18	38	31	46	77	51	68	119
	4:30	2	2	4	26	24	50	38	43	81	66	69	135
	4:45	3	5	8	18	15	33	39	24	63	60	44	104
	5:00	0	1	1	23	18	41	25	47	72	48	66	114
	5:15	1	3	4	25	25	50	29	50	79	55	78	133
	5:30	0	2	2	29	24	53	42	43	85	71	69	140
	5:45	2	1	3	19	19	38	35	30	65	56	50	106

Friday PM Peak	
3:00-4:00	504
3:15-4:15	498
3:30-4:30	519
3:45-4:45	516
4:00-5:00	485
4:15-5:15	472
4:30-5:30	486
4:45-5:45	491
5:00-6:00	493

Time Period		South Casino Driveway			Main Casino Driveway			North Casino Driveway			Casino Total		
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Saturday 11-13-10	12:00	2	0	2	32	12	44	35	54	89	69	66	135
	12:15	2	2	4	28	14	42	34	34	68	64	50	114
	12:30	2	2	4	31	11	42	27	23	50	60	36	96
	12:45	1	3	4	34	13	47	23	33	56	58	49	107
	1:00	0	4	4	20	12	32	23	32	55	43	48	91
	1:15	2	3	5	21	11	32	17	30	47	40	44	84
	1:30	2	7	9	25	17	42	32	14	46	59	38	97
	1:45	4	3	7	25	17	42	33	28	61	62	48	110
	2:00	3	5	8	35	12	47	32	49	81	70	66	136
	2:15	4	0	4	31	26	57	37	29	66	72	55	127
	2:30	1	6	7	29	25	54	16	36	52	46	67	113
	2:45	5	4	9	36	19	55	22	34	56	63	57	120
	3:00	4	7	11	32	16	48	22	28	50	58	51	109
	3:15	4	2	6	28	20	48	33	30	63	65	52	117
	3:30	1	7	8	30	22	52	35	41	76	66	70	136
	3:45	1	4	5	33	29	62	35	52	87	69	85	154
	9:00	1	9	10	48	35	83	34	58	92	83	102	185
	9:15	4	3	7	50	33	83	45	61	106	99	97	196
	9:30	1	6	7	30	41	71	28	47	75	59	94	153
	9:45	7	6	13	54	43	97	43	72	115	104	121	225
	10:00	9	6	15	47	48	95	34	69	103	90	123	213
	10:15	6	6	12	41	35	76	29	52	81	76	93	169
	10:30	4	7	11	36	42	78	42	42	84	82	91	173
	10:45	5	5	10	43	39	82	46	54	100	94	98	192

Saturday Peak	
12:00-1:00	452
12:15-1:15	408
12:30-1:30	378
12:45-1:45	379
1:00-2:00	382
1:15-2:15	427
1:30-2:30	470
1:45-2:45	486
2:00-3:00	496
2:15-3:15	469
2:30-3:30	459
2:45-3:45	482
3:00-4:00	516
9:00-9:15	759
9:15-10:15	787
9:30-10:30	760
9:45-10:45	780
10:00-11:00	747

APPENDIX F

TRIP DISTRIBUTION

Traffic Volume Calculations 2016 PM Peak

Weekday PM Peak								Casino Trips 319		Casino Trips 441				
	mvmt	mvmt #	2010/2012 Existing Volumes	PHF	HV%	RTOR	2016 No Build Volumes	% enter	vol	% exit	vol	2016 Build Volumes	mvmt #	mvmt
	nb left	1	16	0.93	27		17		0		0	17	1	nb left
	nb thru	2	86	0.93	32		93		0		0	93	2	nb thru
	nb right	3	5	0.93	41		5		0		0	5	3	nb right
Front	wb left	4	2	0.93	33		2		0		0	2	4	wb left
and	wb thru	5	2	0.93	22		2		0		0	2	5	wb thru
Packer	wb right	6	5	0.93	15		5		0		0	5	6	wb right
	sb left	7	10	0.93	16		11		0		0	11	7	sb left
	sb thru	8	151	0.93	25		164		0		0	164	8	sb thru
	sb right	9	281	0.93	12		304	28.5	91		0	395	9	sb right
	eb left	10	389	0.93	12		421		0	32.5	143	565	10	eb left
	eb thru	11	19	0.93	17		21		0		0	21	11	eb thru
	eb right	12	38	0.93	38		41		0		0	41	12	eb right
	nb left	13	127	0.80			138		0		0	138	13	nb left
Front	nb thru	14	521	0.80			564		0	32.5	143	707	14	nb thru
and	sb thru	15	331	0.80			358	28.5	91		0	449	15	sb thru
I-76 EB	sb right	16	230	0.80			249		0		0	249	16	sb right
	nb thru	17	327	0.80			340		0	28.5	126	466	17	nb thru
	nb right	18	13	0.80			14		0	4.0	18	31	18	nb right
Front	sb left	19	53	0.80			55		0		0	55	19	sb left
and	sb thru	20	650	0.80			676	28.5	91		0	767	20	sb thru
from I-76 WB/to I-95 SB	eb left	21	77	0.80			80		0		0	80	21	eb left
	eb thru	22	362	0.80			377		0		0	377	22	eb thru
	eb right	23	22	0.80			23		0		0	23	23	eb right
	nb left	24	164	0.80			174		0	28.0	123	298	24	nb left
	nb thru	25	217	0.80			230		0	0.5	2	233	25	nb thru
	nb right	26	0	0.80			0		0		0	0	26	nb right
Front	wb left	27	0	0.80			0		0		0	0	27	wb left
and	wb thru	28	0	0.80			0		0		0	0	28	wb thru
Dunkin Donuts/I-95	wb right	29	0	0.80			0		0		0	0	29	wb right
	sb left	30	0	0.80			0		0		0	0	30	sb left
	sb thru	31	621	0.80			659	0.5	2		0	661	31	sb thru
	sb right	32	312	0.80			331		0		0	331	32	sb right
	eb left	33	484	0.80			514		0		0	514	33	eb left
	eb thru	34	0	0.80			0		0		0	0	34	eb thru
	eb right	35	126	0.80			134	28.0	89		0	223	35	eb right
	nb left	36	33	0.93	3		34		0		0	34	36	nb left
	nb thru	37	44	0.93	0		46		0		0	46	37	nb thru
	nb right	38	20	0.93	29	3	21		0		0	21	38	nb right
Packer	wb left	39	22	0.93	14		23	29.5	94		0	117	39	wb left
and	wb thru	40	266	0.93	6		277	3.0	10		0	286	40	wb thru
7th	wb right	41	98	0.93	0	33	102		0		0	102	41	wb right
	sb left	42	22	0.93	0		23		0		0	23	42	sb left
	sb thru	43	48	0.93	8		50	8.5	27		0	77	43	sb thru
	sb right	44	114	0.93	1	0	119	1.0	3		0	122	44	sb right
	eb left	45	172	0.93	0		179		0	0.5	2	181	45	eb left
	eb thru	46	342	0.93	6		356		0	32.5	143	499	46	eb thru
	eb right	47	18	0.93	7	13	19	33.5	107		0	126	47	eb right

Traffic Volume Calculations 2016 PM Peak

Weekday PM Peak								Casino Trips 319		Casino Trips 441				
	mvmt	mvmt #	2010/2012 Existing Volumes	PHF	HV%	RTOR	2016 No Build Volumes	% enter	vol	% exit	vol	2016 Build Volumes	mvmt #	mvmt
	nb left	48	58	0.96			60		0	33.5	147	207	48	nb left
	nb thru	49	77	0.96			80		0	9.0	40	120	49	nb thru
	nb right	50	46	0.96			48	3.0	10	33.0	145	202	50	nb right
Packer	wb left	51	30	0.96			31	4.0	13		0	44	51	wb left
and	wb thru	52	306	0.96			318		0		0	318	52	wb thru
Darien Street	wb right	53	83	0.96			86		0		0	86	53	wb right
	sb left	54	320	0.96			333	30.0	95		0	428	54	sb left
	sb thru	55	14	0.96			15	2.0	6		0	21	55	sb thru
	sb right	56	39	0.96			41		0		0	41	56	sb right
	eb left	57	79	0.96			82		0		0	82	57	eb left
	eb thru	58	87	0.96			91	0.5	2		0	92	58	eb thru
	eb right	59	24	0.96			25	1.0	3		0	28	59	eb right
	nb left	60	10	0.92	10		11		0		0	11	60	nb left
	nb thru	61	15	0.92	0		16		0		0	16	61	nb thru
	nb right	62	0	0.92	0	0	0		0		0	0	62	nb right
Packer	wb left	63	2	0.92	0		2		0		0	2	63	wb left
and	wb thru	64	290	0.92	2		308		0	33.0	146	453	64	wb thru
10th	wb right	65	118	0.92	0	47	125		0	0.5	2	127	65	wb right
	sb left	66	120	0.92	1		127	0.5	2		0	129	66	sb left
	sb thru	67	17	0.92	0		18		0		0	18	67	sb thru
	sb right	68	86	0.92	17	34	91		0		0	91	68	sb right
	eb left	69	46	0.92	4		49		0		0	49	69	eb left
	eb thru	70	115	0.92	3		122	1.0	3		0	125	70	eb thru
	eb right	71	12	0.92	0	7	13		0		0	13	71	eb right
	nb left	72					0		0		0	0	72	nb left
Packer	nb right	73					0		0		0	0	73	nbright
and	sb right	74	165				172	4.0	13		0	184	74	sbright
95 Ramp	eb thru	75					0		0	32.5	143	143	75	eb thru
	eb right	76					0		0		0	0	76	eb right
	wb thru	77					0	28.5	91		0	91	77	wb thru
	wb right	78					0		0		0	0	78	wb right
	nb left	103	0	0.92	10		0		0		0	0	103	nb left
	nb thru	104	181	0.92	0		192		0	71.0	313	505	104	nb thru
	nb right	105	0	0.92	0	0	0		0		0	0	105	nb right
Darien & N. Site	wb left	106	0	0.92	0		0		0	4.5	20	20	106	wb left
Driveway	wb thru	107	0	0.92	2		0		0		0	0	107	wb thru
	wb right	108	0	0.92	0	47	0	3.0	10	4.5	20	30	108	wb right
	sb left	109	0	0.92	1		0		0		0	0	109	sb left
	sb thru	110	68	0.92	0		72	7.0	22		0	95	110	sb thru
	sb right	111	0	0.92	17	34	0		0		0	0	111	sb right
	eb left	112	0	0.92	4		0		0		0	0	112	eb left
	eb thru	113	0	0.92	3		0		0		0	0	113	eb thru
	eb right	114	0	0.92	0	7	0		0		0	0	114	eb right

Traffic Volume Calculations 2016 PM Peak

Weekday PM Peak								Casino Trips 319 % enter	Casino Trips 319 vol	Casino Trips 441 % exit	Casino Trips 441 vol			
	mvmt	mvmt #	2010/2012 Existing Volumes	PHF	HV%	RTOR	2016 No Build Volumes					2016 Build Volumes	mvmt #	mvmt
	nb left	115	0	0.92	10		0		0		0	0	115	nb left
	nb thru	116	181	0.92	0		192		0	64.0	282	474	116	nb thru
	nb right	117	0	0.92	0	0	0	6.0	19		0	19	117	nb right
Darien & Employee	wb left	118	0	0.92	0		0		0	6.0	26	26	118	wb left
Driveway	wb thru	119	0	0.92	2		0		0		0	0	119	wb thru
	wb right	120	0	0.92	0	47	0		0	7.0	31	31	120	wb right
	sb left	121	0	0.92	1		0	7.0	22		0	22	121	sb left
	sb thru	122	68	0.92	0		72		0	4.5	20	92	122	sb thru
	sb right	123	0	0.92	17	34	0		0		0	0	123	sb right
	eb left	124	0	0.92	4		0		0		0	0	124	eb left
	eb thru	125	0	0.92	3		0		0		0	0	125	eb thru
	eb right	126	0	0.92	0	7	0		0		0	0	126	eb right
	nb left	127	0	0.92	10		0	4.5	14		0	14	127	nb left
	nb thru	128	97	0.92	0		103		0		0	103	128	nb thru
	nb right	129	0	0.92	0	0	0		0		0	0	129	nb right
7th Street &	wb left	130	0	0.92	0		0		0		0	0	130	wb left
North Site Driveway	wb thru	131	0	0.92	2		0		0		0	0	131	wb thru
	wb right	132	0	0.92	0	47	0		0		0	0	132	wb right
	sb left	133	0	0.92	1		0		0		0	0	133	sb left
	sb thru	134	88	0.92	0		93	64.0	204		0	298	134	sb thru
	sb right	135	0	0.92	17	34	0	7.5	24		0	24	135	sb right
	eb left	136	0	0.92	4		0		0		0	0	136	eb left
	eb thru	137	0	0.92	3		0		0		0	0	137	eb thru
	eb right	138	0	0.92	0	7	0		0		0	0	138	eb right
	nb left	139	0	0.92	10		0	14.0	45		0	45	139	nb left
	nb thru	140	97	0.92	0		103	4.5	14		0	117	140	nb thru
	nb right	141	0	0.92	0	0	0		0		0	0	141	nb right
7th Street &	wb left	142	0	0.92	0		0		0		0	0	142	wb left
Garage Driveway	wb thru	143	0	0.92	2		0		0		0	0	143	wb thru
	wb right	144	0	0.92	0	47	0		0		0	0	144	wb right
	sb left	145	0	0.92	1		0		0		0	0	145	sb left
	sb thru	146	88	0.92	0		93		0		0	93	146	sb thru
	sb right	147	0	0.92	17	34	0	64.0	204		0	204	147	sb right
	eb left	148	0	0.92	4		0		0		0	0	148	eb left
	eb thru	149	0	0.92	3		0		0		0	0	149	eb thru
	eb right	150	0	0.92	0	7	0		0		0	0	150	eb right
	nb left	151	0	0.92	10		0		0		0	0	151	nb left
	nb thru	152	181	0.92	0		192	6.0	19		0	211	152	nb thru
	nb right	153	0	0.92	0	0	0		0		0	0	153	nb right
Darrien &	wb left	154	0	0.92	0		0		0	14.0	62	62	154	wb left
Garage Driveway	wb thru	155	0	0.92	2		0		0		0	0	155	wb thru
	wb right	156	0	0.92	0	47	0		0	64.0	282	282	156	wb right
	sb left	157	0	0.92	1		0		0		0	0	157	sb left
	sb thru	158	68	0.92	0		72		0	10.5	46	118	158	sb thru
	sb right	159	0	0.92	17	34	0		0		0	0	159	sb right
	eb left	160	0	0.92	4		0		0		0	0	160	eb left
	eb thru	161	0	0.92	3		0		0		0	0	161	eb thru
	eb right	162	0	0.92	0	7	0		0		0	0	162	eb right

Traffic Volume Calculations 2021 PM Peak

Weekday PM Peak								Casino Trips 319		Casino Trips 441					Weekday PM Peak
	mvmt	mvmt #	2010/2012 Existing Volumes	PHF	HV%	RTOR	2021 No Build Volumes	% enter	vol	% exit	vol	2021 Build Volumes	mvmt #	mvmt	
	nb left	1	16	0.93	27		18		0		0	18	1	nb left	
	nb thru	2	86	0.93	32		98		0		0	98	2	nb thru	
	nb right	3	5	0.93	41		6		0		0	6	3	nb right	
Front	wb left	4	2	0.93	33		2		0		0	2	4	wb left	Front
and	wb thru	5	2	0.93	22		2		0		0	2	5	wb thru	and
Packer	wb right	6	5	0.93	15		6		0		0	6	6	wb right	Packer
	sb left	7	10	0.93	16		11		0		0	11	7	sb left	
	sb thru	8	151	0.93	25		172		0		0	172	8	sb thru	
	sb right	9	281	0.93	12		320	28.5	91		0	411	9	sb right	
	eb left	10	389	0.93	12		443		0	32.5	143	586	10	eb left	
	eb thru	11	19	0.93	17		22		0		0	22	11	eb thru	
	eb right	12	38	0.93	38		43		0		0	43	12	eb right	
	nb left	13	127	0.80			145		0		0	145	13	nb left	
Front	nb thru	14	521	0.80			593		0	32.5	143	736	14	nb thru	Front
and	sb thru	15	331	0.80			377	28.5	91		0	468	15	sb thru	and
I-76 EB	sb right	16	230	0.80			262		0		0	262	16	sb right	I-76 EB
	nb thru	17	327	0.80			358		0	28.5	126	483	17	nb thru	
	nb right	18	13	0.80			14		0	4.0	18	32	18	nb right	
Front	sb left	19	53	0.80			58		0		0	58	19	sb left	Front
and	sb thru	20	650	0.80			711	28.5	91		0	802	20	sb thru	and
from I-76 WB/to I-95 SB	eb left	21	77	0.80			84		0		0	84	21	eb left	from I-76 WB/to I-95 SB
	eb thru	22	362	0.80			396		0		0	396	22	eb thru	
	eb right	23	22	0.80			24		0		0	24	23	eb right	
	nb left	24	164	0.80			183		0	28.0	123	306	24	nb left	
	nb thru	25	217	0.80			242		0	0.5	2	244	25	nb thru	
	nb right	26	0	0.80			0		0		0	0	26	nb right	
Front	wb left	27	0	0.80			0		0		0	0	27	wb left	Front
and	wb thru	28	0	0.80			0		0		0	0	28	wb thru	and
Dunkin Donuts/I-95	wb right	29	0	0.80			0		0		0	0	29	wb right	Dunkin Donuts/I-95
	sb left	30	0	0.80			0		0		0	0	30	sb left	Dunkin Donuts/I-95
	sb thru	31	621	0.80			693	0.5	2		0	694	31	sb thru	
	sb right	32	312	0.80			348		0		0	348	32	sb right	
	eb left	33	484	0.80			540		0		0	540	33	eb left	
	eb thru	34	0	0.80			0		0		0	0	34	eb thru	
	eb right	35	126	0.80			141	28.0	89		0	230	35	eb right	
	nb left	36	33	0.93	3		36		0		0	36	36	nb left	
	nb thru	37	44	0.93	0		48		0		0	48	37	nb thru	
	nb right	38	20	0.93	29	3	22		0		0	22	38	nb right	
Packer	wb left	39	22	0.93	14		24	29.5	94		0	118	39	wb left	Packer
and	wb thru	40	266	0.93	6		291	3.0	10		0	300	40	wb thru	and
7th	wb right	41	98	0.93	0	33	107		0		0	107	41	wb right	7th
	sb left	42	22	0.93	0		24		0		0	24	42	sb left	
	sb thru	43	48	0.93	8		52	8.5	27		0	80	43	sb thru	
	sb right	44	114	0.93	1	0	125	1.0	3		0	128	44	sb right	
	eb left	45	172	0.93	0		188		0	0.5	2	190	45	eb left	
	eb thru	46	342	0.93	6		374		0	32.5	143	517	46	eb thru	
	eb right	47	18	0.93	7	13	20	33.5	107		0	127	47	eb right	

Traffic Volume Calculations 2021 PM Peak

Weekday PM Peak								Casino Trips 319 % enter	Casino Trips 319 vol	Casino Trips 441 % exit	Casino Trips 441 vol				Weekday PM Peak
	mvmt	mvmt #	2010/2012 Existing Volumes	PHF	HV%	RTOR	2021 No Build Volumes					2021 Build Volumes	mvmt #	mvmt	
	nb left	48	58	0.96			63		0	33.5	147	210	48	nb left	
	nb thru	49	77	0.96			84		0	9.0	40	124	49	nb thru	
	nb right	50	46	0.96			50	3.0	10	33.0	145	204	50	nb right	
Packer	wb left	51	30	0.96			33	4.0	13		0	46	51	wb left	Packer
and	wb thru	52	306	0.96			335		0		0	335	52	wb thru	and
Darien Street	wb right	53	83	0.96			91		0		0	91	53	wb right	Darien Street
	sb left	54	320	0.96			350	30.0	95		0	445	54	sb left	
	sb thru	55	14	0.96			15	2.0	6		0	22	55	sb thru	
	sb right	56	39	0.96			43		0		0	43	56	sb right	
	eb left	57	79	0.96			86		0		0	86	57	eb left	
	eb thru	58	87	0.96			95	0.5	2		0	97	58	eb thru	
	eb right	59	24	0.96			26	1.0	3		0	29	59	eb right	
	nb left	60	10	0.92	10		11		0		0	11	60	nb left	
	nb thru	61	15	0.92	0		17		0		0	17	61	nb thru	
	nb right	62	0	0.92	0	0	0		0		0	0	62	nb right	
Packer	wb left	63	2	0.92	0		2		0		0	2	63	wb left	Packer
and	wb thru	64	290	0.92	2		324		0	33.0	146	469	64	wb thru	and
10th	wb right	65	118	0.92	0	47	132		0	0.5	2	134	65	wb right	10th
	sb left	66	120	0.92	1		134	0.5	2		0	135	66	sb left	
	sb thru	67	17	0.92	0		19		0		0	19	67	sb thru	
	sb right	68	86	0.92	17	34	96		0		0	96	68	sb right	
	eb left	69	46	0.92	4		51		0		0	51	69	eb left	
	eb thru	70	115	0.92	3		128	1.0	3		0	131	70	eb thru	
	eb right	71	12	0.92	0	7	13		0		0	13	71	eb right	
	nb left	72					0		0		0	0	72	nb left	
Packer	nb right	73					0		0		0	0	73	nbright	Packer
and	sb right	74	165				180	4.0	13		0	193	74	sbright	and
95 Ramp	eb thru	75					0		0	32.5	143	143	75	eb thru	3rd
	eb right	76					0		0		0	0	76	eb right	
	wb thru	77					0	28.5	91		0	91	77	wb thru	
	wb right	78					0		0		0	0	78	wb right	
	nb left	103	0	0.92	10		0		0		0	0	103	nb left	
	nb thru	104	181	0.92	0		198		0	71.0	313	511	104	nb thru	
	nb right	105	0	0.92	0	0	0		0		0	0	105	nb right	
Darien & N. Site	wb left	106	0	0.92	0		0		0	4.5	20	20	106	wb left	Packer
Driveway	wb thru	107	0	0.92	2		0		0		0	0	107	wb thru	and
	wb right	108	0	0.92	0	47	0	3.0	10	4.5	20	30	108	wb right	10th
	sb left	109	0	0.92	1		0		0		0	0	109	sb left	
	sb thru	110	68	0.92	0		74	7.0	22		0	97	110	sb thru	
	sb right	111	0	0.92	17	34	0		0		0	0	111	sb right	
	eb left	112	0	0.92	4		0		0		0	0	112	eb left	
	eb thru	113	0	0.92	3		0		0		0	0	113	eb thru	
	eb right	114	0	0.92	0	7	0		0		0	0	114	eb right	

Traffic Volume Calculations 2021 PM Peak

Weekday PM Peak								Casino Trips								Weekday PM Peak
								319		441						
	mvmt	mvmt #	2010/2012 Existing Volumes	PHF	HV%	RTOR	2021 No Build Volumes	% enter	vol	% exit	vol	2021 Build Volumes	mvmt #	mvmt		
	nb left	115	0	0.92	10		0		0		0	0	115	nb left		
	nb thru	116	181	0.92	0		198		0	64.0	282	480	116	nb thru		
	nb right	117	0	0.92	0	0	0	6.0	19		0	19	117	nb right		
Darien & Employee	wb left	118	0	0.92	0		0		0	6.0	26	26	118	wb left	Packer	
Driveway	wb thru	119	0	0.92	2		0		0		0	0	119	wb thru	and	
	wb right	120	0	0.92	0	47	0		0	7.0	31	31	120	wb right	10th	
	sb left	121	0	0.92	1		0	7.0	22		0	22	121	sb left		
	sb thru	122	68	0.92	0		74		0	4.5	20	94	122	sb thru		
	sb right	123	0	0.92	17	34	0		0		0	0	123	sb right		
	eb left	124	0	0.92	4		0		0		0	0	124	eb left		
	eb thru	125	0	0.92	3		0		0		0	0	125	eb thru		
	eb right	126	0	0.92	0	7	0		0		0	0	126	eb right		
	nb left	127	0	0.92	10		0	4.5	14		0	14	127	nb left		
	nb thru	128	97	0.92	0		106		0		0	106	128	nb thru		
	nb right	129	0	0.92	0	0	0		0		0	0	129	nb right		
7th Street &	wb left	130	0	0.92	0		0		0		0	0	130	wb left	Packer	
North Site Driveway	wb thru	131	0	0.92	2		0		0		0	0	131	wb thru	and	
	wb right	132	0	0.92	0	47	0		0		0	0	132	wb right	10th	
	sb left	133	0	0.92	1		0		0		0	0	133	sb left		
	sb thru	134	88	0.92	0		96	64.0	204		0	300	134	sb thru		
	sb right	135	0	0.92	17	34	0	7.5	24		0	24	135	sb right		
	eb left	136	0	0.92	4		0		0		0	0	136	eb left		
	eb thru	137	0	0.92	3		0		0		0	0	137	eb thru		
	eb right	138	0	0.92	0	7	0		0		0	0	138	eb right		
	nb left	139	0	0.92	10		0	14.0	45		0	45	139	nb left		
	nb thru	140	97	0.92	0		106	4.5	14		0	120	140	nb thru		
	nb right	141	0	0.92	0	0	0		0		0	0	141	nb right		
7th Street &	wb left	142	0	0.92	0		0		0		0	0	142	wb left	Packer	
Garage Driveway	wb thru	143	0	0.92	2		0		0		0	0	143	wb thru	and	
	wb right	144	0	0.92	0	47	0		0		0	0	144	wb right	10th	
	sb left	145	0	0.92	1		0		0		0	0	145	sb left		
	sb thru	146	88	0.92	0		96		0		0	96	146	sb thru		
	sb right	147	0	0.92	17	34	0	64.0	204		0	204	147	sb right		
	eb left	148	0	0.92	4		0		0		0	0	148	eb left		
	eb thru	149	0	0.92	3		0		0		0	0	149	eb thru		
	eb right	150	0	0.92	0	7	0		0		0	0	150	eb right		
	nb left	151	0	0.92	10		0		0		0	0	151	nb left		
	nb thru	152	181	0.92	0		198	6.0	19		0	217	152	nb thru		
	nb right	153	0	0.92	0	0	0		0		0	0	153	nb right		
Darrien &	wb left	154	0	0.92	0		0		0	14.0	62	62	154	wb left	Packer	
Garage Driveway	wb thru	155	0	0.92	2		0		0		0	0	155	wb thru	and	
	wb right	156	0	0.92	0	47	0		0	64.0	282	282	156	wb right	10th	
	sb left	157	0	0.92	1		0		0		0	0	157	sb left		
	sb thru	158	68	0.92	0		74		0	10.5	46	121	158	sb thru		
	sb right	159	0	0.92	17	34	0		0		0	0	159	sb right		
	eb left	160	0	0.92	4		0		0		0	0	160	eb left		
	eb thru	161	0	0.92	3		0		0		0	0	161	eb thru		
	eb right	162	0	0.92	0	7	0		0		0	0	162	eb right		

Traffic Volume Calculations 2016 & 2021 Event Peak

Weekday Pre-Phillies Event Peak								Casino Trips 218		Casino Trips 302					Weekday Pre-Phillies Event Peak
	mvmt	mvmt #	2009 Existing Volumes	PHF	HV%	RTOR	2016 No Build Volumes	% enter	vol	% exit	vol	2016 Build Volumes	mvmt #	mvmt	
	nb left	1	40	0.90			40		0		0	40	1	nb left	
	nb thru	2	169	0.90			169		0		0	169	2	nb thru	
	nb right	3	3	0.90			3		0		0	3	3	nb right	
Front	wb left	4	4	0.90			4		0		0	4	4	wb left	Front
and	wb thru	5	1	0.90			1		0		0	1	5	wb thru	and
Packer	wb right	6	1	0.90			1		0		0	1	6	wb right	Packer
	sb left	7	8	0.90			8		0		0	8	7	sb left	
	sb thru	8	831	0.90			831		0		0	831	8	sb thru	
	sb right	9	854	0.90			854	28.5	62		0	916	9	sb right	
	eb left	10	473	0.90			473		0	32.5	98	571	10	eb left	
	eb thru	11	1	0.90			1		0		0	1	11	eb thru	
	eb right	12	17	0.90			17		0		0	17	12	eb right	
	nb left	13	127	0.90			127		0		0	127	13	nb left	
Front	nb thru	14	415	0.90			415		0	32.5	98	513	14	nb thru	Front
and	sb thru	15	1693	0.90			1693	28.5	62		0	1755	15	sb thru	and
I-76 EB	sb right	16	230	0.90			230		0		0	230	16	sb right	I-76 EB
	nb thru	17	412	0.90			412		0	28.5	86	498	17	nb thru	
	nb right	18	54	0.90			54		0	4.0	12	66	18	nb right	
Front	sb left	19	116	0.90			116		0		0	116	19	sb left	Front
and	sb thru	20	1243	0.90			1243	28.5	62		0	1305	20	sb thru	and
from I-76 WB/to I-95 SB	eb left	21	186	0.90			186		0		0	186	21	eb left	from I-76 WB/to I-95 SB
	eb thru	22	546	0.90			546		0		0	546	22	eb thru	
	eb right	23	680	0.90			680		0		0	680	23	eb right	
	nb left	24	125	0.90			125		0	28.0	85	210	24	nb left	
	nb thru	25	405	0.90			405		0	0.5	2	407	25	nb thru	
	nb right	26	0	0.90			0		0		0	0	26	nb right	
Front	wb left	27	20	0.90			20		0		0	20	27	wb left	Front
and	wb thru	28	10	0.90			10		0		0	10	28	wb thru	and
Dunkin Donuts/I-95	wb right	29	9	0.90			9		0		0	9	29	wb right	Dunkin Donuts/I-95
	sb left	30	0	0.90			0		0		0	0	30	sb left	Dunkin Donuts/I-95
	sb thru	31	567	0.90			567	0.5	1		0	568	31	sb thru	
	sb right	32	312	0.90			312		0		0	312	32	sb right	
	eb left	33	484	0.90			484		0		0	484	33	eb left	
	eb thru	34	9	0.90			9		0		0	9	34	eb thru	
	eb right	35	771	0.90			771	28.0	61		0	832	35	eb right	
	nb left	36	43	0.90			43		0		0	43	36	nb left	
	nb thru	37	48	0.90			48		0		0	48	37	nb thru	
	nb right	38	25	0.90			25		0		0	25	38	nb right	
Packer	wb left	39	444	0.90			444	29.5	64		0	508	39	wb left	Packer
and	wb thru	40	793	0.90			793	3.0	7		0	800	40	wb thru	and
7th	wb right	41	77	0.90			77		0		0	77	41	wb right	7th
	sb left	42	48	0.90			48		0		0	48	42	sb left	
	sb thru	43	687	0.90			687	8.5	19		0	706	43	sb thru	
	sb right	44	624	0.90			624	1.0	2		0	626	44	sb right	
	eb left	45	82	0.90			82		0	0.5	2	84	45	eb left	
	eb thru	46	130	0.90			130		0	32.5	98	228	46	eb thru	
	eb right	47	110	0.90			110	33.5	73		0	183	47	eb right	
	nb left	48	108	0.90			108		0	33.5	102	210	48	nb left	
	nb thru	49	30	0.90			30		0	9.0	27	57	49	nb thru	
	nb right	50	108	0.90			108	3.0	7	33.0	100	214	50	nb right	
Packer	wb left	51	664	0.90			664	4.0	9		0	673	51	wb left	Packer
and	wb thru	52	541	0.90			541		0		0	541	52	wb thru	and
Darien Street	wb right	53	70	0.90			70		0		0	70	53	wb right	Darien Street
	sb left	54	176	0.90			176	30.0	65		0	241	54	sb left	
	sb thru	55	314	0.90			314	2.0	4		0	318	55	sb thru	
	sb right	56	183	0.90			183		0		0	183	56	sb right	
	eb left	57	43	0.90			43		0		0	43	57	eb left	
	eb thru	58	135	0.90			135	0.5	1		0	136	58	eb thru	
	eb right	59	205	0.90			205	1.0	2		0	207	59	eb right	

Traffic Volume Calculations 2016 & 2021 Event Peak

Weekday Pre-Phillies Event Peak								Casino Trips 218		Casino Trips 302					Weekday Pre-Phillies Event Peak
	mvmt	mvmt #	2009 Existing Volumes	PHF	HV%	RTOR	2016 No Build Volumes	% enter	vol	% exit	vol	2016 Build Volumes	mvmt #	mvmt	
	nb left	1	40	0.90			40		0		0	40	1	nb left	
	nb thru	2	169	0.90			169		0		0	169	2	nb thru	
	nb right	3	3	0.90			3		0		0	3	3	nb right	
Front	wb left	4	4	0.90			4		0		0	4	4	wb left	Front
	nb left	60	9	0.90			9		0		0	9	60	nb left	
	nb thru	61	6	0.90			6		0		0	6	61	nb thru	
	nb right	62	17	0.90			17		0		0	17	62	nb right	
Packer	wb left	63	524	0.90			524		0		0	524	63	wb left	Packer
and	wb thru	64	290	0.90			290		0	33.0	100	390	64	wb thru	and
10th	wb right	65	44	0.90			44		0	0.5	2	46	65	wb right	10th
	sb left	66	128	0.90			128	0.5	1		0	129	66	sb left	
	sb thru	67	213	0.90			213		0		0	213	67	sb thru	
	sb right	68	45	0.90			45		0		0	45	68	sb right	
	eb left	69	30	0.90			30		0		0	30	69	eb left	
	eb thru	70	218	0.90			218	1.0	2		0	220	70	eb thru	
	eb right	71	166	0.90			166		0		0	166	71	eb right	
	nb left	72					0		0		0	0	72	nb left	
Packer	nb right	73					0		0		0	0	73	nbright	Packer
and	sb right	74	421				421	4.0	9		0	430	74	sbright	and
95 Ramp	eb thru	75					0		0	32.5	98	98	75	eb thru	3rd
	eb right	76					0		0		0	0	76	eb right	
	wb thru	77					0	28.5	62		0	62	77	wb thru	
	wb right	78					0		0		0	0	78	wb right	
	nb left	103	0	0.92	10		0		0		0	0	103	nb left	
	nb thru	104	246	0.92	0		246		0	71.0	214	460	104	nb thru	
	nb right	105	0	0.92	0	0	0		0		0	0	105	nb right	
Darien & N. Site	wb left	106	0	0.92	0		0		0	4.5	14	14	106	wb left	Packer
Driveway	wb thru	107	0	0.92	2		0		0		0	0	107	wb thru	and
	wb right	108	0	0.92	0	47	0	3.0	7	4.5	14	21	108	wb right	10th
	sb left	109	0	0.92	1		0		0		0	0	109	sb left	
	sb thru	110	1183	0.92	0		1183	7.0	15		0	1198	110	sb thru	
	sb right	111	0	0.92	17	34	0		0		0	0	111	sb right	
	eb left	112	0	0.92	4		0		0		0	0	112	eb left	
	eb thru	113	0	0.92	3		0		0		0	0	113	eb thru	
	eb right	114	0	0.92	0	7	0		0		0	0	114	eb right	
	nb left	115	0	0.92	10		0		0		0	0	115	nb left	
	nb thru	116	246	0.92	0		246		0	64.0	193	439	116	nb thru	
	nb right	117	0	0.92	0	0	0	6.0	13		0	13	117	nb right	
Darien & Employee	wb left	118	0	0.92	0		0		0	6.0	18	18	118	wb left	Packer
Driveway	wb thru	119	0	0.92	2		0		0		0	0	119	wb thru	and
	wb right	120	0	0.92	0	47	0		0	7.0	21	21	120	wb right	10th
	sb left	121	0	0.92	1		0	7.0	15		0	15	121	sb left	
	sb thru	122	1183	0.92	0		1183		0	4.5	14	1197	122	sb thru	
	sb right	123	0	0.92	17	34	0		0		0	0	123	sb right	
	eb left	124	0	0.92	4		0		0		0	0	124	eb left	
	eb thru	125	0	0.92	3		0		0		0	0	125	eb thru	
	eb right	126	0	0.92	0	7	0		0		0	0	126	eb right	
	nb left	127	0	0.92	10		0	4.5	10		0	10	127	nb left	
	nb thru	128	116	0.92	0		116		0		0	116	128	nb thru	
	nb right	129	0	0.92	0	0	0		0		0	0	129	nb right	
7th Street &	wb left	130	0	0.92	0		0		0		0	0	130	wb left	Packer
North Site Driveway	wb thru	131	0	0.92	2		0		0		0	0	131	wb thru	and
	wb right	132	0	0.92	0	47	0		0		0	0	132	wb right	10th
	sb left	133	0	0.92	1		0		0		0	0	133	sb left	
	sb thru	134	1241	0.92	0		1241	64.0	140		0	1381	134	sb thru	
	sb right	135	0	0.92	17	34	0	7.5	16		0	16	135	sb right	
	eb left	136	0	0.92	4		0		0		0	0	136	eb left	
	eb thru	137	0	0.92	3		0		0		0	0	137	eb thru	
	eb right	138	0	0.92	0	7	0		0		0	0	138	eb right	
	nb left	139	0	0.92	10		0	14.0	31		0	31	139	nb left	
	nb thru	140	116	0.92	0		116	4.5	10		0	126	140	nb thru	
	nb right	141	0	0.92	0	0	0		0		0	0	141	nb right	
7th Street &	wb left	142	0	0.92	0		0		0		0	0	142	wb left	Packer
Garage Driveway	wb thru	143	0	0.92	2		0		0		0	0	143	wb thru	and
	wb right	144	0	0.92	0	47	0		0		0	0	144	wb right	10th
	sb left	145	0	0.92	1		0		0		0	0	145	sb left	
	sb thru	146	1241	0.92	0		1241		0		0	1241	146	sb thru	
	sb right	147	0	0.92	17	34	0	64.0	140		0	140	147	sb right	
	eb left	148	0	0.92	4		0		0		0	0	148	eb left	
	eb thru	149	0	0.92	3		0		0		0	0	149	eb thru	
	eb right	150	0	0.92	0	7	0		0		0	0	150	eb right	
	nb left	151	0	0.92	10		0		0		0	0	151	nb left	
	nb thru	152	246	0.92	0		246	6.0	13		0	259	152	nb thru	
	nb right	153	0	0.92	0	0	0		0		0	0	153	nb right	
Darrien &	wb left	154	0	0.92	0		0		0	14.0	42	42	154	wb left	Packer
Garage Driveway	wb thru	155	0	0.92	2		0		0		0	0	155	wb thru	and
	wb right	156	0	0.92	0	47	0		0	64.0	193	193	156	wb right	10th
	sb left	157	0	0.92	1		0		0		0	0	157	sb left	
	sb thru	158	1183	0.92	0		1183		0	10.5	32	1215	158	sb thru	
	sb right	159	0	0.92	17	34	0		0		0	0	159	sb right	
	eb left	160	0	0.92	4		0		0		0	0	160	eb left	
	eb thru	161	0	0.92	3		0		0		0	0	161	eb thru	
	eb right	162	0	0.92	0	7	0		0		0	0	162	eb right	

APPENDIX G

CRASH DATA ANALYSIS

Crash Analysis

Crash histories for the length of the affected area were requested from the City of Philadelphia Streets Department. The City data represents the five year period from 2007 to 2011 and is the most recent data available from City at the time of preparation of this report. The City provided data for the following study intersections:

1. Packer Avenue and S. 10th Street
2. Packer Avenue and I-76 Eastbound Ramps – S. Darien Street
3. Packer Avenue and S. 7th Street
4. Packer Avenue and S. Front Street
5. S. Front Street and I-76 Eastbound On Ramp
6. S. Front Street and I-76 Westbound Off Ramp – I-95 Southbound On Ramp
7. S. Front Street and I-95 Ramps

The engineering extract summary classifies accident data into various categories. Accidents are broken down by year, roadway conditions, time-of-day, type of vehicle, severity of the accident, 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.

Packer Avenue at South 10th Street
There were 4 reportable crashes, three (3) angle and one (1) rear end, with four (4) being injury occupant accidents (100%). Of the reportable crashes, three (3) or (75%) occurred at the intersection with one (1) listed as other location accidents. One accident occurred due to the driver being under the influence. Accidents peaked on Wednesday with 24% followed by Tuesday and Sunday with 17% each. Approximately 78% occurred in dry weather conditions and two-thirds (66%) during daylight hours. South 10th Street has three lanes and a left turn lane SB and on through and a dedicated left and dedicated right lane NB. Packer Avenue is an east to west roadway with two lanes in each direction and an entrance to I-76 EB ramp just north of the intersection.

Packer Avenue at I-76 EB Ramps and South Darien Street
There were 7 reportable crashes with five (5) being injury occupant accidents (71%) and two (2) being property damage with towing accidents (29%). Of the reportable crashes, seven (7) or (100%) occurred at the intersection. Accidents peaked on Friday with 24% followed by Sunday and Monday with 21% and 16% respectively. Approximately 86% occurred in dry weather conditions and four (4) accidents (57%) during daylight hours.

Packer Avenue at South 7th Street
There were 9 reportable crashes with four (4) being injury occupant accidents (44%), three (3) being property damage with towing accidents (33%) one accident was a fatal pedestrian accident and one was an injury pedestrian accident. Of the reportable crashes, all nine (9) or (100%) occurred at the intersection. Accidents peaked on Thursday with 27% followed by Wednesday and Friday with 18% and 15% respectively. Approximately seven (7) accidents or 78% occurred in dry weather conditions and seven (7) accidents (78%) during daylight hours.

Packer Avenue at South Front Street
There were 7 reportable crashes with five (5) of those being property damage with towing accidents (71%) and two (2) being injury occupant accidents (29%). Of the reportable crashes, 2 accidents (29%) occurred at the intersection with two (2) listed as other and three (3) as midblock accidents. Accidents peaked on Friday with 23% followed by Thursday and Sunday with 18% and 16% respectively. Approximately six (6) accidents or 86% occurred in dry weather conditions and five (5) accidents (71%) during daylight hours.

South Front Street at I-76 WB Off Ramp- I-95 SB on Ramp (Ramp E-DE)
There were 17 reportable crashes with five (5) of those being property damage with towing accidents (29%) and twelve (12) being injury occupant accidents (71%). Of the reportable crashes, 9 accidents (53%) occurred at the intersection with four (4) listed as other and four (4) as midblock accidents.

Accidents peaked on Friday with 23% followed by Tuesday and Wednesday with 17% and 17% respectively. Approximately fourteen (14) accidents or 82% occurred in dry weather conditions and eight (8) accidents (47%) during dark hours and seven (7) accidents (41%) during daylight hours.

South Front Street at I-95 Ramps (Ramp H)

There were 8 reportable crashes with six (6) being injury occupant accidents (75%) and two (2) being property damage with towing accidents (25%). Of the reportable crashes, 1 (12%) occurred at the intersection with six (6) listed as other (assumed to be on the ramp) and one (1) as midblock accidents. Accidents peaked on Tuesday and Friday with 21% each followed by Sunday with 14%. Approximately six (6) accidents or 75% occurred in dry weather conditions and five (5) accidents (63%) during daylight hours and three (3) accidents (38%) during dark hours.

City of Philadelphia Streets Department

REPORTABLE CRASHES

	Packer Avenue & South 10th Street		Packer Avenue & I-76 Eastbound Ramps/South Darien Street		Packer Avenue & South 7th Street		Packer Avenue & South Front Street		South Front Street & I-76 WB Off Ramp/I-95 SB On Ramp (Ramp E-DE)		South Front Street & I-95 Ramp (Ramp H)	
COLLISION TYPE	**TOT.**	**(%)**	**TOT.**	**(%)**	**TOT.**	**(%)**	**TOT.**	**(%)**	**TOT.**	**(%)**	**TOT.**	**(%)**
Head On			1	14	2	22	1	14	2	12		
Hit Pedestrian					2	22		0				
Angle	3	75	4	57	1	11	1	14	5	29	2	25
Other/Unknown			1	14	1	11	2	29	2	12		
Rear End	1	25	1	14	1	11	2	29	4	24	1	12
Rear to Rear (Backing)					1	11						
Sideswipe (Same Direction)									1	6	1	12
Non-Collision											1	12
Fixed Object							1	14	1	6	3	38
Sideswipe (Opposite Direction)					1	11			2	12		
TOTAL	**4**	**100**	**7**	**100**	**9**	**100**	**7**	**100**	**17**	**100**	**8**	**100**

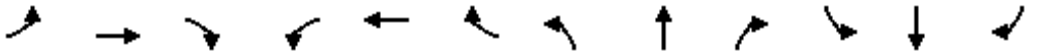
City of Philadelphia Streets Department
CRASH SEVERITY

	Packer Avenue & South 10th Street		Packer Avenue & I-76 Eastbound Ramps/South Darien Street		Packer Avenue & South 7th Street		Packer Avenue & South Front Street		South Front Street & I-76 WB Off Ramp/I-95 SB On Ramp (Ramp E-DE)		South Front Street & I-95 Ramp (Ramp H)	
CRASH SEVERITY	**TOT.**	**(%)**	**TOT.**	**(%)**	**TOT.**	**(%)**	**TOT.**	**(%)**	**TOT.**	**(%)**	**TOT.**	**(%)**
Injury Occupant	4	100	5	71	4	44	2	29	12	71	6	75
Property Damage with Towing			2	29	3	33	5	71	5	29	2	25
Fatality Pedestrian					1	11						
Injury Pedestrian					1	11						
Fatality Bike												
Fatality Occupant												
Injury Bike												
Not Coded												
Not Stated												
TOTAL	**4**	**100**	**7**	**100**	**9**	**100**	**7**	**100**	**17**	**100**	**8**	**100**

APPENDIX H

LEVEL OF SERVICE ANALYSIS WORKSHEETS

2012 EXISTING WEEKDAY PM PEAK HOUR CONDITIONS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	115	12	2	290	118	10	15	0	120	17	86
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1850	1850	1900	1873	1873	1727	1900	0	1881	1663	1663
Lanes	1	3	0	1	3	0	1	1	1	1	2	0
Capacity, veh/h	464	2207	95	630	1839	432	567	802	0	666	702	597
Arriving On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.42	0.42	0.00	0.42	0.42	0.42
Sat Flow, veh/h	968.6	4965.2	213.4	1279.6	4138.8	972.4	1223.3	1900.0	0.0	1404.9	1663.1	1413.7
Grp Volume(v), veh/h	50.0	84.3	46.1	2.2	257.3	135.1	10.9	16.3	0.0	130.4	18.5	56.5
Grp Sat Flow(s),veh/h/ln	968.6	1683.3	1812.1	1279.6	1704.8	1701.8	1223.3	1900.0	0.0	1404.9	1663.1	1413.7
Q Serve(g_s), s	3.0	1.3	1.3	0.1	4.1	4.3	0.5	0.5	38.0	5.4	0.6	2.2
Cycle Q Clear(g_c), s	7.3	1.3	1.3	1.4	4.1	4.3	2.7	0.5	38.0	5.8	0.6	2.2
Proportion In Lane	1.000		0.118	1.000		0.571	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	464.1	1496.2	805.4	630.1	1515.3	756.3	567.0	802.2	0.0	666.2	702.2	596.9
V/C Ratio(X)	0.108	0.056	0.057	0.003	0.170	0.179	0.019	0.020	0.000	0.196	0.026	0.095
Avail Cap(c_a), veh/h	464.1	1496.2	805.4	630.1	1515.3	756.3	567.0	802.2	0.0	666.2	702.2	596.9
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	17.3	14.2	14.3	14.6	15.0	15.1	16.4	15.2	0.0	16.8	15.2	15.6
Incr Delay (d2), s/veh	0.5	0.1	0.1	0.0	0.2	0.5	0.1	0.0	0.0	0.7	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	17.7	14.3	14.4	14.7	15.3	15.6	16.5	15.2	0.0	17.5	15.3	16.0
Lane Group LOS	B	B	B	B	B	B	B	B		B	B	B
Approach Volume, veh/h		180			395			27			205	
Approach Delay, s/veh		15.3			15.4			15.7			16.9	
Approach LOS		B			B			B			B	

Timer												
Assigned Phase		2			6			8			4	
Phase Duration (G+Y+Rc), s		46.00			46.00			44.00			44.00	
Change Period (Y+Rc), s		6.00			6.00			6.00			6.00	
Max Green Setting (Gmax), s		40.00			40.00			38.00			38.00	
Max Q Clear Time (g_c+I1), s		9.27			6.31			4.65			7.82	
Green Extension Time (p_c)		1.71			1.72			0.57			0.57	

Intersection Summary	
HCM 2010 Control Delay	15.8
HCM 2010 Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	172	342	18	22	266	98	33	44	20	22	48	114
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	179.2	177.6	166.7	182.0	190.0	184.5	173.9	147.3	190.0	187.3	188.1
Lanes	1	3	0	1	3	0	1	2	0	0	2	1
Cap, veh/h	512	2231	36	455	1800	433	623	965	369	421	951	660
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.41	0.41	0.41	0.41	0.41	0.00
Sat Flow, veh/h	1040	4958	81	899	4000	963	1334	2340	893	847	2307	1599
Grp Volume(v), veh/h	185	242	132	24	235	123	35	32	34	41	35	0
Grp Sat Flow(s),veh/h/ln	1040	1630	1777	899	1656	1650	1334	1652	1582	1534	1620	1599
Q Serve(g_s), s	10.3	3.5	3.5	1.3	3.4	3.6	1.3	0.9	1.0	0.0	1.0	0.0
Cycle Q Clear(g_c), s	13.9	3.5	3.5	4.8	3.4	3.6	2.3	0.9	1.0	1.1	1.0	0.0
Prop In Lane	1.00		0.05	1.00		0.58	1.00		0.56	0.58		1.00
Lane Grp Cap(c), veh/h	512	1467	800	455	1491	743	623	682	652	704	668	660
V/C Ratio(X)	0.36	0.16	0.17	0.05	0.16	0.17	0.06	0.05	0.05	0.06	0.05	0.00
Avail Cap(c_a), veh/h	512	1467	800	455	1491	743	623	682	652	704	668	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.2	13.1	13.1	14.5	13.0	13.1	14.8	14.1	14.1	14.1	14.1	0.0
Incr Delay (d2), s/veh	2.0	0.2	0.4	0.2	0.2	0.5	0.2	0.1	0.1	0.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.8	1.4	1.5	0.3	1.3	1.4	0.4	0.4	0.4	0.5	0.4	0.0
Lane Grp Delay (d), s/veh	19.2	13.3	13.5	14.7	13.2	13.6	15.0	14.2	14.3	14.3	14.3	0.0
Lane Grp LOS	B	B	B	B	B	B	B	B	B	B	B	
Approach Vol, veh/h		559			382			101			76	
Approach Delay, s/veh		15.3			13.4			14.5			14.3	
Approach LOS		B			B			B			B	

Timer												
Assigned Phs		2			6			8			4	
Phs Duration (G+Y+Rc), s		41.0			41.0			39.0			39.0	
Change Period (Y+Rc), s		5.0			5.0			6.0			6.0	
Max Green Setting (Gmax), s		36.0			36.0			33.0			33.0	
Max Q Clear Time (g_c+I1), s		15.9			6.8			4.3			3.1	
Green Ext Time (p_c), s		2.6			2.7			0.4			0.4	

Intersection Summary												
HCM 2010 Ctrl Delay			14.5									
HCM 2010 LOS			B									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	79	87	24	30	306	83	58	77	46	320	14	39
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	188.1	185.2	188.1	188.1	182.7	186.3	181.0	188.1	172.7	182.7	188.1	188.2
Lanes	1	3	0	1	2	1	1	1	1	1	1	1
Cap, veh/h	579	2214	437	539	1234	507	554	669	522	488	669	569
Arrive On Green	0.11	0.52	0.52	0.36	0.36	0.00	0.36	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1792	4239	837	1291	3471	1425	1353	1881	1468	1247	1881	1600
Grp Volume(v), veh/h	82	71	39	31	319	0	60	80	36	333	15	0
Grp Sat Flow(s),veh/h/ln	1792	1686	1705	1291	1736	1425	1353	1881	1468	1247	1881	1600
Q Serve(g_s), s	2.2	0.9	1.0	1.4	5.9	0.0	2.7	2.6	1.5	22.1	0.5	0.0
Cycle Q Clear(g_c), s	2.2	0.9	1.0	1.4	5.9	0.0	3.2	2.6	1.5	24.7	0.5	0.0
Prop In Lane	1.00		0.49	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	579	1761	890	539	1234	507	554	669	522	488	669	569
V/C Ratio(X)	0.14	0.04	0.04	0.06	0.26	0.00	0.11	0.12	0.07	0.68	0.02	0.00
Avail Cap(c_a), veh/h	579	1761	890	539	1234	507	554	669	522	488	669	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.0	10.5	10.5	19.1	20.6	0.0	19.9	19.5	19.2	27.8	18.8	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.1	0.2	0.5	0.0	0.4	0.4	0.3	7.6	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.0	0.4	0.4	0.5	2.6	0.0	1.0	1.2	0.6	7.8	0.2	0.0
Lane Grp Delay (d), s/veh	13.5	10.5	10.6	19.4	21.1	0.0	20.3	19.9	19.4	35.4	18.9	0.0
Lane Grp LOS	B	B	B	B	C		C	B	B	D	B	
Approach Vol, veh/h		192			350			176			348	
Approach Delay, s/veh		11.8			20.9			19.9			34.7	
Approach LOS		B			C			B			C	

Timer												
Assigned Phs	5	2			6			8			4	
Phs Duration (G+Y+Rc), s	15.0	53.0			38.0			37.0			37.0	
Change Period (Y+Rc), s	5.5	6.0			6.0			5.0			5.0	
Max Green Setting (Gmax), s	9.5	47.0			32.0			32.0			32.0	
Max Q Clear Time (g_c+I1), s	4.2	3.0			7.9			5.2			26.7	
Green Ext Time (p_c), s	0.1	1.3			1.3			1.5			0.8	

Intersection Summary												
HCM 2010 Ctrl Delay			23.6									
HCM 2010 LOS			C									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	389	19	38	2	2	5	16	86	5	10	151	281
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1496	1376	1376	1639	1639	1639	1638	1528	1528	1696	1454	1454
Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Capacity, veh/h	930	216	319	136	139	289	505	1231	71	561	1250	0
Arriving On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.57	0.57	0.57	0.57	0.57	0.00
Sat Flow, veh/h	2180.5	503.5	741.9	268.6	256.4	671.5	1071.6	2862.2	165.0	1176.8	2908.1	0.0
Grp Volume(v), veh/h	418.3	0.0	50.5	9.7	0.0	0.0	17.2	49.0	48.8	10.8	162.4	0.0
Grp Sat Flow(s),veh/h/ln	1090.3	0.0	1245.4	1208.7	0.0	0.0	1071.6	1528.2	1499.1	1176.8	1454.1	0.0
Q Serve(g_s), s	15.2	0.0	2.4	0.0	0.0	0.0	0.8	1.4	1.5	0.4	2.6	0.0
Cycle Q Clear(g_c), s	22.2	0.0	2.4	7.0	0.0	0.0	3.3	1.4	1.5	1.9	2.6	0.0
Proportion In Lane	1.000		0.596	0.222		0.556	1.000		0.110	1.000		0.000
Lane Grp Cap(c), veh/h	929.7	0.0	535.5	563.7	0.0	0.0	505.1	657.1	644.6	560.9	1250.5	0.0
V/C Ratio(X)	0.450	0.000	0.094	0.017	0.000	0.000	0.034	0.075	0.076	0.019	0.130	0.000
Avail Cap(c_a), veh/h	929.7	0.0	535.5	563.7	0.0	0.0	505.1	657.1	644.6	560.9	1250.5	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	25.3	0.0	16.9	16.4	0.0	0.0	13.5	12.5	12.5	12.9	12.8	0.0
Incr Delay (d2), s/veh	1.6	0.0	0.3	0.1	0.0	0.0	0.1	0.2	0.2	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	26.9	0.0	17.3	16.4	0.0	0.0	13.7	12.7	12.7	13.0	13.0	0.0
Lane Group LOS	C		B	B			B	B	B	B	B	
Approach Volume, veh/h		469			10			115			173	
Approach Delay, s/veh		25.9			16.4			12.9			13.0	
Approach LOS		C			B			B			B	

Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		50.00			50.00			50.00			50.00	
Change Period (Y+Rc), s		7.00			7.00			7.00			7.00	
Max Green Setting (Gmax), s		43.00			43.00			43.00			43.00	
Max Q Clear Time (g_c+I1), s		24.15			8.97			5.34			4.58	
Green Extension Time (p_c)		2.01			2.23			0.82			0.82	

Intersection Summary												
HCM 2010 Control Delay			20.9									
HCM 2010 Level of Service			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	362	22	0	1	0	0	327	13	53	650	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1900	0	0	1638	1638	1624	1624	0
Lanes	1	1	1	0	1	0	0	2	0	1	2	0
Capacity, veh/h	529	605	514	0	665	0	0	1147	0	470	1635	0
Arriving On Green	0.35	0.35	0.00	0.00	0.35	0.00	0.00	0.47	0.00	0.16	0.70	0.00
Sat Flow, veh/h	1307.6	1727.3	1468.2		1900.0	0.0		3275.9	0.0	1546.6	3166.7	0.0
Grp Volume(v), veh/h	96.3	452.5	0.0		1.3	0.0		408.8	0.0	66.3	812.5	0.0
Grp Sat Flow(s),veh/h/ln	1307.6	1727.3	1468.2		1900.0	0.0		1637.9	0.0	1546.6	1542.7	0.0
Q Serve(g_s), s	5.2	23.1	0.0		0.0	0.0		8.0	0.0	0.0	12.0	0.0
Cycle Q Clear(g_c), s	5.2	23.1	0.0		0.0	0.0		8.0	0.0	0.0	12.0	0.0
Proportion In Lane	1.000		1.000			0.000			0.000	1.000		0.000
Lane Grp Cap(c), veh/h	529.1	604.5	513.9		665.0	0.0		1146.6	0.0	469.7	1635.3	0.0
V/C Ratio(X)	0.182	0.748	0.000		0.002	0.000		0.357	0.000	0.141	0.497	0.000
Avail Cap(c_a), veh/h	529.1	604.5	513.9		665.0	0.0		1146.6	0.0	469.7	1635.3	0.0
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00		1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	1.000	0.000		1.000	0.000		1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	22.8	28.6	0.0		21.1	0.0		19.5	0.0	20.5	8.7	0.0
Incr Delay (d2), s/veh	0.8	8.3	0.0		0.0	0.0		0.9	0.0	0.6	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	23.6	36.9	0.0		21.1	0.0		20.4	0.0	21.1	9.8	0.0
Lane Group LOS	C	D			C			C		C	A	
Approach Volume, veh/h		549			1			409			879	
Approach Delay, s/veh		34.6			21.1			20.4			10.6	
Approach LOS		C			C			C			B	

Timer												
Assigned Phase		4			8			2		1	6	
Phase Duration (G+Y+Rc), s		41.00			41.00			41.00		18.00	59.00	
Change Period (Y+Rc), s		6.00			6.00			6.00		6.00	6.00	
Max Green Setting (Gmax), s		35.00			35.00			35.00		12.00	53.00	
Max Q Clear Time (g_c+I1), s		25.07			2.04			10.00		2.00	13.96	
Green Extension Time (p_c)		1.15			1.48			4.24		0.07	4.39	

Intersection Summary		
HCM 2010 Control Delay		20.0
HCM 2010 Level of Service		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	484	1	126	0	1	0	164	217	0	0	621	312
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1976	0	1638	1638	0	0	1624	1624
Lanes	2	0	1	0	1	0	1	2	0	0	2	0
Capacity, veh/h	1031	0	514	0	692	0	346	1736	0	0	1137	0
Arriving On Green	0.35	0.35	0.00	0.00	0.35	0.00	0.16	0.70	0.00	0.00	0.47	0.00
Sat Flow, veh/h	2536.8	0.0	1468.2	0.0	1976.0	0.0	1559.9	3275.9	0.0		3247.9	0.0
Grp Volume(v), veh/h	605.0	0.0	0.0	0.0	1.3	0.0	205.0	271.3	0.0		776.3	0.0
Grp Sat Flow(s),veh/h/ln	1268.4	0.0	1468.2	0.0	1976.0	0.0	1559.9	1637.9	0.0		1623.9	0.0
Q Serve(g_s), s	20.4	0.0	0.0	0.0	0.0	0.0	1.0	2.7	0.0		18.7	0.0
Cycle Q Clear(g_c), s	20.4	0.0	0.0	0.0	0.0	0.0	1.0	2.7	0.0		18.7	0.0
Proportion In Lane	1.000		1.000	0.000		0.000	1.000		0.000			0.000
Lane Grp Cap(c), veh/h	1030.8	0.0	513.9	0.0	691.6	0.0	346.0	1736.2	0.0		1136.8	0.0
V/C Ratio(X)	0.587	0.000	0.000	0.000	0.002	0.000	0.592	0.156	0.000		0.683	0.000
Avail Cap(c_a), veh/h	1030.8	0.0	513.9	0.0	691.6	0.0	346.0	1736.2	0.0		1136.8	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.30		1.33	1.33
Upstream Filter(I)	1.000	0.000	0.000	0.000	1.000	0.000	1.000	1.000	0.000		1.000	0.000
Uniform Delay (d), s/veh	27.8	0.0	0.0	0.0	21.1	0.0	34.0	7.3	0.0		22.4	0.0
Incr Delay (d2), s/veh	2.4	0.0	0.0	0.0	0.0	0.0	7.3	0.2	0.0		3.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Lane Group Delay (d), s/veh	30.2	0.0	0.0	0.0	21.1	0.0	41.3	7.5	0.0		25.7	0.0
Lane Group LOS	C				C		D	A			C	
Approach Volume, veh/h		605			1			476			776	
Approach Delay, s/veh		30.2			21.1			22.0			25.7	
Approach LOS		C			C			C			C	

Timer												
Assigned Phase		4			8		5	2			6	
Phase Duration (G+Y+Rc), s		41.00			41.00		18.00	59.00			41.00	
Change Period (Y+Rc), s		6.00			6.00		6.00	6.00			6.00	
Max Green Setting (Gmax), s		35.00			35.00		12.00	53.00			35.00	
Max Q Clear Time (g_c+I1), s		22.41			2.04		3.04	4.75			20.73	
Green Extension Time (p_c)		1.96			2.41		0.33	3.66			3.13	

Intersection Summary		
HCM 2010 Control Delay		26.2
HCM 2010 Level of Service		C

2016 NO BUILD WEEKDAY PM PEAK HOUR CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	122	13	2	308	125	11	16	0	127	18	91
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1850	1850	1900	1873	1873	1727	1900	0	1881	1665	1665
Lanes	1	3	0	1	3	0	1	1	1	1	2	0
Capacity, veh/h	451	2193	106	625	1826	444	561	802	0	665	703	597
Arriving On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.42	0.42	0.00	0.42	0.42	0.42
Sat Flow, veh/h	944.7	4934.5	239.6	1269.5	4107.6	999.0	1216.0	1900.0	0.0	1403.5	1664.6	1414.9
Grp Volume(v), veh/h	53.3	89.9	49.2	2.2	275.5	144.0	12.0	17.4	0.0	138.0	19.6	62.0
Grp Sat Flow(s),veh/h/ln	944.7	1683.3	1807.5	1269.5	1704.7	1697.1	1216.0	1900.0	0.0	1403.5	1664.6	1414.9
Q Serve(g_s), s	3.3	1.4	1.4	0.1	4.4	4.6	0.5	0.5	38.0	5.7	0.6	2.4
Cycle Q Clear(g_c), s	7.9	1.4	1.4	1.5	4.4	4.6	2.9	0.5	38.0	6.2	0.6	2.4
Proportion In Lane	1.000		0.133	1.000		0.589	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	451.2	1496.3	803.3	624.5	1515.3	754.2	561.3	802.2	0.0	665.1	702.8	597.4
V/C Ratio(X)	0.118	0.060	0.061	0.003	0.182	0.191	0.021	0.022	0.000	0.208	0.028	0.104
Avail Cap(c_a), veh/h	451.2	1496.3	803.3	624.5	1515.3	754.2	561.3	802.2	0.0	665.1	702.8	597.4
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	17.6	14.3	14.3	14.7	15.1	15.2	16.6	15.2	0.0	17.0	15.2	15.7
Incr Delay (d2), s/veh	0.5	0.1	0.1	0.0	0.3	0.6	0.1	0.0	0.0	0.7	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	18.1	14.3	14.4	14.7	15.4	15.7	16.7	15.2	0.0	17.7	15.3	16.1
Lane Group LOS	B	B	B	B	B	B	B	B		B	B	B
Approach Volume, veh/h		192			422			29			220	
Approach Delay, s/veh		15.4			15.5			15.8			17.0	
Approach LOS		B			B			B			B	

Timer												
Assigned Phase		2			6			8			4	
Phase Duration (G+Y+Rc), s		46.00			46.00			44.00			44.00	
Change Period (Y+Rc), s		6.00			6.00			6.00			6.00	
Max Green Setting (Gmax), s		40.00			40.00			38.00			38.00	
Max Q Clear Time (g_c+I1), s		9.90			6.64			4.92			8.21	
Green Extension Time (p_c)		1.85			1.85			0.62			0.61	

Intersection Summary	
HCM 2010 Control Delay	15.9
HCM 2010 Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	179	356	19	23	277	102	34	46	21	23	50	119
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	179.2	177.6	166.7	182.0	190.0	184.5	173.9	147.3	190.0	187.4	188.1
Lanes	1	3	0	1	3	0	1	2	0	0	2	1
Cap, veh/h	503	2226	41	447	1790	442	621	962	371	421	950	660
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.41	0.41	0.41	0.41	0.41	0.00
Sat Flow, veh/h	1024	4946	90	886	3977	983	1331	2333	899	848	2303	1599
Grp Volume(v), veh/h	192	252	138	25	246	129	37	34	35	43	36	0
Grp Sat Flow(s),veh/h/ln	1024	1630	1776	886	1656	1647	1331	1652	1580	1531	1620	1599
Q Serve(g_s), s	11.0	3.7	3.7	1.4	3.5	3.7	1.4	1.0	1.1	0.0	1.1	0.0
Cycle Q Clear(g_c), s	14.8	3.7	3.7	5.1	3.5	3.7	2.4	1.0	1.1	1.1	1.1	0.0
Prop In Lane	1.00		0.05	1.00		0.60	1.00		0.57	0.58		1.00
Lane Grp Cap(c), veh/h	503	1467	799	447	1491	741	621	681	652	703	668	660
V/C Ratio(X)	0.38	0.17	0.17	0.06	0.16	0.17	0.06	0.05	0.05	0.06	0.05	0.00
Avail Cap(c_a), veh/h	503	1467	799	447	1491	741	621	681	652	703	668	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.5	13.1	13.1	14.6	13.1	13.1	14.9	14.1	14.1	14.1	14.1	0.0
Incr Delay (d2), s/veh	2.2	0.3	0.5	0.2	0.2	0.5	0.2	0.1	0.2	0.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.0	1.5	1.6	0.3	1.4	1.5	0.5	0.4	0.4	0.5	0.4	0.0
Lane Grp Delay (d), s/veh	19.7	13.4	13.6	14.9	13.3	13.6	15.0	14.2	14.3	14.3	14.3	0.0
Lane Grp LOS	B	B	B	B	B	B	B	B	B	B	B	
Approach Vol, veh/h		582			400			106			79	
Approach Delay, s/veh		15.5			13.5			14.5			14.3	
Approach LOS		B			B			B			B	

Timer												
Assigned Phs		2			6			8			4	
Phs Duration (G+Y+Rc), s		41.0			41.0			39.0			39.0	
Change Period (Y+Rc), s		5.0			5.0			6.0			6.0	
Max Green Setting (Gmax), s		36.0			36.0			33.0			33.0	
Max Q Clear Time (g_c+I1), s		16.8			7.1			4.4			3.1	
Green Ext Time (p_c), s		2.7			2.8			0.4			0.4	

Intersection Summary		
HCM 2010 Ctrl Delay		14.7
HCM 2010 LOS		B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	82	91	25	31	318	86	60	80	48	333	15	41
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	188.1	185.2	188.1	188.1	182.7	186.3	181.0	188.1	172.7	182.7	188.1	188.2
Lanes	1	3	0	1	2	1	1	1	1	1	1	1
Cap, veh/h	573	2210	440	537	1234	563	553	669	522	484	669	569
Arrive On Green	0.11	0.52	0.52	0.36	0.36	0.00	0.36	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1792	4232	843	1285	3471	1583	1352	1881	1468	1241	1881	1600
Grp Volume(v), veh/h	85	75	40	32	331	0	62	83	38	347	16	0
Grp Sat Flow(s),veh/h/ln	1792	1686	1704	1285	1736	1583	1352	1881	1468	1241	1881	1600
Q Serve(g_s), s	2.3	1.0	1.0	1.5	6.1	0.0	2.8	2.7	1.5	23.6	0.5	0.0
Cycle Q Clear(g_c), s	2.3	1.0	1.0	1.5	6.1	0.0	3.3	2.7	1.5	26.2	0.5	0.0
Prop In Lane	1.00		0.49	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	573	1761	890	537	1234	563	553	669	522	484	669	569
V/C Ratio(X)	0.15	0.04	0.05	0.06	0.27	0.00	0.11	0.12	0.07	0.72	0.02	0.00
Avail Cap(c_a), veh/h	573	1761	890	537	1234	563	553	669	522	484	669	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.0	10.5	10.5	19.2	20.7	0.0	19.9	19.6	19.2	28.4	18.8	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.1	0.2	0.5	0.0	0.4	0.4	0.3	8.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.0	0.4	0.4	0.5	2.7	0.0	1.0	1.3	0.6	8.3	0.2	0.0
Lane Grp Delay (d), s/veh	13.6	10.5	10.6	19.4	21.2	0.0	20.3	19.9	19.5	37.2	18.9	0.0
Lane Grp LOS	B	B	B	B	C		C	B	B	D	B	
Approach Vol, veh/h		200			363			183			363	
Approach Delay, s/veh		11.8			21.0			20.0			36.4	
Approach LOS		B			C			B			D	

Timer												
Assigned Phs	5	2			6			8			4	
Phs Duration (G+Y+Rc), s	15.0	53.0			38.0			37.0			37.0	
Change Period (Y+Rc), s	5.5	6.0			6.0			5.0			5.0	
Max Green Setting (Gmax), s	9.5	47.0			32.0			32.0			32.0	
Max Q Clear Time (g_c+I1), s	4.3	3.0			8.1			5.3			28.2	
Green Ext Time (p_c), s	0.1	1.4			1.4			1.6			0.7	

Intersection Summary												
HCM 2010 Ctrl Delay			24.2									
HCM 2010 LOS			C									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	421	21	41	2	2	5	17	93	5	11	164	304
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1496	1378	1378	1639	1639	1639	1638	1528	1528	1696	1454	1454
Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Capacity, veh/h	930	216	320	136	138	288	497	1236	66	556	1251	0
Arriving On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.57	0.57	0.57	0.57	0.57	0.00
Sat Flow, veh/h	2180.5	503.4	743.1	268.3	256.1	670.8	1058.0	2874.7	153.4	1168.8	2908.5	0.0
Grp Volume(v), veh/h	452.7	0.0	55.9	9.7	0.0	0.0	18.3	52.8	52.6	11.8	176.3	0.0
Grp Sat Flow(s),veh/h/ln	1090.3	0.0	1246.6	1207.4	0.0	0.0	1058.0	1527.6	1500.5	1168.8	1454.2	0.0
Q Serve(g_s), s	16.8	0.0	2.7	0.0	0.0	0.0	0.8	1.6	1.6	0.5	2.8	0.0
Cycle Q Clear(g_c), s	23.7	0.0	2.7	7.0	0.0	0.0	3.6	1.6	1.6	2.0	2.8	0.0
Proportion In Lane	1.000		0.596	0.222		0.556	1.000		0.102	1.000		0.000
Lane Grp Cap(c), veh/h	929.7	0.0	536.0	563.2	0.0	0.0	497.1	656.9	645.2	556.2	1250.6	0.0
V/C Ratio(X)	0.487	0.000	0.104	0.017	0.000	0.000	0.037	0.080	0.082	0.021	0.141	0.000
Avail Cap(c_a), veh/h	929.7	0.0	536.0	563.2	0.0	0.0	497.1	656.9	645.2	556.2	1250.6	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	25.8	0.0	17.0	16.4	0.0	0.0	13.7	12.5	12.5	13.0	12.8	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.4	0.1	0.0	0.0	0.1	0.2	0.2	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	27.6	0.0	17.4	16.4	0.0	0.0	13.8	12.8	12.8	13.1	13.0	0.0
Lane Group LOS	C		B	B			B	B	B	B	B	
Approach Volume, veh/h		509			10			124			188	
Approach Delay, s/veh		26.5			16.4			12.9			13.0	
Approach LOS		C			B			B			B	

Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		50.00			50.00			50.00			50.00	
Change Period (Y+Rc), s		7.00			7.00			7.00			7.00	
Max Green Setting (Gmax), s		43.00			43.00			43.00			43.00	
Max Q Clear Time (g_c+I1), s		25.73			8.97			5.65			4.82	
Green Extension Time (p_c)		2.15			2.43			0.89			0.90	

Intersection Summary												
HCM 2010 Control Delay			21.3									
HCM 2010 Level of Service			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	377	23	0	1	0	0	340	14	55	676	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1900	0	0	1638	1638	1624	1624	0
Lanes	1	1	1	0	1	0	0	2	0	1	2	0
Capacity, veh/h	529	605	514	0	665	0	0	1147	0	463	1635	0
Arriving On Green	0.35	0.35	0.00	0.00	0.35	0.00	0.00	0.47	0.00	0.16	0.70	0.00
Sat Flow, veh/h	1307.6	1727.3	1468.2		1900.0	0.0		3275.9	0.0	1546.6	3166.7	0.0
Grp Volume(v), veh/h	100.0	471.3	0.0		1.3	0.0		425.0	0.0	68.8	845.0	0.0
Grp Sat Flow(s),veh/h/ln	1307.6	1727.3	1468.2		1900.0	0.0		1637.9	0.0	1546.6	1542.7	0.0
Q Serve(g_s), s	5.4	24.4	0.0		0.0	0.0		8.4	0.0	0.0	12.7	0.0
Cycle Q Clear(g_c), s	5.4	24.4	0.0		0.0	0.0		8.4	0.0	0.0	12.7	0.0
Proportion In Lane	1.000		1.000			0.000			0.000	1.000		0.000
Lane Grp Cap(c), veh/h	529.1	604.5	513.9		665.0	0.0		1146.6	0.0	463.3	1635.3	0.0
V/C Ratio(X)	0.189	0.780	0.000		0.002	0.000		0.371	0.000	0.148	0.517	0.000
Avail Cap(c_a), veh/h	529.1	604.5	513.9		665.0	0.0		1146.6	0.0	463.3	1635.3	0.0
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00		1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	1.000	0.000		1.000	0.000		1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	22.9	29.1	0.0		21.1	0.0		19.6	0.0	20.8	8.8	0.0
Incr Delay (d2), s/veh	0.8	9.6	0.0		0.0	0.0		0.9	0.0	0.7	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	23.7	38.6	0.0		21.1	0.0		20.5	0.0	21.5	10.0	0.0
Lane Group LOS	C	D			C			C		C	A	
Approach Volume, veh/h		571			1			425			914	
Approach Delay, s/veh		36.0			21.1			20.5			10.8	
Approach LOS		D			C			C			B	

Timer												
Assigned Phase		4			8			2		1	6	
Phase Duration (G+Y+Rc), s		41.00			41.00			41.00		18.00	59.00	
Change Period (Y+Rc), s		6.00			6.00			6.00		6.00	6.00	
Max Green Setting (Gmax), s		35.00			35.00			35.00		12.00	53.00	
Max Q Clear Time (g_c+I1), s		26.39			2.04			10.38		2.00	14.71	
Green Extension Time (p_c)		1.13			1.55			4.44		0.07	4.62	

Intersection Summary		
HCM 2010 Control Delay		20.5
HCM 2010 Level of Service		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	514	1	134	0	1	0	174	230	0	0	659	331
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1976	0	1638	1638	0	0	1624	1624
Lanes	2	0	1	0	1	0	1	2	0	0	2	0
Capacity, veh/h	1031	0	514	0	692	0	332	1736	0	0	1137	0
Arriving On Green	0.35	0.35	0.00	0.00	0.35	0.00	0.16	0.70	0.00	0.00	0.47	0.00
Sat Flow, veh/h	2536.8	0.0	1468.2	0.0	1976.0	0.0	1559.9	3275.9	0.0		3247.9	0.0
Grp Volume(v), veh/h	642.5	0.0	0.0	0.0	1.3	0.0	217.5	287.5	0.0		823.8	0.0
Grp Sat Flow(s),veh/h/ln	1268.4	0.0	1468.2	0.0	1976.0	0.0	1559.9	1637.9	0.0		1623.9	0.0
Q Serve(g_s), s	22.1	0.0	0.0	0.0	0.0	0.0	3.0	2.9	0.0		20.5	0.0
Cycle Q Clear(g_c), s	22.1	0.0	0.0	0.0	0.0	0.0	3.0	2.9	0.0		20.5	0.0
Proportion In Lane	1.000		1.000	0.000		0.000	1.000		0.000			0.000
Lane Grp Cap(c), veh/h	1030.8	0.0	513.9	0.0	691.6	0.0	332.2	1736.2	0.0		1136.8	0.0
V/C Ratio(X)	0.623	0.000	0.000	0.000	0.002	0.000	0.655	0.166	0.000		0.725	0.000
Avail Cap(c_a), veh/h	1030.8	0.0	513.9	0.0	691.6	0.0	332.2	1736.2	0.0		1136.8	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.30		1.33	1.33
Upstream Filter(I)	1.000	0.000	0.000	0.000	1.000	0.000	1.000	1.000	0.000		1.000	0.000
Uniform Delay (d), s/veh	28.3	0.0	0.0	0.0	21.1	0.0	35.1	7.4	0.0		22.8	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.0	0.0	0.0	0.0	9.7	0.2	0.0		4.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Lane Group Delay (d), s/veh	31.2	0.0	0.0	0.0	21.1	0.0	44.8	7.6	0.0		26.9	0.0
Lane Group LOS	C				C		D	A			C	
Approach Volume, veh/h		642			1			505			824	
Approach Delay, s/veh		31.2			21.1			23.6			26.9	
Approach LOS		C			C			C			C	

Timer												
Assigned Phase		4			8		5	2			6	
Phase Duration (G+Y+Rc), s		41.00			41.00		18.00	59.00			41.00	
Change Period (Y+Rc), s		6.00			6.00		6.00	6.00			6.00	
Max Green Setting (Gmax), s		35.00			35.00		12.00	53.00			35.00	
Max Q Clear Time (g_c+I1), s		24.10			2.04		4.97	4.93			22.46	
Green Extension Time (p_c)		1.97			2.59		0.30	3.94			3.20	

Intersection Summary		
HCM 2010 Control Delay	27.4	
HCM 2010 Level of Service	C	

2016 BUILD WEEKDAY PM PEAK HOUR CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	125	13	2	453	127	11	16	0	129	18	91
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1850	1850	1900	1871	1871	1727	1900	0	1881	1665	1665
Lanes	1	3	0	1	3	0	1	1	1	1	2	0
Capacity, veh/h	385	2174	103	614	1929	334	576	836	0	682	732	623
Arriving On Green	0.59	0.59	0.59	0.59	0.59	0.59	0.44	0.44	0.00	0.44	0.44	0.44
Sat Flow, veh/h	815.2	4940.6	234.2	1265.8	4383.3	758.5	1216.0	1900.0	0.0	1403.5	1664.6	1414.9
Grp Volume(v), veh/h	53.3	92.0	50.4	2.2	380.2	199.1	12.0	17.4	0.0	140.2	19.6	62.0
Grp Sat Flow(s),veh/h/ln	815.2	1683.2	1808.4	1265.8	1702.4	1736.9	1216.0	1900.0	0.0	1403.5	1664.6	1414.9
Q Serve(g_s), s	3.5	1.2	1.2	0.1	5.4	5.6	0.6	0.5	44.0	6.3	0.7	2.6
Cycle Q Clear(g_c), s	9.1	1.2	1.2	1.3	5.4	5.6	3.1	0.5	44.0	6.8	0.7	2.6
Proportion In Lane	1.000		0.130	1.000		0.437	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	384.9	1481.2	795.7	613.8	1498.1	764.3	575.9	836.0	0.0	682.3	732.4	622.6
V/C Ratio(X)	0.138	0.062	0.063	0.004	0.254	0.261	0.021	0.021	0.000	0.206	0.027	0.100
Avail Cap(c_a), veh/h	384.9	1481.2	795.7	613.8	1498.1	764.3	575.9	836.0	0.0	682.3	732.4	622.6
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	15.0	11.9	11.9	12.1	12.7	12.8	17.3	15.8	0.0	17.7	15.9	16.4
Incr Delay (d2), s/veh	0.7	0.1	0.2	0.0	0.4	0.8	0.1	0.0	0.0	0.7	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	15.8	11.9	12.0	12.1	13.2	13.6	17.4	15.9	0.0	18.4	15.9	16.7
Lane Group LOS	B	B	B	B	B	B	B	B		B	B	B
Approach Volume, veh/h		196			582			29			222	
Approach Delay, s/veh		13.0			13.3			16.5			17.7	
Approach LOS		B			B			B			B	

Timer												
Assigned Phase		2			6			8			4	
Phase Duration (G+Y+Rc), s		50.00			50.00			50.00			50.00	
Change Period (Y+Rc), s		6.00			6.00			6.00			6.00	
Max Green Setting (Gmax), s		44.00			44.00			44.00			44.00	
Max Q Clear Time (g_c+I1), s		11.11			7.61			5.15			8.79	
Green Extension Time (p_c)		2.43			2.44			0.63			0.63	

Intersection Summary		
HCM 2010 Control Delay		14.3
HCM 2010 Level of Service		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	181	499	126	117	286	102	34	46	21	23	77	122
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	178.9	177.6	166.7	182.0	190.0	184.5	173.9	147.3	190.0	186.2	188.1
Lanes	1	3	0	1	3	0	1	2	0	0	2	1
Cap, veh/h	498	1800	400	340	1801	432	601	962	371	324	1068	660
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.41	0.41	0.41	0.41	0.41	0.00
Sat Flow, veh/h	1014	3999	889	691	4003	959	1297	2333	899	628	2588	1599
Grp Volume(v), veh/h	195	435	224	126	252	133	37	34	35	58	50	0
Grp Sat Flow(s),veh/h/ln	1014	1628	1632	691	1656	1650	1297	1652	1580	1607	1609	1599
Q Serve(g_s), s	11.4	6.8	7.0	11.4	3.6	3.8	1.4	1.0	1.1	0.0	1.5	0.0
Cycle Q Clear(g_c), s	15.2	6.8	7.0	18.4	3.6	3.8	2.9	1.0	1.1	1.5	1.5	0.0
Prop In Lane	1.00		0.54	1.00		0.58	1.00		0.57	0.43		1.00
Lane Grp Cap(c), veh/h	498	1465	734	340	1490	743	601	681	652	727	664	660
V/C Ratio(X)	0.39	0.30	0.30	0.37	0.17	0.18	0.06	0.05	0.05	0.08	0.08	0.00
Avail Cap(c_a), veh/h	498	1465	734	340	1490	743	601	681	652	727	664	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.7	14.0	14.0	19.9	13.1	13.2	15.1	14.1	14.1	14.3	14.2	0.0
Incr Delay (d2), s/veh	2.3	0.5	1.1	3.1	0.2	0.5	0.2	0.1	0.2	0.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.0	2.6	2.8	2.1	1.5	1.6	0.5	0.4	0.4	0.7	0.6	0.0
Lane Grp Delay (d), s/veh	20.0	14.5	15.1	23.0	13.3	13.7	15.3	14.2	14.3	14.5	14.5	0.0
Lane Grp LOS	C	B	B	C	B	B	B	B	B	B	B	
Approach Vol, veh/h		854			511			106			108	
Approach Delay, s/veh		15.9			15.8			14.6			14.5	
Approach LOS		B			B			B			B	
Timer												
Assigned Phs		2			6			8			4	
Phs Duration (G+Y+Rc), s		41.0			41.0			39.0			39.0	
Change Period (Y+Rc), s		5.0			5.0			6.0			6.0	
Max Green Setting (Gmax), s		36.0			36.0			33.0			33.0	
Max Q Clear Time (g_c+I1), s		17.2			20.4			4.9			3.5	
Green Ext Time (p_c), s		4.0			3.8			0.5			0.5	
Intersection Summary												
HCM 2010 Ctrl Delay			15.7									
HCM 2010 LOS			B									
Notes												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	82	92	28	44	318	86	207	120	202	428	21	41
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	188.1	185.3	188.1	188.1	182.7	186.3	181.0	188.1	172.7	182.7	188.1	188.2
Lanes	1	3	0	1	2	1	1	1	1	1	1	1
Cap, veh/h	573	2158	485	535	1234	563	548	669	522	400	669	569
Arrive On Green	0.11	0.52	0.52	0.36	0.36	0.00	0.36	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1792	4132	930	1280	3471	1583	1344	1881	1468	1032	1881	1600
Grp Volume(v), veh/h	85	77	42	46	331	0	216	125	198	446	22	0
Grp Sat Flow(s),veh/h/ln	1792	1686	1689	1280	1736	1583	1344	1881	1468	1032	1881	1600
Q Serve(g_s), s	2.3	1.0	1.1	2.2	6.1	0.0	11.2	4.1	9.0	27.9	0.7	0.0
Cycle Q Clear(g_c), s	2.3	1.0	1.1	2.2	6.1	0.0	11.9	4.1	9.0	32.0	0.7	0.0
Prop In Lane	1.00		0.55	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	573	1761	882	535	1234	563	548	669	522	400	669	569
V/C Ratio(X)	0.15	0.04	0.05	0.09	0.27	0.00	0.39	0.19	0.38	1.12	0.03	0.00
Avail Cap(c_a), veh/h	573	1761	882	535	1234	563	548	669	522	400	669	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.0	10.5	10.5	19.4	20.7	0.0	22.8	20.0	21.6	33.9	18.9	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.1	0.3	0.5	0.0	2.1	0.6	2.1	80.3	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.0	0.4	0.4	0.7	2.7	0.0	4.0	2.0	3.5	18.0	0.3	0.0
Lane Grp Delay (d), s/veh	13.6	10.6	10.6	19.7	21.2	0.0	24.9	20.6	23.7	114.2	19.0	0.0
Lane Grp LOS	B	B	B	B	C		C	C	C	F	B	
Approach Vol, veh/h		204			377			539			468	
Approach Delay, s/veh		11.8			21.0			23.5			109.7	
Approach LOS		B			C			C			F	

Timer												
Assigned Phs	5	2			6			8			4	
Phs Duration (G+Y+Rc), s	15.0	53.0			38.0			37.0			37.0	
Change Period (Y+Rc), s	5.5	6.0			6.0			5.0			5.0	
Max Green Setting (Gmax), s	9.5	47.0			32.0			32.0			32.0	
Max Q Clear Time (g_c+I1), s	4.3	3.1			8.1			13.9			34.0	
Green Ext Time (p_c), s	0.1	1.4			1.4			2.9			0.0	

Intersection Summary												
HCM 2010 Ctrl Delay			46.8									
HCM 2010 LOS			D									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	565	21	41	2	2	5	17	93	5	11	164	395
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1496	1378	1378	1639	1639	1639	1638	1528	1528	1696	1441	1441
Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Capacity, veh/h	930	216	320	136	138	288	497	1236	66	556	1239	0
Arriving On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.57	0.57	0.57	0.57	0.57	0.00
Sat Flow, veh/h	2180.5	503.4	743.1	268.3	256.1	670.8	1058.0	2874.7	153.4	1168.8	2882.1	0.0
Grp Volume(v), veh/h	607.5	0.0	55.9	9.7	0.0	0.0	18.3	52.8	52.6	11.8	176.3	0.0
Grp Sat Flow(s),veh/h/ln	1090.3	0.0	1246.6	1207.4	0.0	0.0	1058.0	1527.6	1500.5	1168.8	1441.0	0.0
Q Serve(g_s), s	24.7	0.0	2.7	0.0	0.0	0.0	0.8	1.6	1.6	0.5	2.9	0.0
Cycle Q Clear(g_c), s	31.7	0.0	2.7	7.0	0.0	0.0	3.7	1.6	1.6	2.0	2.9	0.0
Proportion In Lane	1.000		0.596	0.222		0.556	1.000		0.102	1.000		0.000
Lane Grp Cap(c), veh/h	929.7	0.0	536.0	563.2	0.0	0.0	496.8	656.9	645.2	556.2	1239.3	0.0
V/C Ratio(X)	0.653	0.000	0.104	0.017	0.000	0.000	0.037	0.080	0.082	0.021	0.142	0.000
Avail Cap(c_a), veh/h	929.7	0.0	536.0	563.2	0.0	0.0	496.8	656.9	645.2	556.2	1239.3	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	28.4	0.0	17.0	16.4	0.0	0.0	13.7	12.5	12.5	13.0	12.8	0.0
Incr Delay (d2), s/veh	3.6	0.0	0.4	0.1	0.0	0.0	0.1	0.2	0.2	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	31.9	0.0	17.4	16.4	0.0	0.0	13.8	12.8	12.8	13.1	13.1	0.0
Lane Group LOS	C		B	B			B	B	B	B	B	
Approach Volume, veh/h		663			10			124			188	
Approach Delay, s/veh		30.7			16.4			12.9			13.1	
Approach LOS		C			B			B			B	

Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		50.00			50.00			50.00			50.00	
Change Period (Y+Rc), s		7.00			7.00			7.00			7.00	
Max Green Setting (Gmax), s		43.00			43.00			43.00			43.00	
Max Q Clear Time (g_c+I1), s		33.67			8.97			5.68			4.85	
Green Extension Time (p_c)		2.24			3.35			0.89			0.90	

Intersection Summary												
HCM 2010 Control Delay			25.0									
HCM 2010 Level of Service			C									

Intersection	
Intersection Delay (sec/veh):	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	0	0	0	138	707	0	0	449	249
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	180		0	0		0
Median Width		0			0			10			10	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles(%)	0	0	0	0	0	0	16	16	0	0	17	17
Movement Flow Rate	0	0	0	0	0	0	172	884	0	0	561	311
Number of Lanes	0	0	0	0	1	0	1	2	0	0	2	0

Major/Minor			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All		~	2102	-	872	0	-	884	0	0
Stage 1		-	1230	-	-	-	-	-	-	-
Stage 2		-	872	-	-	-	-	-	-	-
Follow-up Headway		0	4	0	2.36	-	0	2.2	-	-
Pot Capacity-1 Maneuver		0	76	0	830	-	0	1093	-	-
Stage 1		0	368	0	-	-	0	-	-	-
Stage 2		0	469	0	-	-	0	-	-	-
Time blocked-Platoon(%)		0	42	0	15	-	0	27	-	-
Mov Capacity-1 Maneuver		0	61	-	830	-	-	1093	-	-
Mov Capacity-2 Maneuver		0	61	-	-	-	-	-	-	-
Stage 1		0	291	-	-	-	-	-	-	-
Stage 2		0	469	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	0	1.7	0
HCM LOS	A	A	A

Lane	NBL	NBT	WBLn1	SBL	SBT	SBR
Capacity (vph)			0			
HCM Control Delay (s)	10.472	-	0	0	-	-
HCM Lane VC Ratio	0.208	-	-	-	-	-
HCM Lane LOS	B	-	A	A	-	-
HCM 95th Percentile Queue (veh)	0.78	-	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	377	23	0	1	0	0	466	31	55	767	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1900	0	0	1638	1638	1624	1624	0
Lanes	1	1	1	0	1	0	0	2	0	1	2	0
Capacity, veh/h	529	605	514	0	665	0	0	1147	0	406	1635	0
Arriving On Green	0.35	0.35	0.00	0.00	0.35	0.00	0.00	0.47	0.00	0.16	0.70	0.00
Sat Flow, veh/h	1307.6	1727.3	1468.2		1900.0	0.0		3275.9	0.0	1546.6	3166.7	0.0
Grp Volume(v), veh/h	100.0	471.3	0.0		1.3	0.0		582.5	0.0	68.8	958.8	0.0
Grp Sat Flow(s),veh/h/ln	1307.6	1727.3	1468.2		1900.0	0.0		1637.9	0.0	1546.6	1542.7	0.0
Q Serve(g_s), s	5.4	24.4	0.0		0.0	0.0		12.4	0.0	0.0	15.6	0.0
Cycle Q Clear(g_c), s	5.4	24.4	0.0		0.0	0.0		12.4	0.0	0.0	15.6	0.0
Proportion In Lane	1.000		1.000			0.000			0.000	1.000		0.000
Lane Grp Cap(c), veh/h	529.1	604.5	513.9		665.0	0.0		1146.6	0.0	406.1	1635.3	0.0
V/C Ratio(X)	0.189	0.780	0.000		0.002	0.000		0.508	0.000	0.169	0.586	0.000
Avail Cap(c_a), veh/h	529.1	604.5	513.9		665.0	0.0		1146.6	0.0	406.1	1635.3	0.0
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00		1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	1.000	0.000		1.000	0.000		1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	22.9	29.1	0.0		21.1	0.0		20.7	0.0	23.9	9.2	0.0
Incr Delay (d2), s/veh	0.8	9.6	0.0		0.0	0.0		1.6	0.0	0.9	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	23.7	38.6	0.0		21.1	0.0		22.3	0.0	24.8	10.8	0.0
Lane Group LOS	C	D			C			C		C	B	
Approach Volume, veh/h		571			1			582			1028	
Approach Delay, s/veh		36.0			21.1			22.3			11.7	
Approach LOS		D			C			C			B	

Timer												
Assigned Phase		4			8			2		1	6	
Phase Duration (G+Y+Rc), s		41.00			41.00			41.00		18.00	59.00	
Change Period (Y+Rc), s		6.00			6.00			6.00		6.00	6.00	
Max Green Setting (Gmax), s		35.00			35.00			35.00		12.00	53.00	
Max Q Clear Time (g_c+I1), s		26.39			2.04			14.45		2.00	17.63	
Green Extension Time (p_c)		1.13			1.55			5.47		0.07	5.98	

Intersection Summary		
HCM 2010 Control Delay	20.9	
HCM 2010 Level of Service	C	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	514	1	223	0	1	0	298	233	0	0	661	331
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1976	0	1638	1638	0	0	1624	1624
Lanes	2	0	1	0	1	0	1	2	0	0	2	0
Capacity, veh/h	879	0	426	0	573	0	432	1933	0	0	1104	0
Arriving On Green	0.29	0.29	0.00	0.00	0.29	0.00	0.25	0.78	0.00	0.00	0.45	0.00
Sat Flow, veh/h	2536.8	0.0	1468.2	0.0	1976.0	0.0	1559.9	3275.9	0.0		3247.9	0.0
Grp Volume(v), veh/h	642.5	0.0	0.0	0.0	1.3	0.0	372.5	291.3	0.0		826.3	0.0
Grp Sat Flow(s),veh/h/ln	1268.4	0.0	1468.2	0.0	1976.0	0.0	1559.9	1637.9	0.0		1623.9	0.0
Q Serve(g_s), s	24.1	0.0	0.0	0.0	0.0	0.0	13.4	2.2	0.0		21.1	0.0
Cycle Q Clear(g_c), s	24.1	0.0	0.0	0.0	0.0	0.0	13.4	2.2	0.0		21.1	0.0
Proportion In Lane	1.000		1.000	0.000		0.000	1.000		0.000			0.000
Lane Grp Cap(c), veh/h	878.5	0.0	425.8	0.0	573.0	0.0	431.9	1932.8	0.0		1104.3	0.0
V/C Ratio(X)	0.731	0.000	0.000	0.000	0.002	0.000	0.862	0.151	0.000		0.748	0.000
Avail Cap(c_a), veh/h	878.5	0.0	425.8	0.0	573.0	0.0	431.9	1932.8	0.0		1104.3	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.30		1.33	1.33
Upstream Filter(I)	1.000	0.000	0.000	0.000	1.000	0.000	1.000	1.000	0.000		1.000	0.000
Uniform Delay (d), s/veh	33.8	0.0	0.0	0.0	25.2	0.0	31.9	4.6	0.0		23.8	0.0
Incr Delay (d2), s/veh	5.3	0.0	0.0	0.0	0.0	0.0	19.8	0.2	0.0		4.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Lane Group Delay (d), s/veh	39.1	0.0	0.0	0.0	25.2	0.0	51.7	4.8	0.0		28.5	0.0
Lane Group LOS	D				C		D	A			C	
Approach Volume, veh/h		642			1			664			826	
Approach Delay, s/veh		39.1			25.2			31.1			28.5	
Approach LOS		D			C			C			C	

Timer												
Assigned Phase		4			8		5	2			6	
Phase Duration (G+Y+Rc), s		35.00			35.00		25.00	65.00			40.00	
Change Period (Y+Rc), s		6.00			6.00		6.00	6.00			6.00	
Max Green Setting (Gmax), s		29.00			29.00		19.00	59.00			34.00	
Max Q Clear Time (g_c+I1), s		26.14			2.04		15.42	4.17			23.06	
Green Extension Time (p_c)		0.80			2.54		0.39	3.98			3.04	

Intersection Summary												
HCM 2010 Control Delay			32.5									
HCM 2010 Level of Service			C									

Intersection	
Intersection Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	0	14	103	298	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0	150			0
Median Width	0			0	0	
Grade, %	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	16	114	331	27
Number of Lanes	0	1	0	3	2	0

Major/Minor			Major 1		Major 2	
Conflicting Flow All	421	179	358	0	-	0
Stage 1	344	-	-	-	-	-
Stage 2	77	-	-	-	-	-
Follow-up Headway	3.67	3.32	2.22	-	-	-
Pot Capacity-1 Maneuver	578	833	1197	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	896	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	-	-	-
Mov Capacity-1 Maneuver	570	833	1197	-	-	-
Mov Capacity-2 Maneuver	570	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	883	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	1	0
HCM LOS	A	-	-

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Cap, veh/h	1197	-	0	-	-
HCM Control Delay, s	8.047	0	0	-	-
HCM Lane V/C Ratio	0.01	-	-	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th-tile Q, veh	0.0	-	-	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	0	45	117	93	204
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0	100			0
Median Width	0			12	12	
Grade, %	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	50	130	103	227
Number of Lanes	0	1	1	2	2	0

Major/Minor			Major 1		Major 2	
Conflicting Flow All	382	165	330	0	-	0
Stage 1	217	-	-	-	-	-
Stage 2	165	-	-	-	-	-
Follow-up Headway	3.52	3.32	2.22	-	-	-
Pot Capacity-1 Maneuver	593	850	1226	-	-	-
Stage 1	798	-	-	-	-	-
Stage 2	847	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	-	-	-
Mov Capacity-1 Maneuver	569	850	1226	-	-	-
Mov Capacity-2 Maneuver	627	-	-	-	-	-
Stage 1	798	-	-	-	-	-
Stage 2	812	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	2.2	0
HCM LOS	A	-	-

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Cap, veh/h	1226	-	0	-	-
HCM Control Delay, s	8.061	-	0	-	-
HCM Lane V/C Ratio	0.04	-	-	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th-tile Q, veh	0.1	-	-	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	29	505	0	0	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0		0	0	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	32	561	0	0	106
Number of Lanes	1	0	2	0	0	2

Major/Minor			Major 1		Major 2	
Conflicting Flow All	614	281	0	0	561	0
Stage 1	561	-	-	-	-	-
Stage 2	53	-	-	-	-	-
Follow-up Headway	3.52	3.32	-	-	2.22	-
Pot Capacity-1 Maneuver	424	716	-	-	1006	-
Stage 1	535	-	-	-	-	-
Stage 2	963	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	424	716	-	-	1006	-
Mov Capacity-2 Maneuver	471	-	-	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	963	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Cap, veh/h	-	-	591	1006	-
HCM Control Delay, s	-	-	11.7	0	-
HCM Lane V/C Ratio	-	-	0.09	-	-
HCM Lane LOS	-	-	B	A	-
HCM 95th-tile Q, veh	-	-	0.3	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	26	31	474	19	22	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0		0	100	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	34	527	21	24	102
Number of Lanes	1	0	2	0	1	2

Major/Minor			Major 1		Major 2	
Conflicting Flow All	637	274	0	0	548	0
Stage 1	537	-	-	-	-	-
Stage 2	100	-	-	-	-	-
Follow-up Headway	3.52	3.32	-	-	2.22	-
Pot Capacity-1 Maneuver	410	724	-	-	1018	-
Stage 1	550	-	-	-	-	-
Stage 2	913	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	400	724	-	-	1018	-
Mov Capacity-2 Maneuver	470	-	-	-	-	-
Stage 1	550	-	-	-	-	-
Stage 2	891	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	1.7
HCM LOS	B	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Cap, veh/h	-	-	581	1018	-
HCM Control Delay, s	-	-	12	8.623	-
HCM Lane V/C Ratio	-	-	0.11	0.02	-
HCM Lane LOS	-	-	B	A	-
HCM 95th-tile Q, veh	-	-	0.4	0.1	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	6.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	62	282	211	0	0	118
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0		0	100	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	69	313	234	0	0	131
Number of Lanes	1	0	2	0	0	2

Major/Minor			Major 1		Major 2	
Conflicting Flow All	300	117	0	0	234	0
Stage 1	234	-	-	-	-	-
Stage 2	66	-	-	-	-	-
Follow-up Headway	3.52	3.32	-	-	2.22	-
Pot Capacity-1 Maneuver	667	913	-	-	1331	-
Stage 1	783	-	-	-	-	-
Stage 2	949	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	667	913	-	-	1331	-
Mov Capacity-2 Maneuver	684	-	-	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	949	-	-	-	-	-

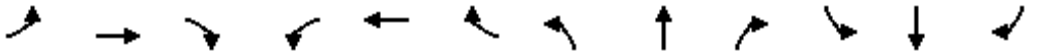
Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	0
HCM LOS	B	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Cap, veh/h	-	-	861	1331	-
HCM Control Delay, s	-	-	12.5	0	-
HCM Lane V/C Ratio	-	-	0.44	-	-
HCM Lane LOS	-	-	B	A	-
HCM 95th-tile Q, veh	-	-	2.3	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

2016 BUILD WITH IMPROVEMENTS WEEKDAY PM PEAK HOUR CONDITIONS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	125	13	2	453	127	11	16	0	129	18	91
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1850	1850	1900	1871	1871	1727	1900	0	1881	1665	1665
Lanes	1	3	0	1	3	0	1	1	1	1	2	0
Capacity, veh/h	385	2174	103	614	1929	334	576	836	0	682	732	623
Arriving On Green	0.59	0.59	0.59	0.59	0.59	0.59	0.44	0.44	0.00	0.44	0.44	0.44
Sat Flow, veh/h	815.2	4940.6	234.2	1265.8	4383.3	758.5	1216.0	1900.0	0.0	1403.5	1664.6	1414.9
Grp Volume(v), veh/h	53.3	92.0	50.4	2.2	380.2	199.1	12.0	17.4	0.0	140.2	19.6	62.0
Grp Sat Flow(s),veh/h/ln	815.2	1683.2	1808.4	1265.8	1702.4	1736.9	1216.0	1900.0	0.0	1403.5	1664.6	1414.9
Q Serve(g_s), s	3.5	1.2	1.2	0.1	5.4	5.6	0.6	0.5	44.0	6.3	0.7	2.6
Cycle Q Clear(g_c), s	9.1	1.2	1.2	1.3	5.4	5.6	3.1	0.5	44.0	6.8	0.7	2.6
Proportion In Lane	1.000		0.130	1.000		0.437	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	384.9	1481.2	795.7	613.8	1498.1	764.3	575.9	836.0	0.0	682.3	732.4	622.6
V/C Ratio(X)	0.138	0.062	0.063	0.004	0.254	0.261	0.021	0.021	0.000	0.206	0.027	0.100
Avail Cap(c_a), veh/h	384.9	1481.2	795.7	613.8	1498.1	764.3	575.9	836.0	0.0	682.3	732.4	622.6
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	15.0	11.9	11.9	12.1	12.7	12.8	17.3	15.8	0.0	17.7	15.9	16.4
Incr Delay (d2), s/veh	0.7	0.1	0.2	0.0	0.4	0.8	0.1	0.0	0.0	0.7	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	15.8	11.9	12.0	12.1	13.2	13.6	17.4	15.9	0.0	18.4	15.9	16.7
Lane Group LOS	B	B	B	B	B	B	B	B		B	B	B
Approach Volume, veh/h		196			582			29			222	
Approach Delay, s/veh		13.0			13.3			16.5			17.7	
Approach LOS		B			B			B			B	

Timer												
Assigned Phase		2			6			8			4	
Phase Duration (G+Y+Rc), s		50.00			50.00			50.00			50.00	
Change Period (Y+Rc), s		6.00			6.00			6.00			6.00	
Max Green Setting (Gmax), s		44.00			44.00			44.00			44.00	
Max Q Clear Time (g_c+I1), s		11.11			7.61			5.15			8.79	
Green Extension Time (p_c)		2.43			2.44			0.63			0.63	

Intersection Summary		
HCM 2010 Control Delay		14.3
HCM 2010 Level of Service		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	181	499	126	117	286	102	34	46	21	23	77	122
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	178.9	177.6	166.7	182.0	190.0	184.5	173.9	147.3	190.0	186.2	188.1
Lanes	1	3	0	1	3	0	1	2	0	0	2	1
Cap, veh/h	526	1920	427	362	1921	460	579	957	369	314	1054	656
Arrive On Green	0.64	0.64	0.64	0.64	0.64	0.64	0.41	0.41	0.41	0.41	0.41	0.00
Sat Flow, veh/h	1014	3999	889	691	4003	959	1297	2333	899	641	2570	1599
Grp Volume(v), veh/h	195	435	224	126	252	133	37	34	35	58	50	0
Grp Sat Flow(s),veh/h/ln	1014	1628	1632	691	1656	1650	1297	1652	1580	1602	1609	1599
Q Serve(g_s), s	10.5	5.9	6.1	10.7	3.1	3.3	1.8	1.2	1.3	0.0	1.9	0.0
Cycle Q Clear(g_c), s	13.7	5.9	6.1	16.7	3.1	3.3	3.7	1.2	1.3	1.9	1.9	0.0
Prop In Lane	1.00		0.54	1.00		0.58	1.00		0.57	0.43		1.00
Lane Grp Cap(c), veh/h	526	1563	783	362	1590	792	579	677	648	708	660	656
V/C Ratio(X)	0.37	0.28	0.29	0.35	0.16	0.17	0.06	0.05	0.05	0.08	0.08	0.00
Avail Cap(c_a), veh/h	526	1563	783	362	1590	792	579	677	648	708	660	656
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.8	10.5	10.5	14.2	10.0	10.0	19.1	17.8	17.8	18.0	18.0	0.0
Incr Delay (d2), s/veh	2.0	0.4	0.9	2.6	0.2	0.5	0.2	0.1	0.2	0.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.6	2.2	2.3	1.9	1.2	1.3	0.6	0.5	0.5	0.9	0.8	0.0
Lane Grp Delay (d), s/veh	14.8	10.9	11.4	16.8	10.2	10.4	19.3	17.9	18.0	18.2	18.2	0.0
Lane Grp LOS	B	B	B	B	B	B	B	B	B	B	B	
Approach Vol, veh/h		854			511			106			108	
Approach Delay, s/veh		11.9			11.9			18.4			18.2	
Approach LOS		B			B			B			B	
Timer												
Assigned Phs		2			6			8			4	
Phs Duration (G+Y+Rc), s		53.0			53.0			47.0			47.0	
Change Period (Y+Rc), s		5.0			5.0			6.0			6.0	
Max Green Setting (Gmax), s		48.0			48.0			41.0			41.0	
Max Q Clear Time (g_c+I1), s		15.7			18.7			5.7			3.9	
Green Ext Time (p_c), s		4.3			4.3			0.5			0.5	
Intersection Summary												
HCM 2010 Ctrl Delay			12.8									
HCM 2010 LOS			B									
Notes												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	82	92	28	44	318	86	207	120	202	428	21	41
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	188.1	185.3	188.1	188.1	182.7	186.3	181.0	188.1	172.7	182.7	188.1	188.2
Lanes	1	3	0	1	2	1	1	1	1	1	1	1
Cap, veh/h	387	1570	353	405	902	412	750	959	749	562	959	816
Arrive On Green	0.09	0.51	0.51	0.35	0.35	0.00	0.51	0.51	0.51	0.51	0.51	0.00
Sat Flow, veh/h	1792	4132	930	1280	3471	1583	1344	1881	1468	1032	1881	1600
Grp Volume(v), veh/h	85	77	42	46	331	0	216	125	198	446	22	0
Grp Sat Flow(s),veh/h/ln	1792	1686	1689	1280	1736	1583	1344	1881	1468	1032	1881	1600
Q Serve(g_s), s	3.2	1.2	1.3	2.5	7.1	0.0	9.5	3.5	7.6	39.9	0.6	0.0
Cycle Q Clear(g_c), s	3.2	1.2	1.3	2.5	7.1	0.0	10.1	3.5	7.6	43.4	0.6	0.0
Prop In Lane	1.00		0.55	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	387	1282	642	405	903	412	750	959	749	562	959	816
V/C Ratio(X)	0.22	0.06	0.07	0.11	0.37	0.00	0.29	0.13	0.26	0.79	0.02	0.00
Avail Cap(c_a), veh/h	387	1282	642	405	903	412	750	959	749	562	959	816
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.4	15.6	15.6	25.0	26.5	0.0	14.6	12.9	13.9	24.3	12.1	0.0
Incr Delay (d2), s/veh	1.3	0.1	0.2	0.6	1.2	0.0	1.0	0.3	0.9	11.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.5	0.5	0.6	0.8	3.1	0.0	3.3	1.6	2.8	11.6	0.3	0.0
Lane Grp Delay (d), s/veh	23.7	15.7	15.8	25.6	27.7	0.0	15.6	13.1	14.7	35.2	12.2	0.0
Lane Grp LOS	C	B	B	C	C		B	B	B	D	B	
Approach Vol, veh/h		204			377			539			468	
Approach Delay, s/veh		19.1			27.4			14.7			34.1	
Approach LOS		B			C			B			C	

Timer												
Assigned Phs	5	2			6			8			4	
Phs Duration (G+Y+Rc), s	12.0	44.0			32.0			56.0			56.0	
Change Period (Y+Rc), s	5.5	6.0			6.0			5.0			5.0	
Max Green Setting (Gmax), s	6.5	38.0			26.0			51.0			51.0	
Max Q Clear Time (g_c+I1), s	5.2	3.3			9.1			12.1			45.4	
Green Ext Time (p_c), s	0.0	1.4			1.3			3.1			1.7	

Intersection Summary												
HCM 2010 Ctrl Delay			24.0									
HCM 2010 LOS			C									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	514	1	223	0	1	0	298	233	0	0	661	331
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1976	0	1638	1638	0	0	1624	1624
Lanes	2	0	1	0	1	0	1	2	0	0	2	0
Capacity, veh/h	879	0	426	0	573	0	432	1933	0	0	1104	0
Arriving On Green	0.29	0.29	0.00	0.00	0.29	0.00	0.25	0.78	0.00	0.00	0.45	0.00
Sat Flow, veh/h	2536.8	0.0	1468.2	0.0	1976.0	0.0	1559.9	3275.9	0.0		3247.9	0.0
Grp Volume(v), veh/h	642.5	0.0	0.0	0.0	1.3	0.0	372.5	291.3	0.0		826.3	0.0
Grp Sat Flow(s),veh/h/ln	1268.4	0.0	1468.2	0.0	1976.0	0.0	1559.9	1637.9	0.0		1623.9	0.0
Q Serve(g_s), s	24.1	0.0	0.0	0.0	0.0	0.0	13.4	2.2	0.0		21.1	0.0
Cycle Q Clear(g_c), s	24.1	0.0	0.0	0.0	0.0	0.0	13.4	2.2	0.0		21.1	0.0
Proportion In Lane	1.000		1.000	0.000		0.000	1.000		0.000			0.000
Lane Grp Cap(c), veh/h	878.5	0.0	425.8	0.0	573.0	0.0	431.9	1932.8	0.0		1104.3	0.0
V/C Ratio(X)	0.731	0.000	0.000	0.000	0.002	0.000	0.862	0.151	0.000		0.748	0.000
Avail Cap(c_a), veh/h	878.5	0.0	425.8	0.0	573.0	0.0	431.9	1932.8	0.0		1104.3	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.30		1.33	1.33
Upstream Filter(I)	1.000	0.000	0.000	0.000	1.000	0.000	1.000	1.000	0.000		1.000	0.000
Uniform Delay (d), s/veh	33.8	0.0	0.0	0.0	25.2	0.0	31.9	4.6	0.0		23.8	0.0
Incr Delay (d2), s/veh	5.3	0.0	0.0	0.0	0.0	0.0	19.8	0.2	0.0		4.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Lane Group Delay (d), s/veh	39.1	0.0	0.0	0.0	25.2	0.0	51.7	4.8	0.0		28.5	0.0
Lane Group LOS	D				C		D	A			C	
Approach Volume, veh/h		642			1			664			826	
Approach Delay, s/veh		39.1			25.2			31.1			28.5	
Approach LOS		D			C			C			C	

Timer												
Assigned Phase		4			8		5	2			6	
Phase Duration (G+Y+Rc), s		35.00			35.00		25.00	65.00			40.00	
Change Period (Y+Rc), s		6.00			6.00		6.00	6.00			6.00	
Max Green Setting (Gmax), s		29.00			29.00		19.00	59.00			34.00	
Max Q Clear Time (g_c+I1), s		26.14			2.04		15.42	4.17			23.06	
Green Extension Time (p_c)		0.80			2.54		0.39	3.98			3.04	

Intersection Summary		
HCM 2010 Control Delay	32.5	
HCM 2010 Level of Service	C	

2021 NO BUILD WEEKDAY PM PEAK HOUR CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	128	13	2	324	132	11	17	0	134	19	96
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1850	1850	1900	1873	1873	1727	1900	0	1881	1665	1665
Lanes	1	3	0	1	3	0	1	1	1	1	2	0
Capacity, veh/h	440	2198	102	620	1811	456	555	802	0	664	703	597
Arriving On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.42	0.42	0.00	0.42	0.42	0.42
Sat Flow, veh/h	923.2	4946.4	229.1	1262.0	4074.5	1027.1	1208.9	1900.0	0.0	1402.1	1664.6	1414.9
Grp Volume(v), veh/h	55.4	94.1	51.5	2.2	292.4	152.2	12.0	18.5	0.0	145.7	20.7	67.4
Grp Sat Flow(s),veh/h/ln	923.2	1683.1	1809.2	1262.0	1704.8	1692.1	1208.9	1900.0	0.0	1402.1	1664.6	1414.9
Q Serve(g_s), s	3.5	1.4	1.5	0.1	4.7	4.9	0.5	0.5	38.0	6.1	0.7	2.6
Cycle Q Clear(g_c), s	8.5	1.4	1.5	1.6	4.7	4.9	3.1	0.5	38.0	6.6	0.7	2.6
Proportion In Lane	1.000		0.127	1.000		0.607	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	439.6	1496.1	804.1	620.4	1515.3	752.0	555.5	802.2	0.0	664.1	702.8	597.4
V/C Ratio(X)	0.126	0.063	0.064	0.004	0.193	0.202	0.022	0.023	0.000	0.219	0.029	0.113
Avail Cap(c_a), veh/h	439.6	1496.1	804.1	620.4	1515.3	752.0	555.5	802.2	0.0	664.1	702.8	597.4
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	17.8	14.3	14.3	14.7	15.2	15.3	16.7	15.2	0.0	17.1	15.2	15.8
Incr Delay (d2), s/veh	0.6	0.1	0.2	0.0	0.3	0.6	0.1	0.1	0.0	0.8	0.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	18.4	14.4	14.4	14.8	15.5	15.9	16.8	15.2	0.0	17.9	15.3	16.2
Lane Group LOS	B	B	B	B	B	B	B	B		B	B	B
Approach Volume, veh/h		201			447			30			234	
Approach Delay, s/veh		15.5			15.6			15.8			17.1	
Approach LOS		B			B			B			B	

Timer												
Assigned Phase		2			6			8			4	
Phase Duration (G+Y+Rc), s		46.00			46.00			44.00			44.00	
Change Period (Y+Rc), s		6.00			6.00			6.00			6.00	
Max Green Setting (Gmax), s		40.00			40.00			38.00			38.00	
Max Q Clear Time (g_c+I1), s		10.45			6.94			5.15			8.60	
Green Extension Time (p_c)		1.96			1.97			0.66			0.65	

Intersection Summary		
HCM 2010 Control Delay		16.0
HCM 2010 Level of Service		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	188	374	20	24	291	107	36	48	24	24	52	125
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	179.2	177.6	166.7	182.0	190.0	184.5	173.3	147.3	190.0	187.4	188.1
Lanes	1	3	0	1	3	0	1	2	0	0	2	1
Cap, veh/h	493	2215	49	438	1784	447	620	936	389	421	948	660
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.41	0.41	0.41	0.41	0.41	0.00
Sat Flow, veh/h	1005	4923	110	869	3964	994	1329	2268	944	847	2298	1599
Grp Volume(v), veh/h	202	266	145	26	259	136	39	37	38	44	38	0
Grp Sat Flow(s),veh/h/ln	1005	1630	1772	869	1656	1645	1329	1646	1566	1525	1620	1599
Q Serve(g_s), s	12.1	3.9	3.9	1.5	3.7	4.0	1.5	1.1	1.2	0.0	1.1	0.0
Cycle Q Clear(g_c), s	16.0	3.9	3.9	5.4	3.7	4.0	2.6	1.1	1.2	1.1	1.1	0.0
Prop In Lane	1.00		0.06	1.00		0.60	1.00		0.60	0.59		1.00
Lane Grp Cap(c), veh/h	493	1467	797	438	1491	740	620	679	646	700	668	660
V/C Ratio(X)	0.41	0.18	0.18	0.06	0.17	0.18	0.06	0.05	0.06	0.06	0.06	0.00
Avail Cap(c_a), veh/h	493	1467	797	438	1491	740	620	679	646	700	668	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.0	13.2	13.2	14.8	13.1	13.2	14.9	14.1	14.2	14.1	14.1	0.0
Incr Delay (d2), s/veh	2.5	0.3	0.5	0.3	0.3	0.5	0.2	0.2	0.2	0.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.2	1.5	1.7	0.3	1.5	1.6	0.5	0.4	0.5	0.5	0.4	0.0
Lane Grp Delay (d), s/veh	20.5	13.4	13.7	15.1	13.4	13.7	15.1	14.3	14.3	14.3	14.3	0.0
Lane Grp LOS	C	B	B	B	B	B	B	B	B	B	B	
Approach Vol, veh/h		613			421			114			82	
Approach Delay, s/veh		15.8			13.6			14.6			14.3	
Approach LOS		B			B			B			B	
Timer												
Assigned Phs		2			6			8			4	
Phs Duration (G+Y+Rc), s		41.0			41.0			39.0			39.0	
Change Period (Y+Rc), s		5.0			5.0			6.0			6.0	
Max Green Setting (Gmax), s		36.0			36.0			33.0			33.0	
Max Q Clear Time (g_c+I1), s		18.0			7.4			4.6			3.1	
Green Ext Time (p_c), s		2.8			3.0			0.4			0.4	
Intersection Summary												
HCM 2010 Ctrl Delay			14.8									
HCM 2010 LOS			B									
Notes												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	86	95	26	33	335	91	63	84	50	350	15	43
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	188.1	185.2	188.1	188.1	182.7	186.3	181.0	188.1	172.7	182.7	188.1	188.2
Lanes	1	3	0	1	2	1	1	1	1	1	1	1
Cap, veh/h	563	2207	443	535	1234	563	553	669	522	479	669	569
Arrive On Green	0.11	0.52	0.52	0.36	0.36	0.00	0.36	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1792	4226	848	1279	3471	1583	1352	1881	1468	1233	1881	1600
Grp Volume(v), veh/h	90	78	42	34	349	0	66	88	40	365	16	0
Grp Sat Flow(s),veh/h/ln	1792	1686	1703	1279	1736	1583	1352	1881	1468	1233	1881	1600
Q Serve(g_s), s	2.5	1.0	1.1	1.6	6.5	0.0	3.0	2.8	1.6	25.6	0.5	0.0
Cycle Q Clear(g_c), s	2.5	1.0	1.1	1.6	6.5	0.0	3.5	2.8	1.6	28.4	0.5	0.0
Prop In Lane	1.00		0.50	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	563	1761	889	535	1234	563	553	669	522	479	669	569
V/C Ratio(X)	0.16	0.04	0.05	0.06	0.28	0.00	0.12	0.13	0.08	0.76	0.02	0.00
Avail Cap(c_a), veh/h	563	1761	889	535	1234	563	553	669	522	479	669	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.1	10.5	10.5	19.2	20.8	0.0	20.0	19.6	19.2	29.2	18.8	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.1	0.2	0.6	0.0	0.4	0.4	0.3	10.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.1	0.4	0.4	0.5	2.8	0.0	1.1	1.4	0.6	9.2	0.2	0.0
Lane Grp Delay (d), s/veh	13.7	10.6	10.6	19.4	21.4	0.0	20.4	20.0	19.5	40.1	18.9	0.0
Lane Grp LOS	B	B	B	B	C		C	C	B	D	B	
Approach Vol, veh/h		210			383			194			381	
Approach Delay, s/veh		11.9			21.2			20.0			39.2	
Approach LOS		B			C			C			D	

Timer												
Assigned Phs	5	2			6			8			4	
Phs Duration (G+Y+Rc), s	15.0	53.0			38.0			37.0			37.0	
Change Period (Y+Rc), s	5.5	6.0			6.0			5.0			5.0	
Max Green Setting (Gmax), s	9.5	47.0			32.0			32.0			32.0	
Max Q Clear Time (g_c+I1), s	4.5	3.1			8.5			5.5			30.4	
Green Ext Time (p_c), s	0.1	1.5			1.4			1.7			0.3	

Intersection Summary		
HCM 2010 Ctrl Delay		25.2
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	443	22	43	2	2	6	18	98	6	11	172	320
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1496	1378	1378	1647	1647	1647	1638	1529	1529	1696	1454	1454
Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Capacity, veh/h	1072	214	321	126	130	319	492	1227	74	552	1251	0
Arriving On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.57	0.57	0.57	0.57	0.57	0.00
Sat Flow, veh/h	2178.4	498.3	747.5	246.9	235.4	740.8	1049.8	2853.4	173.2	1162.0	2908.4	0.0
Grp Volume(v), veh/h	476.3	0.0	59.1	10.8	0.0	0.0	19.4	56.0	55.8	11.8	184.9	0.0
Grp Sat Flow(s),veh/h/ln	1089.2	0.0	1245.8	1234.7	0.0	0.0	1049.8	1528.6	1498.0	1162.0	1454.2	0.0
Q Serve(g_s), s	16.1	0.0	2.8	0.0	0.0	0.0	0.9	1.6	1.7	0.5	3.0	0.0
Cycle Q Clear(g_c), s	16.5	0.0	2.8	0.4	0.0	0.0	3.9	1.6	1.7	2.1	3.0	0.0
Proportion In Lane	1.000		0.600	0.200		0.600	1.000		0.116	1.000		0.000
Lane Grp Cap(c), veh/h	1071.7	0.0	535.7	574.1	0.0	0.0	492.2	657.3	644.1	552.2	1250.6	0.0
V/C Ratio(X)	0.444	0.000	0.110	0.019	0.000	0.000	0.039	0.085	0.087	0.021	0.148	0.000
Avail Cap(c_a), veh/h	1071.7	0.0	535.7	574.1	0.0	0.0	492.2	657.3	644.1	552.2	1250.6	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	21.1	0.0	17.1	16.4	0.0	0.0	13.7	12.6	12.6	13.0	12.8	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.4	0.1	0.0	0.0	0.1	0.3	0.3	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	22.4	0.0	17.5	16.4	0.0	0.0	13.9	12.8	12.8	13.1	13.1	0.0
Lane Group LOS	C		B	B			B	B	B	B	B	
Approach Volume, veh/h		535			11			131			197	
Approach Delay, s/veh		21.9			16.4			13.0			13.1	
Approach LOS		C			B			B			B	

Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		50.00			50.00			50.00			50.00	
Change Period (Y+Rc), s		7.00			7.00			7.00			7.00	
Max Green Setting (Gmax), s		43.00			43.00			43.00			43.00	
Max Q Clear Time (g_c+I1), s		18.48			2.41			5.86			4.97	
Green Extension Time (p_c)		2.48			2.61			0.94			0.95	

Intersection Summary		
HCM 2010 Control Delay		18.5
HCM 2010 Level of Service		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	84	396	24	0	1	0	0	358	14	58	711	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1900	0	0	1638	1638	1624	1624	0
Lanes	1	1	1	0	1	0	0	2	0	1	2	0
Capacity, veh/h	529	605	514	0	665	0	0	1147	0	455	1635	0
Arriving On Green	0.35	0.35	0.00	0.00	0.35	0.00	0.00	0.47	0.00	0.16	0.70	0.00
Sat Flow, veh/h	1307.6	1727.3	1468.2		1900.0	0.0		3275.9	0.0	1546.6	3166.7	0.0
Grp Volume(v), veh/h	105.0	495.0	0.0		1.3	0.0		447.5	0.0	72.5	888.8	0.0
Grp Sat Flow(s),veh/h/ln	1307.6	1727.3	1468.2		1900.0	0.0		1637.9	0.0	1546.6	1542.7	0.0
Q Serve(g_s), s	5.7	26.1	0.0		0.0	0.0		8.9	0.0	0.0	13.8	0.0
Cycle Q Clear(g_c), s	5.7	26.1	0.0		0.0	0.0		8.9	0.0	0.0	13.8	0.0
Proportion In Lane	1.000		1.000			0.000			0.000	1.000		0.000
Lane Grp Cap(c), veh/h	529.1	604.5	513.9		665.0	0.0		1146.6	0.0	454.6	1635.3	0.0
V/C Ratio(X)	0.198	0.819	0.000		0.002	0.000		0.390	0.000	0.159	0.543	0.000
Avail Cap(c_a), veh/h	529.1	604.5	513.9		665.0	0.0		1146.6	0.0	454.6	1635.3	0.0
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00		1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	1.000	0.000		1.000	0.000		1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	23.0	29.6	0.0		21.1	0.0		19.8	0.0	21.3	9.0	0.0
Incr Delay (d2), s/veh	0.8	11.8	0.0		0.0	0.0		1.0	0.0	0.7	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	23.8	41.4	0.0		21.1	0.0		20.8	0.0	22.1	10.3	0.0
Lane Group LOS	C	D			C			C		C	B	
Approach Volume, veh/h		600			1			448			961	
Approach Delay, s/veh		38.3			21.1			20.8			11.2	
Approach LOS		D			C			C			B	

Timer												
Assigned Phase		4			8			2		1	6	
Phase Duration (G+Y+Rc), s		41.00			41.00			41.00		18.00	59.00	
Change Period (Y+Rc), s		6.00			6.00			6.00		6.00	6.00	
Max Green Setting (Gmax), s		35.00			35.00			35.00		12.00	53.00	
Max Q Clear Time (g_c+I1), s		28.11			2.04			10.92		2.00	15.78	
Green Extension Time (p_c)		1.07			1.64			4.73		0.08	4.94	

Intersection Summary		
HCM 2010 Control Delay		21.4
HCM 2010 Level of Service		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	540	1	141	0	1	0	183	242	0	0	693	348
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1976	0	1638	1638	0	0	1624	1624
Lanes	2	0	1	0	1	0	1	2	0	0	2	0
Capacity, veh/h	1031	0	514	0	692	0	320	1736	0	0	1137	0
Arriving On Green	0.35	0.35	0.00	0.00	0.35	0.00	0.16	0.70	0.00	0.00	0.47	0.00
Sat Flow, veh/h	2536.8	0.0	1468.2	0.0	1976.0	0.0	1559.9	3275.9	0.0		3247.9	0.0
Grp Volume(v), veh/h	675.0	0.0	0.0	0.0	1.3	0.0	228.8	302.5	0.0		866.3	0.0
Grp Sat Flow(s),veh/h/ln	1268.4	0.0	1468.2	0.0	1976.0	0.0	1559.9	1637.9	0.0		1623.9	0.0
Q Serve(g_s), s	23.6	0.0	0.0	0.0	0.0	0.0	4.7	3.1	0.0		22.1	0.0
Cycle Q Clear(g_c), s	23.6	0.0	0.0	0.0	0.0	0.0	4.7	3.1	0.0		22.1	0.0
Proportion In Lane	1.000		1.000	0.000		0.000	1.000		0.000			0.000
Lane Grp Cap(c), veh/h	1030.8	0.0	513.9	0.0	691.6	0.0	320.2	1736.2	0.0		1136.8	0.0
V/C Ratio(X)	0.655	0.000	0.000	0.000	0.002	0.000	0.714	0.174	0.000		0.762	0.000
Avail Cap(c_a), veh/h	1030.8	0.0	513.9	0.0	691.6	0.0	320.2	1736.2	0.0		1136.8	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.30		1.33	1.33
Upstream Filter(I)	1.000	0.000	0.000	0.000	1.000	0.000	1.000	1.000	0.000		1.000	0.000
Uniform Delay (d), s/veh	28.8	0.0	0.0	0.0	21.1	0.0	36.1	7.4	0.0		23.3	0.0
Incr Delay (d2), s/veh	3.2	0.0	0.0	0.0	0.0	0.0	12.8	0.2	0.0		4.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Lane Group Delay (d), s/veh	32.1	0.0	0.0	0.0	21.1	0.0	48.9	7.6	0.0		28.1	0.0
Lane Group LOS	C				C		D	A			C	
Approach Volume, veh/h		675			1			531			866	
Approach Delay, s/veh		32.1			21.1			25.4			28.1	
Approach LOS		C			C			C			C	

Timer												
Assigned Phase		4			8		5	2			6	
Phase Duration (G+Y+Rc), s		41.00			41.00		18.00	59.00			41.00	
Change Period (Y+Rc), s		6.00			6.00		6.00	6.00			6.00	
Max Green Setting (Gmax), s		35.00			35.00		12.00	53.00			35.00	
Max Q Clear Time (g_c+I1), s		25.62			2.04		6.72	5.11			24.09	
Green Extension Time (p_c)		1.94			2.74		0.27	4.21			3.19	

Intersection Summary												
HCM 2010 Control Delay			28.7									
HCM 2010 Level of Service			C									

2021 BUILD WEEKDAY PM PEAK HOUR CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	131	13	2	469	134	11	17	0	135	19	96
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1849	1849	1900	1871	1871	1727	1900	0	1881	1665	1665
Lanes	1	3	0	1	3	0	1	1	1	1	2	0
Capacity, veh/h	394	2278	103	636	1999	363	545	798	0	653	699	594
Arriving On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.42	0.42	0.00	0.42	0.42	0.42
Sat Flow, veh/h	796.5	4951.9	224.1	1258.3	4346.4	790.1	1208.9	1900.0	0.0	1402.1	1664.6	1414.9
Grp Volume(v), veh/h	55.4	96.3	52.7	2.2	397.1	207.2	12.0	18.5	0.0	146.7	20.7	67.4
Grp Sat Flow(s),veh/h/ln	796.5	1683.0	1809.9	1258.3	1702.5	1731.5	1208.9	1900.0	0.0	1402.1	1664.6	1414.9
Q Serve(g_s), s	3.5	1.2	1.2	0.1	5.4	5.5	0.6	0.6	42.0	6.8	0.7	2.9
Cycle Q Clear(g_c), s	9.1	1.2	1.2	1.2	5.4	5.5	3.5	0.6	42.0	7.4	0.7	2.9
Proportion In Lane	1.000		0.124	1.000		0.456	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	394.4	1548.4	832.6	636.0	1566.3	796.5	544.7	798.0	0.0	652.9	699.1	594.2
V/C Ratio(X)	0.141	0.062	0.063	0.003	0.254	0.260	0.022	0.023	0.000	0.225	0.030	0.113
Avail Cap(c_a), veh/h	394.4	1548.4	832.6	636.0	1566.3	796.5	544.7	798.0	0.0	652.9	699.1	594.2
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	13.6	10.7	10.7	11.0	11.5	11.6	18.7	17.0	0.0	19.2	17.0	17.7
Incr Delay (d2), s/veh	0.7	0.1	0.1	0.0	0.4	0.8	0.1	0.1	0.0	0.8	0.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	14.4	10.8	10.9	11.0	11.9	12.3	18.8	17.0	0.0	20.0	17.1	18.0
Lane Group LOS	B	B	B	B	B	B	B	B		B	B	B
Approach Volume, veh/h		204			607			30			235	
Approach Delay, s/veh		11.8			12.1			17.7			19.2	
Approach LOS		B			B			B			B	

Timer												
Assigned Phase		2			6			8			4	
Phase Duration (G+Y+Rc), s		52.00			52.00			48.00			48.00	
Change Period (Y+Rc), s		6.00			6.00			6.00			6.00	
Max Green Setting (Gmax), s		46.00			46.00			42.00			42.00	
Max Q Clear Time (g_c+I1), s		11.07			7.53			5.51			9.42	
Green Extension Time (p_c)		2.57			2.58			0.67			0.66	

Intersection Summary		
HCM 2010 Control Delay		13.7
HCM 2010 Level of Service		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	190	517	127	118	300	107	36	48	22	24	80	128
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	178.9	177.6	166.7	181.9	190.0	184.5	174.1	147.3	190.0	186.2	188.1
Lanes	1	3	0	1	3	0	1	2	0	0	2	1
Cap, veh/h	488	1806	395	333	1795	437	598	966	369	324	1066	660
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.41	0.41	0.41	0.41	0.41	0.00
Sat Flow, veh/h	996	4013	877	677	3988	971	1293	2342	894	629	2584	1599
Grp Volume(v), veh/h	204	449	231	127	266	139	39	36	37	60	52	0
Grp Sat Flow(s),veh/h/ln	996	1628	1634	677	1656	1648	1293	1654	1583	1604	1609	1599
Q Serve(g_s), s	12.4	7.0	7.2	11.8	3.8	4.1	1.5	1.0	1.1	0.0	1.6	0.0
Cycle Q Clear(g_c), s	16.4	7.0	7.2	19.1	3.8	4.1	3.1	1.0	1.1	1.6	1.6	0.0
Prop In Lane	1.00		0.54	1.00		0.59	1.00		0.56	0.43		1.00
Lane Grp Cap(c), veh/h	488	1465	735	333	1490	742	598	682	653	726	664	660
V/C Ratio(X)	0.42	0.31	0.31	0.38	0.18	0.19	0.07	0.05	0.06	0.08	0.08	0.00
Avail Cap(c_a), veh/h	488	1465	735	333	1490	742	598	682	653	726	664	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.2	14.0	14.1	20.2	13.2	13.2	15.2	14.1	14.1	14.3	14.3	0.0
Incr Delay (d2), s/veh	2.6	0.5	1.1	3.3	0.3	0.6	0.2	0.1	0.2	0.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.3	2.7	3.0	2.2	1.5	1.7	0.5	0.4	0.4	0.7	0.6	0.0
Lane Grp Delay (d), s/veh	20.8	14.6	15.2	23.5	13.4	13.8	15.4	14.3	14.3	14.5	14.5	0.0
Lane Grp LOS	C	B	B	C	B	B	B	B	B	B	B	
Approach Vol, veh/h		884			532			112			112	
Approach Delay, s/veh		16.2			15.9			14.7			14.5	
Approach LOS		B			B			B			B	

Timer												
Assigned Phs		2			6			8			4	
Phs Duration (G+Y+Rc), s		41.0			41.0			39.0			39.0	
Change Period (Y+Rc), s		5.0			5.0			6.0			6.0	
Max Green Setting (Gmax), s		36.0			36.0			33.0			33.0	
Max Q Clear Time (g_c+I1), s		18.4			21.1			5.1			3.6	
Green Ext Time (p_c), s		4.1			3.9			0.5			0.5	

Intersection Summary												
HCM 2010 Ctrl Delay			15.9									
HCM 2010 LOS			B									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	86	97	29	46	335	91	210	124	204	445	22	43
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	188.1	185.3	188.1	188.1	182.7	186.3	181.0	188.1	172.7	182.7	188.1	188.2
Lanes	1	3	0	1	2	1	1	1	1	1	1	1
Cap, veh/h	563	2161	483	533	1234	563	547	669	522	396	669	569
Arrive On Green	0.11	0.52	0.52	0.36	0.36	0.00	0.36	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1792	4138	924	1273	3471	1583	1343	1881	1468	1027	1881	1600
Grp Volume(v), veh/h	90	81	44	48	349	0	219	129	200	464	23	0
Grp Sat Flow(s),veh/h/ln	1792	1686	1690	1273	1736	1583	1343	1881	1468	1027	1881	1600
Q Serve(g_s), s	2.5	1.1	1.1	2.3	6.5	0.0	11.4	4.3	9.1	27.7	0.7	0.0
Cycle Q Clear(g_c), s	2.5	1.1	1.1	2.3	6.5	0.0	12.2	4.3	9.1	32.0	0.7	0.0
Prop In Lane	1.00		0.55	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	563	1761	882	533	1234	563	547	669	522	396	669	569
V/C Ratio(X)	0.16	0.05	0.05	0.09	0.28	0.00	0.40	0.19	0.38	1.17	0.03	0.00
Avail Cap(c_a), veh/h	563	1761	882	533	1234	563	547	669	522	396	669	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.1	10.5	10.5	19.4	20.8	0.0	22.9	20.1	21.6	33.9	18.9	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.1	0.3	0.6	0.0	2.2	0.6	2.1	100.6	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.1	0.4	0.5	0.7	2.8	0.0	4.1	2.1	3.6	20.1	0.3	0.0
Lane Grp Delay (d), s/veh	13.7	10.6	10.7	19.8	21.4	0.0	25.1	20.7	23.8	134.6	19.0	0.0
Lane Grp LOS	B	B	B	B	C		C	C	C	F	B	
Approach Vol, veh/h		215			397			548			487	
Approach Delay, s/veh		11.9			21.2			23.6			129.1	
Approach LOS		B			C			C			F	

Timer												
Assigned Phs	5	2			6			8			4	
Phs Duration (G+Y+Rc), s	15.0	53.0			38.0			37.0			37.0	
Change Period (Y+Rc), s	5.5	6.0			6.0			5.0			5.0	
Max Green Setting (Gmax), s	9.5	47.0			32.0			32.0			32.0	
Max Q Clear Time (g_c+I1), s	4.5	3.1			8.5			14.2			34.0	
Green Ext Time (p_c), s	0.1	1.5			1.5			3.0			0.0	

Intersection Summary	
HCM 2010 Ctrl Delay	52.7
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	586	22	43	2	2	6	18	98	6	11	172	411
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1496	1378	1378	1647	1647	1647	1638	1529	1529	1696	1442	1442
Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Capacity, veh/h	1072	214	321	126	130	319	492	1227	74	552	1240	0
Arriving On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.57	0.57	0.57	0.57	0.57	0.00
Sat Flow, veh/h	2178.4	498.3	747.5	246.9	235.4	740.8	1049.8	2853.4	173.2	1162.0	2883.1	0.0
Grp Volume(v), veh/h	630.1	0.0	59.1	10.8	0.0	0.0	19.4	56.0	55.8	11.8	184.9	0.0
Grp Sat Flow(s),veh/h/ln	1089.2	0.0	1245.8	1234.7	0.0	0.0	1049.8	1528.6	1498.0	1162.0	1441.5	0.0
Q Serve(g_s), s	23.4	0.0	2.8	0.0	0.0	0.0	0.9	1.6	1.7	0.5	3.0	0.0
Cycle Q Clear(g_c), s	23.8	0.0	2.8	0.4	0.0	0.0	3.9	1.6	1.7	2.1	3.0	0.0
Proportion In Lane	1.000		0.600	0.200		0.600	1.000		0.116	1.000		0.000
Lane Grp Cap(c), veh/h	1071.7	0.0	535.7	574.1	0.0	0.0	491.9	657.3	644.1	552.2	1239.7	0.0
V/C Ratio(X)	0.588	0.000	0.110	0.019	0.000	0.000	0.039	0.085	0.087	0.021	0.149	0.000
Avail Cap(c_a), veh/h	1071.7	0.0	535.7	574.1	0.0	0.0	491.9	657.3	644.1	552.2	1239.7	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	23.2	0.0	17.1	16.4	0.0	0.0	13.8	12.6	12.6	13.0	12.8	0.0
Incr Delay (d2), s/veh	2.4	0.0	0.4	0.1	0.0	0.0	0.1	0.3	0.3	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	25.6	0.0	17.5	16.4	0.0	0.0	13.9	12.8	12.8	13.1	13.1	0.0
Lane Group LOS	C		B	B			B	B	B	B	B	
Approach Volume, veh/h		689			11			131			197	
Approach Delay, s/veh		24.9			16.4			13.0			13.1	
Approach LOS		C			B			B			B	

Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		50.00			50.00			50.00			50.00	
Change Period (Y+Rc), s		7.00			7.00			7.00			7.00	
Max Green Setting (Gmax), s		43.00			43.00			43.00			43.00	
Max Q Clear Time (g_c+I1), s		25.78			2.41			5.89			5.00	
Green Extension Time (p_c)		3.08			3.55			0.94			0.95	

Intersection Summary		
HCM 2010 Control Delay		21.0
HCM 2010 Level of Service		C

Intersection	
Intersection Delay (sec/veh):	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	0	0	0	145	736	0	0	468	262
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	180		0	0		0
Median Width		0			0			10			10	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles(%)	0	0	0	0	0	0	16	16	0	0	17	17
Movement Flow Rate	0	0	0	0	0	0	181	920	0	0	585	327
Number of Lanes	0	0	0	0	1	0	1	2	0	0	2	0

Major/Minor			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All		~	2195	-	913	0	-	920	0	0
Stage 1		-	1282	-	-	-	-	-	-	-
Stage 2		-	913	-	-	-	-	-	-	-
Follow-up Headway		0	4	0	2.36	-	0	2.2	-	-
Pot Capacity-1 Maneuver		0	64	0	830	-	0	1049	-	-
Stage 1		0	342	0	-	-	0	-	-	-
Stage 2		0	471	0	-	-	0	-	-	-
Time blocked-Platoon(%)		0	45	0	18	-	0	27	-	-
Mov Capacity-1 Maneuver		0	50	-	830	-	-	1049	-	-
Mov Capacity-2 Maneuver		0	50	-	-	-	-	-	-	-
Stage 1		0	267	-	-	-	-	-	-	-
Stage 2		0	471	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	0	1.7	0
HCM LOS	A	A	A

Lane	NBL	NBT	WBLn1	SBL	SBT	SBR
Capacity (vph)			0			
HCM Control Delay (s)	10.545	-	0	0	-	-
HCM Lane VC Ratio	0.218	-	-	-	-	-
HCM Lane LOS	B	-	A	A	-	-
HCM 95th Percentile Queue (veh)	0.83	-	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	84	396	24	0	1	0	0	483	32	58	802	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1900	0	0	1638	1638	1624	1624	0
Lanes	1	1	1	0	1	0	0	2	0	1	2	0
Capacity, veh/h	529	605	514	0	665	0	0	1147	0	399	1635	0
Arriving On Green	0.35	0.35	0.00	0.00	0.35	0.00	0.00	0.47	0.00	0.16	0.70	0.00
Sat Flow, veh/h	1307.6	1727.3	1468.2		1900.0	0.0		3275.9	0.0	1546.6	3166.7	0.0
Grp Volume(v), veh/h	105.0	495.0	0.0		1.3	0.0		603.8	0.0	72.5	1002.5	0.0
Grp Sat Flow(s),veh/h/ln	1307.6	1727.3	1468.2		1900.0	0.0		1637.9	0.0	1546.6	1542.7	0.0
Q Serve(g_s), s	5.7	26.1	0.0		0.0	0.0		13.0	0.0	0.0	16.9	0.0
Cycle Q Clear(g_c), s	5.7	26.1	0.0		0.0	0.0		13.0	0.0	0.0	16.9	0.0
Proportion In Lane	1.000		1.000			0.000			0.000	1.000		0.000
Lane Grp Cap(c), veh/h	529.1	604.5	513.9		665.0	0.0		1146.6	0.0	398.9	1635.3	0.0
V/C Ratio(X)	0.198	0.819	0.000		0.002	0.000		0.527	0.000	0.182	0.613	0.000
Avail Cap(c_a), veh/h	529.1	604.5	513.9		665.0	0.0		1146.6	0.0	398.9	1635.3	0.0
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00		1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	1.000	0.000		1.000	0.000		1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	23.0	29.6	0.0		21.1	0.0		20.9	0.0	24.5	9.4	0.0
Incr Delay (d2), s/veh	0.8	11.8	0.0		0.0	0.0		1.7	0.0	1.0	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	23.8	41.4	0.0		21.1	0.0		22.6	0.0	25.5	11.2	0.0
Lane Group LOS	C	D			C			C		C	B	
Approach Volume, veh/h		600			1			604			1075	
Approach Delay, s/veh		38.3			21.1			22.6			12.1	
Approach LOS		D			C			C			B	

Timer												
Assigned Phase		4			8			2		1	6	
Phase Duration (G+Y+Rc), s		41.00			41.00			41.00		18.00	59.00	
Change Period (Y+Rc), s		6.00			6.00			6.00		6.00	6.00	
Max Green Setting (Gmax), s		35.00			35.00			35.00		12.00	53.00	
Max Q Clear Time (g_c+I1), s		28.11			2.04			15.05		2.00	18.88	
Green Extension Time (p_c)		1.07			1.64			5.73		0.08	6.33	

Intersection Summary		
HCM 2010 Control Delay	21.8	
HCM 2010 Level of Service	C	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	540	1	230	0	1	0	306	244	0	0	694	348
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1976	0	1638	1638	0	0	1624	1624
Lanes	2	0	1	0	1	0	1	2	0	0	2	0
Capacity, veh/h	879	0	426	0	573	0	420	1933	0	0	1104	0
Arriving On Green	0.29	0.29	0.00	0.00	0.29	0.00	0.25	0.78	0.00	0.00	0.45	0.00
Sat Flow, veh/h	2536.8	0.0	1468.2	0.0	1976.0	0.0	1559.9	3275.9	0.0		3247.9	0.0
Grp Volume(v), veh/h	675.0	0.0	0.0	0.0	1.3	0.0	382.5	305.0	0.0		867.5	0.0
Grp Sat Flow(s),veh/h/ln	1268.4	0.0	1468.2	0.0	1976.0	0.0	1559.9	1637.9	0.0		1623.9	0.0
Q Serve(g_s), s	25.8	0.0	0.0	0.0	0.0	0.0	15.4	2.3	0.0		22.7	0.0
Cycle Q Clear(g_c), s	25.8	0.0	0.0	0.0	0.0	0.0	15.4	2.3	0.0		22.7	0.0
Proportion In Lane	1.000		1.000	0.000		0.000	1.000		0.000			0.000
Lane Grp Cap(c), veh/h	878.5	0.0	425.8	0.0	573.0	0.0	420.4	1932.8	0.0		1104.3	0.0
V/C Ratio(X)	0.768	0.000	0.000	0.000	0.002	0.000	0.910	0.158	0.000		0.786	0.000
Avail Cap(c_a), veh/h	878.5	0.0	425.8	0.0	573.0	0.0	420.4	1932.8	0.0		1104.3	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.30		1.33	1.33
Upstream Filter(I)	1.000	0.000	0.000	0.000	1.000	0.000	1.000	1.000	0.000		1.000	0.000
Uniform Delay (d), s/veh	34.4	0.0	0.0	0.0	25.2	0.0	32.9	4.7	0.0		24.3	0.0
Incr Delay (d2), s/veh	6.4	0.0	0.0	0.0	0.0	0.0	26.2	0.2	0.0		5.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Lane Group Delay (d), s/veh	40.8	0.0	0.0	0.0	25.2	0.0	59.1	4.8	0.0		29.9	0.0
Lane Group LOS	D				C		E	A			C	
Approach Volume, veh/h		675			1			688			868	
Approach Delay, s/veh		40.8			25.2			35.0			29.9	
Approach LOS		D			C			D			C	

Timer												
Assigned Phase		4			8		5	2			6	
Phase Duration (G+Y+Rc), s		35.00			35.00		25.00	65.00			40.00	
Change Period (Y+Rc), s		6.00			6.00		6.00	6.00			6.00	
Max Green Setting (Gmax), s		29.00			29.00		19.00	59.00			34.00	
Max Q Clear Time (g_c+I1), s		27.80			2.04		17.40	4.29			24.69	
Green Extension Time (p_c)		0.39			2.69		0.21	4.24			2.97	

Intersection Summary												
HCM 2010 Control Delay			34.8									
HCM 2010 Level of Service			C									

Intersection	
Intersection Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	0	14	106	300	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0	150			0
Median Width	0			0	0	
Grade, %	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	16	118	333	27
Number of Lanes	0	1	0	3	2	0

Major/Minor			Major 1		Major 2	
Conflicting Flow All	425	180	360	0	-	0
Stage 1	347	-	-	-	-	-
Stage 2	78	-	-	-	-	-
Follow-up Headway	3.67	3.32	2.22	-	-	-
Pot Capacity-1 Maneuver	575	832	1195	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	895	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	-	-	-
Mov Capacity-1 Maneuver	567	832	1195	-	-	-
Mov Capacity-2 Maneuver	567	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	882	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0.9	0
HCM LOS	A	-	-

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Cap, veh/h	1195	-	0	-	-
HCM Control Delay, s	8.052	0	0	-	-
HCM Lane V/C Ratio	0.01	-	-	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th-tile Q, veh	0.0	-	-	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	0	45	120	96	204
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0	100			0
Median Width	0			12	12	
Grade, %	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	50	133	107	227
Number of Lanes	0	1	1	2	2	0

Major/Minor			Major 1		Major 2	
Conflicting Flow All	387	167	333	0	-	0
Stage 1	220	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Follow-up Headway	3.52	3.32	2.22	-	-	-
Pot Capacity-1 Maneuver	589	848	1223	-	-	-
Stage 1	795	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	-	-	-
Mov Capacity-1 Maneuver	565	848	1223	-	-	-
Mov Capacity-2 Maneuver	624	-	-	-	-	-
Stage 1	795	-	-	-	-	-
Stage 2	810	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	2.2	0
HCM LOS	A	-	-

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Cap, veh/h	1223	-	0	-	-
HCM Control Delay, s	8.069	-	0	-	-
HCM Lane V/C Ratio	0.04	-	-	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th-tile Q, veh	0.1	-	-	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	29	511	0	0	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0		0	0	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	32	568	0	0	108
Number of Lanes	1	0	2	0	0	2

Major/Minor			Major 1		Major 2	
Conflicting Flow All	622	284	0	0	568	0
Stage 1	568	-	-	-	-	-
Stage 2	54	-	-	-	-	-
Follow-up Headway	3.52	3.32	-	-	2.22	-
Pot Capacity-1 Maneuver	419	713	-	-	1000	-
Stage 1	530	-	-	-	-	-
Stage 2	962	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	419	713	-	-	1000	-
Mov Capacity-2 Maneuver	467	-	-	-	-	-
Stage 1	530	-	-	-	-	-
Stage 2	962	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	0
HCM LOS	B	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Cap, veh/h	-	-	587	1000	-
HCM Control Delay, s	-	-	11.8	0	-
HCM Lane V/C Ratio	-	-	0.09	-	-
HCM Lane LOS	-	-	B	A	-
HCM 95th-tile Q, veh	-	-	0.3	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	26	31	480	19	22	94
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0		0	100	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	34	533	21	24	104
Number of Lanes	1	0	2	0	1	2

Major/Minor			Major 1		Major 2	
Conflicting Flow All	645	277	0	0	554	0
Stage 1	544	-	-	-	-	-
Stage 2	101	-	-	-	-	-
Follow-up Headway	3.52	3.32	-	-	2.22	-
Pot Capacity-1 Maneuver	405	720	-	-	1012	-
Stage 1	546	-	-	-	-	-
Stage 2	912	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	395	720	-	-	1012	-
Mov Capacity-2 Maneuver	466	-	-	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	890	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	1.6
HCM LOS	B	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Cap, veh/h	-	-	577	1012	-
HCM Control Delay, s	-	-	12	8.645	-
HCM Lane V/C Ratio	-	-	0.11	0.02	-
HCM Lane LOS	-	-	B	A	-
HCM 95th-tile Q, veh	-	-	0.4	0.1	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	6.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	62	282	282	0	0	121
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0		0	100	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	69	313	313	0	0	134
Number of Lanes	1	0	2	0	0	2

Major/Minor			Major 1		Major 2	
Conflicting Flow All	380	157	0	0	313	0
Stage 1	313	-	-	-	-	-
Stage 2	67	-	-	-	-	-
Follow-up Headway	3.52	3.32	-	-	2.22	-
Pot Capacity-1 Maneuver	595	861	-	-	1244	-
Stage 1	715	-	-	-	-	-
Stage 2	948	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	595	861	-	-	1244	-
Mov Capacity-2 Maneuver	625	-	-	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	948	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.4	0	0
HCM LOS	B	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Cap, veh/h	-	-	806	1244	-
HCM Control Delay, s	-	-	13.4	0	-
HCM Lane V/C Ratio	-	-	0.47	-	-
HCM Lane LOS	-	-	B	A	-
HCM 95th-tile Q, veh	-	-	2.6	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

2021 BUILD WITH IMPROVEMENTS WEEKDAY PM PEAK HOUR CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	131	13	2	469	134	11	17	0	135	19	96
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1849	1849	1900	1871	1871	1727	1900	0	1881	1665	1665
Lanes	1	3	0	1	3	0	1	1	1	1	2	0
Capacity, veh/h	394	2278	103	636	1999	363	545	798	0	653	699	594
Arriving On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.42	0.42	0.00	0.42	0.42	0.42
Sat Flow, veh/h	796.5	4951.9	224.1	1258.3	4346.4	790.1	1208.9	1900.0	0.0	1402.1	1664.6	1414.9
Grp Volume(v), veh/h	55.4	96.3	52.7	2.2	397.1	207.2	12.0	18.5	0.0	146.7	20.7	67.4
Grp Sat Flow(s),veh/h/ln	796.5	1683.0	1809.9	1258.3	1702.5	1731.5	1208.9	1900.0	0.0	1402.1	1664.6	1414.9
Q Serve(g_s), s	3.5	1.2	1.2	0.1	5.4	5.5	0.6	0.6	42.0	6.8	0.7	2.9
Cycle Q Clear(g_c), s	9.1	1.2	1.2	1.2	5.4	5.5	3.5	0.6	42.0	7.4	0.7	2.9
Proportion In Lane	1.000		0.124	1.000		0.456	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	394.4	1548.4	832.6	636.0	1566.3	796.5	544.7	798.0	0.0	652.9	699.1	594.2
V/C Ratio(X)	0.141	0.062	0.063	0.003	0.254	0.260	0.022	0.023	0.000	0.225	0.030	0.113
Avail Cap(c_a), veh/h	394.4	1548.4	832.6	636.0	1566.3	796.5	544.7	798.0	0.0	652.9	699.1	594.2
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	13.6	10.7	10.7	11.0	11.5	11.6	18.7	17.0	0.0	19.2	17.0	17.7
Incr Delay (d2), s/veh	0.7	0.1	0.1	0.0	0.4	0.8	0.1	0.1	0.0	0.8	0.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	14.4	10.8	10.9	11.0	11.9	12.3	18.8	17.0	0.0	20.0	17.1	18.0
Lane Group LOS	B	B	B	B	B	B	B	B		B	B	B
Approach Volume, veh/h		204			607			30			235	
Approach Delay, s/veh		11.8			12.1			17.7			19.2	
Approach LOS		B			B			B			B	

Timer												
Assigned Phase		2			6			8			4	
Phase Duration (G+Y+Rc), s		52.00			52.00			48.00			48.00	
Change Period (Y+Rc), s		6.00			6.00			6.00			6.00	
Max Green Setting (Gmax), s		46.00			46.00			42.00			42.00	
Max Q Clear Time (g_c+I1), s		11.07			7.53			5.51			9.42	
Green Extension Time (p_c)		2.57			2.58			0.67			0.66	

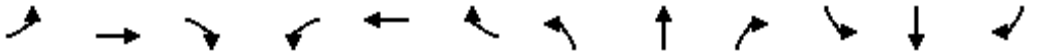
Intersection Summary		
HCM 2010 Control Delay	13.7	
HCM 2010 Level of Service	B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	190	517	127	118	300	107	36	48	22	24	80	128
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	178.9	177.6	166.7	181.9	190.0	184.5	174.1	147.3	190.0	186.2	188.1
Lanes	1	3	0	1	3	0	1	2	0	0	2	1
Cap, veh/h	516	1926	421	354	1914	466	577	960	367	315	1052	656
Arrive On Green	0.64	0.64	0.64	0.64	0.64	0.64	0.41	0.41	0.41	0.41	0.41	0.00
Sat Flow, veh/h	996	4013	877	677	3988	971	1293	2342	894	642	2566	1599
Grp Volume(v), veh/h	204	449	231	127	266	139	39	36	37	60	52	0
Grp Sat Flow(s),veh/h/ln	996	1628	1634	677	1656	1648	1293	1654	1583	1599	1609	1599
Q Serve(g_s), s	11.5	6.1	6.3	11.1	3.2	3.4	1.9	1.3	1.4	0.0	2.0	0.0
Cycle Q Clear(g_c), s	14.9	6.1	6.3	17.4	3.2	3.4	3.9	1.3	1.4	2.0	2.0	0.0
Prop In Lane	1.00		0.54	1.00		0.59	1.00		0.56	0.43		1.00
Lane Grp Cap(c), veh/h	516	1563	784	354	1590	791	577	678	649	707	660	656
V/C Ratio(X)	0.40	0.29	0.29	0.36	0.17	0.18	0.07	0.05	0.06	0.08	0.08	0.00
Avail Cap(c_a), veh/h	516	1563	784	354	1590	791	577	678	649	707	660	656
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.1	10.5	10.5	14.4	10.0	10.0	19.2	17.8	17.8	18.0	18.0	0.0
Incr Delay (d2), s/veh	2.3	0.5	1.0	2.8	0.2	0.5	0.2	0.1	0.2	0.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.8	2.2	2.4	2.0	1.3	1.4	0.6	0.6	0.6	0.9	0.8	0.0
Lane Grp Delay (d), s/veh	15.3	11.0	11.5	17.2	10.2	10.5	19.4	17.9	18.0	18.2	18.2	0.0
Lane Grp LOS	B	B	B	B	B	B	B	B	B	B	B	
Approach Vol, veh/h		884			532			112			112	
Approach Delay, s/veh		12.1			12.0			18.5			18.2	
Approach LOS		B			B			B			B	

Timer												
Assigned Phs		2			6			8			4	
Phs Duration (G+Y+Rc), s		53.0			53.0			47.0			47.0	
Change Period (Y+Rc), s		5.0			5.0			6.0			6.0	
Max Green Setting (Gmax), s		48.0			48.0			41.0			41.0	
Max Q Clear Time (g_c+I1), s		16.9			19.4			5.9			4.0	
Green Ext Time (p_c), s		4.5			4.4			0.5			0.5	

Intersection Summary												
HCM 2010 Ctrl Delay			12.9									
HCM 2010 LOS			B									

Notes



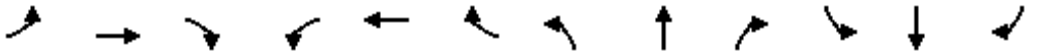
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	86	97	29	46	335	91	210	124	204	445	22	43
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	188.1	185.3	188.1	188.1	182.7	186.3	181.0	188.1	172.7	182.7	188.1	188.2
Lanes	1	3	0	1	2	1	1	1	1	1	1	1
Cap, veh/h	344	1448	323	365	798	364	790	1016	793	592	1016	864
Arrive On Green	0.09	0.47	0.47	0.31	0.31	0.00	0.54	0.54	0.54	0.54	0.54	0.00
Sat Flow, veh/h	1792	4138	924	1273	3471	1583	1343	1881	1468	1027	1881	1600
Grp Volume(v), veh/h	90	81	44	48	349	0	219	129	200	464	23	0
Grp Sat Flow(s),veh/h/ln	1792	1686	1690	1273	1736	1583	1343	1881	1468	1027	1881	1600
Q Serve(g_s), s	3.6	1.3	1.4	2.8	8.1	0.0	9.1	3.4	7.3	40.7	0.6	0.0
Cycle Q Clear(g_c), s	3.6	1.3	1.4	2.8	8.1	0.0	9.6	3.4	7.3	44.1	0.6	0.0
Prop In Lane	1.00		0.55	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	344	1180	591	365	798	364	790	1016	793	592	1016	864
V/C Ratio(X)	0.26	0.07	0.07	0.13	0.44	0.00	0.28	0.13	0.25	0.78	0.02	0.00
Avail Cap(c_a), veh/h	344	1180	591	365	798	364	790	1016	793	592	1016	864
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.7	17.7	17.8	27.7	29.5	0.0	13.0	11.4	12.2	22.3	10.7	0.0
Incr Delay (d2), s/veh	1.8	0.1	0.2	0.7	1.7	0.0	0.9	0.3	0.8	10.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.7	0.6	0.6	0.9	3.5	0.0	3.1	1.5	2.7	11.7	0.3	0.0
Lane Grp Delay (d), s/veh	26.5	17.8	18.0	28.4	31.3	0.0	13.8	11.6	13.0	32.3	10.8	0.0
Lane Grp LOS	C	B	B	C	C		B	B	B	C	B	
Approach Vol, veh/h		215			397			548			487	
Approach Delay, s/veh		21.5			30.9			13.0			31.3	
Approach LOS		C			C			B			C	
Timer												
Assigned Phs	5	2			6			8			4	
Phs Duration (G+Y+Rc), s	12.0	41.0			29.0			59.0			59.0	
Change Period (Y+Rc), s	5.5	6.0			6.0			5.0			5.0	
Max Green Setting (Gmax), s	6.5	35.0			23.0			54.0			54.0	
Max Q Clear Time (g_c+I1), s	5.6	3.4			10.1			11.6			46.1	
Green Ext Time (p_c), s	0.0	1.5			1.3			3.3			2.2	
Intersection Summary												
HCM 2010 Ctrl Delay			23.8									
HCM 2010 LOS			C									
Notes												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	540	1	230	0	1	0	306	244	0	0	694	348
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1976	0	1638	1638	0	0	1624	1624
Lanes	2	0	1	0	1	0	1	2	0	0	2	0
Capacity, veh/h	879	0	426	0	573	0	420	1933	0	0	1104	0
Arriving On Green	0.29	0.29	0.00	0.00	0.29	0.00	0.25	0.78	0.00	0.00	0.45	0.00
Sat Flow, veh/h	2536.8	0.0	1468.2	0.0	1976.0	0.0	1559.9	3275.9	0.0		3247.9	0.0
Grp Volume(v), veh/h	675.0	0.0	0.0	0.0	1.3	0.0	382.5	305.0	0.0		867.5	0.0
Grp Sat Flow(s),veh/h/ln	1268.4	0.0	1468.2	0.0	1976.0	0.0	1559.9	1637.9	0.0		1623.9	0.0
Q Serve(g_s), s	25.8	0.0	0.0	0.0	0.0	0.0	15.4	2.3	0.0		22.7	0.0
Cycle Q Clear(g_c), s	25.8	0.0	0.0	0.0	0.0	0.0	15.4	2.3	0.0		22.7	0.0
Proportion In Lane	1.000		1.000	0.000		0.000	1.000		0.000			0.000
Lane Grp Cap(c), veh/h	878.5	0.0	425.8	0.0	573.0	0.0	420.4	1932.8	0.0		1104.3	0.0
V/C Ratio(X)	0.768	0.000	0.000	0.000	0.002	0.000	0.910	0.158	0.000		0.786	0.000
Avail Cap(c_a), veh/h	878.5	0.0	425.8	0.0	573.0	0.0	420.4	1932.8	0.0		1104.3	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.30		1.33	1.33
Upstream Filter(I)	1.000	0.000	0.000	0.000	1.000	0.000	1.000	1.000	0.000		1.000	0.000
Uniform Delay (d), s/veh	34.4	0.0	0.0	0.0	25.2	0.0	32.9	4.7	0.0		24.3	0.0
Incr Delay (d2), s/veh	6.4	0.0	0.0	0.0	0.0	0.0	26.2	0.2	0.0		5.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Lane Group Delay (d), s/veh	40.8	0.0	0.0	0.0	25.2	0.0	59.1	4.8	0.0		29.9	0.0
Lane Group LOS	D				C		E	A			C	
Approach Volume, veh/h		675			1			688			868	
Approach Delay, s/veh		40.8			25.2			35.0			29.9	
Approach LOS		D			C			D			C	

Timer												
Assigned Phase		4			8		5	2			6	
Phase Duration (G+Y+Rc), s		35.00			35.00		25.00	65.00			40.00	
Change Period (Y+Rc), s		6.00			6.00		6.00	6.00			6.00	
Max Green Setting (Gmax), s		29.00			29.00		19.00	59.00			34.00	
Max Q Clear Time (g_c+I1), s		27.80			2.04		17.40	4.29			24.69	
Green Extension Time (p_c)		0.39			2.69		0.21	4.24			2.97	

Intersection Summary												
HCM 2010 Control Delay			34.8									
HCM 2010 Level of Service			C									

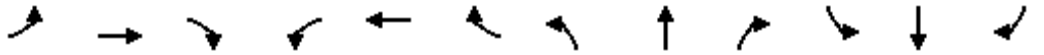
2012 EXISTING WEEKDAY PRE-PHILLIES EVENT PEAK HOUR CONDITIONS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	218	166	524	290	44	9	6	17	128	213	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1868	1868	1900	1868	1868	1727	1900	1900	1881	1845	1845
Lanes	1	3	0	1	3	0	1	1	1	1	2	0
Capacity, veh/h	520	1511	706	471	2266	0	491	802	682	676	1469	76
Arriving On Green	0.44	0.44	0.44	0.44	0.44	0.00	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	1080.3	3400.1	1587.9	1042.0	5266.6	0.0	1081.1	1900.0	1615.0	1418.5	3480.3	178.8
Grp Volume(v), veh/h	33.3	242.2	176.7	582.2	322.2	0.0	10.0	6.7	18.9	142.2	124.9	124.0
Grp Sat Flow(s),veh/h/ln	1080.3	1700.0	1587.9	1042.0	1699.5	0.0	1081.1	1900.0	1615.0	1418.5	1845.3	1813.8
Q Serve(g_s), s	1.7	3.8	6.3	33.7	3.4	0.0	0.5	0.2	0.6	5.8	3.8	3.8
Cycle Q Clear(g_c), s	5.1	3.8	6.3	40.0	3.4	0.0	4.3	0.2	0.6	6.0	3.8	3.8
Proportion In Lane	1.000		1.000	1.000		0.000	1.000		1.000	1.000		0.099
Lane Grp Cap(c), veh/h	519.6	1511.1	705.8	470.6	2266.0	0.0	490.6	802.2	681.9	676.0	779.1	765.8
V/C Ratio(X)	0.064	0.160	0.250	1.237	0.142	0.000	0.020	0.008	0.028	0.210	0.160	0.162
Avail Cap(c_a), veh/h	519.6	1511.1	705.8	470.6	2266.0	0.0	490.6	802.2	681.9	676.0	779.1	765.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	16.3	15.0	15.6	31.0	14.8	0.0	17.5	15.1	15.2	16.8	16.1	16.1
Incr Delay (d2), s/veh	0.2	0.2	0.8	123.9	0.1	0.0	0.1	0.0	0.1	0.7	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	16.6	15.2	16.5	154.9	15.0	0.0	17.5	15.1	15.3	17.5	16.6	16.6
Lane Group LOS	B	B	B	F	B		B	B	B	B	B	B
Approach Volume, veh/h		452			904			36			391	
Approach Delay, s/veh		15.8			105.0			15.9			16.9	
Approach LOS		B			F			B			B	

Timer												
Assigned Phase		2			6			8			4	
Phase Duration (G+Y+Rc), s		46.00			46.00			44.00			44.00	
Change Period (Y+Rc), s		6.00			6.00			6.00			6.00	
Max Green Setting (Gmax), s		40.00			40.00			38.00			38.00	
Max Q Clear Time (g_c+I1), s		8.26			42.00			6.34			8.00	
Green Extension Time (p_c)		5.86			0.00			1.02			1.02	

Intersection Summary		
HCM 2010 Control Delay	61.3	
HCM 2010 Level of Service	E	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	82	130	110	444	793	77	43	48	25	48	687	624
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	178.5	177.6	166.7	180.2	190.0	184.5	172.7	147.3	190.0	183.8	188.1
Lanes	1	3	0	1	3	0	1	2	0	0	2	1
Cap, veh/h	315	1462	683	514	2135	128	264	914	404	112	1328	660
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.41	0.41	0.41	0.41	0.41	0.00
Sat Flow, veh/h	693	3248	1517	1040	4745	285	771	2215	979	148	3221	1599
Grp Volume(v), veh/h	91	144	109	493	608	326	48	38	40	433	383	0
Grp Sat Flow(s),veh/h/ln	693	1624	1517	1040	1639	1751	771	1641	1554	1779	1589	1599
Q Serve(g_s), s	8.2	2.0	3.4	32.6	10.0	10.1	4.1	1.1	1.2	4.5	14.9	0.0
Cycle Q Clear(g_c), s	18.2	2.0	3.4	36.0	10.0	10.1	19.0	1.1	1.2	14.7	14.9	0.0
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.63	0.12		1.00
Lane Grp Cap(c), veh/h	315	1462	683	514	1475	788	264	677	641	784	656	660
V/C Ratio(X)	0.29	0.10	0.16	0.96	0.41	0.41	0.18	0.06	0.06	0.55	0.58	0.00
Avail Cap(c_a), veh/h	315	1462	683	514	1475	788	264	677	641	784	656	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	21.0	12.7	13.0	26.0	14.9	14.9	25.6	14.1	14.2	18.1	18.2	0.0
Incr Delay (d2), s/veh	2.3	0.1	0.5	30.9	0.9	1.6	1.5	0.2	0.2	2.8	3.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.6	0.8	1.3	14.3	4.0	4.4	0.9	0.5	0.5	6.9	6.1	0.0
Lane Grp Delay (d), s/veh	23.3	12.8	13.5	56.9	15.7	16.5	27.1	14.3	14.4	20.9	22.0	0.0
Lane Grp LOS	C	B	B	E	B	B	C	B	B	C	C	
Approach Vol, veh/h		344			1427			126			816	
Approach Delay, s/veh		15.8			30.1			19.2			21.4	
Approach LOS		B			C			B			C	

Timer												
Assigned Phs		2			6			8			4	
Phs Duration (G+Y+Rc), s		41.0			41.0			39.0			39.0	
Change Period (Y+Rc), s		5.0			5.0			6.0			6.0	
Max Green Setting (Gmax), s		36.0			36.0			33.0			33.0	
Max Q Clear Time (g_c+I1), s		20.2			38.0			21.0			16.9	
Green Ext Time (p_c), s		5.2			0.0			2.2			2.3	

Intersection Summary		
HCM 2010 Ctrl Delay		25.2
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	135	205	664	541	70	108	30	108	176	314	183
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	188.1	186.7	188.1	188.1	182.7	186.3	181.0	188.1	172.7	182.7	195.6	188.2
Lanes	1	3	0	1	2	1	1	1	1	1	1	1
Cap, veh/h	466	1774	829	460	1234	507	306	669	522	508	696	569
Arrive On Green	0.11	0.52	0.52	0.36	0.36	0.00	0.36	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1792	3397	1587	1070	3471	1425	1048	1881	1468	1243	1956	1600
Grp Volume(v), veh/h	48	150	222	738	601	0	120	33	108	196	349	0
Grp Sat Flow(s),veh/h/ln	1792	1699	1587	1070	1736	1425	1048	1881	1468	1243	1956	1600
Q Serve(g_s), s	1.3	2.0	7.0	32.0	12.1	0.0	9.1	1.0	4.6	11.1	12.6	0.0
Cycle Q Clear(g_c), s	1.3	2.0	7.0	32.0	12.1	0.0	21.7	1.0	4.6	12.1	12.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	466	1774	829	460	1234	507	306	669	522	508	696	569
V/C Ratio(X)	0.10	0.08	0.27	1.60	0.49	0.00	0.39	0.05	0.21	0.39	0.50	0.00
Avail Cap(c_a), veh/h	466	1774	829	460	1234	507	306	669	522	508	696	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.5	10.7	11.9	31.8	22.6	0.0	31.3	19.0	20.2	23.0	22.7	0.0
Incr Delay (d2), s/veh	0.4	0.1	0.8	281.2	1.4	0.0	3.7	0.1	0.9	2.2	2.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.6	0.8	2.7	46.5	5.3	0.0	2.7	0.5	1.8	3.7	6.5	0.0
Lane Grp Delay (d), s/veh	14.0	10.8	12.7	313.0	24.0	0.0	35.0	19.2	21.1	25.2	25.3	0.0
Lane Grp LOS	B	B	B	F	C		D	B	C	C	C	
Approach Vol, veh/h		420			1339			261			545	
Approach Delay, s/veh		12.2			183.3			27.2			25.3	
Approach LOS		B			F			C			C	

Timer												
Assigned Phs	5	2			6			8			4	
Phs Duration (G+Y+Rc), s	15.0	53.0			38.0			37.0			37.0	
Change Period (Y+Rc), s	5.5	6.0			6.0			5.0			5.0	
Max Green Setting (Gmax), s	9.5	47.0			32.0			32.0			32.0	
Max Q Clear Time (g_c+I1), s	3.3	9.0			34.0			23.7			14.6	
Green Ext Time (p_c), s	0.0	6.3			0.0			1.6			2.1	

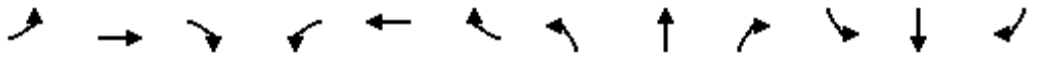
Intersection Summary	
HCM 2010 Ctrl Delay	105.8
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	473	1	17	4	1	1	40	169	3	8	831	854
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1496	1352	1352	1542	1542	1542	1638	1522	1522	1696	1488	1488
Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Capacity, veh/h	1078	62	433	283	68	57	195	1259	22	515	1257	0
Arriving On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.56	0.56	0.56	0.56	0.56	0.00
Sat Flow, veh/h	2188.5	146.4	1024.6	538.7	131.6	134.7	602.8	2982.8	52.8	1110.3	2977.0	0.0
Grp Volume(v), veh/h	525.6	0.0	8.9	6.7	0.0	0.0	44.4	95.7	95.5	8.9	923.3	0.0
Grp Sat Flow(s),veh/h/ln	1094.3	0.0	1171.0	808.1	0.0	0.0	602.8	1522.5	1513.2	1110.3	1488.5	0.0
Q Serve(g_s), s	16.5	0.0	0.4	0.0	0.0	0.0	5.5	2.7	2.7	0.3	20.8	0.0
Cycle Q Clear(g_c), s	16.7	0.0	0.4	0.2	0.0	0.0	26.3	2.7	2.7	3.1	20.8	0.0
Proportion In Lane	1.000		0.875	0.667		0.167	1.000		0.035	1.000		0.000
Lane Grp Cap(c), veh/h	1078.4	0.0	494.4	407.9	0.0	0.0	195.0	642.8	638.9	515.3	1257.0	0.0
V/C Ratio(X)	0.487	0.000	0.018	0.016	0.000	0.000	0.228	0.149	0.149	0.017	0.735	0.000
Avail Cap(c_a), veh/h	1078.4	0.0	494.4	407.9	0.0	0.0	195.0	642.8	638.9	515.3	1257.0	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	19.9	0.0	15.1	15.1	0.0	0.0	25.8	12.0	12.0	12.7	16.0	0.0
Incr Delay (d2), s/veh	1.6	0.0	0.1	0.1	0.0	0.0	2.7	0.5	0.5	0.1	3.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	21.5	0.0	15.2	15.2	0.0	0.0	28.5	12.5	12.5	12.8	19.8	0.0
Lane Group LOS	C		B	B			C	B	B	B	B	
Approach Volume, veh/h		534			7			236			932	
Approach Delay, s/veh		21.4			15.2			15.5			19.7	
Approach LOS		C			B			B			B	

Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		45.00			45.00			45.00			45.00	
Change Period (Y+Rc), s		7.00			7.00			7.00			7.00	
Max Green Setting (Gmax), s		38.00			38.00			38.00			38.00	
Max Q Clear Time (g_c+I1), s		18.74			2.23			28.32			22.83	
Green Extension Time (p_c)		2.44			2.70			3.13			3.78	

Intersection Summary												
HCM 2010 Control Delay			19.7									
HCM 2010 Level of Service			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	186	546	680	0	1	0	0	412	54	116	1243	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1900	0	0	1638	1638	1624	1624	0
Lanes	1	1	1	0	1	0	0	2	0	1	2	0
Capacity, veh/h	588	672	571	0	739	0	0	910	0	413	1474	0
Arriving On Green	0.39	0.39	0.00	0.00	0.39	0.00	0.00	0.37	0.00	0.18	0.64	0.00
Sat Flow, veh/h	1308.0	1727.3	1468.2		1900.0	0.0		3275.9	0.0	1546.6	3166.7	0.0
Grp Volume(v), veh/h	206.7	606.7	0.0		1.1	0.0		457.8	0.0	128.9	1381.1	0.0
Grp Sat Flow(s),veh/h/ln	1308.0	1727.3	1468.2		1900.0	0.0		1637.9	0.0	1546.6	1542.7	0.0
Q Serve(g_s), s	10.3	29.8	0.0		0.0	0.0		9.7	0.0	0.0	36.3	0.0
Cycle Q Clear(g_c), s	10.4	29.8	0.0		0.0	0.0		9.7	0.0	0.0	36.3	0.0
Proportion In Lane	1.000		1.000			0.000			0.000	1.000		0.000
Lane Grp Cap(c), veh/h	588.2	671.7	571.0		738.9	0.0		910.0	0.0	413.5	1474.2	0.0
V/C Ratio(X)	0.351	0.903	0.000		0.002	0.000		0.503	0.000	0.312	0.937	0.000
Avail Cap(c_a), veh/h	588.2	671.7	571.0		738.9	0.0		910.0	0.0	413.5	1474.2	0.0
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00		1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	1.000	0.000		1.000	0.000		1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	20.0	25.9	0.0		16.8	0.0		23.6	0.0	25.7	15.2	0.0
Incr Delay (d2), s/veh	1.6	17.8	0.0		0.0	0.0		2.0	0.0	2.0	12.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	21.6	43.7	0.0		16.8	0.0		25.5	0.0	27.7	27.7	0.0
Lane Group LOS	C	D			B			C		C	C	
Approach Volume, veh/h		813			1			458			1510	
Approach Delay, s/veh		38.1			16.8			25.5			27.7	
Approach LOS		D			B			C			C	

Timer												
Assigned Phase		4			8			2		1	6	
Phase Duration (G+Y+Rc), s		41.00			41.00			31.00		18.00	49.00	
Change Period (Y+Rc), s		6.00			6.00			6.00		6.00	6.00	
Max Green Setting (Gmax), s		35.00			35.00			25.00		12.00	43.00	
Max Q Clear Time (g_c+I1), s		31.78			2.03			11.74		2.00	38.29	
Green Extension Time (p_c)		0.92			2.38			5.91		0.19	2.93	

Intersection Summary		
HCM 2010 Control Delay	30.4	
HCM 2010 Level of Service	C	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	484	9	771	20	10	9	125	405	0	0	567	312
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	1976	1976	1976	1638	1638	0	0	1624	1624
Lanes	2	0	1	0	1	0	1	2	0	0	2	0
Capacity, veh/h	791	0	408	209	105	76	471	1929	0	0	1263	0
Arriving On Green	0.28	0.28	0.00	0.28	0.28	0.28	0.18	0.78	0.00	0.00	0.52	0.00
Sat Flow, veh/h	2456.9	0.0	1468.2	608.5	289.2	273.8	1559.9	3275.9	0.0		3247.9	0.0
Grp Volume(v), veh/h	537.8	0.0	0.0	43.3	0.0	0.0	138.9	450.0	0.0		630.0	0.0
Grp Sat Flow(s),veh/h/ln	1228.4	0.0	1468.2	1186.6	0.0	0.0	1559.9	1637.9	0.0		1623.9	0.0
Q Serve(g_s), s	18.7	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0		11.4	0.0
Cycle Q Clear(g_c), s	20.6	0.0	0.0	1.9	0.0	0.0	0.0	3.3	0.0		11.4	0.0
Proportion In Lane	1.000		1.000	0.513		0.231	1.000		0.000			0.000
Lane Grp Cap(c), veh/h	790.6	0.0	407.8	390.1	0.0	0.0	471.0	1929.1	0.0		1263.1	0.0
V/C Ratio(X)	0.680	0.000	0.000	0.111	0.000	0.000	0.295	0.233	0.000		0.499	0.000
Avail Cap(c_a), veh/h	790.6	0.0	407.8	390.1	0.0	0.0	471.0	1929.1	0.0		1263.1	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.30		1.33	1.33
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	0.000	1.000	1.000	0.000		1.000	0.000
Uniform Delay (d), s/veh	31.8	0.0	0.0	24.0	0.0	0.0	20.3	4.4	0.0		16.0	0.0
Incr Delay (d2), s/veh	4.7	0.0	0.0	0.6	0.0	0.0	1.6	0.3	0.0		1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Lane Group Delay (d), s/veh	36.5	0.0	0.0	24.6	0.0	0.0	21.8	4.6	0.0		17.4	0.0
Lane Group LOS	D			C			C	A			B	
Approach Volume, veh/h		538			43			589			630	
Approach Delay, s/veh		36.5			24.6			8.7			17.4	
Approach LOS		D			C			A			B	

Timer												
Assigned Phase		4			8		5	2			6	
Phase Duration (G+Y+Rc), s		31.00			31.00		18.00	59.00			41.00	
Change Period (Y+Rc), s		6.00			6.00		6.00	6.00			6.00	
Max Green Setting (Gmax), s		25.00			25.00		12.00	53.00			35.00	
Max Q Clear Time (g_c+I1), s		22.65			3.90		2.00	5.28			13.36	
Green Extension Time (p_c)		0.61			2.20		0.21	3.73			3.53	

Intersection Summary		
HCM 2010 Control Delay	20.5	
HCM 2010 Level of Service	C	

2016 AND 2021 NO BUILD WEEKDAY PRE-PHILLIES EVENT PEAK HOUR CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	218	166	524	290	44	9	6	17	128	213	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1868	1868	1900	1868	1868	1727	1900	1900	1881	1845	1845
Lanes	1	3	0	1	3	0	1	1	1	1	2	0
Capacity, veh/h	520	1511	706	471	2266	0	491	802	682	676	1469	76
Arriving On Green	0.44	0.44	0.44	0.44	0.44	0.00	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	1080.3	3400.1	1587.9	1042.0	5266.6	0.0	1081.1	1900.0	1615.0	1418.5	3480.3	178.8
Grp Volume(v), veh/h	33.3	242.2	176.7	582.2	322.2	0.0	10.0	6.7	18.9	142.2	124.9	124.0
Grp Sat Flow(s),veh/h/ln	1080.3	1700.0	1587.9	1042.0	1699.5	0.0	1081.1	1900.0	1615.0	1418.5	1845.3	1813.8
Q Serve(g_s), s	1.7	3.8	6.3	33.7	3.4	0.0	0.5	0.2	0.6	5.8	3.8	3.8
Cycle Q Clear(g_c), s	5.1	3.8	6.3	40.0	3.4	0.0	4.3	0.2	0.6	6.0	3.8	3.8
Proportion In Lane	1.000		1.000	1.000		0.000	1.000		1.000	1.000		0.099
Lane Grp Cap(c), veh/h	519.6	1511.1	705.8	470.6	2266.0	0.0	490.6	802.2	681.9	676.0	779.1	765.8
V/C Ratio(X)	0.064	0.160	0.250	1.237	0.142	0.000	0.020	0.008	0.028	0.210	0.160	0.162
Avail Cap(c_a), veh/h	519.6	1511.1	705.8	470.6	2266.0	0.0	490.6	802.2	681.9	676.0	779.1	765.8
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	16.3	15.0	15.6	31.0	14.8	0.0	17.5	15.1	15.2	16.8	16.1	16.1
Incr Delay (d2), s/veh	0.2	0.2	0.8	123.9	0.1	0.0	0.1	0.0	0.1	0.7	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	16.6	15.2	16.5	154.9	15.0	0.0	17.5	15.1	15.3	17.5	16.6	16.6
Lane Group LOS	B	B	B	F	B		B	B	B	B	B	B
Approach Volume, veh/h		452			904			36			391	
Approach Delay, s/veh		15.8			105.0			15.9			16.9	
Approach LOS		B			F			B			B	

Timer												
Assigned Phase		2			6			8			4	
Phase Duration (G+Y+Rc), s		46.00			46.00			44.00			44.00	
Change Period (Y+Rc), s		6.00			6.00			6.00			6.00	
Max Green Setting (Gmax), s		40.00			40.00			38.00			38.00	
Max Q Clear Time (g_c+I1), s		8.26			42.00			6.34			8.00	
Green Extension Time (p_c)		5.86			0.00			1.02			1.02	

Intersection Summary		
HCM 2010 Control Delay		61.3
HCM 2010 Level of Service		E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	82	130	110	444	793	77	43	48	25	48	687	624
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	178.5	177.6	166.7	180.2	190.0	184.5	172.7	147.3	190.0	183.8	188.1
Lanes	1	3	0	1	3	0	1	2	0	0	2	1
Cap, veh/h	315	1462	683	514	2135	128	264	914	404	112	1328	660
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.41	0.41	0.41	0.41	0.41	0.00
Sat Flow, veh/h	693	3248	1517	1040	4745	285	771	2215	979	148	3221	1599
Grp Volume(v), veh/h	91	144	109	493	608	326	48	38	40	433	383	0
Grp Sat Flow(s),veh/h/ln	693	1624	1517	1040	1639	1751	771	1641	1554	1779	1589	1599
Q Serve(g_s), s	8.2	2.0	3.4	32.6	10.0	10.1	4.1	1.1	1.2	4.5	14.9	0.0
Cycle Q Clear(g_c), s	18.2	2.0	3.4	36.0	10.0	10.1	19.0	1.1	1.2	14.7	14.9	0.0
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.63	0.12		1.00
Lane Grp Cap(c), veh/h	315	1462	683	514	1475	788	264	677	641	784	656	660
V/C Ratio(X)	0.29	0.10	0.16	0.96	0.41	0.41	0.18	0.06	0.06	0.55	0.58	0.00
Avail Cap(c_a), veh/h	315	1462	683	514	1475	788	264	677	641	784	656	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	21.0	12.7	13.0	26.0	14.9	14.9	25.6	14.1	14.2	18.1	18.2	0.0
Incr Delay (d2), s/veh	2.3	0.1	0.5	30.9	0.9	1.6	1.5	0.2	0.2	2.8	3.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.6	0.8	1.3	14.3	4.0	4.4	0.9	0.5	0.5	6.9	6.1	0.0
Lane Grp Delay (d), s/veh	23.3	12.8	13.5	56.9	15.7	16.5	27.1	14.3	14.4	20.9	22.0	0.0
Lane Grp LOS	C	B	B	E	B	B	C	B	B	C	C	
Approach Vol, veh/h		344			1427			126			816	
Approach Delay, s/veh		15.8			30.1			19.2			21.4	
Approach LOS		B			C			B			C	

Timer												
Assigned Phs		2			6			8			4	
Phs Duration (G+Y+Rc), s		41.0			41.0			39.0			39.0	
Change Period (Y+Rc), s		5.0			5.0			6.0			6.0	
Max Green Setting (Gmax), s		36.0			36.0			33.0			33.0	
Max Q Clear Time (g_c+I1), s		20.2			38.0			21.0			16.9	
Green Ext Time (p_c), s		5.2			0.0			2.2			2.3	

Intersection Summary		
HCM 2010 Ctrl Delay		25.2
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	135	205	664	541	70	108	30	108	176	314	183
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	188.1	186.7	188.1	188.1	182.7	186.3	181.0	188.1	172.7	182.7	188.1	188.2
Lanes	1	3	0	1	2	1	1	1	1	1	1	1
Cap, veh/h	466	1774	829	460	1234	507	299	669	522	508	669	569
Arrive On Green	0.11	0.52	0.52	0.36	0.36	0.00	0.36	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1792	3397	1587	1070	3471	1425	1048	1881	1468	1243	1881	1600
Grp Volume(v), veh/h	48	150	222	738	601	0	120	33	108	196	349	0
Grp Sat Flow(s),veh/h/ln	1792	1699	1587	1070	1736	1425	1048	1881	1468	1243	1881	1600
Q Serve(g_s), s	1.3	2.0	7.0	32.0	12.1	0.0	9.2	1.0	4.6	11.1	13.2	0.0
Cycle Q Clear(g_c), s	1.3	2.0	7.0	32.0	12.1	0.0	22.4	1.0	4.6	12.1	13.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	466	1774	829	460	1234	507	299	669	522	508	669	569
V/C Ratio(X)	0.10	0.08	0.27	1.60	0.49	0.00	0.40	0.05	0.21	0.39	0.52	0.00
Avail Cap(c_a), veh/h	466	1774	829	460	1234	507	299	669	522	508	669	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.5	10.7	11.9	31.8	22.6	0.0	31.8	19.0	20.2	23.0	22.9	0.0
Incr Delay (d2), s/veh	0.4	0.1	0.8	281.2	1.4	0.0	4.0	0.1	0.9	2.2	2.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.6	0.8	2.7	46.5	5.3	0.0	2.8	0.5	1.8	3.7	6.5	0.0
Lane Grp Delay (d), s/veh	14.0	10.8	12.7	313.0	24.0	0.0	35.8	19.2	21.1	25.2	25.8	0.0
Lane Grp LOS	B	B	B	F	C		D	B	C	C	C	
Approach Vol, veh/h		420			1339			261			545	
Approach Delay, s/veh		12.2			183.3			27.6			25.6	
Approach LOS		B			F			C			C	

Timer												
Assigned Phs	5	2			6			8			4	
Phs Duration (G+Y+Rc), s	15.0	53.0			38.0			37.0			37.0	
Change Period (Y+Rc), s	5.5	6.0			6.0			5.0			5.0	
Max Green Setting (Gmax), s	9.5	47.0			32.0			32.0			32.0	
Max Q Clear Time (g_c+I1), s	3.3	9.0			34.0			24.4			15.2	
Green Ext Time (p_c), s	0.0	6.3			0.0			1.5			2.1	

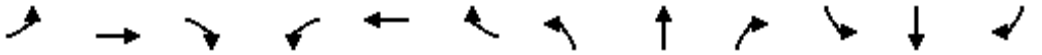
Intersection Summary	
HCM 2010 Ctrl Delay	105.9
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	473	1	17	4	1	1	40	169	3	8	831	854
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1496	1352	1352	1542	1542	1542	1638	1522	1522	1696	1488	1488
Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Capacity, veh/h	1078	62	433	283	68	57	195	1259	22	515	1257	0
Arriving On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.56	0.56	0.56	0.56	0.56	0.00
Sat Flow, veh/h	2188.5	146.4	1024.6	538.7	131.6	134.7	602.8	2982.8	52.8	1110.3	2977.0	0.0
Grp Volume(v), veh/h	525.6	0.0	8.9	6.7	0.0	0.0	44.4	95.7	95.5	8.9	923.3	0.0
Grp Sat Flow(s),veh/h/ln	1094.3	0.0	1171.0	808.1	0.0	0.0	602.8	1522.5	1513.2	1110.3	1488.5	0.0
Q Serve(g_s), s	16.5	0.0	0.4	0.0	0.0	0.0	5.5	2.7	2.7	0.3	20.8	0.0
Cycle Q Clear(g_c), s	16.7	0.0	0.4	0.2	0.0	0.0	26.3	2.7	2.7	3.1	20.8	0.0
Proportion In Lane	1.000		0.875	0.667		0.167	1.000		0.035	1.000		0.000
Lane Grp Cap(c), veh/h	1078.4	0.0	494.4	407.9	0.0	0.0	195.0	642.8	638.9	515.3	1257.0	0.0
V/C Ratio(X)	0.487	0.000	0.018	0.016	0.000	0.000	0.228	0.149	0.149	0.017	0.735	0.000
Avail Cap(c_a), veh/h	1078.4	0.0	494.4	407.9	0.0	0.0	195.0	642.8	638.9	515.3	1257.0	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	19.9	0.0	15.1	15.1	0.0	0.0	25.8	12.0	12.0	12.7	16.0	0.0
Incr Delay (d2), s/veh	1.6	0.0	0.1	0.1	0.0	0.0	2.7	0.5	0.5	0.1	3.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	21.5	0.0	15.2	15.2	0.0	0.0	28.5	12.5	12.5	12.8	19.8	0.0
Lane Group LOS	C		B	B			C	B	B	B	B	
Approach Volume, veh/h		534			7			236			932	
Approach Delay, s/veh		21.4			15.2			15.5			19.7	
Approach LOS		C			B			B			B	

Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		45.00			45.00			45.00			45.00	
Change Period (Y+Rc), s		7.00			7.00			7.00			7.00	
Max Green Setting (Gmax), s		38.00			38.00			38.00			38.00	
Max Q Clear Time (g_c+I1), s		18.74			2.23			28.32			22.83	
Green Extension Time (p_c)		2.44			2.70			3.13			3.78	

Intersection Summary												
HCM 2010 Control Delay			19.7									
HCM 2010 Level of Service			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	186	546	680	0	1	0	0	412	54	116	1243	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1900	0	0	1638	1638	1624	1624	0
Lanes	1	1	1	0	1	0	0	2	0	1	2	0
Capacity, veh/h	588	672	571	0	739	0	0	910	0	413	1474	0
Arriving On Green	0.39	0.39	0.00	0.00	0.39	0.00	0.00	0.37	0.00	0.18	0.64	0.00
Sat Flow, veh/h	1308.0	1727.3	1468.2		1900.0	0.0		3275.9	0.0	1546.6	3166.7	0.0
Grp Volume(v), veh/h	206.7	606.7	0.0		1.1	0.0		457.8	0.0	128.9	1381.1	0.0
Grp Sat Flow(s),veh/h/ln	1308.0	1727.3	1468.2		1900.0	0.0		1637.9	0.0	1546.6	1542.7	0.0
Q Serve(g_s), s	10.3	29.8	0.0		0.0	0.0		9.7	0.0	0.0	36.3	0.0
Cycle Q Clear(g_c), s	10.4	29.8	0.0		0.0	0.0		9.7	0.0	0.0	36.3	0.0
Proportion In Lane	1.000		1.000			0.000			0.000	1.000		0.000
Lane Grp Cap(c), veh/h	588.2	671.7	571.0		738.9	0.0		910.0	0.0	413.5	1474.2	0.0
V/C Ratio(X)	0.351	0.903	0.000		0.002	0.000		0.503	0.000	0.312	0.937	0.000
Avail Cap(c_a), veh/h	588.2	671.7	571.0		738.9	0.0		910.0	0.0	413.5	1474.2	0.0
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00		1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	1.000	0.000		1.000	0.000		1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	20.0	25.9	0.0		16.8	0.0		23.6	0.0	25.7	15.2	0.0
Incr Delay (d2), s/veh	1.6	17.8	0.0		0.0	0.0		2.0	0.0	2.0	12.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	21.6	43.7	0.0		16.8	0.0		25.5	0.0	27.7	27.7	0.0
Lane Group LOS	C	D			B			C		C	C	
Approach Volume, veh/h		813			1			458			1510	
Approach Delay, s/veh		38.1			16.8			25.5			27.7	
Approach LOS		D			B			C			C	

Timer												
Assigned Phase		4			8			2		1	6	
Phase Duration (G+Y+Rc), s		41.00			41.00			31.00		18.00	49.00	
Change Period (Y+Rc), s		6.00			6.00			6.00		6.00	6.00	
Max Green Setting (Gmax), s		35.00			35.00			25.00		12.00	43.00	
Max Q Clear Time (g_c+I1), s		31.78			2.03			11.74		2.00	38.29	
Green Extension Time (p_c)		0.92			2.38			5.91		0.19	2.93	

Intersection Summary		
HCM 2010 Control Delay	30.4	
HCM 2010 Level of Service	C	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	484	9	771	20	10	9	125	405	0	0	567	312
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	1976	1976	1976	1638	1638	0	0	1624	1624
Lanes	2	0	1	0	1	0	1	2	0	0	2	0
Capacity, veh/h	791	0	408	209	105	76	471	1929	0	0	1263	0
Arriving On Green	0.28	0.28	0.00	0.28	0.28	0.28	0.18	0.78	0.00	0.00	0.52	0.00
Sat Flow, veh/h	2456.9	0.0	1468.2	608.5	289.2	273.8	1559.9	3275.9	0.0		3247.9	0.0
Grp Volume(v), veh/h	537.8	0.0	0.0	43.3	0.0	0.0	138.9	450.0	0.0		630.0	0.0
Grp Sat Flow(s),veh/h/ln	1228.4	0.0	1468.2	1186.6	0.0	0.0	1559.9	1637.9	0.0		1623.9	0.0
Q Serve(g_s), s	18.7	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0		11.4	0.0
Cycle Q Clear(g_c), s	20.6	0.0	0.0	1.9	0.0	0.0	0.0	3.3	0.0		11.4	0.0
Proportion In Lane	1.000		1.000	0.513		0.231	1.000		0.000			0.000
Lane Grp Cap(c), veh/h	790.6	0.0	407.8	390.1	0.0	0.0	471.0	1929.1	0.0		1263.1	0.0
V/C Ratio(X)	0.680	0.000	0.000	0.111	0.000	0.000	0.295	0.233	0.000		0.499	0.000
Avail Cap(c_a), veh/h	790.6	0.0	407.8	390.1	0.0	0.0	471.0	1929.1	0.0		1263.1	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.30		1.33	1.33
Upstream Filter(I)	1.000	0.000	0.000	1.000	0.000	0.000	1.000	1.000	0.000		1.000	0.000
Uniform Delay (d), s/veh	31.8	0.0	0.0	24.0	0.0	0.0	20.3	4.4	0.0		16.0	0.0
Incr Delay (d2), s/veh	4.7	0.0	0.0	0.6	0.0	0.0	1.6	0.3	0.0		1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Lane Group Delay (d), s/veh	36.5	0.0	0.0	24.6	0.0	0.0	21.8	4.6	0.0		17.4	0.0
Lane Group LOS	D			C			C	A			B	
Approach Volume, veh/h		538			43			589			630	
Approach Delay, s/veh		36.5			24.6			8.7			17.4	
Approach LOS		D			C			A			B	

Timer												
Assigned Phase		4			8		5	2			6	
Phase Duration (G+Y+Rc), s		31.00			31.00		18.00	59.00			41.00	
Change Period (Y+Rc), s		6.00			6.00		6.00	6.00			6.00	
Max Green Setting (Gmax), s		25.00			25.00		12.00	53.00			35.00	
Max Q Clear Time (g_c+I1), s		22.65			3.90		2.00	5.28			13.36	
Green Extension Time (p_c)		0.61			2.20		0.21	3.73			3.53	

Intersection Summary		
HCM 2010 Control Delay		20.5
HCM 2010 Level of Service		C

2016 AND 2021 BUILD WEEKDAY PRE-PHILLIES EVENT PEAK HOUR CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	220	166	524	390	46	9	6	17	129	213	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1868	1868	1900	1867	1867	1727	1900	1900	1881	1845	1845
Lanes	1	3	0	1	3	0	1	1	1	1	2	0
Capacity, veh/h	781	2448	1143	815	3669	0	178	304	258	295	557	29
Arriving On Green	0.96	0.96	0.96	0.96	0.96	0.00	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	990.7	3399.9	1587.8	1040.2	5263.8	0.0	1081.1	1900.0	1615.0	1418.5	3480.3	178.8
Grp Volume(v), veh/h	33.3	244.4	176.7	582.2	433.3	0.0	10.0	6.7	18.9	143.3	124.9	124.0
Grp Sat Flow(s),veh/h/ln	990.7	1699.9	1587.8	1040.2	1698.6	0.0	1081.1	1900.0	1615.0	1418.5	1845.3	1813.8
Q Serve(g_s), s	0.2	0.3	0.6	10.9	0.4	0.0	0.8	0.3	1.0	9.5	6.1	6.2
Cycle Q Clear(g_c), s	0.6	0.3	0.6	11.5	0.4	0.0	7.0	0.3	1.0	9.8	6.1	6.2
Proportion In Lane	1.000		1.000	1.000		0.000	1.000		1.000	1.000		0.099
Lane Grp Cap(c), veh/h	781.3	2447.9	1143.2	815.2	3669.0	0.0	178.4	304.0	258.4	294.8	295.3	290.2
V/C Ratio(X)	0.043	0.100	0.155	0.714	0.118	0.000	0.056	0.022	0.073	0.486	0.423	0.427
Avail Cap(c_a), veh/h	781.3	2447.9	1143.2	815.2	3669.0	0.0	178.4	304.0	258.4	294.8	295.3	290.2
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	0.6	0.6	0.6	0.9	0.6	0.0	41.0	35.4	35.7	39.5	37.8	37.9
Incr Delay (d2), s/veh	0.1	0.1	0.3	5.3	0.1	0.0	0.6	0.1	0.5	5.6	4.4	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	0.7	0.7	0.9	6.2	0.7	0.0	41.6	35.5	36.2	45.2	42.2	42.4
Lane Group LOS	A	A	A	A	A		D	D	D	D	D	D
Approach Volume, veh/h		454			1016			36			392	
Approach Delay, s/veh		0.8			3.8			37.6			43.4	
Approach LOS		A			A			D			D	

Timer												
Assigned Phase		2			6			8			4	
Phase Duration (G+Y+Rc), s		78.00			78.00			22.00			22.00	
Change Period (Y+Rc), s		6.00			6.00			6.00			6.00	
Max Green Setting (Gmax), s		72.00			72.00			16.00			16.00	
Max Q Clear Time (g_c+I1), s		2.57			13.45			9.00			11.77	
Green Extension Time (p_c)		6.69			6.68			0.66			0.48	

Intersection Summary		
HCM 2010 Control Delay		11.9
HCM 2010 Level of Service		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	84	228	183	508	800	77	43	48	25	48	706	626
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	178.5	177.6	166.7	180.1	190.0	184.5	172.7	147.3	190.0	183.8	188.1
Lanes	1	3	0	1	3	0	1	2	0	0	2	1
Cap, veh/h	312	1462	683	423	2137	127	257	914	404	110	1330	660
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.41	0.41	0.41	0.41	0.41	0.00
Sat Flow, veh/h	689	3249	1517	897	4748	282	759	2215	979	144	3225	1599
Grp Volume(v), veh/h	93	253	190	564	613	329	48	38	40	444	393	0
Grp Sat Flow(s),veh/h/ln	689	1624	1517	897	1639	1752	759	1641	1554	1780	1589	1599
Q Serve(g_s), s	8.5	3.7	6.3	29.7	10.1	10.2	4.2	1.1	1.2	5.0	15.4	0.0
Cycle Q Clear(g_c), s	18.6	3.7	6.3	36.0	10.1	10.2	19.7	1.1	1.2	15.3	15.4	0.0
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.63	0.12		1.00
Lane Grp Cap(c), veh/h	312	1462	683	423	1475	788	257	677	641	785	656	660
V/C Ratio(X)	0.30	0.17	0.28	1.33	0.42	0.42	0.19	0.06	0.06	0.57	0.60	0.00
Avail Cap(c_a), veh/h	312	1462	683	423	1475	788	257	677	641	785	656	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	21.2	13.1	13.8	28.3	14.9	14.9	26.0	14.1	14.2	18.2	18.3	0.0
Incr Delay (d2), s/veh	2.4	0.3	1.0	165.4	0.9	1.6	1.6	0.2	0.2	2.9	4.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.6	1.5	2.4	27.9	4.0	4.5	0.9	0.5	0.5	7.1	6.4	0.0
Lane Grp Delay (d), s/veh	23.6	13.4	14.8	193.7	15.7	16.5	27.6	14.3	14.4	21.2	22.4	0.0
Lane Grp LOS	C	B	B	F	B	B	C	B	B	C	C	
Approach Vol, veh/h		536			1506			126			837	
Approach Delay, s/veh		15.7			82.6			19.4			21.7	
Approach LOS		B			F			B			C	

Timer												
Assigned Phs		2			6			8			4	
Phs Duration (G+Y+Rc), s		41.0			41.0			39.0			39.0	
Change Period (Y+Rc), s		5.0			5.0			6.0			6.0	
Max Green Setting (Gmax), s		36.0			36.0			33.0			33.0	
Max Q Clear Time (g_c+I1), s		20.6			38.0			21.7			17.4	
Green Ext Time (p_c), s		6.1			0.0			2.2			2.4	

Intersection Summary												
HCM 2010 Ctrl Delay			51.0									
HCM 2010 LOS			D									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	136	207	673	541	70	210	57	214	241	318	183
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	188.1	186.7	188.1	188.1	182.7	186.3	181.0	188.1	172.7	182.7	188.1	188.2
Lanes	1	3	0	1	2	1	1	1	1	1	1	1
Cap, veh/h	466	1774	829	460	1234	507	296	669	522	449	669	569
Arrive On Green	0.11	0.52	0.52	0.36	0.36	0.00	0.36	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1792	3397	1587	1068	3471	1425	1045	1881	1468	1108	1881	1600
Grp Volume(v), veh/h	48	151	224	748	601	0	233	63	226	268	353	0
Grp Sat Flow(s),veh/h/ln	1792	1699	1587	1068	1736	1425	1045	1881	1468	1108	1881	1600
Q Serve(g_s), s	1.3	2.0	7.1	32.0	12.1	0.0	18.6	2.0	10.6	19.1	13.4	0.0
Cycle Q Clear(g_c), s	1.3	2.0	7.1	32.0	12.1	0.0	32.0	2.0	10.6	21.1	13.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	466	1774	829	460	1234	507	296	669	522	449	669	569
V/C Ratio(X)	0.10	0.09	0.27	1.63	0.49	0.00	0.79	0.09	0.43	0.60	0.53	0.00
Avail Cap(c_a), veh/h	466	1774	829	460	1234	507	296	669	522	449	669	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.5	10.8	12.0	31.8	22.6	0.0	36.4	19.3	22.1	26.4	23.0	0.0
Incr Delay (d2), s/veh	0.4	0.1	0.8	292.2	1.4	0.0	18.8	0.3	2.6	5.7	3.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.6	0.8	2.7	47.8	5.3	0.0	6.9	1.0	4.1	6.0	6.6	0.0
Lane Grp Delay (d), s/veh	14.0	10.8	12.8	324.0	24.0	0.0	55.2	19.6	24.7	32.1	26.0	0.0
Lane Grp LOS	B	B	B	F	C		E	B	C	C	C	
Approach Vol, veh/h		423			1349			522			621	
Approach Delay, s/veh		12.2			190.3			37.7			28.6	
Approach LOS		B			F			D			C	

Timer												
Assigned Phs	5	2			6			8			4	
Phs Duration (G+Y+Rc), s	15.0	53.0			38.0			37.0			37.0	
Change Period (Y+Rc), s	5.5	6.0			6.0			5.0			5.0	
Max Green Setting (Gmax), s	9.5	47.0			32.0			32.0			32.0	
Max Q Clear Time (g_c+I1), s	3.3	9.1			34.0			34.0			23.1	
Green Ext Time (p_c), s	0.0	6.4			0.0			0.0			2.5	

Intersection Summary	
HCM 2010 Ctrl Delay	102.7
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	571	1	17	4	1	1	40	169	3	8	831	916
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1496	1352	1352	1542	1542	1542	1638	1522	1522	1696	1484	1484
Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Capacity, veh/h	1078	62	433	283	68	57	194	1259	22	515	1253	0
Arriving On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.56	0.56	0.56	0.56	0.56	0.00
Sat Flow, veh/h	2188.5	146.4	1024.6	538.7	131.6	134.7	602.8	2982.8	52.8	1110.3	2968.4	0.0
Grp Volume(v), veh/h	634.4	0.0	8.9	6.7	0.0	0.0	44.4	95.7	95.5	8.9	923.3	0.0
Grp Sat Flow(s),veh/h/ln	1094.3	0.0	1171.0	808.1	0.0	0.0	602.8	1522.5	1513.2	1110.3	1484.2	0.0
Q Serve(g_s), s	21.3	0.0	0.4	0.0	0.0	0.0	5.5	2.7	2.7	0.3	20.9	0.0
Cycle Q Clear(g_c), s	21.6	0.0	0.4	0.2	0.0	0.0	26.4	2.7	2.7	3.1	20.9	0.0
Proportion In Lane	1.000		0.875	0.667		0.167	1.000		0.035	1.000		0.000
Lane Grp Cap(c), veh/h	1078.4	0.0	494.4	407.9	0.0	0.0	194.3	642.8	638.9	515.3	1253.3	0.0
V/C Ratio(X)	0.588	0.000	0.018	0.016	0.000	0.000	0.229	0.149	0.149	0.017	0.737	0.000
Avail Cap(c_a), veh/h	1078.4	0.0	494.4	407.9	0.0	0.0	194.3	642.8	638.9	515.3	1253.3	0.0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	0.000	1.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	21.3	0.0	15.1	15.1	0.0	0.0	25.9	12.0	12.0	12.7	16.0	0.0
Incr Delay (d2), s/veh	2.4	0.0	0.1	0.1	0.0	0.0	2.7	0.5	0.5	0.1	3.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	23.7	0.0	15.2	15.2	0.0	0.0	28.6	12.5	12.5	12.8	19.9	0.0
Lane Group LOS	C		B	B			C	B	B	B	B	
Approach Volume, veh/h		643			7			236			932	
Approach Delay, s/veh		23.6			15.2			15.5			19.8	
Approach LOS		C			B			B			B	

Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		45.00			45.00			45.00			45.00	
Change Period (Y+Rc), s		7.00			7.00			7.00			7.00	
Max Green Setting (Gmax), s		38.00			38.00			38.00			38.00	
Max Q Clear Time (g_c+I1), s		23.56			2.23			28.44			22.93	
Green Extension Time (p_c)		2.75			3.35			3.11			3.78	

Intersection Summary		
HCM 2010 Control Delay		20.6
HCM 2010 Level of Service		C

Intersection	
Intersection Delay (sec/veh):	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	0	0	0	127	513	0	0	1755	230
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	180		0	0		0
Median Width		0			0			10			10	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	0	16	16	0	0	17	17
Movement Flow Rate	0	0	0	0	0	0	141	570	0	0	1950	256
Number of Lanes	0	0	0	0	1	0	1	2	0	0	2	0

Major/Minor			Minor 1			Major 1			Major 2	
Conflicting Flow Rate - All		~	3058	-	2206	0	-	570	0	0
Stage 1		-	852	-	-	-	-	-	-	-
Stage 2		-	2206	-	-	-	-	-	-	-
Follow-up Headway		0	4	0	2.36	-	0	2.2	-	-
Pot Capacity-1 Maneuver		0	6	0	308	-	0	1278	-	-
Stage 1		0	496	0	-	-	0	-	-	-
Stage 2		0	174	0	-	-	0	-	-	-
Time blocked-Platoon(%)		0	50	0	68	-	0	17	-	-
Mov Capacity-1 Maneuver		0	3	-	308	-	-	1278	-	-
Mov Capacity-2 Maneuver		0	3	-	-	-	-	-	-	-
Stage 1		0	269	-	-	-	-	-	-	-
Stage 2		0	174	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	0	5.2	0
HCM LOS	A	A	A

Lane	NBL	NBT	WBLn1	SBL	SBT	SBR
Capacity (vph)			0			
HCM Control Delay (s)	26.2	-	0	0	-	-
HCM Lane VC Ratio	0.458	-	-	-	-	-
HCM Lane LOS	D	-	A	A	-	-
HCM 95th Percentile Queue (veh)	2.286	-	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	186	546	680	0	1	0	0	498	66	116	1305	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1727	1727	1727	0	1900	0	0	1638	1638	1624	1624	0
Lanes	1	1	1	0	1	0	0	2	0	1	2	0
Capacity, veh/h	588	672	571	0	739	0	0	910	0	381	1474	0
Arriving On Green	0.39	0.39	0.00	0.00	0.39	0.00	0.00	0.37	0.00	0.18	0.64	0.00
Sat Flow, veh/h	1308.0	1727.3	1468.2		1900.0	0.0		3275.9	0.0	1546.6	3166.7	0.0
Grp Volume(v), veh/h	206.7	606.7	0.0		1.1	0.0		553.3	0.0	128.9	1450.0	0.0
Grp Sat Flow(s),veh/h/ln	1308.0	1727.3	1468.2		1900.0	0.0		1637.9	0.0	1546.6	1542.7	0.0
Q Serve(g_s), s	10.3	29.8	0.0		0.0	0.0		12.4	0.0	0.0	41.1	0.0
Cycle Q Clear(g_c), s	10.4	29.8	0.0		0.0	0.0		12.4	0.0	0.0	41.1	0.0
Proportion In Lane	1.000		1.000			0.000			0.000	1.000		0.000
Lane Grp Cap(c), veh/h	588.2	671.7	571.0		738.9	0.0		910.0	0.0	380.9	1474.2	0.0
V/C Ratio(X)	0.351	0.903	0.000		0.002	0.000		0.608	0.000	0.338	0.984	0.000
Avail Cap(c_a), veh/h	588.2	671.7	571.0		738.9	0.0		910.0	0.0	380.9	1474.2	0.0
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00		1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.000	1.000	0.000		1.000	0.000		1.000	0.000	1.000	1.000	0.000
Uniform Delay (d), s/veh	20.0	25.9	0.0		16.8	0.0		24.4	0.0	28.2	16.1	0.0
Incr Delay (d2), s/veh	1.6	17.8	0.0		0.0	0.0		3.0	0.0	2.4	19.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	21.6	43.7	0.0		16.8	0.0		27.4	0.0	30.6	35.9	0.0
Lane Group LOS	C	D			B			C		C	D	
Approach Volume, veh/h		813			1			553			1579	
Approach Delay, s/veh		38.1			16.8			27.4			35.5	
Approach LOS		D			B			C			D	

Timer												
Assigned Phase		4			8			2		1	6	
Phase Duration (G+Y+Rc), s		41.00			41.00			31.00		18.00	49.00	
Change Period (Y+Rc), s		6.00			6.00			6.00		6.00	6.00	
Max Green Setting (Gmax), s		35.00			35.00			25.00		12.00	43.00	
Max Q Clear Time (g_c+I1), s		31.78			2.03			14.36		2.00	43.12	
Green Extension Time (p_c)		0.92			2.38			5.69		0.19	0.00	

Intersection Summary		
HCM 2010 Control Delay	34.7	
HCM 2010 Level of Service	C	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	484	0	832	20	10	9	210	407	0	0	568	312
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Adj Sat Flow Rate	1727	0	1727	1976	1976	1976	1638	1638	0	0	1624	1624
Lanes	2	0	1	0	1	0	1	2	0	0	2	0
Capacity, veh/h	0	0	0	61	31	9	471	1929	0	0	1263	0
Arriving On Green	0.00	0.00	0.00	0.28	0.28	0.28	0.18	0.78	0.00	0.00	0.52	0.00
Sat Flow, veh/h		0		74.0	290.2	33.3	1559.9	3275.9	0.0		3247.9	0.0
Grp Volume(v), veh/h		0.0		43.3	0.0	0.0	233.3	452.2	0.0		631.1	0.0
Grp Sat Flow(s),veh/h/ln				144.3	0.0	0.0	1559.9	1637.9	0.0		1623.9	0.0
Q Serve(g_s), s				0.0	0.0	0.0	0.0	3.3	0.0		11.4	0.0
Cycle Q Clear(g_c), s				25.0	0.0	0.0	0.0	3.3	0.0		11.4	0.0
Proportion In Lane				0.513		0.231	1.000		0.000			0.000
Lane Grp Cap(c), veh/h				100.6	0.0	0.0	470.6	1929.1	0.0		1263.1	0.0
V/C Ratio(X)				0.431	0.000	0.000	0.496	0.234	0.000		0.500	0.000
Avail Cap(c_a), veh/h				100.6	0.0	0.0	470.6	1929.1	0.0		1263.1	0.0
HCM Platoon Ratio				1.00	1.00	1.00	1.33	1.33	1.30		1.33	1.33
Upstream Filter(I)				1.000	0.000	0.000	1.000	1.000	0.000		1.000	0.000
Uniform Delay (d), s/veh				24.0	0.0	0.0	23.6	4.4	0.0		16.0	0.0
Incr Delay (d2), s/veh				12.9	0.0	0.0	3.7	0.3	0.0		1.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Lane Group Delay (d), s/veh				36.9	0.0	0.0	27.3	4.7	0.0		17.4	0.0
Lane Group LOS				D			C	A			B	
Approach Volume, veh/h					43			686			631	
Approach Delay, s/veh					36.9			12.4			17.4	
Approach LOS					D			B			B	

Timer												
Assigned Phase					8		5	2			6	
Phase Duration (G+Y+Rc), s					31.00		18.00	59.00			41.00	
Change Period (Y+Rc), s					6.00		6.00	6.00			6.00	
Max Green Setting (Gmax), s					25.00		12.00	53.00			35.00	
Max Q Clear Time (g_c+I1), s					27.00		2.00	5.30			13.39	
Green Extension Time (p_c)					0.00		0.42	3.74			3.54	

Intersection Summary												
HCM 2010 Control Delay			15.5									
HCM 2010 Level of Service			B									

Intersection	
Intersection Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	0	10	116	1381	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0	150			0
Median Width	0			0	0	
Grade, %	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	11	129	1534	18
Number of Lanes	0	1	0	3	2	0

Major/Minor			Major 1		Major 2	
Conflicting Flow All	1617	776	1552	0	-	0
Stage 1	1543	-	-	-	-	-
Stage 2	74	-	-	-	-	-
Follow-up Headway	3.67	3.32	2.22	-	-	-
Pot Capacity-1 Maneuver	119	340	423	-	-	-
Stage 1	159	-	-	-	-	-
Stage 2	899	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	-	-	-
Mov Capacity-1 Maneuver	116	340	423	-	-	-
Mov Capacity-2 Maneuver	116	-	-	-	-	-
Stage 1	159	-	-	-	-	-
Stage 2	874	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	1.2	0
HCM LOS	A	-	-

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Cap, veh/h	423	-	0	-	-
HCM Control Delay, s	13.74	0.1	0	-	-
HCM Lane V/C Ratio	0.03	-	-	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th-tile Q, veh	0.1	-	-	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	0	31	126	1241	140
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0	100			0
Median Width	0			12	12	
Grade, %	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	34	140	1379	156
Number of Lanes	0	1	1	2	2	0

Major/Minor			Major 1		Major 2	
Conflicting Flow All	1596	767	1534	0	-	0
Stage 1	1457	-	-	-	-	-
Stage 2	139	-	-	-	-	-
Follow-up Headway	3.52	3.32	2.22	-	-	-
Pot Capacity-1 Maneuver	97	345	430	-	-	-
Stage 1	181	-	-	-	-	-
Stage 2	873	-	-	-	-	-
Time blocked-Platoon, %	0	0	0	-	-	-
Mov Capacity-1 Maneuver	89	345	430	-	-	-
Mov Capacity-2 Maneuver	156	-	-	-	-	-
Stage 1	181	-	-	-	-	-
Stage 2	804	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	2.8	0
HCM LOS	A	-	-

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Cap, veh/h	430	-	0	-	-
HCM Control Delay, s	14.1	-	0	-	-
HCM Lane V/C Ratio	0.08	-	-	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th-tile Q, veh	0.3	-	-	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	14	20	460	0	0	1198
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0		0	0	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	22	511	0	0	1331
Number of Lanes	1	0	2	0	0	2

Major/Minor			Major 1		Major 2	
Conflicting Flow All	1177	256	0	0	511	0
Stage 1	511	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Follow-up Headway	3.52	3.32	-	-	2.22	-
Pot Capacity-1 Maneuver	184	743	-	-	1050	-
Stage 1	567	-	-	-	-	-
Stage 2	472	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	184	743	-	-	1050	-
Mov Capacity-2 Maneuver	318	-	-	-	-	-
Stage 1	567	-	-	-	-	-
Stage 2	472	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	0
HCM LOS	B	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Cap, veh/h	-	-	479	1050	-
HCM Control Delay, s	-	-	13.2	0	-
HCM Lane V/C Ratio	-	-	0.08	-	-
HCM Lane LOS	-	-	B	A	-
HCM 95th-tile Q, veh	-	-	0.3	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	18	21	439	13	15	1197
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0		0	100	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	23	488	14	17	1330
Number of Lanes	1	0	2	0	1	2

Major/Minor			Major 1		Major 2	
Conflicting Flow All	1193	251	0	0	502	0
Stage 1	495	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Follow-up Headway	3.52	3.32	-	-	2.22	-
Pot Capacity-1 Maneuver	180	749	-	-	1059	-
Stage 1	578	-	-	-	-	-
Stage 2	455	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	177	749	-	-	1059	-
Mov Capacity-2 Maneuver	309	-	-	-	-	-
Stage 1	578	-	-	-	-	-
Stage 2	448	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	0.1
HCM LOS	B	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Cap, veh/h	-	-	452	1059	-
HCM Control Delay, s	-	-	13.8	8.454	-
HCM Lane V/C Ratio	-	-	0.10	0.02	-
HCM Lane LOS	-	-	B	A	-
HCM 95th-tile Q, veh	-	-	0.3	0.0	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	42	193	259	0	0	1215
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	None	None	None	None	None	None
Storage Length	0	0		0	100	
Median Width	12		12			12
Grade, %	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	214	288	0	0	1350
Number of Lanes	1	0	2	0	0	2

Major/Minor			Major 1		Major 2	
Conflicting Flow All	963	144	0	0	288	0
Stage 1	288	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Follow-up Headway	3.52	3.32	-	-	2.22	-
Pot Capacity-1 Maneuver	253	877	-	-	1271	-
Stage 1	735	-	-	-	-	-
Stage 2	467	-	-	-	-	-
Time blocked-Platoon, %	0	0	-	-	0	-
Mov Capacity-1 Maneuver	253	877	-	-	1271	-
Mov Capacity-2 Maneuver	366	-	-	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	467	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0
HCM LOS	B	-	-

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Cap, veh/h	-	-	702	1271	-
HCM Control Delay, s	-	-	13.1	0	-
HCM Lane V/C Ratio	-	-	0.37	-	-
HCM Lane LOS	-	-	B	A	-
HCM 95th-tile Q, veh	-	-	1.7	0.0	-

Notes

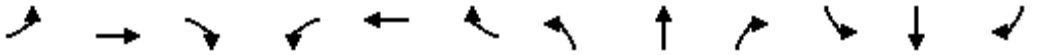
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

2016 AND 2021 BUILD WITH IMPROVEMENTS WEEKDAY PRE-PHILLIES EVENT PEAK HOUR CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	220	166	524	390	46	9	6	17	129	213	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1827	1868	1868	1900	1867	1867	1727	1900	1900	1881	1845	1845
Lanes	1	3	0	1	3	0	1	1	1	1	2	0
Capacity, veh/h	781	2448	1143	815	3669	0	178	304	258	295	557	29
Arriving On Green	0.96	0.96	0.96	0.96	0.96	0.00	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	990.7	3399.9	1587.8	1040.2	5263.8	0.0	1081.1	1900.0	1615.0	1418.5	3480.3	178.8
Grp Volume(v), veh/h	33.3	244.4	176.7	582.2	433.3	0.0	10.0	6.7	18.9	143.3	124.9	124.0
Grp Sat Flow(s),veh/h/ln	990.7	1699.9	1587.8	1040.2	1698.6	0.0	1081.1	1900.0	1615.0	1418.5	1845.3	1813.8
Q Serve(g_s), s	0.2	0.3	0.6	10.9	0.4	0.0	0.8	0.3	1.0	9.5	6.1	6.2
Cycle Q Clear(g_c), s	0.6	0.3	0.6	11.5	0.4	0.0	7.0	0.3	1.0	9.8	6.1	6.2
Proportion In Lane	1.000		1.000	1.000		0.000	1.000		1.000	1.000		0.099
Lane Grp Cap(c), veh/h	781.3	2447.9	1143.2	815.2	3669.0	0.0	178.4	304.0	258.4	294.8	295.3	290.2
V/C Ratio(X)	0.043	0.100	0.155	0.714	0.118	0.000	0.056	0.022	0.073	0.486	0.423	0.427
Avail Cap(c_a), veh/h	781.3	2447.9	1143.2	815.2	3669.0	0.0	178.4	304.0	258.4	294.8	295.3	290.2
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	0.6	0.6	0.6	0.9	0.6	0.0	41.0	35.4	35.7	39.5	37.8	37.9
Incr Delay (d2), s/veh	0.1	0.1	0.3	5.3	0.1	0.0	0.6	0.1	0.5	5.6	4.4	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Delay (d), s/veh	0.7	0.7	0.9	6.2	0.7	0.0	41.6	35.5	36.2	45.2	42.2	42.4
Lane Group LOS	A	A	A	A	A		D	D	D	D	D	D
Approach Volume, veh/h		454			1016			36			392	
Approach Delay, s/veh		0.8			3.8			37.6			43.4	
Approach LOS		A			A			D			D	

Timer												
Assigned Phase		2			6			8			4	
Phase Duration (G+Y+Rc), s		78.00			78.00			22.00			22.00	
Change Period (Y+Rc), s		6.00			6.00			6.00			6.00	
Max Green Setting (Gmax), s		72.00			72.00			16.00			16.00	
Max Q Clear Time (g_c+I1), s		2.57			13.45			9.00			11.77	
Green Extension Time (p_c)		6.69			6.68			0.66			0.48	

Intersection Summary												
HCM 2010 Control Delay			11.9									
HCM 2010 Level of Service			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	84	228	183	508	800	77	43	48	25	48	706	626
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	178.5	177.6	166.7	180.1	190.0	184.5	172.7	147.3	190.0	183.8	188.1
Lanes	1	3	0	1	3	0	1	2	0	0	2	1
Cap, veh/h	377	1689	789	497	2469	147	195	820	362	98	1188	592
Arrive On Green	0.69	0.69	0.69	0.69	0.69	0.69	0.37	0.37	0.37	0.37	0.37	0.00
Sat Flow, veh/h	689	3249	1517	897	4748	282	759	2215	979	156	3210	1599
Grp Volume(v), veh/h	93	253	190	564	613	329	48	38	40	443	394	0
Grp Sat Flow(s),veh/h/ln	689	1624	1517	897	1639	1752	759	1641	1554	1776	1589	1599
Q Serve(g_s), s	6.8	2.7	4.6	47.4	7.7	7.7	5.7	1.5	1.7	11.1	20.7	0.0
Cycle Q Clear(g_c), s	14.5	2.7	4.6	52.0	7.7	7.7	26.4	1.5	1.7	20.7	20.7	0.0
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.63	0.12		1.00
Lane Grp Cap(c), veh/h	377	1689	789	497	1705	911	195	607	575	697	588	592
V/C Ratio(X)	0.25	0.15	0.24	1.14	0.36	0.36	0.25	0.06	0.07	0.64	0.67	0.00
Avail Cap(c_a), veh/h	377	1689	789	497	1705	911	195	607	575	697	588	592
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	11.6	7.8	8.1	21.2	8.6	8.6	37.4	20.3	20.4	26.3	26.4	0.0
Incr Delay (d2), s/veh	1.6	0.2	0.7	83.1	0.6	1.1	3.0	0.2	0.2	4.4	6.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.2	1.0	1.7	23.8	2.7	3.0	1.3	0.6	0.7	10.0	9.0	0.0
Lane Grp Delay (d), s/veh	13.1	8.0	8.8	104.2	9.2	9.7	40.4	20.5	20.6	30.7	32.3	0.0
Lane Grp LOS	B	A	A	F	A	A	D	C	C	C	C	
Approach Vol, veh/h		536			1506			126			837	
Approach Delay, s/veh		9.2			44.9			28.1			31.4	
Approach LOS		A			D			C			C	

Timer												
Assigned Phs		2			6			8			4	
Phs Duration (G+Y+Rc), s		57.0			57.0			43.0			43.0	
Change Period (Y+Rc), s		5.0			5.0			6.0			6.0	
Max Green Setting (Gmax), s		52.0			52.0			37.0			37.0	
Max Q Clear Time (g_c+I1), s		16.5			54.0			28.4			22.7	
Green Ext Time (p_c), s		7.6			0.0			1.9			2.3	

Intersection Summary												
HCM 2010 Ctrl Delay			34.1									
HCM 2010 LOS			C									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	136	207	673	541	70	210	57	214	241	318	183
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	188.1	186.7	188.1	188.1	182.7	186.3	181.0	188.1	172.7	182.7	188.1	188.2
Lanes	1	3	0	1	2	1	1	1	1	1	1	1
Cap, veh/h	487	1868	873	531	1493	613	268	640	499	424	640	544
Arrive On Green	0.09	0.73	0.73	0.57	0.57	0.00	0.34	0.34	0.34	0.34	0.34	0.00
Sat Flow, veh/h	1792	3397	1587	1068	3471	1425	1045	1881	1468	1108	1881	1600
Grp Volume(v), veh/h	48	151	224	748	601	0	233	63	226	268	353	0
Grp Sat Flow(s),veh/h/ln	1792	1699	1587	1068	1736	1425	1045	1881	1468	1108	1881	1600
Q Serve(g_s), s	1.3	1.3	4.7	43.0	9.6	0.0	18.8	2.3	12.0	21.8	15.2	0.0
Cycle Q Clear(g_c), s	1.3	1.3	4.7	43.0	9.6	0.0	34.0	2.3	12.0	24.1	15.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	487	1868	873	531	1493	613	268	640	499	424	640	544
V/C Ratio(X)	0.10	0.08	0.26	1.41	0.40	0.00	0.87	0.10	0.45	0.63	0.55	0.00
Avail Cap(c_a), veh/h	487	1868	873	531	1493	613	268	640	499	424	640	544
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.5	6.2	6.7	24.3	14.3	0.0	42.1	22.5	25.7	30.8	26.8	0.0
Incr Delay (d2), s/veh	0.4	0.1	0.7	194.8	0.8	0.0	29.7	0.3	2.9	7.0	3.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.6	0.5	1.7	41.9	3.7	0.0	8.2	1.1	4.7	6.9	7.7	0.0
Lane Grp Delay (d), s/veh	12.9	6.3	7.4	219.2	15.1	0.0	71.9	22.8	28.7	37.8	30.2	0.0
Lane Grp LOS	B	A	A	F	B		E	C	C	D	C	
Approach Vol, veh/h		423			1349			522			621	
Approach Delay, s/veh		7.6			128.2			47.3			33.5	
Approach LOS		A			F			D			C	

Timer												
Assigned Phs	5	2			6			8			4	
Phs Duration (G+Y+Rc), s	12.0	61.0			49.0			39.0			39.0	
Change Period (Y+Rc), s	5.5	6.0			6.0			5.0			5.0	
Max Green Setting (Gmax), s	6.5	55.0			43.0			34.0			34.0	
Max Q Clear Time (g_c+I1), s	3.3	6.7			45.0			36.0			26.1	
Green Ext Time (p_c), s	0.0	6.5			0.0			0.0			2.3	

Intersection Summary	
HCM 2010 Ctrl Delay	76.0
HCM 2010 LOS	E

Notes

APPENDIX I

QUEUE ANALYSIS WORKSHEETS

2012 EXISTING WEEKDAY PM PEAK HOUR CONDITIONS

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	L	T
Maximum Queue (ft)	87	96	47	49	18	82	97	60	37	40	114	44
Average Queue (ft)	30	39	6	9	1	27	29	16	4	7	50	10
95th Queue (ft)	69	81	28	34	8	62	70	40	22	28	99	33
Link Distance (ft)		254	254	254		604	604	604		768		768
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150		250	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: 10th Street & Packer Avenue

Movement	SB
Directions Served	TR
Maximum Queue (ft)	77
Average Queue (ft)	29
95th Queue (ft)	64
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	164	112	106	98	67	66	95	104	60	50	60	77
Average Queue (ft)	81	46	45	40	12	23	34	24	15	14	17	28
95th Queue (ft)	145	87	92	88	40	53	76	69	42	38	50	64
Link Distance (ft)		560	560	560		1936	1936	1936		1460	1460	610
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275				225			
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	23
Average Queue (ft)	1
95th Queue (ft)	12
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	78	66	51	42	52	113	155	82	88	71	309	160
Average Queue (ft)	34	17	9	12	10	41	72	29	37	21	187	22
95th Queue (ft)	65	47	36	38	34	89	133	68	75	52	309	111
Link Distance (ft)		604	604	604		560	560		1137	1137	293	
Upstream Blk Time (%)											3	
Queuing Penalty (veh)											0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)									0		27	
Queuing Penalty (veh)									0		10	

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	250	202	104	55	58	112	36	34	143	247
Average Queue (ft)	135	90	27	5	8	33	4	6	52	61
95th Queue (ft)	220	163	75	26	30	83	19	25	111	183
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						0			2	
Queuing Penalty (veh)						0			0	

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	157	42	101
Average Queue (ft)	49	2	12
95th Queue (ft)	116	18	53
Link Distance (ft)		561	561
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	180		
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	203	299	134	17	272	213	137	268	286
Average Queue (ft)	53	185	5	1	138	105	34	134	167
95th Queue (ft)	145	297	58	9	221	181	89	246	276
Link Distance (ft)	261	261		175	561	561		555	555
Upstream Blk Time (%)	1	5							
Queuing Penalty (veh)	0	0							
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		9	0					1	
Queuing Penalty (veh)		2	0					0	

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	350	306	28	224	112	126	311	329
Average Queue (ft)	206	158	2	122	40	49	212	248
95th Queue (ft)	313	281	14	206	95	96	328	364
Link Distance (ft)	420	420	47		555	555	272	272
Upstream Blk Time (%)	0		0				5	17
Queuing Penalty (veh)	0		0				0	0
Storage Bay Dist (ft)				250				
Storage Blk Time (%)				0				
Queuing Penalty (veh)				1				

Network Summary

Network wide Queuing Penalty: 14

2016 NO BUILD WEEKDAY PM PEAK HOUR CONDITIONS

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	L	T
Maximum Queue (ft)	86	118	60	58	14	64	82	66	37	48	106	33
Average Queue (ft)	29	38	8	15	1	29	28	18	5	8	53	7
95th Queue (ft)	70	82	37	44	6	59	65	44	22	31	93	27
Link Distance (ft)		254	254	254		604	604	604		768		768
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150		250	
Storage Blk Time (%)		0										
Queuing Penalty (veh)		0										

Intersection: 6: 10th Street & Packer Avenue

Movement	SB
Directions Served	TR
Maximum Queue (ft)	73
Average Queue (ft)	32
95th Queue (ft)	64
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	176	116	120	111	42	65	89	115	60	38	65	67
Average Queue (ft)	81	49	44	44	9	23	32	29	15	12	15	28
95th Queue (ft)	150	91	93	95	29	53	71	76	43	35	48	62
Link Distance (ft)		560	560	560		1936	1936	1936		1460	1460	610
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275				225			
Storage Blk Time (%)	0											
Queuing Penalty (veh)	0											

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	40
Average Queue (ft)	3
95th Queue (ft)	21
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	78	61	47	48	56	100	137	82	108	63	317	160
Average Queue (ft)	30	17	12	13	15	37	66	29	42	20	198	27
95th Queue (ft)	65	46	37	39	41	83	121	66	88	49	326	126
Link Distance (ft)		604	604	604		560	560		1137	1137	293	
Upstream Blk Time (%)											5	
Queuing Penalty (veh)											0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)											32	0
Queuing Penalty (veh)											13	0

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	281	232	114	41	44	142	72	51	156	265
Average Queue (ft)	144	102	34	5	8	34	4	9	49	68
95th Queue (ft)	252	193	90	23	32	86	24	34	110	197
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										0
Queuing Penalty (veh)										0
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						2			1	
Queuing Penalty (veh)						0			0	

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	NB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	166	43	29	118
Average Queue (ft)	59	2	2	18
95th Queue (ft)	125	32	19	73
Link Distance (ft)		334	561	561
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	180			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	1	0		

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	172	307	225	24	243	203	142	291	304
Average Queue (ft)	52	189	14	1	152	115	39	152	192
95th Queue (ft)	138	312	105	11	227	197	97	261	292
Link Distance (ft)	261	261		175	561	561		555	555
Upstream Blk Time (%)	0	7							
Queuing Penalty (veh)	0	0							
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		13	0					0	
Queuing Penalty (veh)		3	0					0	

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	370	304	18	254	108	122	317	329
Average Queue (ft)	207	154	1	136	35	61	231	261
95th Queue (ft)	313	271	9	218	83	102	341	377
Link Distance (ft)	420	420	47		555	555	272	272
Upstream Blk Time (%)	0	0	0				12	32
Queuing Penalty (veh)	0	0	0				0	0
Storage Bay Dist (ft)				250				
Storage Blk Time (%)				0				
Queuing Penalty (veh)				0				

Network Summary

Network wide Queuing Penalty: 18

2016 BUILD WEEKDAY PM PEAK HOUR CONDITIONS

Intersection: 1: Darien Street & Port Cochere Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	55
Average Queue (ft)	27
95th Queue (ft)	52
Link Distance (ft)	68
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: 7th Street & Port Cochere Enter

Movement	NB
Directions Served	LT
Maximum Queue (ft)	40
Average Queue (ft)	3
95th Queue (ft)	19
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	150
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: 7th Street & Garage Enter

Movement	NB	SB
Directions Served	L	TR
Maximum Queue (ft)	39	13
Average Queue (ft)	10	0
95th Queue (ft)	34	5
Link Distance (ft)		435
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	L	T
Maximum Queue (ft)	76	103	42	68	14	124	131	96	37	32	148	35
Average Queue (ft)	33	41	7	14	1	56	61	22	3	8	56	8
95th Queue (ft)	70	83	29	45	6	99	112	50	19	28	112	28
Link Distance (ft)		254	254	254		604	604	604		768		768
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150		250	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: 10th Street & Packer Avenue

Movement	SB
Directions Served	TR
Maximum Queue (ft)	73
Average Queue (ft)	32
95th Queue (ft)	61
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	166	109	134	159	164	70	94	117	70	61	71	85
Average Queue (ft)	80	51	60	74	72	25	35	30	15	13	18	23
95th Queue (ft)	139	94	115	135	141	57	75	80	45	40	53	62
Link Distance (ft)		560	560	560		1938	1938	1938	237	237	237	610
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275							
Storage Blk Time (%)	0											
Queuing Penalty (veh)	0											

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	58
Average Queue (ft)	21
95th Queue (ft)	51
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	95	75	42	44	65	114	137	151	183	112	340	235
Average Queue (ft)	37	19	13	16	17	43	69	90	69	51	310	117
95th Queue (ft)	77	54	39	43	46	90	121	144	141	88	342	310
Link Distance (ft)		604	604	604		560	560		161	161	293	
Upstream Blk Time (%)								0	0		79	
Queuing Penalty (veh)								0	1		0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)								1	0		81	
Queuing Penalty (veh)								1	1		33	

Intersection: 14: Darien Street & Garage Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	135
Average Queue (ft)	69
95th Queue (ft)	109
Link Distance (ft)	110
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	316	258	124	38	45	123	69	39	128	220
Average Queue (ft)	173	130	29	7	10	35	8	5	50	58
95th Queue (ft)	279	223	79	27	33	89	37	24	102	169
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						1			1	
Queuing Penalty (veh)						0			0	

Intersection: 18: Darien Street & Employee Drivewa

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	73	31
Average Queue (ft)	32	7
95th Queue (ft)	59	29
Link Distance (ft)	131	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	170	24	178
Average Queue (ft)	72	1	30
95th Queue (ft)	137	12	104
Link Distance (ft)		561	561
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	180		
Storage Blk Time (%)	0		
Queuing Penalty (veh)	1		

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	162	297	224	12	357	306	63	149	474
Average Queue (ft)	43	194	18	1	188	158	16	52	123
95th Queue (ft)	107	299	117	10	290	259	51	127	335
Link Distance (ft)	261	261		175	561	561		556	556
Upstream Blk Time (%)	0	4							0
Queuing Penalty (veh)	0	0							0
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		10	0						
Queuing Penalty (veh)		2	0						

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	407	407	29	279	122	60	321	330
Average Queue (ft)	242	206	2	135	20	15	230	268
95th Queue (ft)	377	365	13	229	91	47	348	376
Link Distance (ft)	473	473	47		556	556	272	272
Upstream Blk Time (%)	0	1	0				14	30
Queuing Penalty (veh)	0	0	0				0	0
Storage Bay Dist (ft)				250				
Storage Blk Time (%)				0				
Queuing Penalty (veh)				0				

Network Summary

Network wide Queuing Penalty: 40

2016 BUILD WITH IMPROVEMENTS WEEKDAY PM PEAK HOUR CONDITIONS

Intersection: 1: Darien Street & Port Cochere Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	67
Average Queue (ft)	28
95th Queue (ft)	55
Link Distance (ft)	68
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: 7th Street & Port Cochere Enter

Movement	NB
Directions Served	LT
Maximum Queue (ft)	28
Average Queue (ft)	2
95th Queue (ft)	15
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	150
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: 7th Street & Garage Enter

Movement	NB	SB
Directions Served	L	TR
Maximum Queue (ft)	44	17
Average Queue (ft)	11	1
95th Queue (ft)	37	9
Link Distance (ft)		435
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	L	T
Maximum Queue (ft)	78	98	48	55	9	119	114	60	37	36	145	44
Average Queue (ft)	30	43	7	13	1	60	59	17	5	8	51	7
95th Queue (ft)	68	85	32	43	7	106	102	42	23	29	109	29
Link Distance (ft)		254	254	254		604	604	604		768		768
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150		250	
Storage Blk Time (%)		0										
Queuing Penalty (veh)		0										

Intersection: 6: 10th Street & Packer Avenue

Movement	SB
Directions Served	TR
Maximum Queue (ft)	82
Average Queue (ft)	29
95th Queue (ft)	67
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	132	103	124	146	145	72	85	97	46	52	61	81
Average Queue (ft)	74	48	53	64	55	21	27	23	13	15	12	24
95th Queue (ft)	120	92	101	114	112	53	67	68	38	43	43	62
Link Distance (ft)		560	560	560		1938	1938	1938	237	237	237	610
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275							
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	64
Average Queue (ft)	19
95th Queue (ft)	52
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	126	66	50	63	66	139	169	156	141	101	312	235
Average Queue (ft)	53	23	12	17	22	70	95	77	45	46	204	22
95th Queue (ft)	104	55	39	46	56	125	150	139	96	79	319	133
Link Distance (ft)		604	604	604		560	560		161	161	293	
Upstream Blk Time (%)								0	0		4	
Queuing Penalty (veh)								0	0		0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)	0							0	0		33	
Queuing Penalty (veh)	0							1	0		13	

Intersection: 14: Darien Street & Garage Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	118
Average Queue (ft)	70
95th Queue (ft)	109
Link Distance (ft)	110
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	356	286	99	45	47	111	42	54	140	238
Average Queue (ft)	170	125	29	7	11	35	5	5	47	58
95th Queue (ft)	289	227	77	27	37	87	23	28	103	169
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										0
Queuing Penalty (veh)										0
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						1			1	
Queuing Penalty (veh)						0			0	

Intersection: 18: Darien Street & Employee Drivewa

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	53	4	35
Average Queue (ft)	27	0	5
95th Queue (ft)	50	3	24
Link Distance (ft)	131	215	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	NB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	186	74	96	144
Average Queue (ft)	63	3	5	17
95th Queue (ft)	136	54	49	84
Link Distance (ft)		334	561	561
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		1		
Storage Bay Dist (ft)	180			
Storage Blk Time (%)	0			
Queuing Penalty (veh)	2			

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	165	294	90	6	282	250	85	171	646
Average Queue (ft)	42	183	8	0	182	156	19	57	147
95th Queue (ft)	110	287	76	6	261	244	60	136	385
Link Distance (ft)	261	261		175	561	561		552	552
Upstream Blk Time (%)	0	3							0
Queuing Penalty (veh)	0	0							0
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		8	0					0	
Queuing Penalty (veh)		2	0					0	

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	R	LTR	L	T	TR	T	TR
Maximum Queue (ft)	325	260	105	24	237	62	52	317	330
Average Queue (ft)	196	147	9	1	126	17	13	236	268
95th Queue (ft)	283	257	72	10	214	48	42	341	368
Link Distance (ft)	473	473		48		552	552	269	269
Upstream Blk Time (%)				0				12	32
Queuing Penalty (veh)				0				0	0
Storage Bay Dist (ft)			150		250				
Storage Blk Time (%)		2	0		0				
Queuing Penalty (veh)		5	0		0				

Network Summary

Network wide Queuing Penalty: 24

2021 NO BUILD WEEKDAY PM PEAK HOUR CONDITIONS

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	L	T
Maximum Queue (ft)	94	93	65	41	10	76	94	49	26	50	121	39
Average Queue (ft)	30	39	6	12	1	29	32	20	5	13	57	7
95th Queue (ft)	74	80	30	36	5	62	75	42	21	38	100	27
Link Distance (ft)		254	254	254		604	604	604		768		768
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150		250	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: 10th Street & Packer Avenue

Movement	SB
Directions Served	TR
Maximum Queue (ft)	91
Average Queue (ft)	37
95th Queue (ft)	77
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	181	102	105	94	52	103	127	119	64	56	78	71
Average Queue (ft)	81	52	49	34	9	28	36	32	18	16	21	29
95th Queue (ft)	150	88	96	79	34	73	82	78	52	40	56	62
Link Distance (ft)		560	560	560		1936	1936	1936		1460	1460	610
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275				225			
Storage Blk Time (%)	0											
Queuing Penalty (veh)	0											

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	30
Average Queue (ft)	3
95th Queue (ft)	16
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	93	60	50	53	50	126	164	88	102	73	332	235
Average Queue (ft)	37	20	12	14	14	42	74	26	46	24	193	21
95th Queue (ft)	71	48	38	41	37	97	126	63	86	58	315	132
Link Distance (ft)		604	604	604		560	560		1137	1137	293	
Upstream Blk Time (%)											7	
Queuing Penalty (veh)											0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)											33	
Queuing Penalty (veh)											14	

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	248	209	119	32	56	129	110	47	130	253
Average Queue (ft)	139	102	29	3	10	40	12	9	50	78
95th Queue (ft)	222	182	75	18	35	99	55	32	107	217
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						2			2	
Queuing Penalty (veh)						0			0	

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	161	12	105
Average Queue (ft)	66	0	13
95th Queue (ft)	129	0	58
Link Distance (ft)		561	561
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	180		
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	TR	L	T	T
Maximum Queue (ft)	158	297	225	290	267	126	322	498
Average Queue (ft)	47	202	20	156	119	41	156	208
95th Queue (ft)	102	318	126	257	212	101	267	357
Link Distance (ft)	261	261		561	561		555	555
Upstream Blk Time (%)		6						
Queuing Penalty (veh)		0						
Storage Bay Dist (ft)			200			240		
Storage Blk Time (%)		12	0				0	
Queuing Penalty (veh)		3	0				0	

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	359	261	15	268	73	96	318	330
Average Queue (ft)	207	154	1	143	31	54	238	269
95th Queue (ft)	301	254	7	237	73	91	353	380
Link Distance (ft)	420	420	47		555	555	272	272
Upstream Blk Time (%)			0				13	31
Queuing Penalty (veh)			0				0	0
Storage Bay Dist (ft)				250				
Storage Blk Time (%)				1				
Queuing Penalty (veh)				2				

Network Summary

Network wide Queuing Penalty: 20

2021 BUILD WEEKDAY PM PEAK HOUR CONDITIONS

Intersection: 1: Darien Street & Port Cochere Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	70
Average Queue (ft)	26
95th Queue (ft)	55
Link Distance (ft)	48
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Darien Street & Garage Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	130
Average Queue (ft)	78
95th Queue (ft)	121
Link Distance (ft)	108
Upstream Blk Time (%)	2
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: 7th Street & Garage Enter

Movement	NB	SB
Directions Served	L	TR
Maximum Queue (ft)	31	7
Average Queue (ft)	13	0
95th Queue (ft)	37	4
Link Distance (ft)		478
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	L	T
Maximum Queue (ft)	85	104	44	56	23	118	119	58	40	35	137	28
Average Queue (ft)	32	44	6	13	1	55	61	20	6	8	54	8
95th Queue (ft)	70	86	27	39	9	99	106	46	26	29	104	28
Link Distance (ft)		254	254	254		604	604	604		768		768
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150		250	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: 10th Street & Packer Avenue

Movement	SB
Directions Served	TR
Maximum Queue (ft)	86
Average Queue (ft)	36
95th Queue (ft)	71
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	177	129	133	164	172	72	88	108	54	53	85	92
Average Queue (ft)	83	64	67	85	66	23	23	24	13	13	15	26
95th Queue (ft)	151	114	117	145	147	55	64	68	39	38	49	69
Link Distance (ft)		560	560	560		1934	1934	1934	246	246	246	610
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275							
Storage Blk Time (%)	0											
Queuing Penalty (veh)	0											

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	92
Average Queue (ft)	24
95th Queue (ft)	67
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	138	64	64	64	83	191	182	131	132	93	314	235
Average Queue (ft)	50	26	19	23	21	79	105	69	48	46	206	17
95th Queue (ft)	101	57	50	54	59	146	165	117	105	77	336	116
Link Distance (ft)		604	604	604		560	560		143	143	293	
Upstream Blk Time (%)								0	0	0	7	
Queuing Penalty (veh)								0	0	0	0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)						0		0	0		34	
Queuing Penalty (veh)						0		0	0		14	

Intersection: 14: 7th Street & Port Cochere Enter

Movement	NB
Directions Served	LT
Maximum Queue (ft)	30
Average Queue (ft)	4
95th Queue (ft)	20
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	150
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	405	283	104	58	52	127	84	26	174	320
Average Queue (ft)	193	139	32	7	11	42	12	6	58	71
95th Queue (ft)	315	241	75	31	39	97	49	23	127	200
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										0
Queuing Penalty (veh)										0
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						2			1	
Queuing Penalty (veh)						0			0	

Intersection: 18: Darien Street & Employee Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	68	46
Average Queue (ft)	29	9
95th Queue (ft)	53	33
Link Distance (ft)	119	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	184	53	206
Average Queue (ft)	81	6	34
95th Queue (ft)	152	40	116
Link Distance (ft)		561	561
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	180		
Storage Blk Time (%)	1		
Queuing Penalty (veh)	2		

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	TR	L	T	T
Maximum Queue (ft)	175	313	225	374	288	75	153	497
Average Queue (ft)	52	187	19	204	168	19	59	128
95th Queue (ft)	130	309	121	320	264	55	134	328
Link Distance (ft)	261	261		561	561		555	555
Upstream Blk Time (%)	0	6						0
Queuing Penalty (veh)	0	0						0
Storage Bay Dist (ft)			200			240		
Storage Blk Time (%)		11	0					
Queuing Penalty (veh)		3	0					

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	388	396	10	279	155	68	316	328
Average Queue (ft)	253	218	1	150	18	17	245	278
95th Queue (ft)	370	359	8	249	89	51	342	365
Link Distance (ft)	420	420	47		555	555	272	272
Upstream Blk Time (%)	0	1	0				14	38
Queuing Penalty (veh)	0	0	0				0	0
Storage Bay Dist (ft)				250				
Storage Blk Time (%)				1				
Queuing Penalty (veh)				1				

Network Summary

Network wide Queuing Penalty: 22

2021 BUILD WITH IMPROVEMENTS WEEKDAY PM PEAK HOUR CONDITIONS

Intersection: 1: Darien Street & Port Cochere Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	62
Average Queue (ft)	27
95th Queue (ft)	50
Link Distance (ft)	48
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Darien Street & Garage Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	130
Average Queue (ft)	80
95th Queue (ft)	121
Link Distance (ft)	108
Upstream Blk Time (%)	2
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: 7th Street & Garage Enter

Movement	NB	SB
Directions Served	L	TR
Maximum Queue (ft)	31	15
Average Queue (ft)	10	1
95th Queue (ft)	34	6
Link Distance (ft)		467
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	L	T
Maximum Queue (ft)	77	101	54	56	23	138	118	56	38	35	118	42
Average Queue (ft)	29	41	6	15	2	60	56	21	5	8	49	7
95th Queue (ft)	64	81	30	42	12	108	98	44	23	29	95	28
Link Distance (ft)		254	254	254		604	604	604		768		768
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150		250	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: 10th Street & Packer Avenue

Movement	SB
Directions Served	TR
Maximum Queue (ft)	76
Average Queue (ft)	33
95th Queue (ft)	66
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	166	121	145	171	161	76	66	92	68	46	67	82
Average Queue (ft)	81	62	60	89	56	23	23	24	11	13	17	25
95th Queue (ft)	138	108	113	152	115	56	58	68	40	39	51	63
Link Distance (ft)		560	560	560		1934	1934	1934	246	246	246	610
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275							
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	80
Average Queue (ft)	30
95th Queue (ft)	68
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	111	50	58	65	75	152	164	133	132	97	326	235
Average Queue (ft)	45	22	11	22	25	77	105	73	45	46	211	22
95th Queue (ft)	87	52	40	54	59	135	160	123	94	79	332	136
Link Distance (ft)		604	604	604		560	560		143	143	293	
Upstream Blk Time (%)								0	0		7	
Queuing Penalty (veh)								0	0		0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)								0	0		36	
Queuing Penalty (veh)								0	0		15	

Intersection: 14: 7th Street & Port Cochere Enter

Movement	NB
Directions Served	LT
Maximum Queue (ft)	31
Average Queue (ft)	5
95th Queue (ft)	23
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	150
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	339	250	117	59	59	122	41	34	179	263
Average Queue (ft)	176	135	29	8	8	40	5	3	58	70
95th Queue (ft)	279	219	75	33	33	94	23	18	128	190
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										0
Queuing Penalty (veh)										0
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						2			2	
Queuing Penalty (veh)						0			0	

Intersection: 18: Darien Street & Employee Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	63	45
Average Queue (ft)	26	8
95th Queue (ft)	50	31
Link Distance (ft)	119	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	149	114	170
Average Queue (ft)	72	5	29
95th Queue (ft)	134	42	99
Link Distance (ft)		561	561
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	180		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	257	296	150	20	347	292	77	157	193
Average Queue (ft)	54	202	13	1	202	169	21	53	101
95th Queue (ft)	136	317	99	11	313	281	57	130	181
Link Distance (ft)	261	261		175	561	561		555	555
Upstream Blk Time (%)	1	9							
Queuing Penalty (veh)	0	0							
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		14	0						
Queuing Penalty (veh)		4	0						

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LTR	L	T	TR	T	TR
Maximum Queue (ft)	429	427	287	58	67	316	328
Average Queue (ft)	246	221	146	14	19	256	289
95th Queue (ft)	382	376	243	45	54	343	358
Link Distance (ft)	420	420		555	555	272	272
Upstream Blk Time (%)	2	3				17	41
Queuing Penalty (veh)	0	0				0	0
Storage Bay Dist (ft)			250				
Storage Blk Time (%)			1				
Queuing Penalty (veh)			1				

Network Summary

Network wide Queuing Penalty: 21

2012 EXISTING WEEKDAY PRE-PHILLIES EVENT PEAK HOUR CONDITIONS

Intersection: 3:

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	R	L
Maximum Queue (ft)	70	97	105	198	315	556	393	368	49	28	30	111
Average Queue (ft)	20	36	16	82	251	206	109	74	7	3	7	50
95th Queue (ft)	54	79	59	153	366	596	418	371	29	18	26	95
Link Distance (ft)		254	254	254		598	598	598		768	768	
Upstream Blk Time (%)						2	1	0				
Queuing Penalty (veh)						4	2	0				
Storage Bay Dist (ft)	150				250				150			250
Storage Blk Time (%)		0			36	0						
Queuing Penalty (veh)		0			35	0						

Intersection: 6: 10th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	122	112
Average Queue (ft)	59	41
95th Queue (ft)	105	88
Link Distance (ft)	768	768
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	118	65	59	108	380	1590	1349	1066	92	55	73	637
Average Queue (ft)	47	23	19	43	365	1089	748	201	31	18	18	358
95th Queue (ft)	91	55	49	87	466	1563	1386	775	73	46	54	745
Link Distance (ft)		560	560	560		1936	1936	1936		1460	1460	610
Upstream Blk Time (%)												5
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200				275				225			
Storage Blk Time (%)					11	82						
Queuing Penalty (veh)					30	366						

Intersection: 7: 7th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	655	669
Average Queue (ft)	627	630
95th Queue (ft)	643	649
Link Distance (ft)	610	610
Upstream Blk Time (%)	86	98
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	R	L	T	R	LT
Maximum Queue (ft)	69	63	50	129	325	591	587	681	162	87	73	333
Average Queue (ft)	20	24	10	52	324	568	509	641	80	20	33	279
95th Queue (ft)	50	54	35	101	326	584	613	769	146	67	66	368
Link Distance (ft)		598	598	598		560	560	560		1137	1137	292
Upstream Blk Time (%)						28	4	98				34
Queuing Penalty (veh)						137	21	476				0
Storage Bay Dist (ft)	200				225				150			
Storage Blk Time (%)					85	4			4			54
Queuing Penalty (veh)					230	28			1			98

Intersection: 8: Darien Street & Packer Avenue

Movement	SB
Directions Served	R
Maximum Queue (ft)	160
Average Queue (ft)	126
95th Queue (ft)	232
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	110
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	307	209	63	28	77	143	79	57	304	352
Average Queue (ft)	154	103	9	2	31	55	12	4	165	239
95th Queue (ft)	258	185	40	13	72	119	43	29	273	398
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)									0	2
Queuing Penalty (veh)									1	18
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)					0	2			24	
Queuing Penalty (veh)					0	1			2	

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	186	308	404
Average Queue (ft)	69	27	120
95th Queue (ft)	136	156	409
Link Distance (ft)		561	561
Upstream Blk Time (%)		0	6
Queuing Penalty (veh)		0	57
Storage Bay Dist (ft)	180		
Storage Blk Time (%)	1		
Queuing Penalty (veh)	2		

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	276	320	225	6	197	162	133	270	521
Average Queue (ft)	77	296	225	0	102	80	57	185	211
95th Queue (ft)	205	317	226	5	169	139	115	260	356
Link Distance (ft)	261	261		175	561	561		555	555
Upstream Blk Time (%)	1	70							0
Queuing Penalty (veh)	0	0							0
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		10	81					1	
Queuing Penalty (veh)		71	517					1	

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	478	478	61	161	85	76	305	312
Average Queue (ft)	447	456	25	74	29	18	177	158
95th Queue (ft)	468	478	57	138	68	55	278	304
Link Distance (ft)	420	420	47		555	555	272	272
Upstream Blk Time (%)	56	97	4				1	3
Queuing Penalty (veh)	0	0	0				0	0
Storage Bay Dist (ft)				250				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Network Summary

Network wide Queuing Penalty: 2098

2016 AND 2021 NO BUILD WEEKDAY PRE-PHILLIES EVENT PEAK HOUR CONDITIONS

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	R	L
Maximum Queue (ft)	64	82	114	175	315	596	502	341	42	28	30	114
Average Queue (ft)	18	33	17	87	257	225	120	34	7	3	8	51
95th Queue (ft)	48	75	66	153	373	629	445	228	28	15	29	98
Link Distance (ft)		254	254	254		604	604	604		768	768	
Upstream Blk Time (%)						1	0	0				
Queuing Penalty (veh)						4	1	0				
Storage Bay Dist (ft)	150				250				150			250
Storage Blk Time (%)					39	0						
Queuing Penalty (veh)					38	0						

Intersection: 6: 10th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	126	124
Average Queue (ft)	56	45
95th Queue (ft)	101	91
Link Distance (ft)	768	768
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	123	64	67	102	380	1440	1201	931	105	55	72	623
Average Queue (ft)	53	22	20	42	370	1010	728	129	34	17	18	311
95th Queue (ft)	103	50	54	84	442	1461	1327	526	86	43	52	675
Link Distance (ft)		560	560	560		1936	1936	1936		1460	1460	610
Upstream Blk Time (%)												3
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200				275				225			
Storage Blk Time (%)					15	83						
Queuing Penalty (veh)					40	367						

Intersection: 7: 7th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	656	657
Average Queue (ft)	613	627
95th Queue (ft)	746	655
Link Distance (ft)	610	610
Upstream Blk Time (%)	83	94
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

2016 AND 2021 BUILD WEEKDAY PRE-PHILLIES EVENT PEAK HOUR CONDITIONS

Intersection: 1: Darien Street & Employee Driveway

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	54	4	31
Average Queue (ft)	23	0	5
95th Queue (ft)	46	3	23
Link Distance (ft)	95	215	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	R	L
Maximum Queue (ft)	60	93	139	173	309	436	309	230	45	31	30	127
Average Queue (ft)	21	31	25	87	213	161	86	25	9	3	8	56
95th Queue (ft)	50	68	87	157	359	513	327	187	33	18	28	107
Link Distance (ft)		254	254	254		604	604	604		768	768	
Upstream Blk Time (%)						1	0					
Queuing Penalty (veh)						3	1					
Storage Bay Dist (ft)	150				250				150			250
Storage Blk Time (%)					24	0						
Queuing Penalty (veh)					32	0						

Intersection: 6: 10th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	116	95
Average Queue (ft)	58	41
95th Queue (ft)	102	81
Link Distance (ft)	768	768
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	127	71	82	160	380	1528	1294	1064	100	46	68	632
Average Queue (ft)	49	27	31	67	374	1102	845	190	28	14	18	367
95th Queue (ft)	97	57	68	124	434	1453	1349	736	70	38	53	752
Link Distance (ft)		560	560	560		1936	1936	1936	244	244	244	610
Upstream Blk Time (%)												5
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200				275							
Storage Blk Time (%)					42	57						
Queuing Penalty (veh)					113	288						

Intersection: 7: 7th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	659	661
Average Queue (ft)	623	629
95th Queue (ft)	694	644
Link Distance (ft)	610	610
Upstream Blk Time (%)	83	98
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	R	L	T	R	LT
Maximum Queue (ft)	52	59	56	149	325	589	607	677	163	224	126	349
Average Queue (ft)	19	21	14	57	324	560	506	649	124	101	52	316
95th Queue (ft)	46	49	42	112	325	612	651	665	183	245	96	336
Link Distance (ft)		604	604	604		560	560	560		164	164	293
Upstream Blk Time (%)						27	4	99	11	16	0	75
Queuing Penalty (veh)						132	21	486	0	39	0	0
Storage Bay Dist (ft)	200				225				150			
Storage Blk Time (%)					84	1			23	12		80
Queuing Penalty (veh)					226	8			13	26		147

Intersection: 8: Darien Street & Packer Avenue

Movement	SB
Directions Served	R
Maximum Queue (ft)	235
Average Queue (ft)	221
95th Queue (ft)	311
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	110
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 13: Darien Street & Port Cochere Exit

Movement	WB	NB	NB
Directions Served	LR	T	T
Maximum Queue (ft)	70	182	67
Average Queue (ft)	22	30	2
95th Queue (ft)	53	138	30
Link Distance (ft)	86	460	460
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	316	267	59	28	107	127	56	55	320	368
Average Queue (ft)	182	134	10	2	34	51	10	3	156	230
95th Queue (ft)	291	238	38	15	86	108	35	27	252	392
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)									0	2
Queuing Penalty (veh)									0	19
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)					2	1			23	
Queuing Penalty (veh)					1	0			2	

Intersection: 17: Darien Street & Garage Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	121
Average Queue (ft)	58
95th Queue (ft)	99
Link Distance (ft)	113
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 19: 7th Street & Garage Enter

Movement	NB	SB
Directions Served	L	TR
Maximum Queue (ft)	54	9
Average Queue (ft)	17	0
95th Queue (ft)	47	5
Link Distance (ft)		459
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	NB	NB	SB	SB
Directions Served	L	T	T	T	TR
Maximum Queue (ft)	182	109	60	424	493
Average Queue (ft)	77	4	2	42	156
95th Queue (ft)	145	58	44	202	511
Link Distance (ft)		334	334	561	561
Upstream Blk Time (%)		0			11
Queuing Penalty (veh)		0			110
Storage Bay Dist (ft)	180				
Storage Blk Time (%)	1	0			
Queuing Penalty (veh)	3	0			

2016 AND 2021 BUILD WITH IMPROVEMENTS WEEKDAY PRE-PHILLIES EVENT PEAK HOUR CONDITIONS

Intersection: 1: Darien Street & Employee Driveway

Movement	WB	NB	NB	SB
Directions Served	LR	T	TR	L
Maximum Queue (ft)	62	145	130	31
Average Queue (ft)	27	22	11	4
95th Queue (ft)	53	116	80	22
Link Distance (ft)	95	215	215	
Upstream Blk Time (%)		1	1	
Queuing Penalty (veh)		2	1	
Storage Bay Dist (ft)				100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	R	L
Maximum Queue (ft)	51	65	46	128	271	38	57	17	45	40	34	171
Average Queue (ft)	15	18	6	54	113	9	14	2	9	5	10	84
95th Queue (ft)	42	51	30	104	206	33	43	11	32	23	33	146
Link Distance (ft)		254	254	254		605	605	605		768	768	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150			250
Storage Blk Time (%)					0							0
Queuing Penalty (veh)					1							0

Intersection: 6: 10th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	163	160
Average Queue (ft)	90	74
95th Queue (ft)	150	140
Link Distance (ft)	768	768
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	136	95	106	185	380	1021	922	463	102	55	70	612
Average Queue (ft)	61	45	42	91	312	478	298	48	38	15	19	274
95th Queue (ft)	120	83	85	164	471	1017	827	276	88	41	53	563
Link Distance (ft)		560	560	560		1936	1936	1936	244	244	244	610
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200				275							
Storage Blk Time (%)	0				31	20						
Queuing Penalty (veh)	0				84	105						

Intersection: 7: 7th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	655	656
Average Queue (ft)	555	589
95th Queue (ft)	825	804
Link Distance (ft)	610	610
Upstream Blk Time (%)	56	82
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	R	L	T	R	L
Maximum Queue (ft)	52	59	37	138	325	584	598	684	164	234	115	125
Average Queue (ft)	17	21	6	48	315	479	407	623	150	192	53	112
95th Queue (ft)	45	50	27	105	365	727	750	841	190	305	96	147
Link Distance (ft)		605	605	605		560	560	560		164	164	
Upstream Blk Time (%)						5	2	94	41	60	0	
Queuing Penalty (veh)						27	11	459	0	145	0	
Storage Bay Dist (ft)	200				225				150			75
Storage Blk Time (%)					65	2			67	43		37
Queuing Penalty (veh)					176	11			38	92		185

Intersection: 8: Darien Street & Packer Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	329	293
Average Queue (ft)	230	73
95th Queue (ft)	358	281
Link Distance (ft)	293	
Upstream Blk Time (%)	12	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		110
Storage Blk Time (%)	39	
Queuing Penalty (veh)	167	

Intersection: 13: Darien Street & Port Cochere Exit

Movement	WB	NB	NB
Directions Served	LR	T	T
Maximum Queue (ft)	99	410	364
Average Queue (ft)	54	186	41
95th Queue (ft)	105	484	229
Link Distance (ft)	86	460	460
Upstream Blk Time (%)	43	9	0
Queuing Penalty (veh)	0	19	1
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	371	267	67	50	118	152	79	86	314	347
Average Queue (ft)	197	135	11	4	38	55	11	6	163	235
95th Queue (ft)	319	234	43	22	88	114	38	40	276	390
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)									0	2
Queuing Penalty (veh)									0	19
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)					2	2			22	
Queuing Penalty (veh)					1	1			2	

Intersection: 17: Darien Street & Garage Exit

Movement	WB	NB
Directions Served	LR	T
Maximum Queue (ft)	131	11
Average Queue (ft)	63	0
95th Queue (ft)	107	8
Link Distance (ft)	113	333
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: 7th Street & Garage Enter

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	58	10	13
Average Queue (ft)	21	0	1
95th Queue (ft)	50	7	7
Link Distance (ft)		459	459
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	NB	NB	SB	SB
Directions Served	L	T	T	T	TR
Maximum Queue (ft)	211	218	78	425	555
Average Queue (ft)	96	23	8	44	324
95th Queue (ft)	187	155	93	221	811
Link Distance (ft)		334	334	561	561
Upstream Blk Time (%)		1	0		40
Queuing Penalty (veh)		3	0		393
Storage Bay Dist (ft)	180				
Storage Blk Time (%)	6	0			
Queuing Penalty (veh)	16	0			

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	264	316	225	6	222	193	170	311	482
Average Queue (ft)	69	294	225	0	120	102	61	183	205
95th Queue (ft)	183	316	231	5	200	173	131	263	326
Link Distance (ft)	261	261		175	561	561		552	552
Upstream Blk Time (%)	1	73							0
Queuing Penalty (veh)	0	0							0
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		8	86					1	
Queuing Penalty (veh)		55	553					1	

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	R	LTR	L	T	TR	T	TR
Maximum Queue (ft)	410	482	175	60	228	89	78	285	309
Average Queue (ft)	205	460	175	24	118	23	18	165	148
95th Queue (ft)	398	481	176	56	208	62	56	266	289
Link Distance (ft)	419	419		48		552	552	268	268
Upstream Blk Time (%)	2	98		3				1	3
Queuing Penalty (veh)	0	0		0				0	0
Storage Bay Dist (ft)			150		250				
Storage Blk Time (%)		17	22		0				
Queuing Penalty (veh)		139	52		0				

Intersection: 32: 7th Street & Port Cochere Enter

Movement	NB	SB
Directions Served	LT	T
Maximum Queue (ft)	60	6
Average Queue (ft)	8	0
95th Queue (ft)	37	4
Link Distance (ft)		244
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	150	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 2760

APPENDIX J

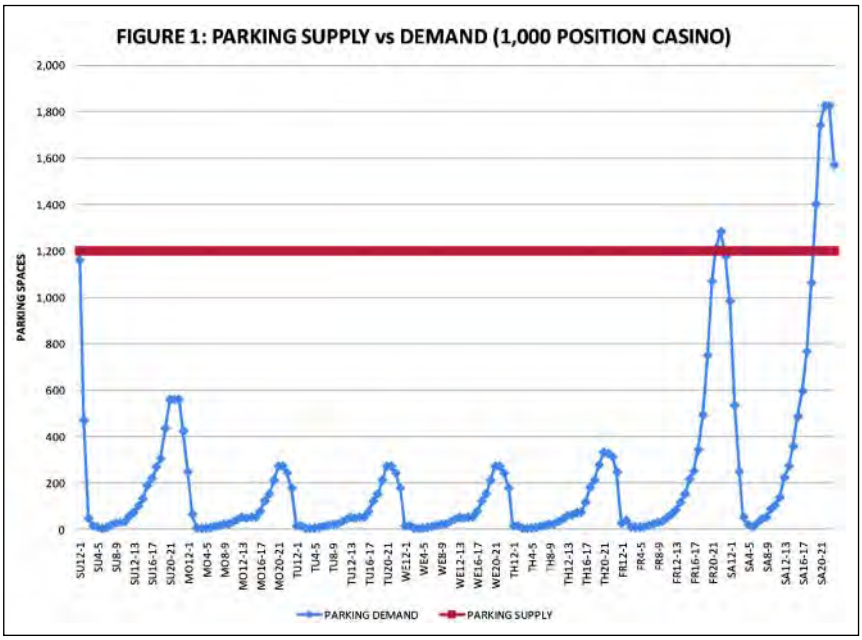
WORKS CITED

Parking and Profits in Indian Country

by James M. Klas

Parking at Indian casinos is often an underappreciated issue in the gaming industry. Five years ago, ramps were more the exception than the rule. Parking was generally considered a cost of doing business rather than a direct enhancement to bottom line performance. The main question was, "How much do I need?" as opposed to, "How can parking, both in terms of amount and configuration, help maximize profits for the complex as a whole?" Much has happened in five years. Structured parking is now commonplace among new facilities and expansions. It's time not only to provide updated parking rules of thumb and statistics, but also to explain in detail just why and how parking can affect your profits to a significant degree.

Suppose that you have a casino with 1,000 gaming positions (895 machines and 15 tables for example) making $175 per gaming position per day. You have all the typical base amenities in terms of food and beverage and retail, but no hotel, no big showroom or other component that requires extra parking spaces. Suppose also that your casino does not have a significant busing program. Essentially all of your customers come by car. If the casino has 1,200 parking spaces available for customers (not counting employees) and a typical customer flow from hour to hour and day to day, the parking pattern might look something like the graph in Figure 1.



If you look at the graph, it appears that 1,200 spaces is more than enough for the customer base except for a few hours on Friday and Saturday night. Surely adding parking that would only be used for about seven hours per week would be too expensive, right? Not so fast.

The total shortage in the example amounts to 2,468 vehicle hours per week. Now some of those vehicles will wait for a spot. Some of those vehicles will come back another time. Some of them will just park in some area that isn't supposed to be used. In each case, your casino will still get some or all of the money those people intended to spend. Nevertheless, some of those vehicles will turn around and go home (and probably not come back again). How many? Suppose the figure is half. If those cars averaged between 2.0 and 2.1 people per vehicle and those people planned to spend $65 apiece on your gaming floor, you just lost

Table 1: Parking Ratios

	Median	Lower Quartile	Upper Quartile
ALL U.S. CASINOS *(parking spaces per gaming position)*	1.07	0.75	1.59
CASINOS WITH BINGO HALLS *(parking spaces per gaming position and bingo seat)*	0.68	0.54	0.96
CASINOS WITH HOTELS *(parking spaces per gaming position and hotel room)*	0.88	0.61	1.15
CASINOS WITH HOTELS AND CONVENTION SPACE *(parking spaces per gaming position, hotel room and 100 sq. ft. of function space)*	0.80	0.55	1.07
CASINOS WITH HOTELS, CONVENTION SPACE AND BINGO HALLS *(parking spaces per gaming position, hotel room, bingo seat and 100 sq. ft. of convention space)*	0.62	0.45	0.81
CASINOS WITH NO HOTELS, CONVENTION SPACE OR BINGO HALLS *(parking spaces per gaming position)*	0.98	0.63	1.59

Source: KlasRobinson Q.E.D. and Casino City's Gaming Business Directory August 2010

Table 2: Parking Rules of Thumb

Component	Spaces
CASINO	1 to 1.2 per position
BINGO HALL	1:2 seats or 2:3 seats
HOTEL	2:3 rooms or 3:4 rooms
CONVENTION SPACE	1:200 sq. ft. or 2:300 sq. ft.
SHOWROOMS	1:2 seats
RESTAURANT & BARS	Included
OTHER ATTRACTIONS/AMENITIES	Varies by type/market

Source: KlasRobinson Q.E.D.

over $164,000 in gaming revenue that week. Since this is an average week, you will continue to lose $164,000 per week every week, or $8.5 million per year.

Maybe your customers are more resilient or more determined. Maybe you only lose one out of every four instead of half. That still amounts to nearly $4.3 million per year in lost revenue.

What would it take to get that revenue back? An additional 628 parking spaces would mean that in an average week there would never be a parking shortage. Now 628 spaces can be expensive to build. Assume there isn't enough space for that many additional surface spots and you have to build a ramp. At a cost of $14,000 per space, that ramp would cost nearly $8.8 million dollars. While that's quite a sum, the return on that investment in terms of extra gaming revenue equals almost 49 percent if you are losing one in four and a whopping 97 percent at one half!

The example might not fit your property, but the principle certainly does. If you are losing customers because of insufficient parking, even just a few customers during just a few hours on one or two peak nights, the money you lose in gaming revenue is more than enough to justify the cost of building the extra space, even if it's ramp space. In fact, ramp space in general can offer more than just added capacity. Shorter walks from the car to the casino equals more time on the gaming floor. Protection from the elements makes it easier for customers to spend their rainy days or sweltering days or snowy days with your casino rather than stuck at home waiting for better weather. Shorter valet waits, premium parking spots for top players, these and other advantages have caused ramps to increase in popularity and importance for casinos across the country.

So how much parking do you need? Table 1 shows the median and quartile statistics for all U.S. casinos and for sub-categories depending upon what ancillary facilities and amenities they have. For each category, the relevant ratio is described below the line item. For all U.S. casinos and for casinos without hotels, convention space or bingo, the measure is parking spaces per gaming position (tables count for seven positions). For casinos with bingo halls, the bingo seating is added to the gaming position count. For casinos with hotels, the room count is added to the gaming positions. For convention space, the ratio reflects the inclusion of each 100 sq. ft. of space.

Table 2 provides general rules of thumb by component that serve as a starting point. It's important to remember that these rules of thumb are minimums for parking and that more is not only desirable, it may even be necessary. Note in Table 1 the range between the lower and upper quartiles for each category, keeping in mind that one quarter of the U.S. casinos in each category have even more parking than the upper quartile ratios shown. In fact, if the hypothetical casino we used for our example followed the rules of thumb shown, it would have had even fewer than the 1,200 spaces assumed.

Parking and profits? Let's call it parking for profits. It has long been understood that gaming floors should be built large enough to accommodate near peak demand. The same concept applies to parking, garages included. The returns are better than meets the eye. ♣

James M. Klas is Co-Founder and Principal of KlasRobinson Q.E.D. He can be reached by calling (800) 475-8140 or email jklas@klasrobinsonqed.com.

PITG Gaming, LLC

THE MAJESTIC STAR CASINO, PITTSBURGH TRANSPORTATION AND PARKING ASSESSMENT

FINAL REPORT

DECEMBER 2005 - REV OCT 2006

IBI GROUP

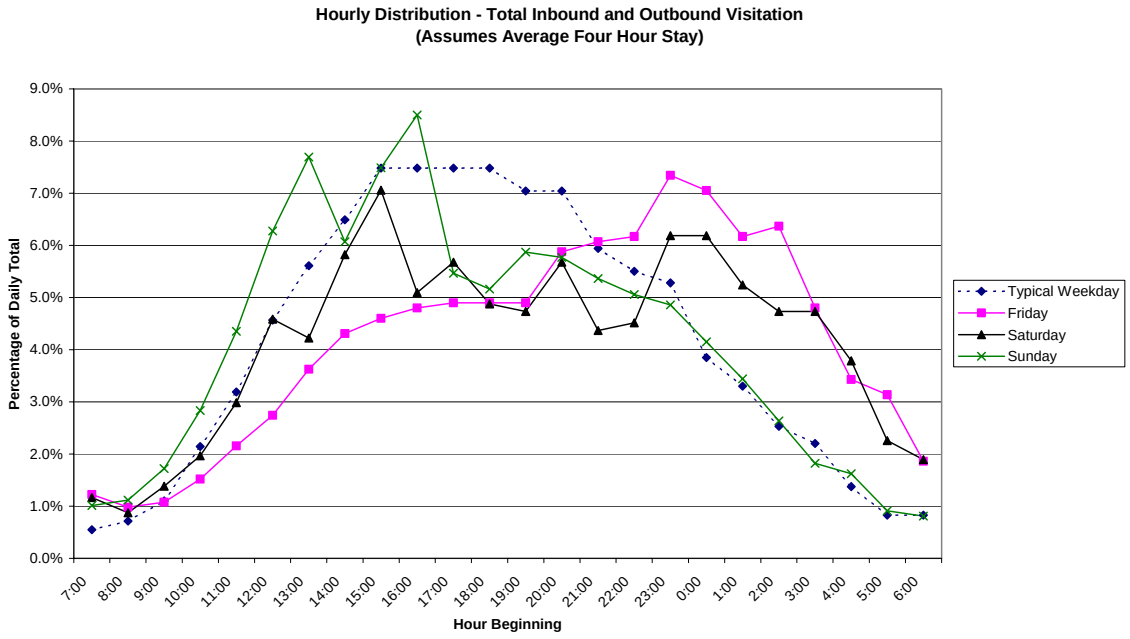
Exhibit 7-1 - Design Level of Daily Person Visits

Day	Recorded Average Visits (MSC/Trump 3265 slots)	Estimated Daily Visits Per Slot	Estimated Daily Visits Per 5000 Slots	Daily Visit Design Levels
Sunday	15600	4.8	23,890	30,000
Weekday	11500	3.5	17,611	20,000
Friday	16500	5.1	25,268	30,000
Saturday	20200	6.2	30,934	36,000

Hourly Variation

Hourly arrival and departure patterns were obtained from data measured at Casino Niagara in Niagara Falls, Canada. When surveyed, Casino Niagara had annual attendance of approximately 10 million per year for a 3,000 slot facility. The proposed North Shore Casino is expected to draw a maximum of 10 million visits per year. The total inbound hourly visits as a percentage of the daily visits are shown in **Exhibit 7-2** below.

Exhibit 7-2 – Hourly Variation of Visits



The number of automobiles entering the proposed North Shore Casino site was calculated using the following assumed parameters, based on Casino Niagara data, but adjusted to reflect a lower percentage of people walking to the site for the North Shore location.

- Automobile modal split: 90% by car (assumes remaining 10% arrives by taxi, charter bus, water taxi or walking); and

Philadelphia Sports Complex
Parking and Traffic Management Plan

Philadelphia, Pennsylvania

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2 Existing Event Parking Analysis

The following is a brief discussion of various large events at the existing Sports Complex, including parking demands and a summary of traffic and parking management for events. Events are currently scheduled so that there is ample parking for all events, except for some dual events, when all lots can approach capacity. Table 1 summarizes peak demands for each individual existing use.

Table 1
Single Event Peak Parking Demand
Existing Events at the Philadelphia Sports Complex

Event	Peak Single-Event Demand
Wachovia Spectrum/Center Event	7,200
MLB Game	10,000
MLB Post-Season Game	15,000
NFL Game	18,000

Lincoln Financial Field

Located within the sports complex, south of Pattison Avenue, Lincoln Financial Field (LFF) is the home of the NFL's Philadelphia Eagles. Lincoln Financial Field also hosts Temple University football games and occasional soccer games, concerts, the Army-Navy football game. From September 2008 through August 2009, Lincoln Financial Field hosted 21 major events.

Lincoln Financial Field has 68,532 seats for football games. Typically, almost all of the seats are sold for pro football games; however actual attendance is typically lower due to "no shows". During the 2008 seasons, the average attendance was almost 96% of capacity. Pre-season games typically have an attendance of approximately 55,000.

Not every striped on-site space is used for Eagles games, due to parking inefficiencies from tailgating (most evident in the Wachovia lots), as well as the availability of parking in several large off-site private lots. The total supply of striped spaces for NFL games is 19,765 (5,497 spaces at Lincoln Financial Field, 8,318 spaces at Citizens Bank Park, and 5,959 spaces at the Wachovia complex). There are also about 2,600 overflow parking spaces in FDR Park and in the Naval Hospital lot.

Citizens Bank Park

The baseball stadium, with 43,647 seats, is the home of the Philadelphia Phillies (MLB). It also hosts occasional concerts.

Intersection Signalization

The City of Philadelphia Streets Department, Engineering Division, owns, operates and maintains the traffic signal system enclosed in the Sports Complex area along with all signals within the City limits.

Interconnect

The traffic signals in the system are interconnected with fiber optic cable on three (3) corridors.

1. Broad Street between City Hall to Terminal Avenue
2. Pattison Avenue between 7th Street to Penrose Avenue
3. Front Street between Oregon Avenue to Packer Avenue

All fiber optic cable is multimode with the exception of Pattison Avenue east of Broad Street which is single mode fiber optic cable. The Broad Street and Pattison Avenue corridors are interconnected together. The Front Street corridor is a stand alone system. All fiber optic cable is located in underground conduit.

A gap within the system is on Pattison Avenue from 7th Street to Front Street. When the system is being updated, this gap should be closed.

Controller Cabinet Equipment

The signalized intersections within in the Sports Complex area are equipped with solid state Type 170 controller cabinets, image video detection for vehicle detection, along with upgraded pedestrian facilities including pedestrian countdown Hand/Man signals and ADA compliant handicap ramps.

When the system upgrade is undertaken, complete equipment upgrades are recommended for the traffic signals along Packer Avenue.

Timing

The central hub intersection within the system is located at Broad Street and Pattison Avenue. The controller cabinet houses a special "manual plan select" panel with four (4) buttons that control traffic signal timings and cycle lengths along Broad Street and Pattison Avenue. The limits of the timing changes along the corridors are as follows:

1. Broad Street between Bigler Street to Terminal Avenue
2. Pattison Avenue between 7th Street to Penrose Avenue

Prior to an event, a Philadelphia Police Department representative opens the controller cabinet at Broad Street and Pattison Avenue and institutes one of the following four (4) programs:

- Program 1: normal operation – 90 second cycle length.

- Program 2: pre-game operation – 100-second cycle length. Consistent and synchronized green time on Broad Street.
- Program 3: pre-game operation – 120 second cycle length. Designed to move traffic along Broad Street to Pattison Avenue.
- Program 4: post-game operation – 120 second cycle length. Timing favors Pattison Avenue and progresses traffic flow towards I-95 and I-76.

It is important to note that three hours after a program is instituted normal operation is supposed to return. It has also been reported through stakeholder discussions that normal operations doesn't always resume within those three hours, therefore it would be important that operations staff verify that the time-out feature is functioning properly.

Intelligent Transportation Systems

Currently a stimulus driven ITS design build project is at the 30% design phase named I-95 GR1 ITS. This PennDOT project proposes to install two CCTV cameras on Broad Street and permanent Variable Message Signs (VMS) along both Broad Street and Pattison Avenue. As stated earlier this project is in the early design phase and as such the final locations of these devices has not been determined at the time of this report. The proposed VMS signs are small two line message boards to provide immediate incident manage messages to the motoring public.

Operations

A comprehensive signal plan should be developed – these improvements should be implemented in conjunction with event day signal programs along the Packer Avenue and Front Street corridors to fully realize the benefits of these measures.

Figure 5-10 shows existing queues along the Front Street and Packer Avenue corridors for egress from an Eagles event. After implementing the signal timing changes at Front Street and the I-76 West off-ramp, and improving coordination along the Front Street and Packer Avenue corridors, projected queues may be reduced to the extents shown in Figure 5-11. A side benefit of the reduced queues and overall improved operations along the Front Street and Packer Avenue corridors would likely be a decrease in the number of vehicles using 10th Street north of Packer Avenue as an alternate egress route.

Note that additional coordination may be required in the Front Street and Packer Avenue corridors to ensure that the projected benefits are realized. For example, the intersections along these corridors should be coordinated with the new signal timing.

Figure 5-10: Queues from the intersections along Front Street typically extend back to and add to congestion on Packer Avenue.

Figure 5-11: Signal timing improvements along Front Street should help reduce queues along Packer Street on egress.

Coordinated Signal Control

In general, the program for post-event conditions may improve egress conditions significantly if it is consistently adhered to. The Front Street signal corridor should be connected to the Broad Street and Pattison Avenue signal corridors. Once all three corridors are connected, a central control point, such as at the Traffic Management Center at the Wachovia Center, should be established from which all the signals can be set to operate on the appropriate ingress or egress program.

The event programs should be triggered at the following times, depending on the event type:

to stay away during a 60,000 –person Lincoln Financial Field event, for example, than during a 17,000–person Wachovia event.

These factors are described in Table 6. For a Lincoln Financial Field peak event or a peak dual event, the factors account for a reduction in parking and traffic demand of nearly 45% from non-event day estimates.

Table 6: Average and Peak *Philly Live!* Parking Demand Projections

	Peak PL	Linked	Stay-Away	Demand
Eagles	1600	25%	25%	900
Phillies	1200	15%	15%	867
Flyers	1600	10%	10%	1296

	Avg PL	Linked	Stay-Away	Demand
Eagles	1200	25%	25%	675
Phillies	1100	15%	15%	795
Flyers	1200	10%	10%	972

Based on these estimates, the proposed Philly Live development would generate a demand for some 675 parking spaces on a typical weekend with a Lincoln Financial Field event. In addition to this projected increase in parking demand, the projected development footprint also results in a reduction in supply of some 650 spaces (see Figure 8-3).

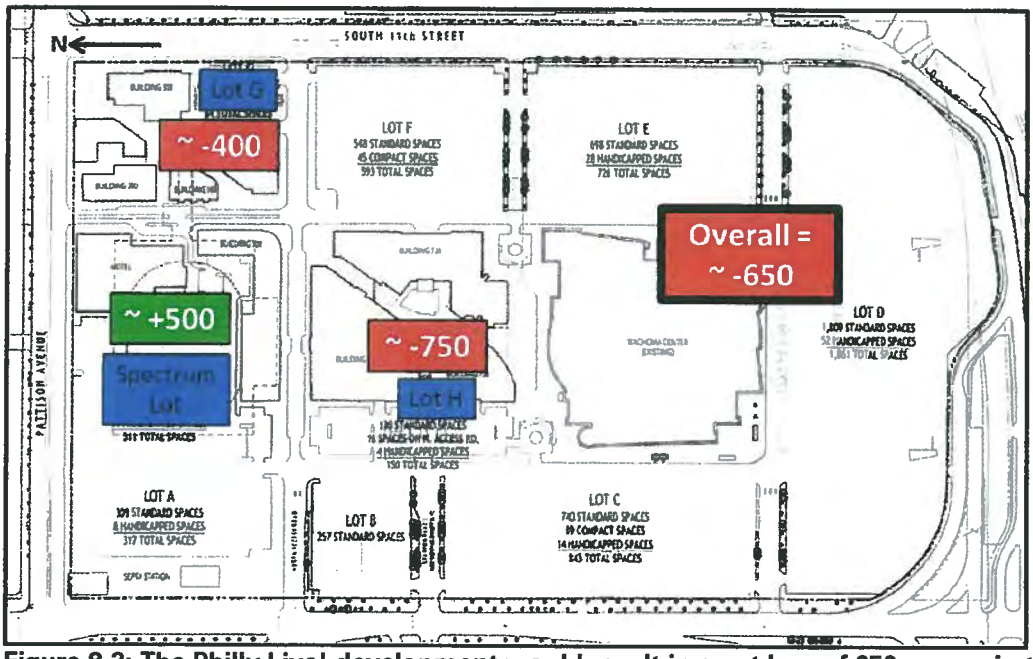


Figure 8-3: The Philly Live! development would result in a net loss of 650 spaces in the Wachovia lots.

Gaming Casino Traffic

THE AUTHORS SUMMARIZE RESULTS FROM TRAFFIC VOLUME STUDIES OF TWO GAMING CASINOS—THE CASINO ST. CHARLES AND THE CASINO QUEEN.

BY PAUL C. BOX AND WILLIAM BUNTE

GAMING CASINOS GENERATE significant volumes of traffic—especially during the evening peak hour. Two studies of existing operations were made in the St. Louis, Mo., USA, metropolitan area, including hourly vehicular volumes and daily variations. Also, the projections from an economic report for a proposed casino were utilized to provide multiplication factors for traffic counted in any given month, to that expected during the peak summer months.

Gaming casinos have three general types of positions—individual, such as slots and video poker; table, such as blackjack and poker; and audience, such as Keno or racing. For riverboat type facilities, a land-side staging area is used. Other customary services include bar and restaurant.

The Casino St. Charles is located in the metropolitan area, west of the Missouri River. It is reported to have about 2,500 gaming positions, about 80 percent of which are slots or video poker machines.

In January 1995, counts of entering and leaving traffic were taken across weekdays, Saturday and Sunday.[1] For the peak hours, the counts were converted into rates of flow in and out of the facility per gaming position and were expanded to the summer peak conditions (see Table 1). The highest weekday traffic occurs on Friday, while the absolute peak hour occurs on Saturday evening.

From the counts, it also was possible to calculate the hourly variation by the days of the week during which counts

Table 1. Casino St. Charles peak hour rates of vehicular flow per gaming position.

Day	Hour	Rate*
Thursday facility peak	18:00 to 19:00	
IN		0.25
OUT		0.23
Thursday street peak	16:30 to 17:30	
IN		0.19
OUT		0.23
Friday facility peak	18:00 to 19:00	
IN		0.29
OUT		0.25
Friday street peak	16:30 to 17:30	
IN		0.19
OUT		0.24
Saturday facility peak	18:00 to 19:00	
IN		0.34
OUT		0.30
Sunday facility peak		
IN	13:00 to 14:00	0.25
OUT	16:00 to 17:00	0.25

*Expanded to summer peaks.
Source: Ref. 1

were taken. These data are given in Table 2. It should be noted that the facility is quite busy from 09:00 through 22:00 hours. Unlike residential, office or industrial developments, gaming casinos have no significant AM peak hour loading.

A second study was taken at the Casino Queen, a land-based facility on the north side of the Mississippi River in East St. Louis, Ill., USA. Table 3 gives the rates of flow in the PM peak hour per gaming position for customer traffic and separately for employee/service vehicles. The counts have been expanded to peak summer month activity. Only one truck entered or left the casino during the PM peak, which was from 16:30 to 17:30. This is a much smaller facility than the Casino St. Charles, with only 1,200 gaming positions. About 80 percent are slots or video poker. Furthermore, this casino is only open 22 hours per day (09:00 through 07:00). Pickup/dropoff traffic also was observed at the Casino Queen, and amounted to about 10 vehicles during the PM peak. Data on various characteristics of the casinos, such as floor area and employees, are given in Table 4.

The peak gaming months are reported as May, July and August. These may be considered as the "design" condition. The percent of average months and the monthly variation in expected casino traffic, provided in the form of a multiplier for counts taken in a given month to those projected during the peak months, is given in Table 5. For example, a February count would be expanded by 30 percent (1.3 times the count) to reach peak month volumes. The data are taken from an economic study,[3] prepared in connection with a gaming facility zoning application to St. Louis County.

Additional studies of casino traffic are warranted because of widely varying characteristics. For example, the St. Louis casinos had similar rates of peak flow per gaming position. However, the St. Charles facility continued to experience significant flow and had a weekday peak just after the PM peak, while the Casino Queen traffic dropped abruptly at the end of the rush hour. The count was discontinued at this point, because

Table 2. Hourly variation by day of week.

	Percent of Daily Vehicular Traffic					
	IN			OUT		
Hour Begin	Weekday*	Sat.	Sun.	Weekday*	Sat.	Sun.
00	2.5	3.0	3.9	4.3	5.9	7.3
01	1.8	2.7	3.7	3.9	4.4	6.2
02	1.2	1.3	1.9	3.3	4.2	5.4
03	0.7	0.8	1.0	3.2	4.7	5.2
04	1.0	0.6	0.9	3.3	3.7	3.9
05	0.7	0.6	0.9	1.6	2.0	2.5
06	1.0	0.7	0.8	0.6	0.7	0.8
07	1.6	1.1	1.3	0.6	0.5	0.4
08	3.9	3.3	4.4	1.2	0.9	0.8
09	5.6	4.7	6.1	1.3	0.9	0.9
10	5.2	4.3	5.6	2.1	1.7	1.9
11	5.5	4.9	5.7	3.0	2.6	2.9
12	5.8	4.8	6.6	4.1	2.8	3.8
13	6.0	5.2	7.2	5.2	3.5	4.4
14	5.4	5.6	6.5	6.1	4.1	5.5
15	5.2	5.6	6.1	6.4	5.8	6.5
16	5.3	5.7	5.8	7.1	6.3	6.6
17	5.9	6.7	6.2	6.6	6.8	6.0
18	7.8	7.8	5.8	7.0	6.9	6.4
19	7.4	7.7	4.0	5.7	6.4	5.8
20	6.3	6.5	3.9	5.3	6.7	4.3
21	5.3	6.1	5.0	5.7	6.1	4.3
22	4.7	5.7	3.4	6.3	6.0	4.6
23	4.0	4.6	3.3	6.1	6.4	3.6

*Average Monday AM, Thursday PM plus Friday.
Source: Ref. 1.

Table 3. Evening peak hour Casino Queen vehicular traffic.

	Rate per Gaming Position*	
Type of Traffic	IN	OUT
Customer	0.27	0.26
Employee/Service	0.02	0.02
TOTAL	0.29	0.28

*Expanded to peak months per Ref. 3.
Source: Ref. 2.

Table 4. Site characteristics.

	St. Charles	Casino Queen
Floor area (gaming and staging), square feet*	47,000	65,000
Employees	—	1,200
Employees at peak time	700	450
Capacity (gamblers)	4,200	—
*Conversion: One square foot = 0.093 square meter.		

Table 5. Monthly variation.

Month of Count	Percent of Average Month	Multiplier to Expand to Seasonal Peak
January	111%	1.1
February	90%	1.3
March	111%	1.1
April	108%	1.1
May	116%	1.0
June	108%	1.1
July	121%	1.0
August	121%	1.0
September	113%	1.1
October	105%	1.2
November	98%	1.2
December	105%	1.2

Source: Ref. 3.

the scope of study was intended to analyze only the PM street peak hour generation.

The two sites studied have provided useful information on hourly and monthly variation. These data should guide studies of other sites. Separate counts of customer and employee vehicular traffic, plus trucks, should be taken on busy weekdays and perhaps on a Saturday evening, if a street capacity problem is likely. At some locations, large numbers of patrons may arrive by bus, which relates to geometric design of driveways.

Other studies of gaming facilities needed include parking generation, which represents a major factor. The development of gaming on Native American tribal lands is often away from or at the fringe of metropolitan areas. Traffic and parking characteristics of these facilities may differ from those

within a metropolitan area. Busing may represent a more significant factor—especially relative to parking layout. ■

References

1. *Traffic Impact Study for the Ultimate Development of St. Charles Riverfront Station,* Final Report. Crawford, Bunte, Brammeier, August 1995, unpublished.

2. *Study of Casino Queen.* Paul C. Box and Associates Inc., November 1996, unpublished.

3. *Horseshoe Gaming, St. Louis County Project.* Economics Research Associates, as presented to County Plan Commission about September 1996, unpublished.

PAUL C. BOX, *P.E., has about 17 years of experience working for cities and some 33 years of experience as a traffic consultant. He has more than 100 publications in the traffic engineering field, has lectured extensively and has chaired a number of ITE Standard Practice technical committees. He is a Fellow and Life Member of ITE.*

WILLIAM F. BUNTE, *P.E., received his bachelor's and master's degrees in civil engineering from the University of Illinois. During the past 32 years he has provided traffic and transportation engineering consulting services for a variety of private and public clients. He currently is a partner in the firm of Crawford, Bunte, Brammeier. He is a Fellow of ITE.*

Executive Summary of the

INTERIM REPORT OF FINDINGS

Philadelphia Gaming Advisory Task Force

TABLE 3: Casino Visitation Patterns by Time of Day

		Morning	Afternoon	Adj. To	Rush Hour	Evening	Night	Graveyard	Adj. To
		8-11a	11a-4p	3-hour period	4p-7p	7p-10p	10p-1a	1a-8a	3-hour period
Monday – Thursday	average	8%	30%	18%	17%	18.5%	14.5%	12%	5.1%
	peak	10%	33%	19.8%	20%	20%	17%	14%	6.0%
Friday	average	7%	18%	10.8%	12%	18%	18%	27%	11.6%
	peak	9%	21%	12.6%	15%	22%	20.5%	30%	12.9%
Saturday	average	9%	24%	14.4%	15%	17.5%	16.5%	18%	7.7%
	peak	11.5%	26.5%	15.9%	17.5%	22%	19%	20.5%	8.8%
Sunday	average	7.5%	29%	17.4%	20%	18.5%	14%	11%	4.7%
	peak	10%	31.5%	18.9%	22.5%	21%	16%	13%	5.6%

Source: Innovation Group

Mode of Arrival

With up to 5,000 slot machines per gaming facility and between 12,000 and 36,000 visitors per day, traffic and parking demands generated by Philadelphia slots-only casinos will be substantial. Understanding how gamers are likely to arrive at Philadelphia slots parlors is a necessary first step in assessing the potential traffic impacts associated with casino development. Graph 2 displays the expected typical distribution of transportation modes for a casino located in a given area of the City.

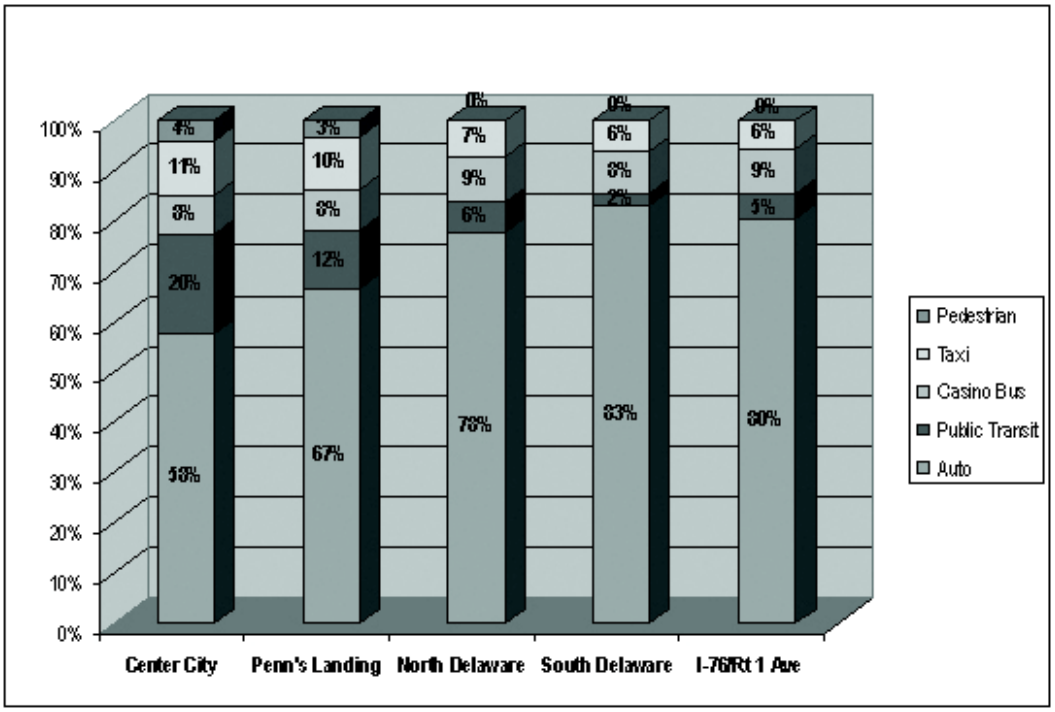
Private automobile will be the overwhelming preferred mode of arrival at Philadelphia gaming sites, with more than half of gamers expected to drive to a casino in or near Center City, and more than three-quarters arriving by car at other sites in the city. Philadelphia casinos are expected to rely on chartered buses significantly less than Atlantic City, but still will draw approximately 8 percent of their visitors by coach.

Public transit share would be significant only for casinos located in Center City and, to a lesser degree, at Penn's Landing. Despite Philadelphia's extensive transit infrastructure, it is anticipated that no more than 20 percent of casino customers would arrive via transit at a Center City site, and as little as two percent for a site along the South Delaware.

More than half of regional survey respondents (52 percent) claim that having public transportation proximate to a Philadelphia casino would be important to them. However, current behavior heavily favoring personal automobile use – 83 percent of respondents said they drive into the city for leisure activity – suggests that while people may think transit is important in general or for others, they personally will continue to drive.

Pedestrian volume to Philadelphia casino locations will be minimal except for Center City or Penn's Landing locations, and taxi volumes would be maximized at sites in, or close to, Center City.

GRAPH 2: Mode of Arrival

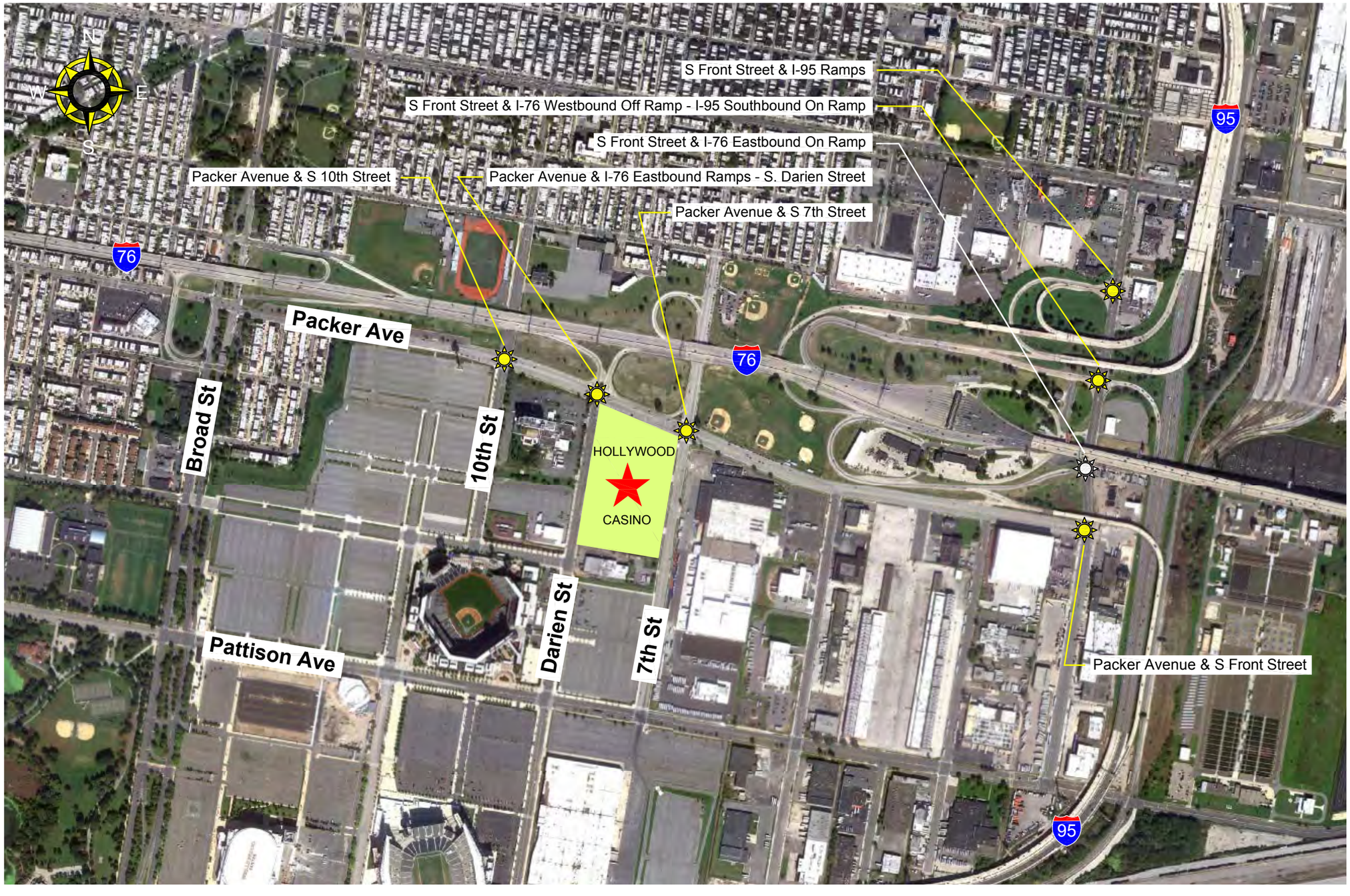


Source: Innovation Group

Transportation Access Analysis

In order to assess traffic impacts, the Task Force conducted a detailed analysis of existing and projected traffic volumes on streets surrounding potential gaming sites, as well as an engineering review of the capacity of those streets and intersections to carry the increased volumes. A summary of current traffic volumes on major roads near potential gaming sites and the projected additional traffic demand generated by casino development at each site are presented in Tables 4 and 5. For each site, the numbers in the first row are current traffic volumes based on electronic counts of vehicles conducted during May 2005. The second row shows the estimated number of additional vehicles on weekdays and Saturdays if a slots-only casino were to be placed at that location. The estimates vary between sites for two main reasons: (1) Based on Task Force projections, different sites will experience different levels of visitation based on their varying proximity and accessibility to patrons and (2) it is estimated that some sites will draw more patrons by public transit and therefore the number of automobiles would be less.

It is important to note that conclusions about potential congestion problems at these sites cannot be drawn without analyzing projected traffic volumes within the context of existing roadway and intersection capacity and without an understanding of peak traffic volumes. A projected sharp increase in traffic volume



PENN NATIONAL GAMING INC.

HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

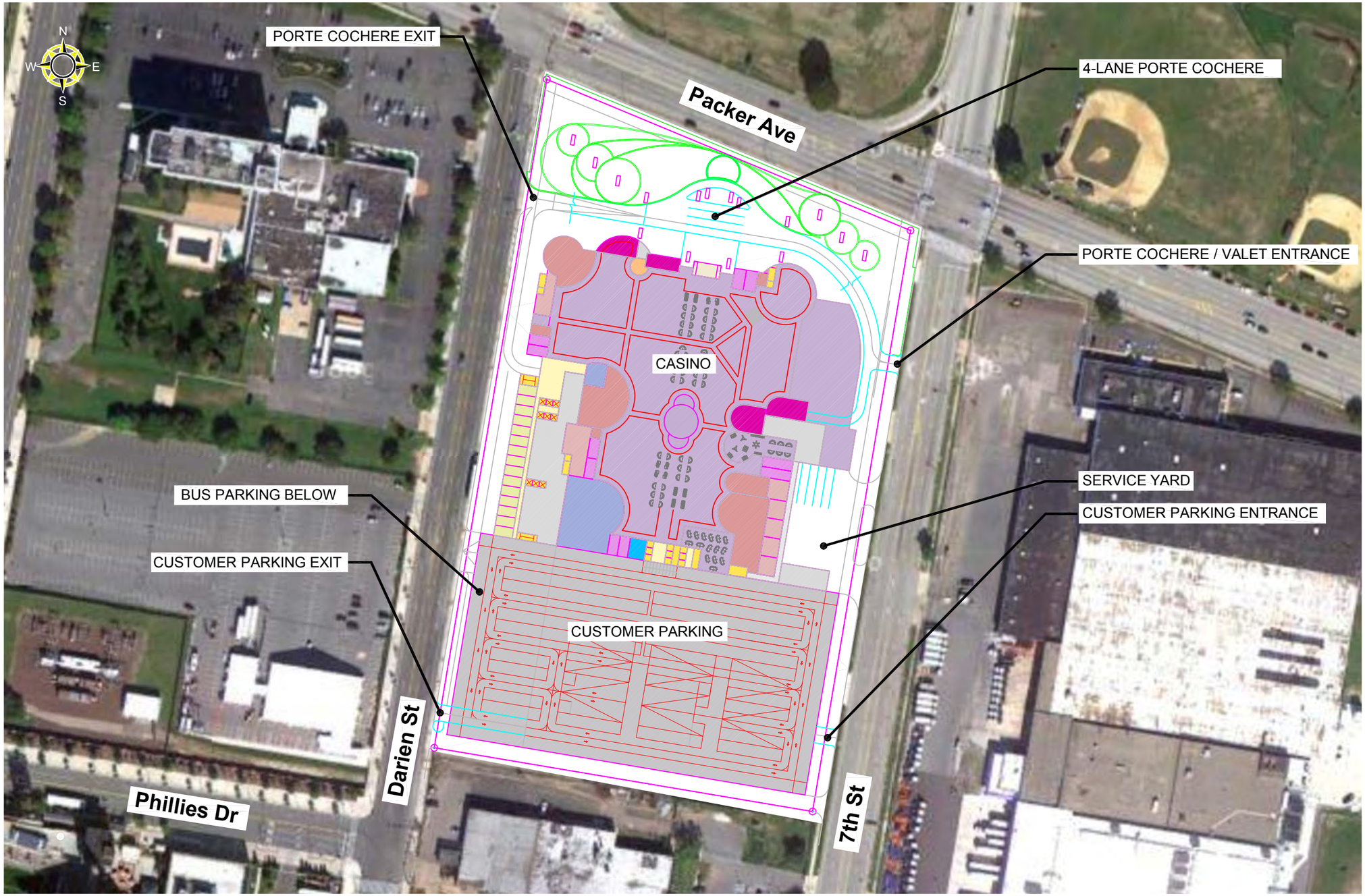
LEGEND

- PROJECT SITE
- SIGNALIZED
- UNSIGNALIZED

FIGURE 1

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

PROJECT SITE AND STUDY AREA



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PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

SCALE: 1'=150'

FIGURE 2

Pennoni

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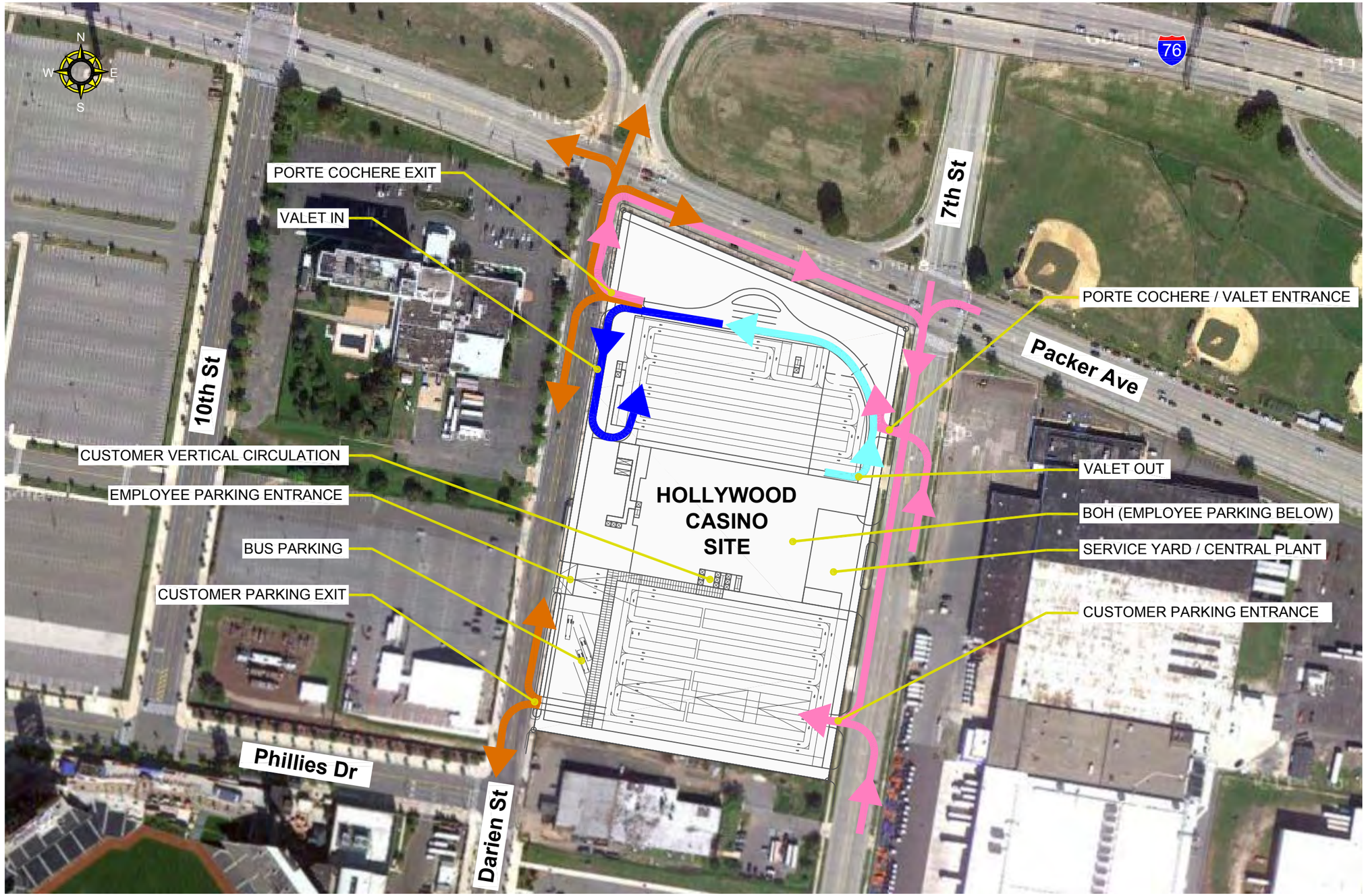
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

CONCEPTUAL

SITE PLAN



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HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

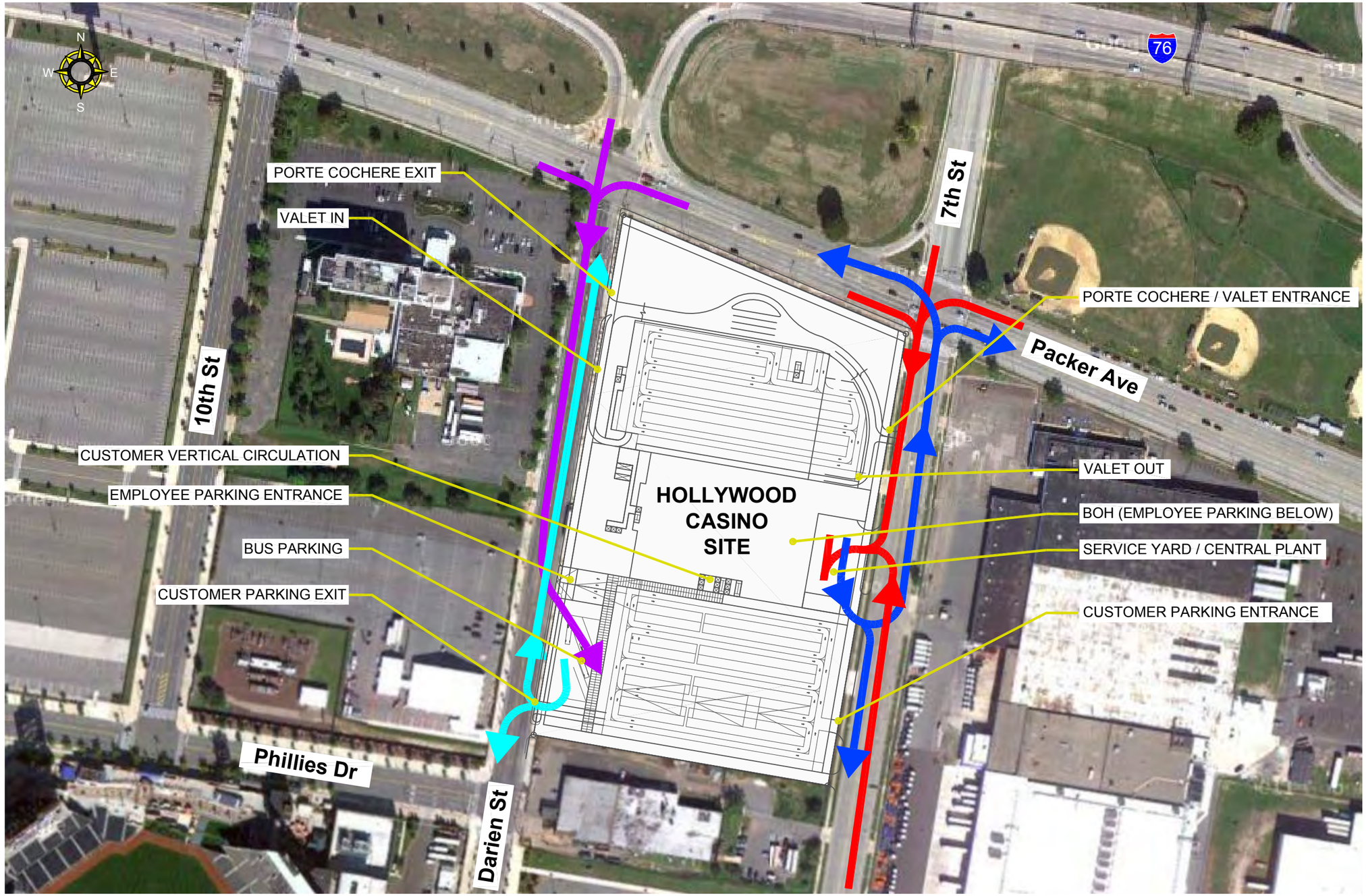
- Proposed Valet Route - Pickup
- Proposed Valet Route - To Parking
- Proposed Customer - Inbound
- Proposed Customer - Outbound

FIGURE 3

Pennoni

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

PASSENGER VEHICLE SITE CIRCULATION



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HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

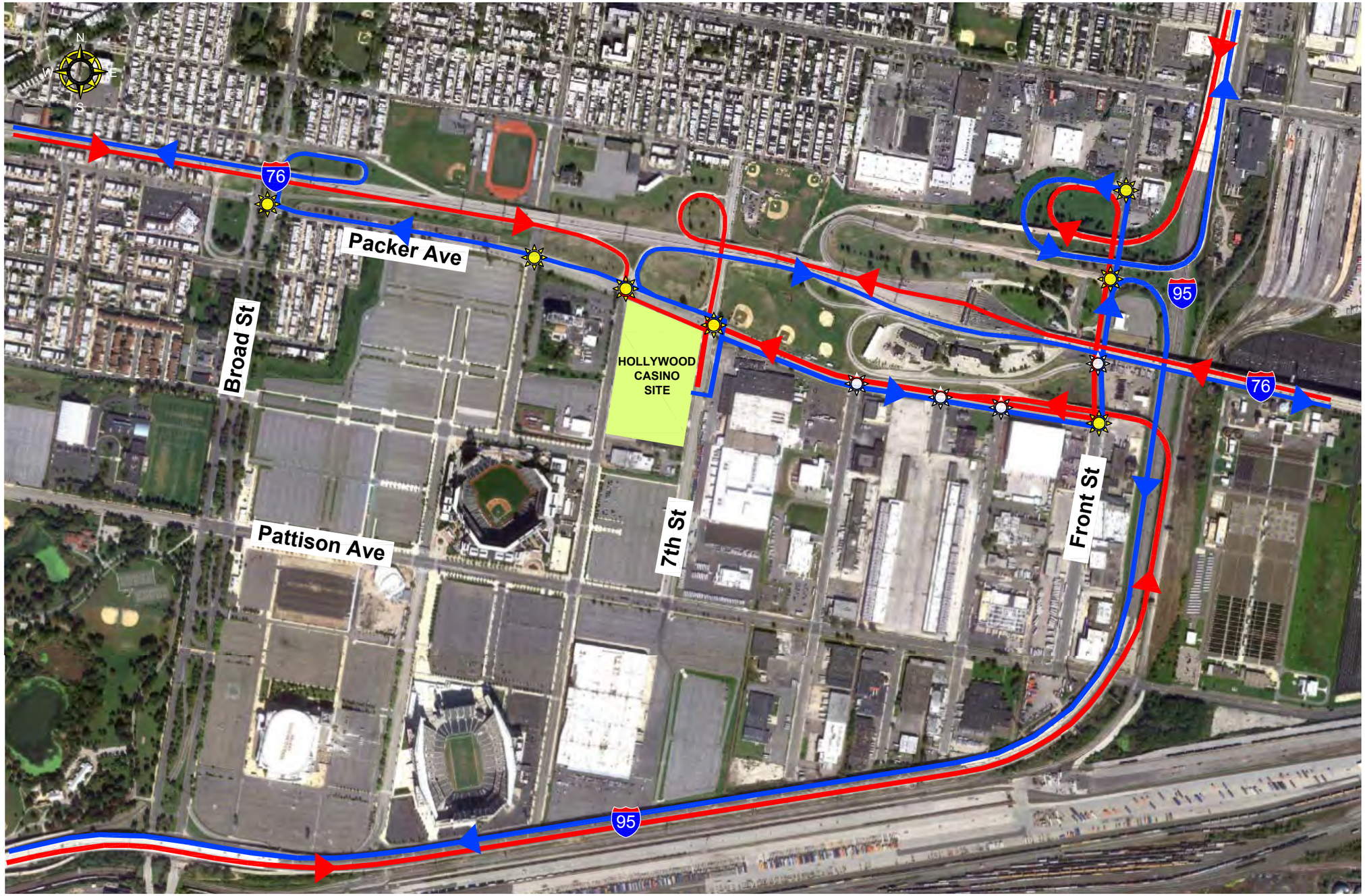
- Proposed Bus Route - Inbound
- Proposed Bus Route - Outbound
- Proposed Truck Route - Inbound
- Proposed Truck Route - Outbound

FIGURE 4

Pennoni

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

PROPOSED HEAVY VEHICLE SITE CIRCULATION



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PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

- Proposed Truck Route - Inbound
- Proposed Truck Route - Outbound
- Signalized Intersection
- Unsignalized Intersection

FIGURE 5

Pennoni

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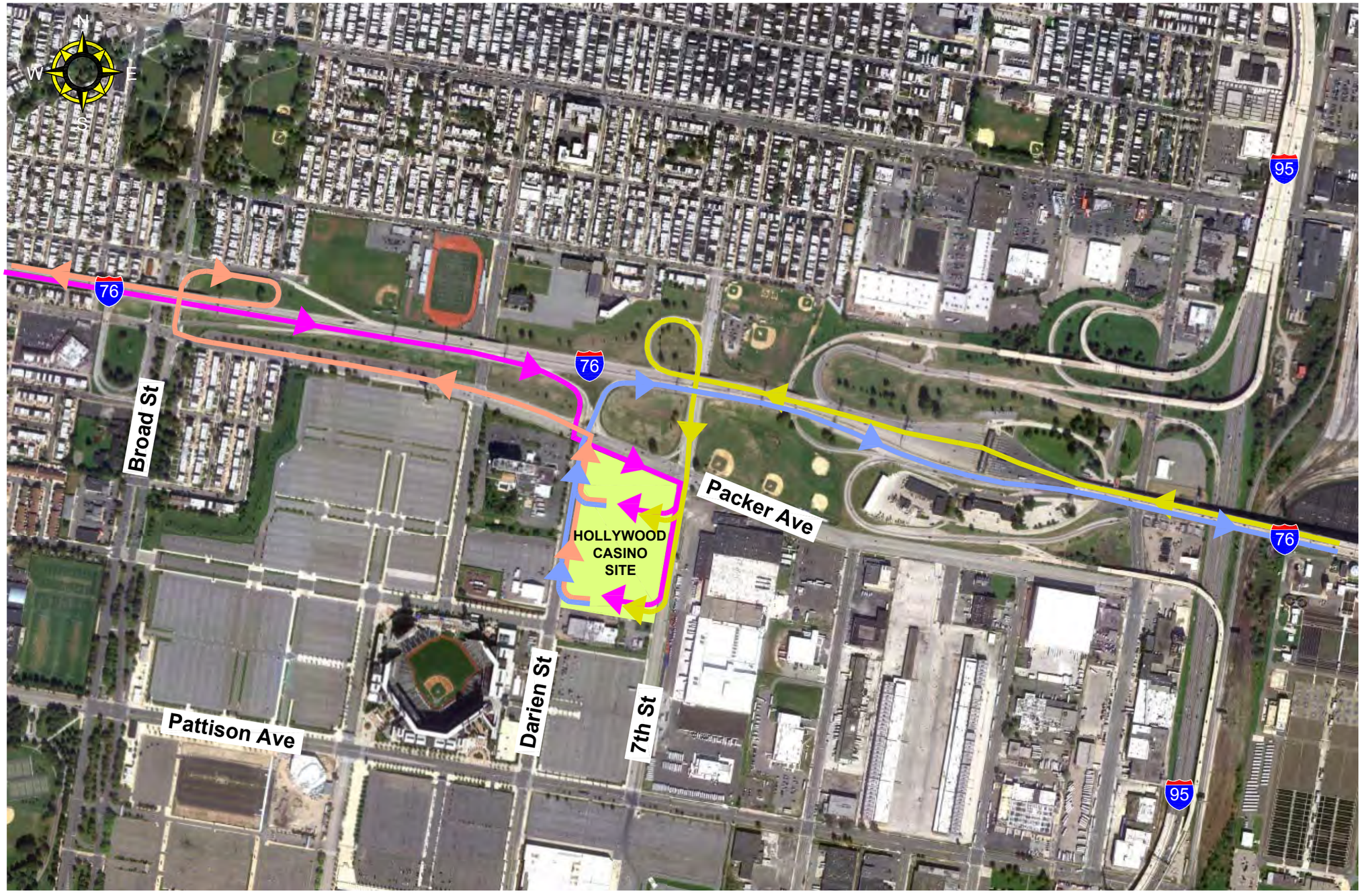
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

PROPOSED HEAVY VEHICLE ROUTE



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PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

- To I-76 Eastbound
- To I-76 Westbound
- From I-76 Eastbound
- From I-76 Westbound

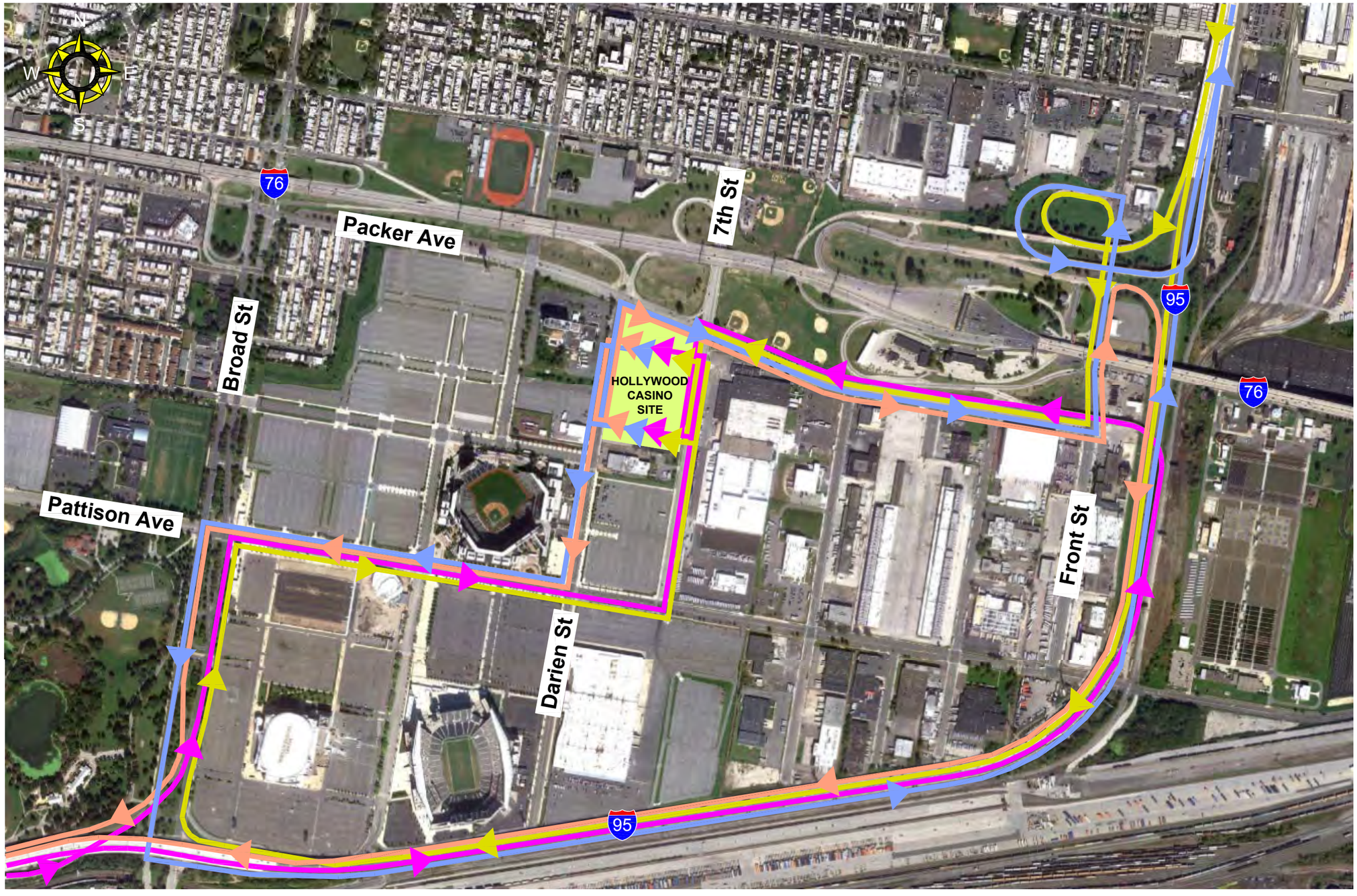
FIGURE 6

Pennoni

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

ACCESS TO / FROM

INTERSTATE 76



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HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

- To I-95 Northbound
- To I-95 Southbound
- From I-95 Northbound
- From I-95 Southbound

FIGURE 7

Pennoni

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CONSULTING ENGINEERS
3001 MARKET STREET
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ACCESS TO / FROM INTERSTATE 95

PENN NATIONAL GAMING INC.

HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

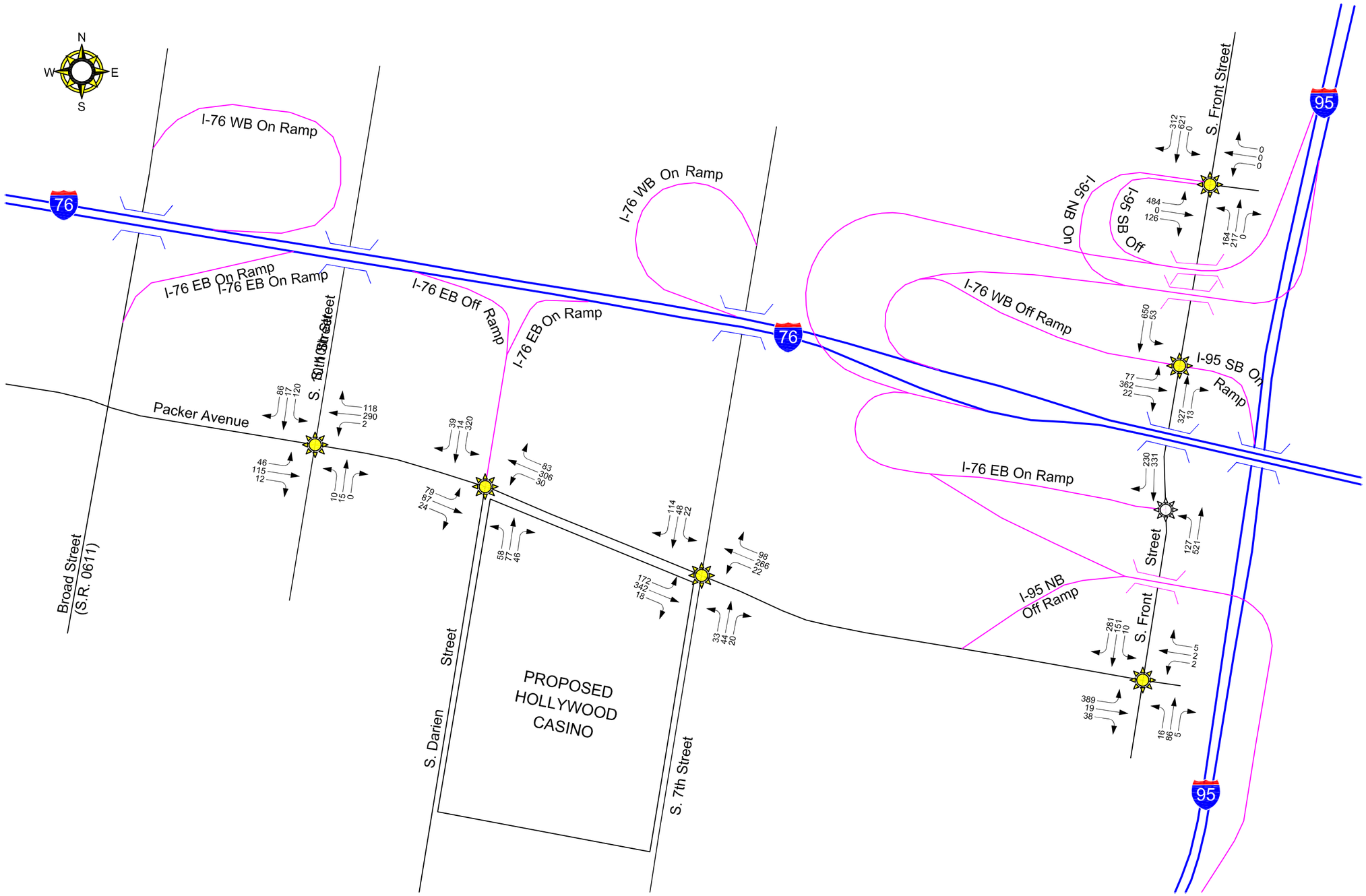
- SEPTA Broad Street Line Subway
- 71 SEPTA Bus Route

FIGURE 8

Pennoni

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

EXISTING TRANSIT FACILITIES



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HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

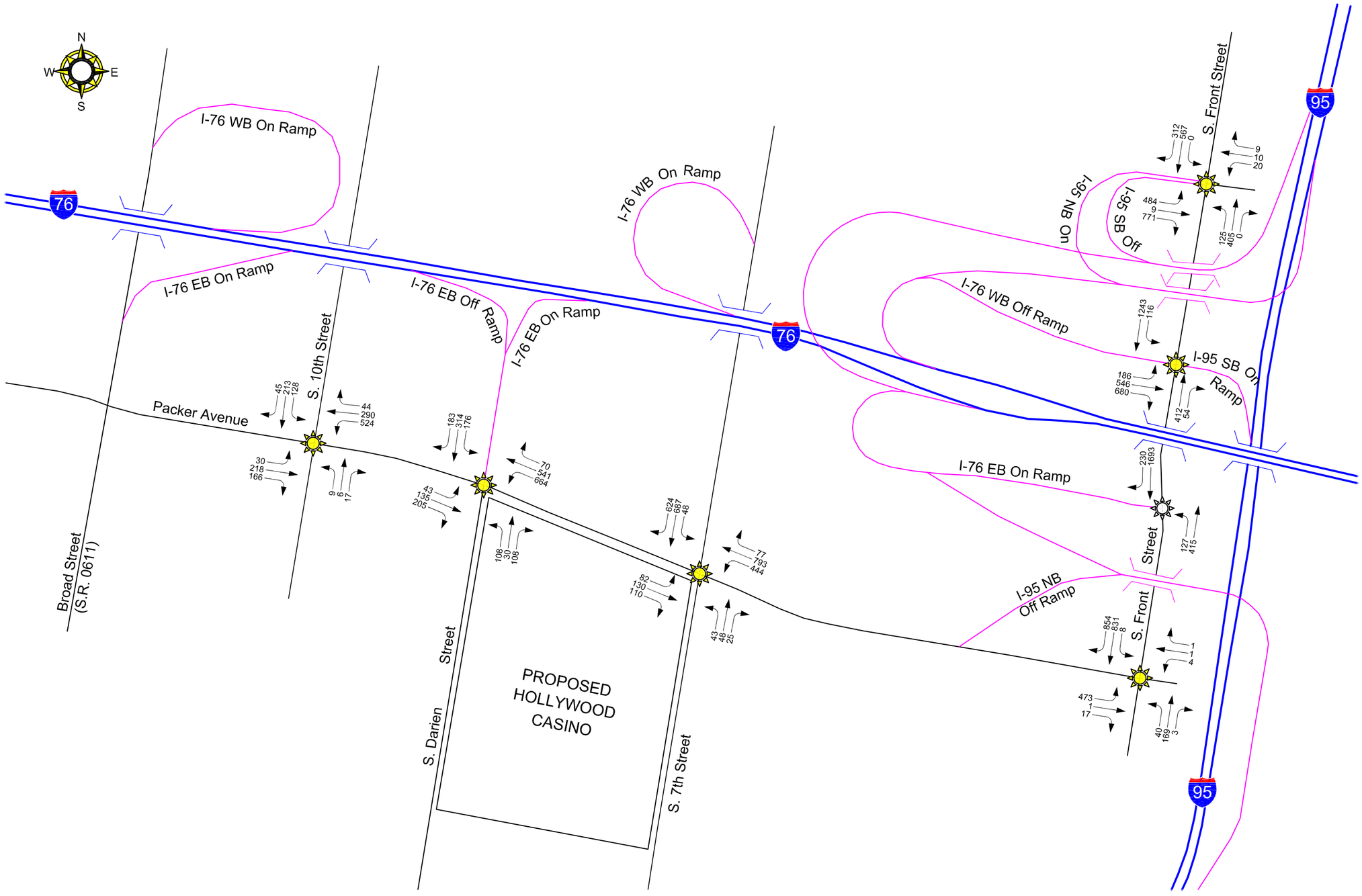
- Surface Street
- Interstate Highway
- Interstate Ramp
- Signalized Intersection
- Unsignalized Intersection
- 000 Peak Hour Traffic Volume
- Lane Configuration

FIGURE 9

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2012 EXISTING VOLUMES

WEEKDAY PM PEAK HOUR



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HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

- Surface Street
- Interstate Highway
- Interstate Ramp
- Signalized Intersection
- Unsignalized Intersection
- 000 Peak Hour Traffic Volume
- Lane Configuration

FIGURE 10

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2012 EXISTING VOLUMES WEEKDAY

PRE-PHILLIES EVENT PEAK HOUR

N
W E
S

LEGEND:

- CA-1, Auto-Oriented Commercial-1
- CA-2, Auto-Oriented Commercial-2
- CMX-1, Neighborhood Commercial Mixed-Use-1
- CMX-2, Neighborhood Commercial Mixed-Use-2
- CMX-2.5, Neighborhood Commercial Mixed-Use-2.5
- CMX-3, Community Commercial Mixed-Use
- CMX-4, Center City Commercial Mixed-Use
- CMX-5, Center City Core Commercial Mixed-Use
- I-1, Light Industrial
- I-2, Medium Industrial
- I-3, Heavy Industrial
- I-P, Port Industrial
- ICMX, Industrial Commercial Mixed-Use
- IRMX, Industrial Residential Mixed-Use
- RM-1, Residential Multi-Family-1
- RM-2, Residential Multi-Family-2
- RM-3, Residential Multi-Family-3
- RM-4, Residential Multi-Family-4
- RMX-1, Residential Mixed-Use-1
- RMX-2, Residential Mixed-Use-2
- RMX-3, Residential (Center City) Mixed-Use-3
- RSA-1, Residential Single-Family Attached-1
- RSA-2, Residential Single-Family Attached-2
- RSA-3, Residential Single-Family Attached-3
- RSA-4, Residential Single-Family Attached-4
- RSA-5, Residential Single-Family Attached-5
- RTA-1, Residential Two-Family Attached-1
- RSD-1, Residential Single-Family Detached-1
- RSD-2, Residential Single-Family Detached-2
- RSD-3, Residential Single-Family Detached-3
- SP-AIR, Airport (Special Purpose)
- SP-ENT, SP-ENT, Entertainment (Special Purpose)
- SP-INS, Institutional (Special Purpose)
- SP-PO-A, Active Parks and Open Space (Special Purpose)
- SP-PO-P, Passive Parks and Open Space (Special Purpose)
- SP-STA, Sports Stadium (Special Purpose)

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PHILADELPHIA, PA

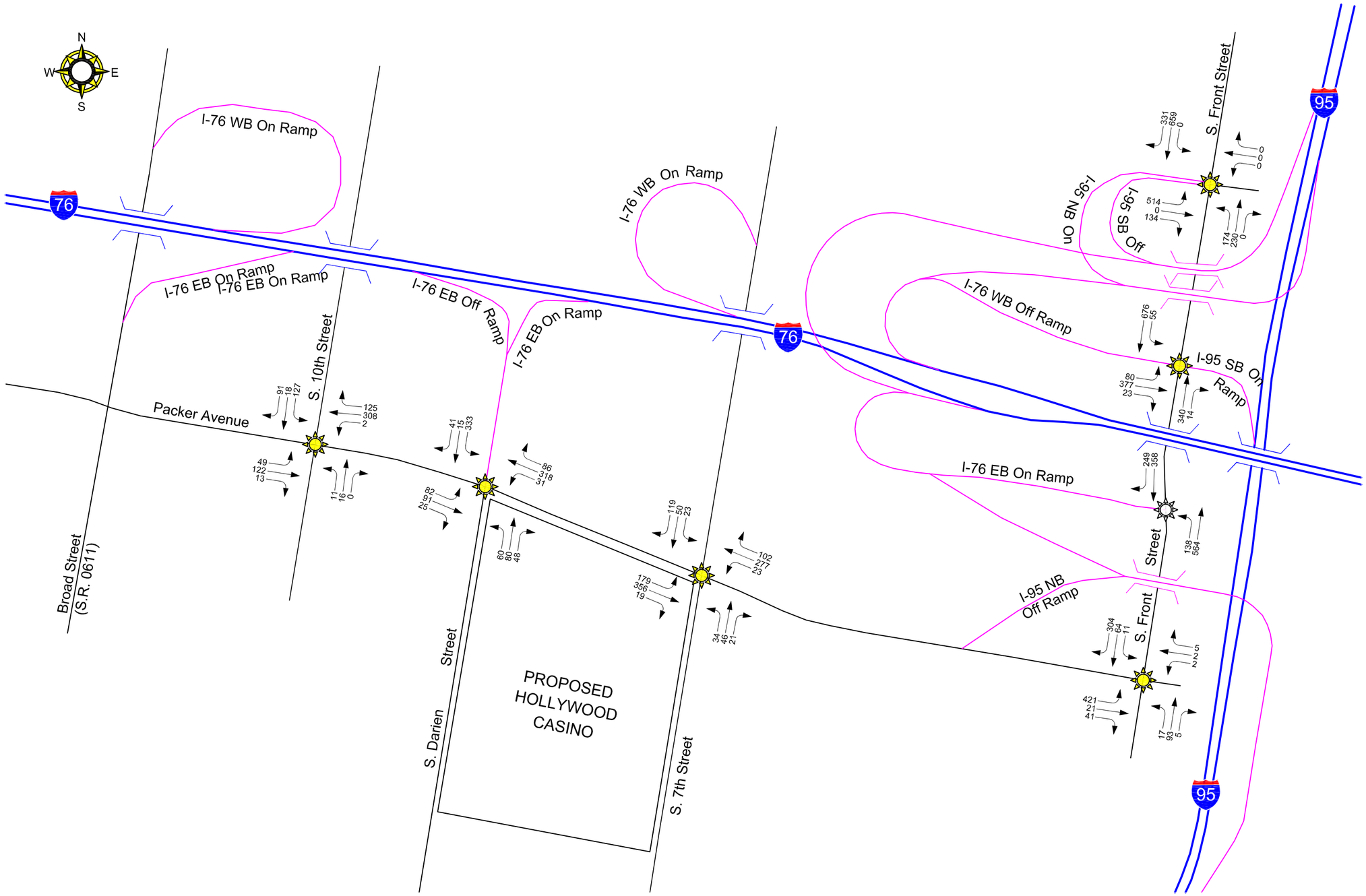
TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012

FIGURE 11

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

EXISTING LAND ZONING



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PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

- Surface Street
- Interstate Highway
- Interstate Ramp
- Signalized Intersection
- Unsignalized Intersection
- 000 Peak Hour Traffic Volume
- Lane Configuration

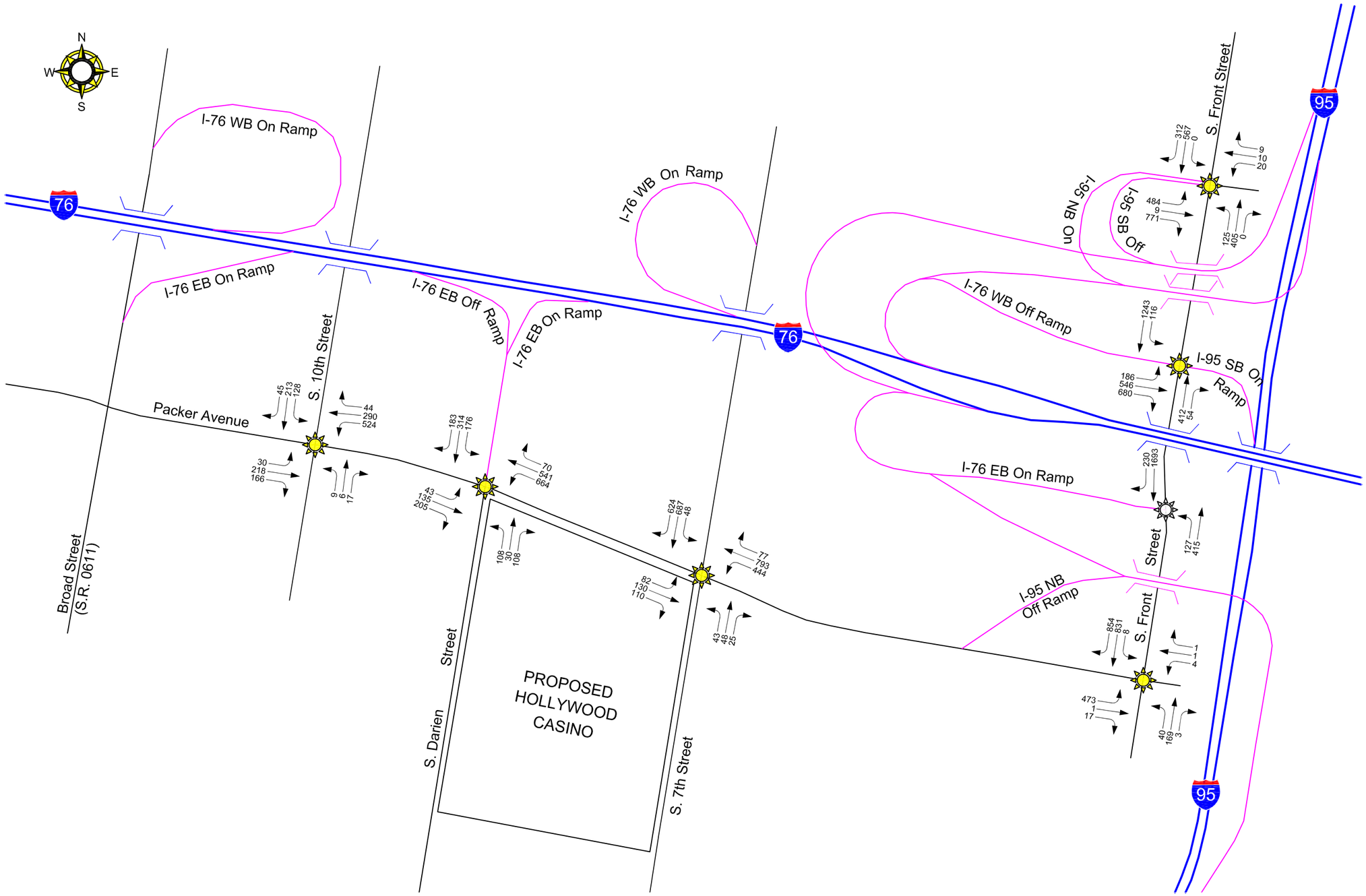
FIGURE 12

Pennoni

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2016 OPENING DAY NO BUILD VOLUMES

WEEKDAY PM PEAK HOUR



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HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

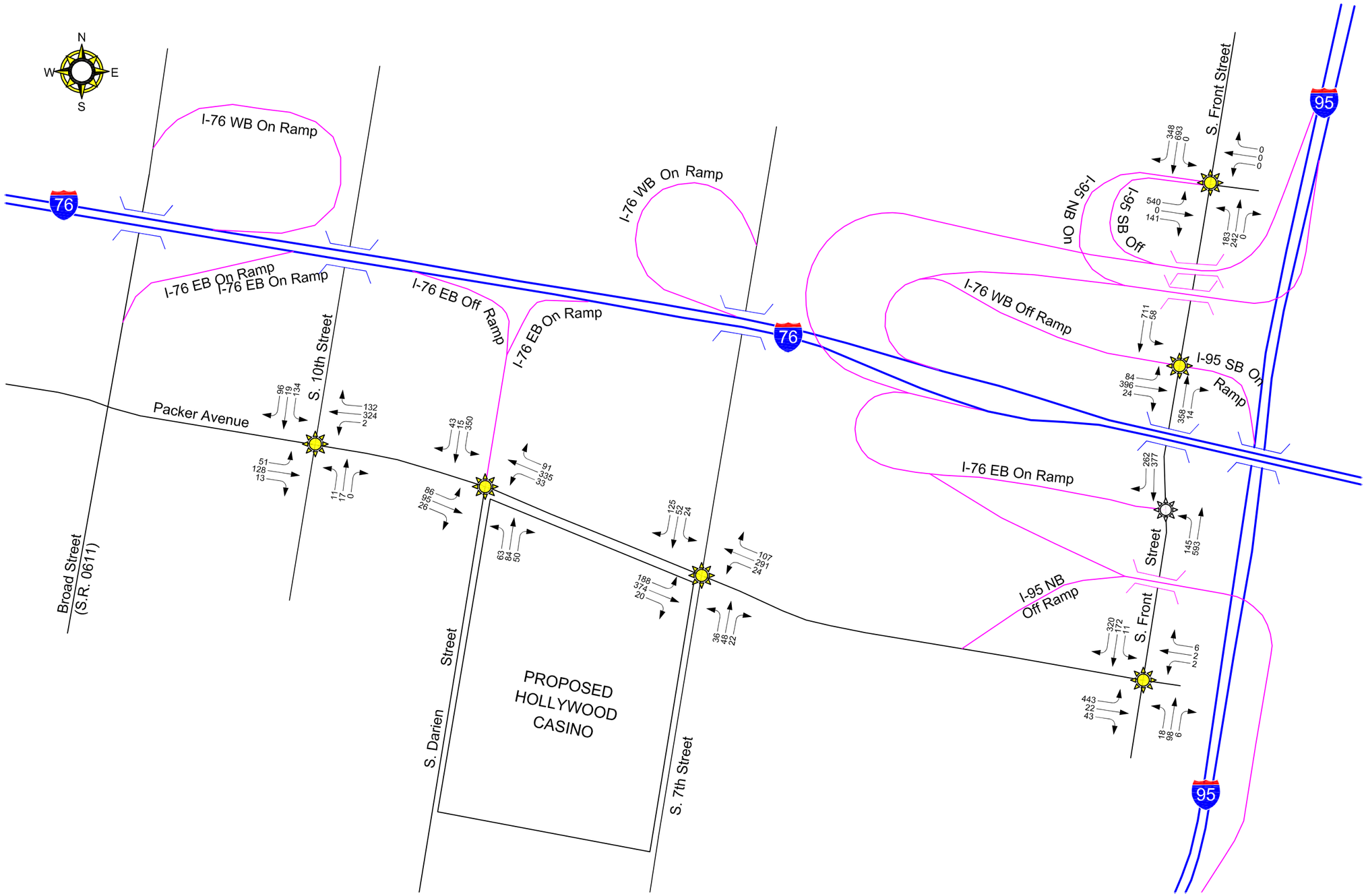
- Surface Street
- Interstate Highway
- Interstate Ramp
- Signalized Intersection
- Unsignalized Intersection
- 000 Peak Hour Traffic Volume
- Lane Configuration

FIGURE 13

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2016 OPENING DAY NO BUILD VOLUMES

WEEKDAY PRE-PHILLIES EVENT PEAK HOUR



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HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

- Surface Street
- Interstate Highway
- Interstate Ramp
- Signalized Intersection
- Unsignalized Intersection
- 000 Peak Hour Traffic Volume
- Lane Configuration

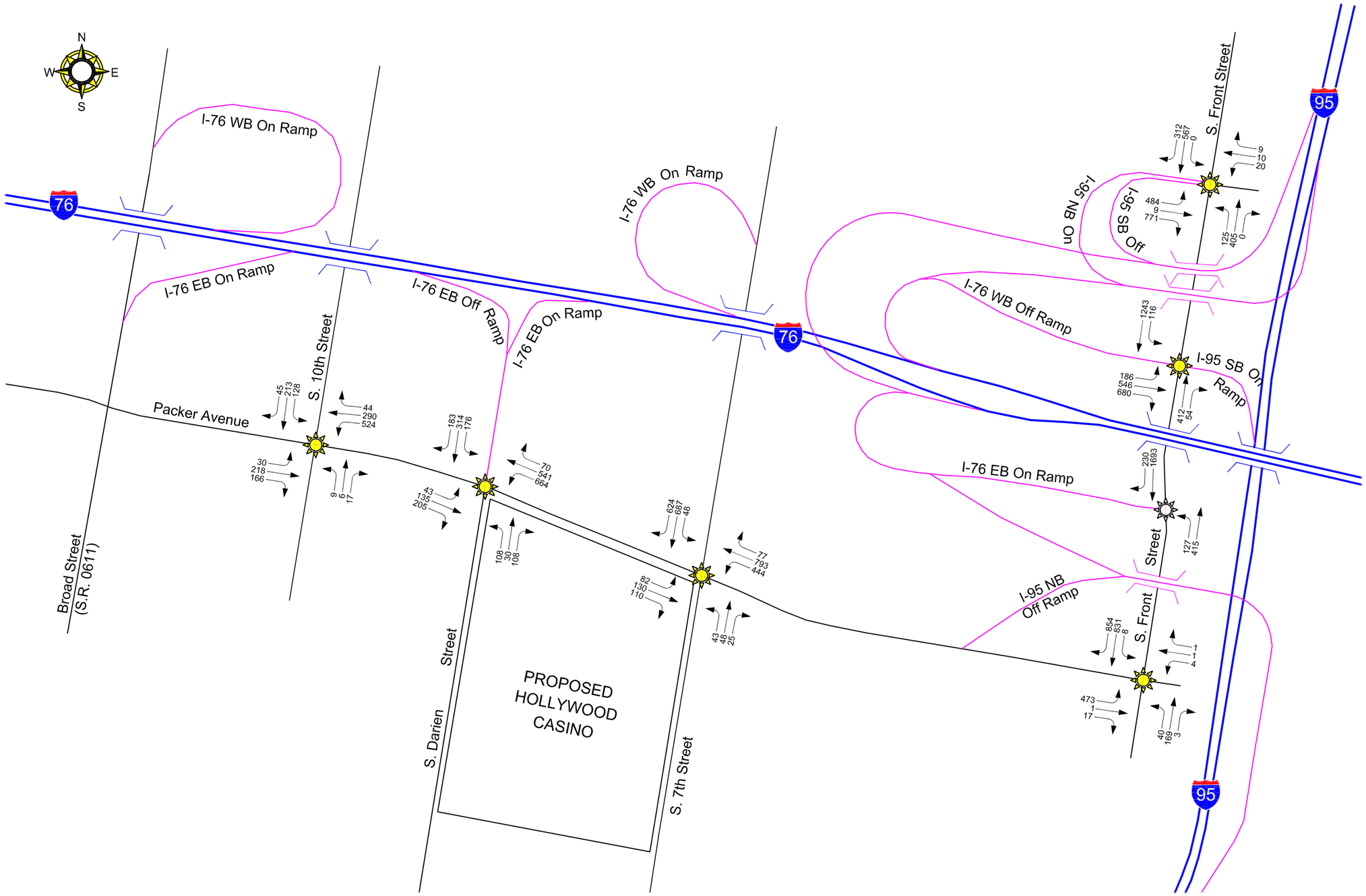
FIGURE 14

Pennoni

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2021 HORIZON NO BUILD VOLUMES

WEEKDAY PM PEAK HOUR



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HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

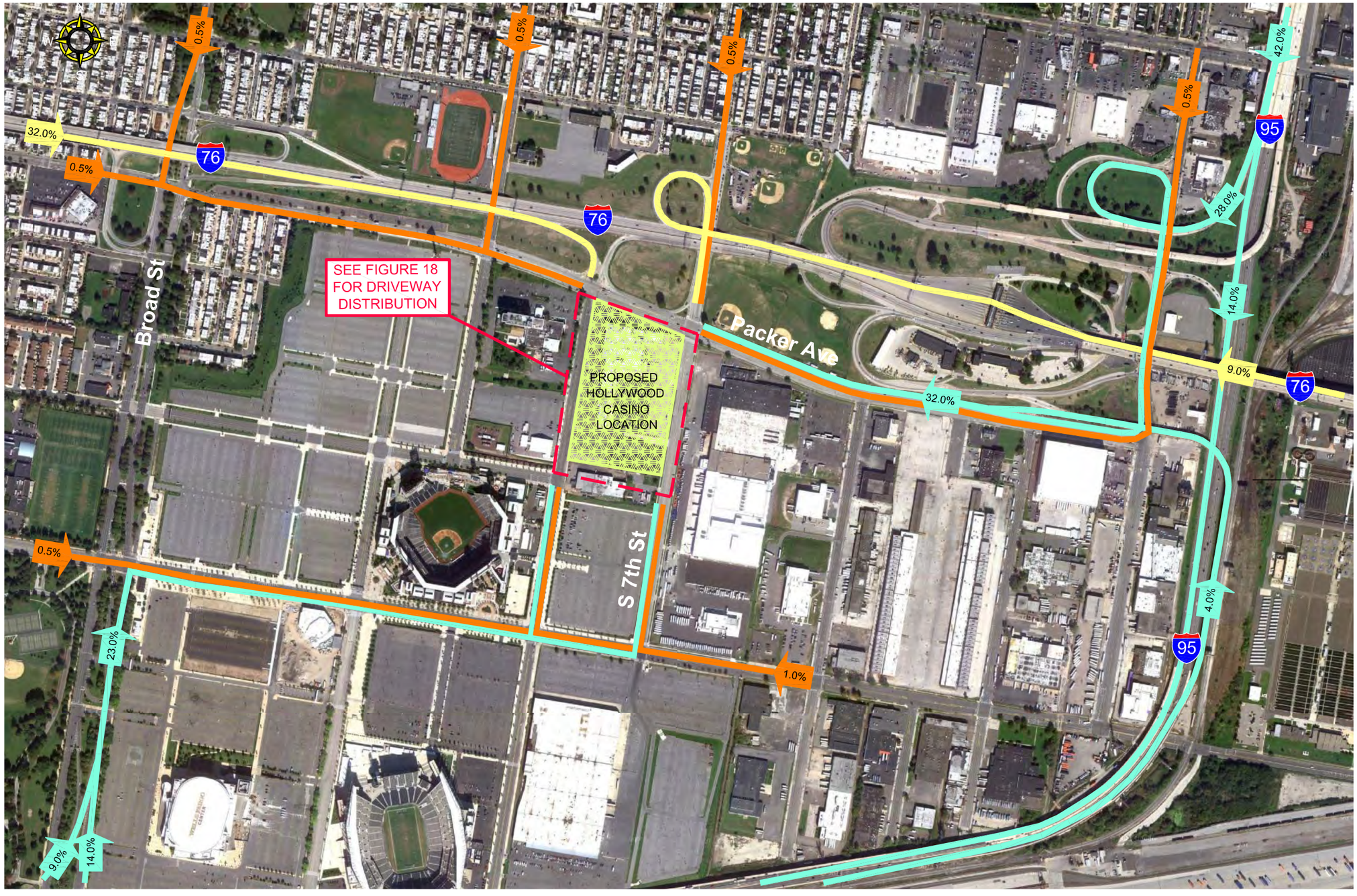
- Surface Street
- Interstate Highway
- Interstate Ramp
- Signalized Intersection
- Unsignalized Intersection
- 000 Peak Hour Traffic Volume
- Lane Configuration

FIGURE 15

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2021 HORIZON NO BUILD VOLUMES

WEEKDAY PRE-PHILLIES EVENT PEAK HOUR



PENN NATIONAL GAMING INC.

HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012

LEGEND

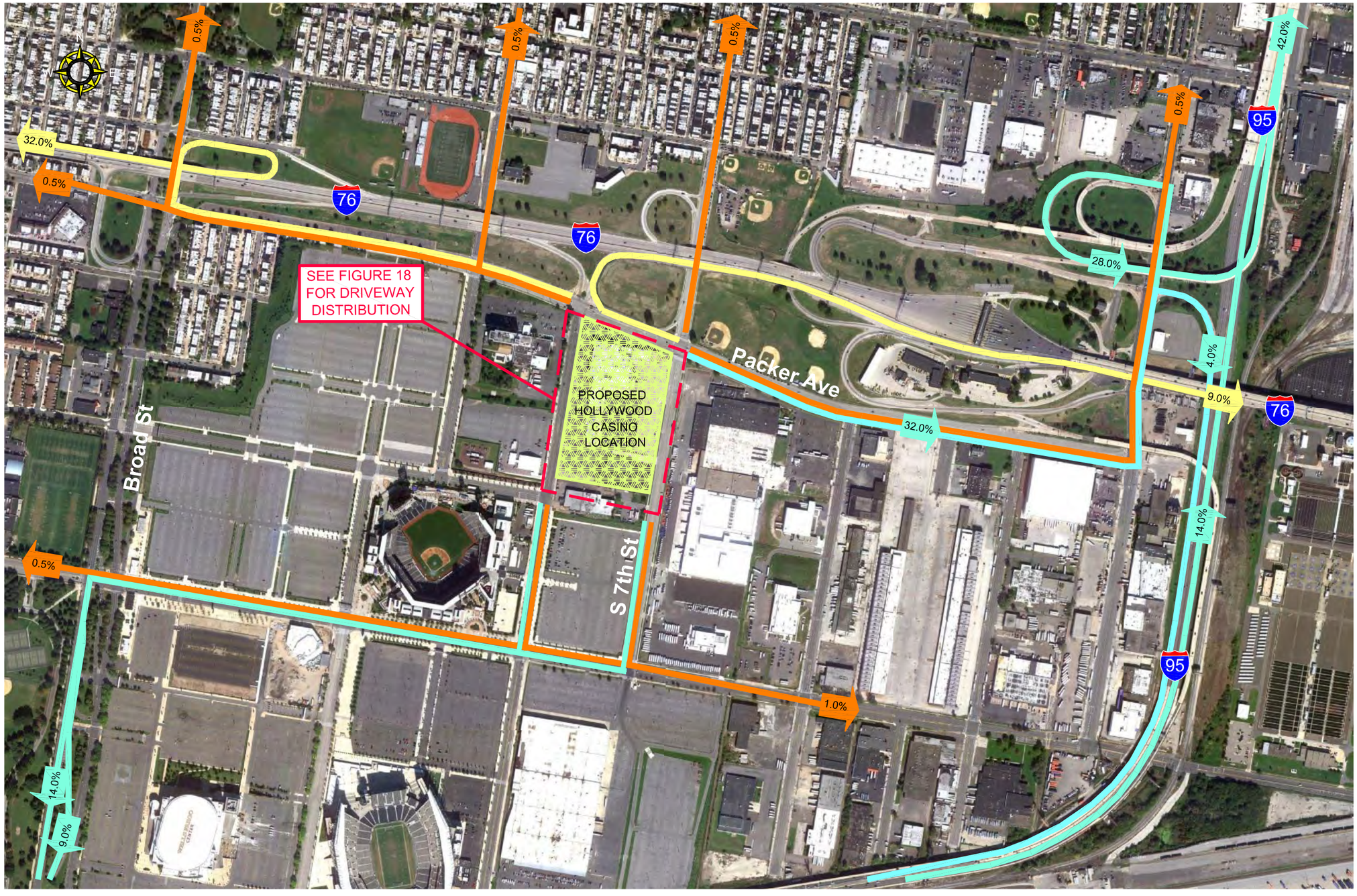
- 0.5% Local Street Contribution
- 0.5% From I-76
- 0.5% From I-95

FIGURE 16

Pennoni

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

DISTRIBUTION AND ASSIGNMENT OF ENTRY TRAFFIC



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HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012

LEGEND

- 0.5% Local Street Contribution
- 0.5% To I-76
- 0.5% To I-95

FIGURE 17

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PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

DISTRIBUTION AND ASSIGNMENT OF EXIT TRAFFIC

PENN NATIONAL
GAMING INC.

HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

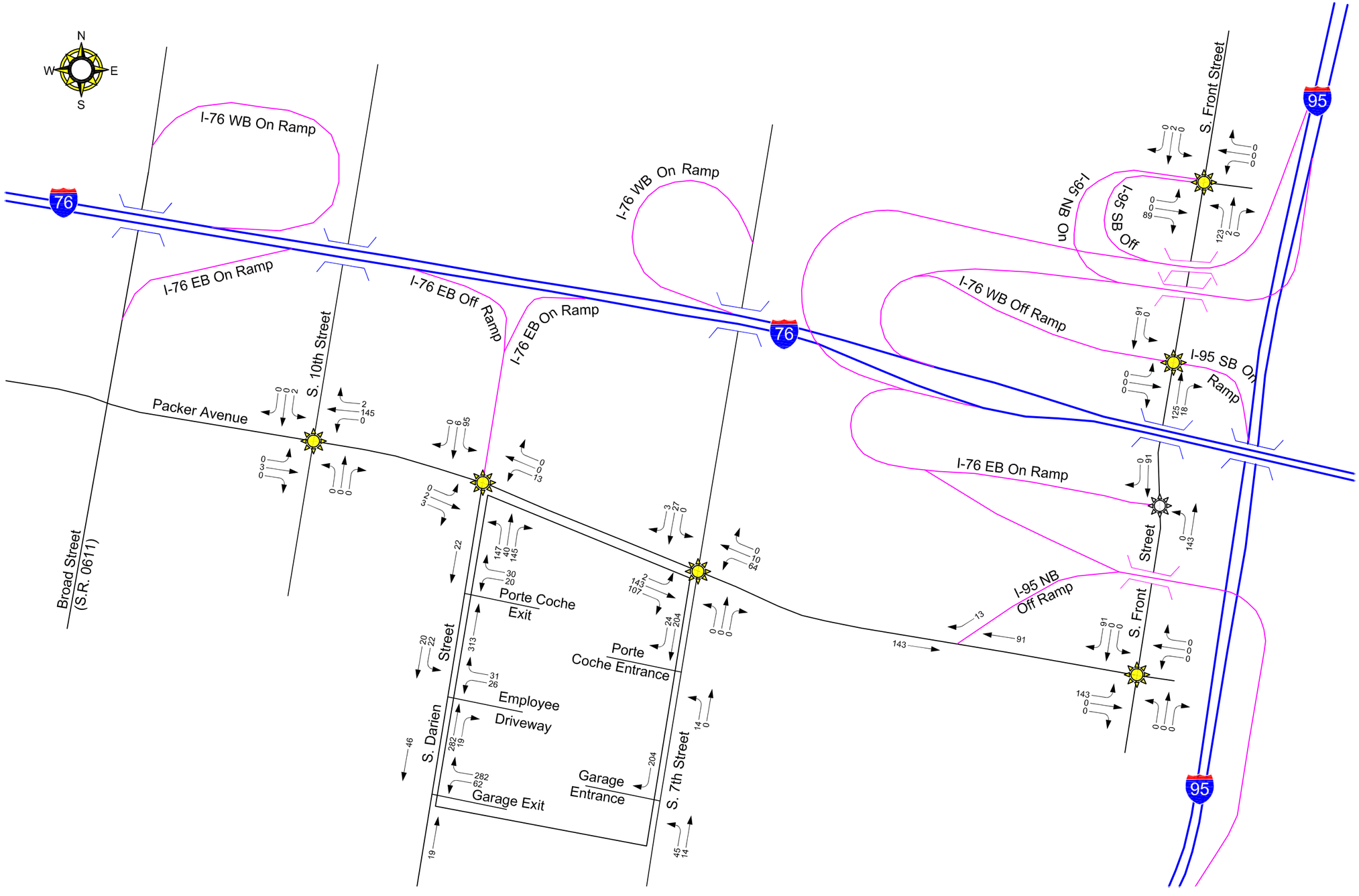
LEGEND

##(##) Entry % (Exit %)

FIGURE 18

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

DRIVEWAY DISTRIBUTION



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HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

- Surface Street
- Interstate Highway
- Interstate Ramp
- Signalized Intersection
- Unsignalized Intersection
- 000 Peak Hour Traffic Volume
- Lane Configuration

FIGURE 19

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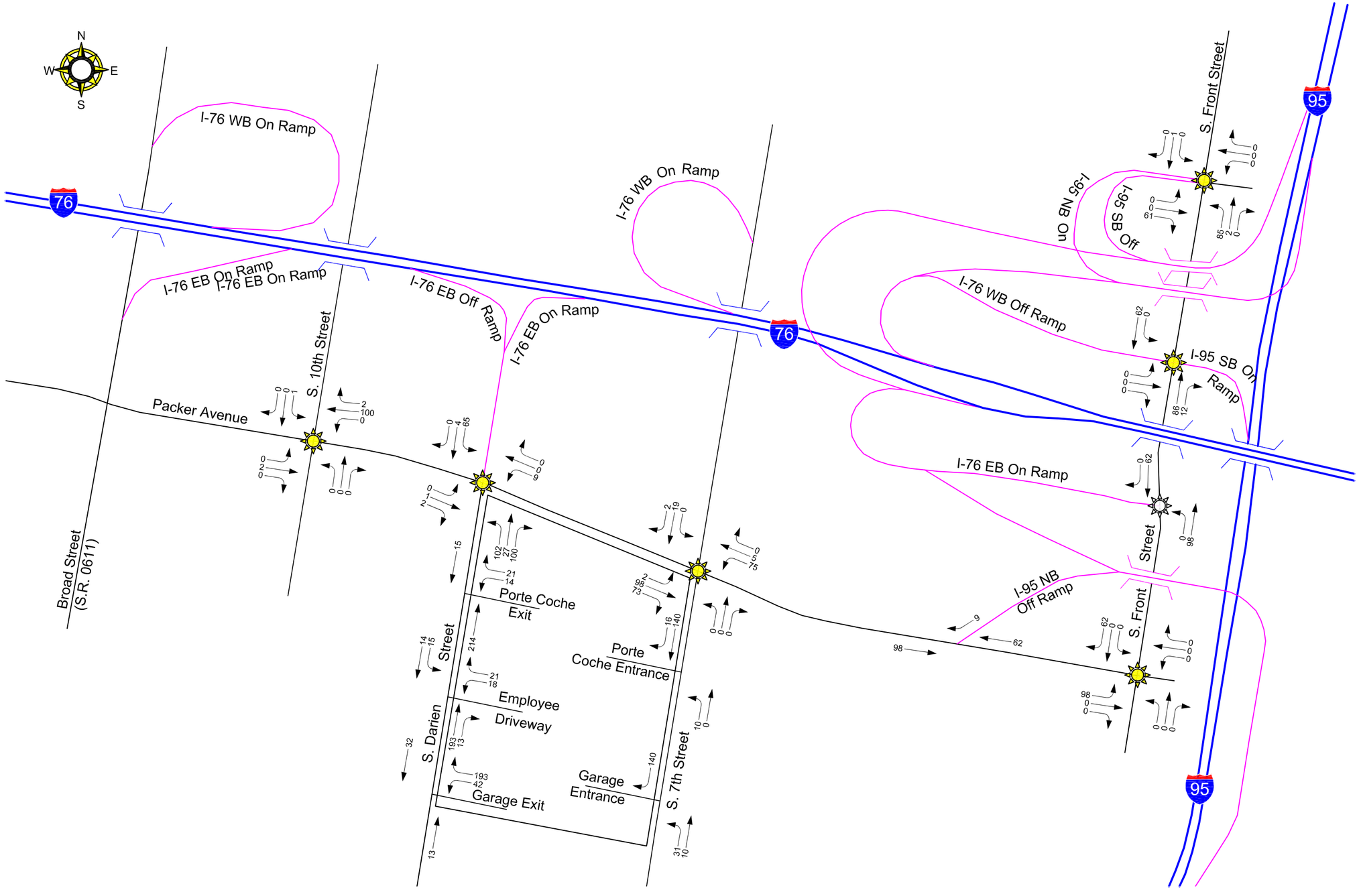
PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2016 AND 2021 SITE TRIPS

WEEKDAY PM PEAK HOUR



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HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

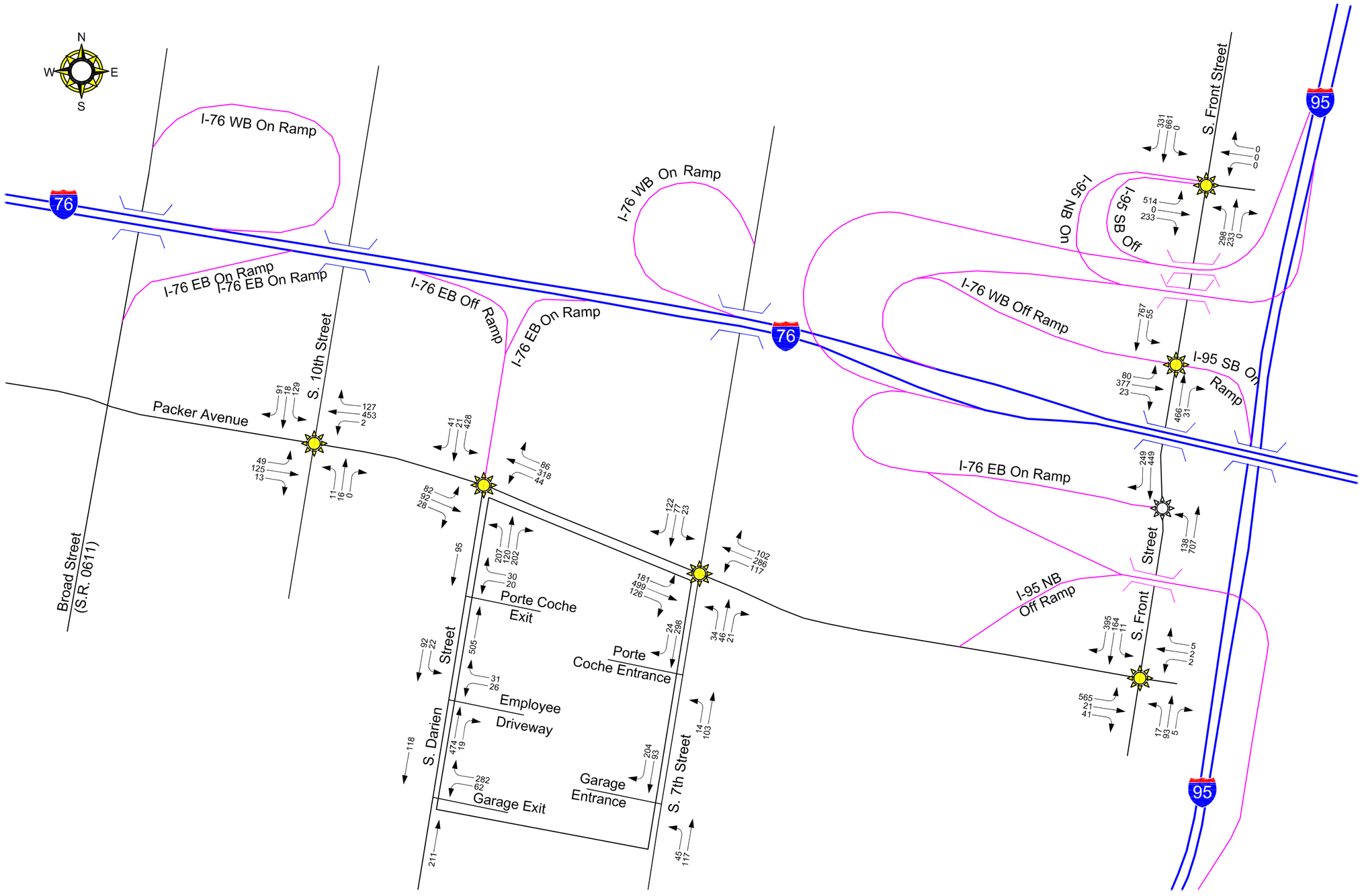
- Surface Street
- Interstate Highway
- Interstate Ramp
- Signalized Intersection
- Unsignalized Intersection
- 000 Peak Hour Traffic Volume
- Lane Configuration

FIGURE 20

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2016 AND 2021 SITE TRIPS WEEKDAY

PRE-PHILLIES EVENT PEAK HOUR



PENN NATIONAL GAMING INC.

HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

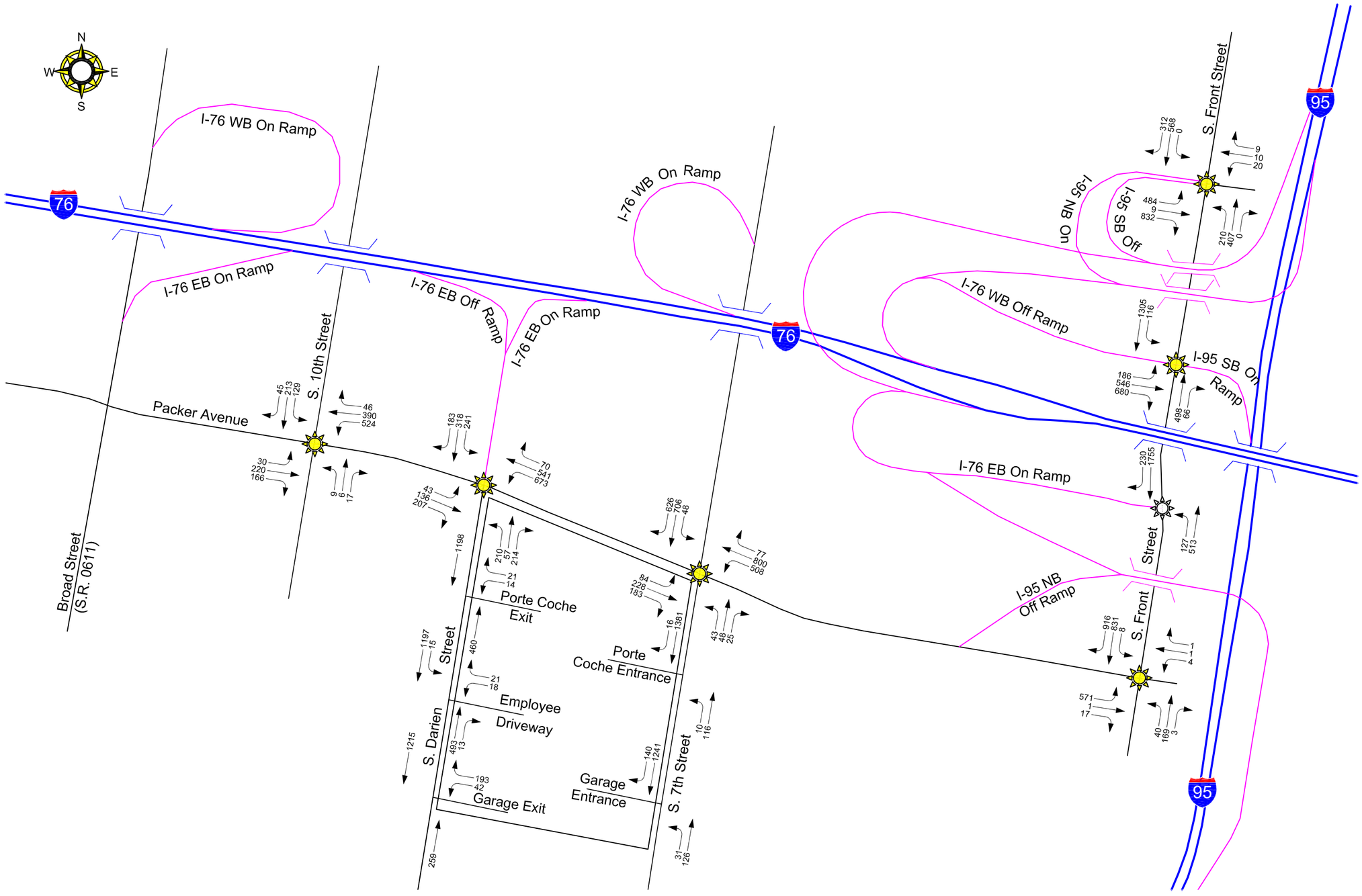
- Surface Street
- Interstate Highway
- Interstate Ramp
- Signalized Intersection
- Unsignalized Intersection
- 000 Peak Hour Traffic Volume
- Lane Configuration

FIGURE 21

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2016 OPENING DAY BUILD VOLUMES

WEEKDAY PM PEAK HOUR



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HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

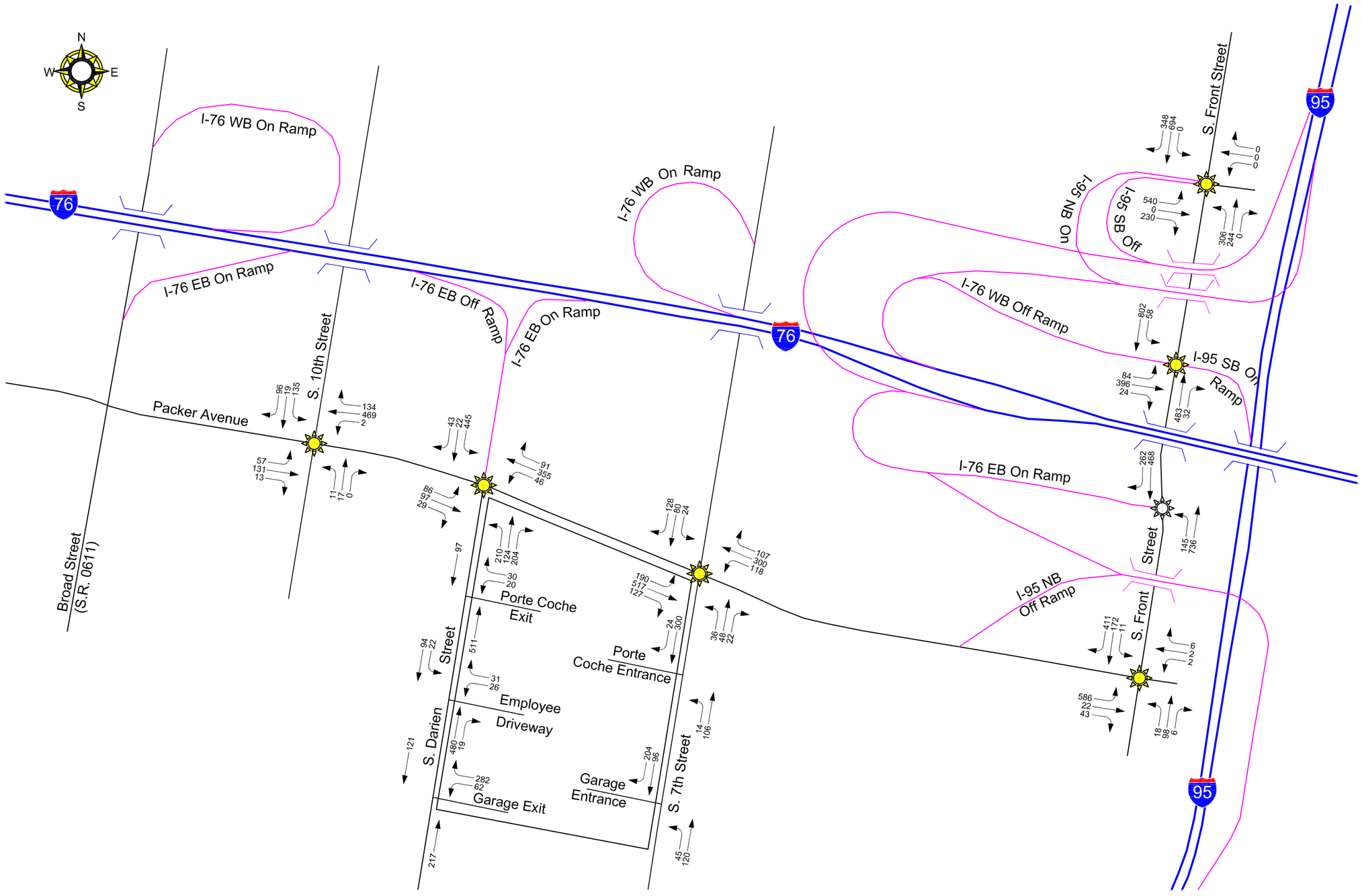
- Surface Street
- Interstate Highway
- Interstate Ramp
- Signalized Intersection
- Unsignalized Intersection
- 000 Peak Hour Traffic Volume
- Lane Configuration

FIGURE 22

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2016 OPENING DAY BUILD VOLUMES

WEEKDAY PRE-PHILLIES EVENT PEAK HOUR



PENN NATIONAL GAMING INC.

HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

- Surface Street
- Interstate Highway
- Interstate Ramp
- Signalized Intersection
- Unsignalized Intersection
- 000 Peak Hour Traffic Volume
- Lane Configuration

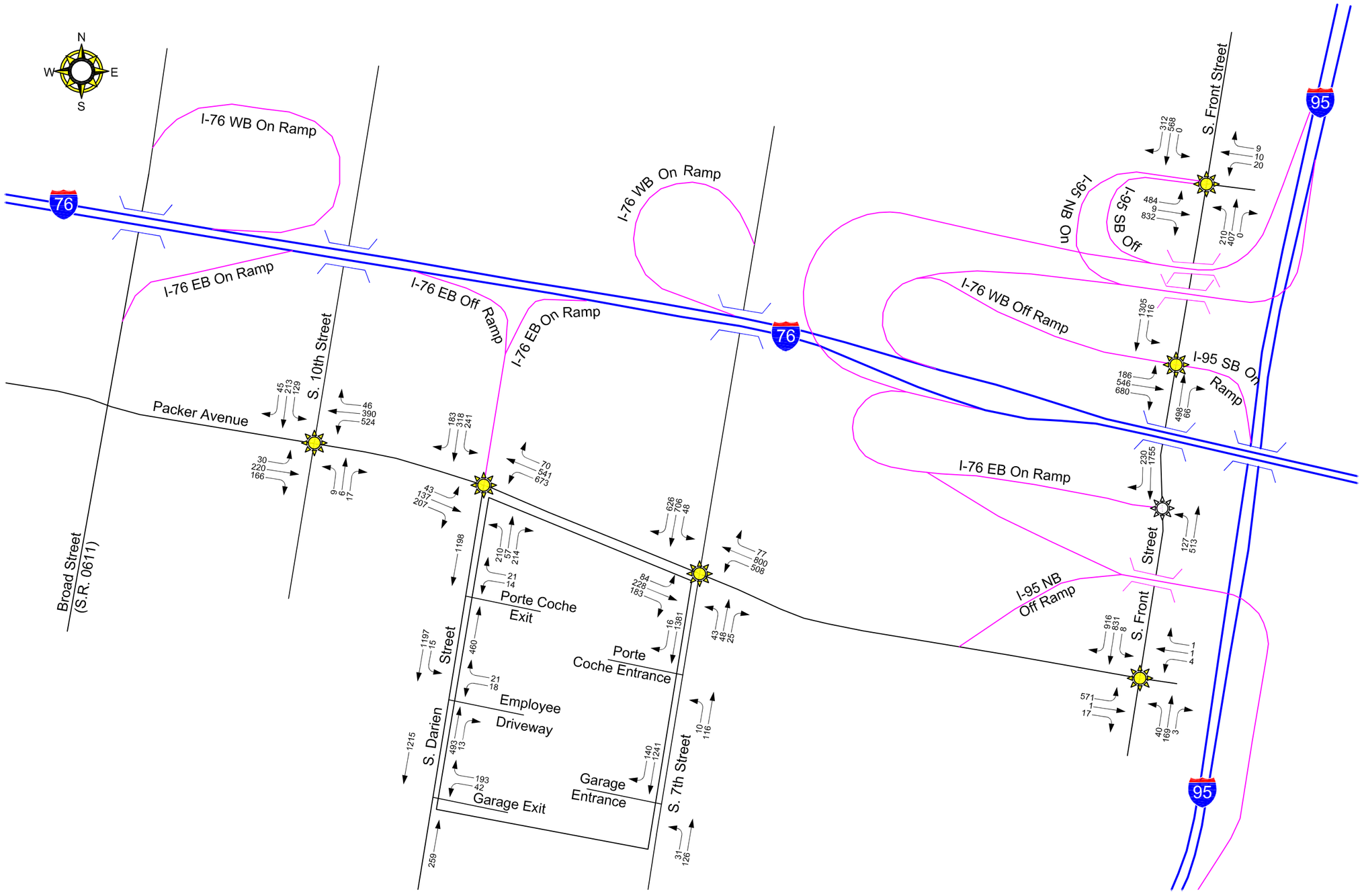
FIGURE 23

Pennoni

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2021 HORIZON BUILD VOLUMES

WEEKDAY PM PEAK HOUR



PENN NATIONAL GAMING INC.

HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

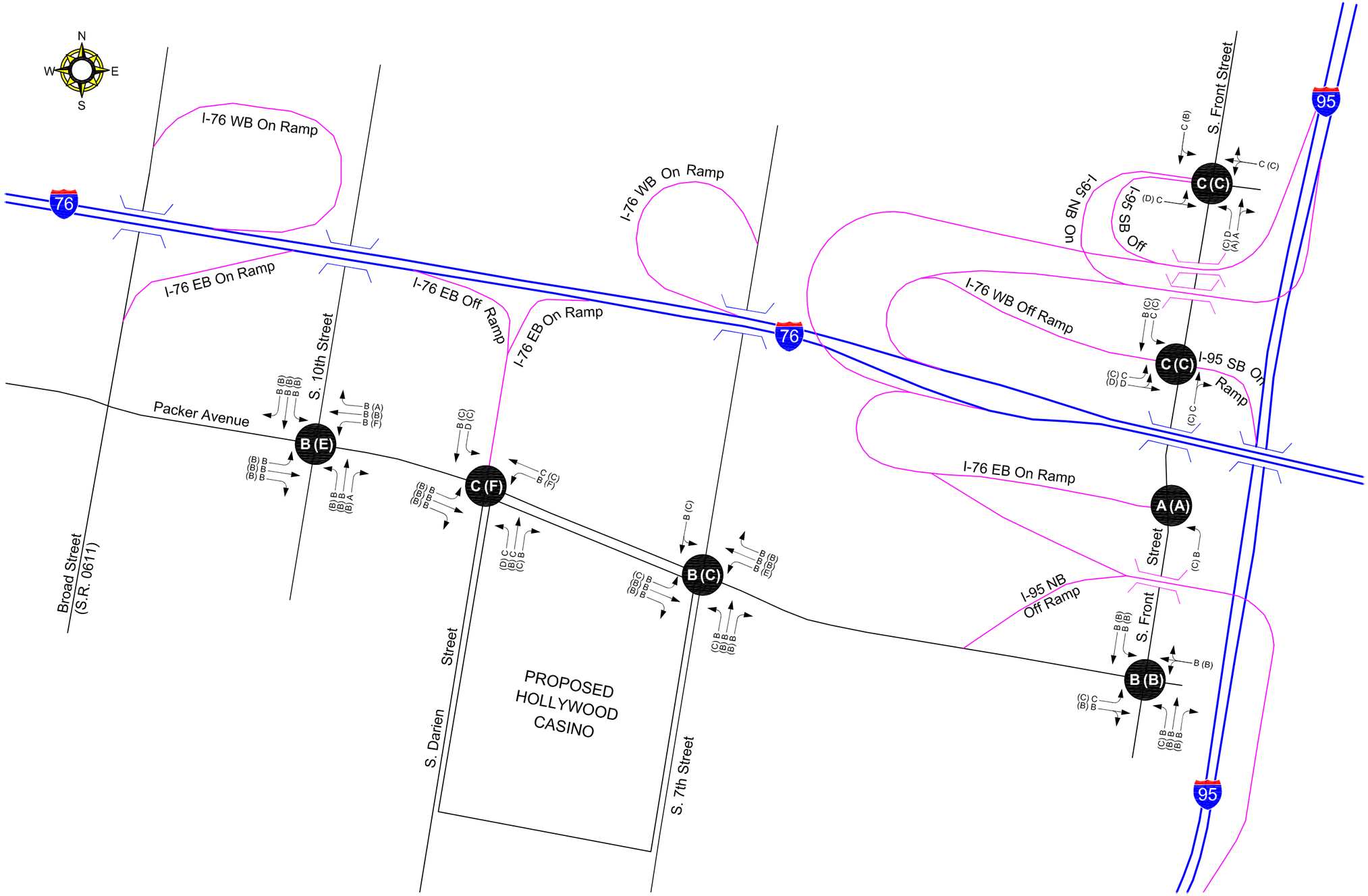
- Surface Street
- Interstate Highway
- Interstate Ramp
- Signalized Intersection
- Unsignalized Intersection
- 000 Peak Hour Traffic Volume
- Lane Configuration

FIGURE 24

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2021 HORIZON BUILD VOLUMES

WEEKDAY PRE-PHILLIES EVENT PEAK HOUR



PENN NATIONAL GAMING INC.

HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

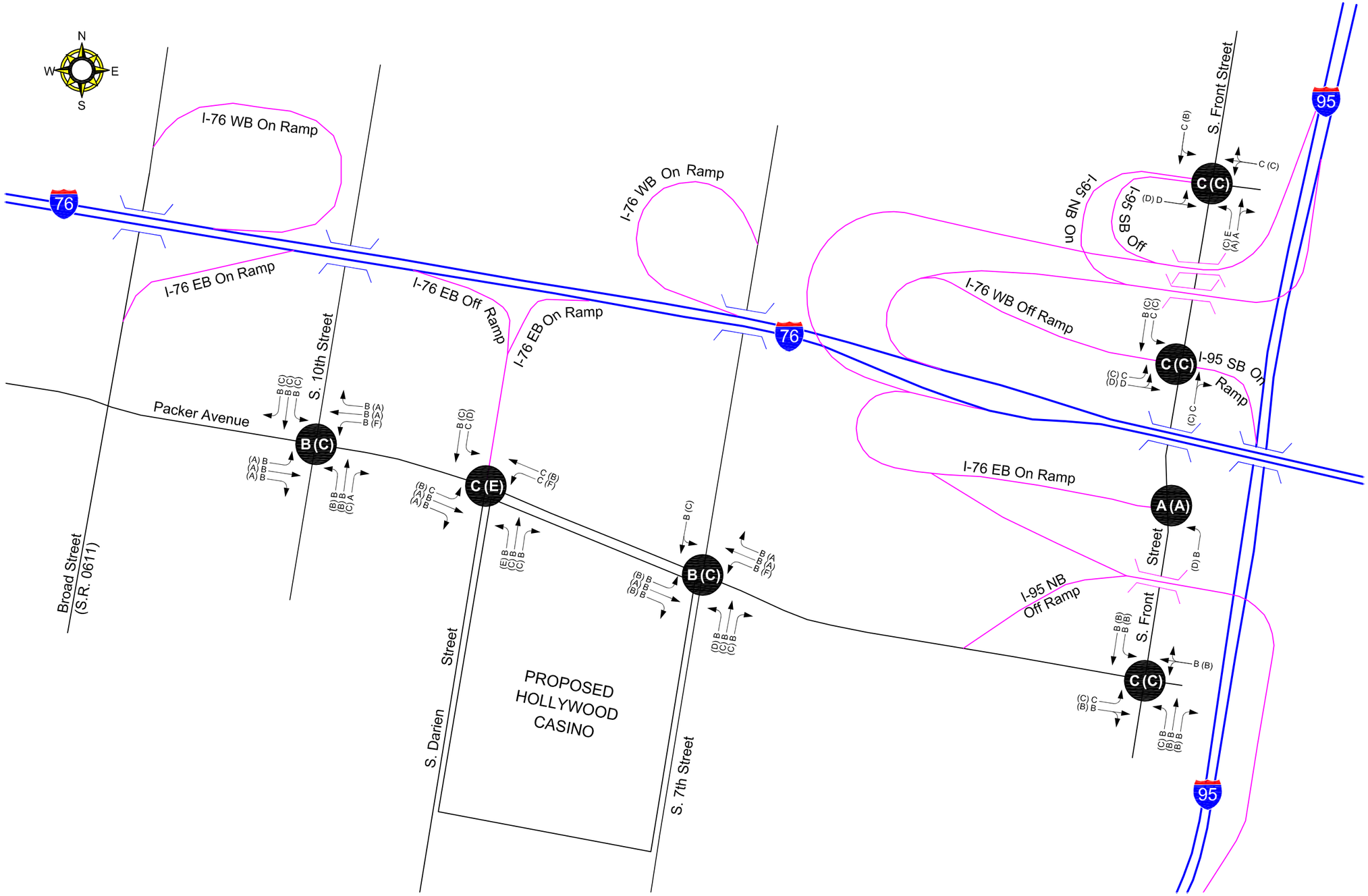
- Surface Street
- Interstate Highway
- Interstate Ramp
- A — Weekday PM Peak Hour LOS
- (A) — Weekday Pre-Phillies Event Peak Hour LOS
- A (A) — Overall Intersection LOS
- Lane Configuration

FIGURE 25

Pennoni

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2021 HORIZON NO BUILD
LEVEL OF SERVICE
WEEKDAY PM PEAK HOUR



PENN NATIONAL GAMING INC.

HOLLYWOOD CASINO

PHILADELPHIA, PA

TRANSPORTATION IMPACT STUDY

NOVEMBER 14, 2012
REVISED FEBRUARY 1, 2013

LEGEND

- Surface Street
- Interstate Highway
- Interstate Ramp
- A — Weekday PM Peak Hour LOS
- (A) — Weekday Pre-Phillies Event Peak Hour LOS
- A(A) — Overall Intersection LOS
- Lane Configuration

FIGURE 26

Pennoni

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3001 MARKET STREET
PHILADELPHIA, PA 19104

2021 HORIZON BUILD WITH IMPROVEMENTS
LEVEL OF SERVICE
WEEKDAY PM PEAK HOUR

APPENDIX 34

PHASE 1 ENVIRONMENTAL SITE ASSESSMENT

PHASE I ENVIRONMENTAL SITE ASSESSMENT

The Turf Club
700 Packer Avenue
Philadelphia, Pennsylvania 19148

Submitted To:

Mr. Alex Stolyar, Vice President, Corporate Development
Penn National Gaming, Inc.
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Submitted By:

Pennoni Associates Inc.
One Drexel Plaza
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Project Environmental Scientist

William F. Schmidt, PE
Associate Vice President

Proj. No. PNGI 1201

November 6, 2012

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EXECUTIVE SUMMARY

On behalf of Penn National Gaming, Inc. (Client), Pennoni Associates Inc. (Pennoni) has performed a Phase I Environmental Site Assessment (ESA) of the property located at 700 Packer Avenue in Philadelphia, Pennsylvania. The subject property consists of approximately 13.35 acres of land improved with an approximately 120,218 square foot mixed use commercial building.

Pennoni conducted the ESA in general conformance with the scope and limitations of the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation E 1527-05. ASTM E 1527-05 is a voluntary consensus standard that constitutes "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice." The procedures included in the ASTM E1527-05 standard comply with the United States Environmental Protection Agency (USEPA) 40 CFR Part 312, Standards and Practices for All Appropriate Inquiries; Final Rule.

The primary objective of the Phase I ESA was to identify recognized environmental conditions (RECs) in connection with the subject property. A REC is defined as the presence or likely presence of any hazardous substance or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

To identify RECs in connection with the subject property, Pennoni's Phase I ESA included a records review, a site reconnaissance, interviews with owners, operators, and occupants of the subject property, interviews with local, state, and federal government officials, a review of information provided by the User (i.e., the party seeking to complete an environmental site assessment of the subject property), and preparation of a report presenting Pennoni's findings, opinions, conclusions and supporting documentation. The Phase I ESA for the subject property did not include any testing or sampling of materials (e.g., soil, water, air, building materials).

Our findings, opinions, and conclusions regarding RECs in connection with the subject property are summarized below. Results of our evaluation of non-scope considerations including wetlands, flood zones, and radon are also summarized below.

Findings and Opinion

The key findings of Pennoni's Phase I ESA for the subject property are presented in the table below.

FINDINGS SUMMARY TABLE

Area of Concern	Not Identified/No Significant Finding	*De minimis*	ASTM Non-Scope	REC/ HREC	Further Action Recommended
Historical Review				X	YES
On-Site Industrial Operations	X				
User Provided Information	X				
Adjoining Properties of Concern	X				

Area of Concern	Not Identified/No Significant Finding	*De minimis*	ASTM Non-Scope	REC/ HREC	Further Action Recommended
Regulatory Agency Review	X				
Hazardous Substances	X				
Storage Tanks	X				
Floor Drains/Sumps				X	YES
Other Issues – stains and corrosion, drains, sumps, stressed vegetation, solid waste, septic systems, etc.	X				
PCBs		X			YES
Asbestos-Containing Materials			X		YES
Lead-Based Paint			X		YES
Wetlands	X				
Radon	X				

Conclusions

This assessment has revealed the following RECs or conditions indicative of releases or threatened releases of hazardous substances on, at, in or to the subject property:

1. Review of the 1951 historic Sanborn map reveals the former use of the subject property as a City Dump/Public Dump. Historic dumping of unknown materials may have impacted subsurface soil and groundwater beneath the subject property. Pennoni recommends that a subsurface soil and groundwater investigation be performed to determine if regulated compounds are present in either media at concentrations exceeding the Pennsylvania Department of Environmental Protection (PADEP) Residential or Non-Residential Used Aquifer Statewide Health Standards.

2. Pennoni observed evidence of six (6) below-ground hydraulic lifts which appear to have been removed and filled within the vacant truck repair garage on the subject property. Controls for the six (6) underground lifts were also observed along the walls of the building. The condition of the hydraulic fluid supply lines that formerly provided hydraulic oil to the underground cylinders is not known. There is a potential that subsurface soils in the vicinity of the lifts may have been impacted with concentrations of polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs) at concentrations exceeding PADEP Residential or Non-Residential Used Aquifer Statewide Health Standards as a result of releases from the hydraulic fluid supply lines. Pennoni recommends that a subsurface soil investigation be conducted within the vacant truck garage building to evaluate soil quality in the vicinity of the lifts.

3. Pennoni observed floor drains throughout the vacant truck repair garage on the subject property. Pennoni also observed two (2) manhole covers which appear to be access ways for an oil/water separator within the building; however, the presence of an oil/water separator could not be verified. Notable staining was not observed in the vicinity of the drains and no chemical or petroleum odors were noted; however, the integrity of a holding tank associated with the oil/water separator could not be verified. Therefore, subsurface soils in the vicinity of the suspect oil/water separator may be impacted with regulated compounds at concentrations

exceeding the PADEP Residential or Non-Residential Used Aquifer Statewide Health Standards. Pennoni recommends that a subsurface soil investigation be conducted in the vicinity of the oil/water separator holding tank.

Additionally, Pennoni has identified the following *de minimis* conditions in connection with the subject property:

- Pennoni observed a pad-mounted transformer located in the southeast corner of the subject property. Pennoni did not observe a placard indicating the PCB-content of the transformer. No evidence of leaking or staining was observed on the concrete pad or grass surrounding the transformer.

- Fluorescent lights were observed throughout the subject property buildings. Based on the age of the buildings of the subject property building, it is possible that the ballasts contains PCBs. Evidence of staining or leaking was not observed in the vicinity of the fluorescent lights; however, it would be prudent to check the lighting for PCB labeling prior to disposal.

Pennoni has also identified the following ASTM Non-Scope Considerations in connection with the subject property:

- No ACM was definitively identified during this ESA and no sampling was performed. During the site visit, however, some suspect materials were observed within the subject property buildings. The materials include, but are not limited to, 12 x 12 in. vinyl floor tile and 2 x 2 ft. ceiling tile. The observed suspect materials appeared by be in fair to good condition. Whether or not these materials are asbestos containing can only be confirmed by manufacturer knowledge or by collecting samples of the materials and having them analyzed by an accredited laboratory. Prior to renovations or demotion, an ACM survey should be performed.

- No LBP was definitively identified during the ESA; however, the subject property buildings would be expected to have one or more layer of LBP based on the dates of construction. Testing of the paint can be performed to determine if any of the older layers are lead containing, or the materials can merely be presumed to be LBP and, subsequent to receiving proper notice of the potential presence of LBP on or in the structures, renovation or demolition contractors can take appropriate precautionary measures to prevent worker exposure and proper handling during renovation or demolition activities.

1.0 INTRODUCTION

On behalf of Penn National Gaming (Client), Pennoni Associates Inc. (Pennoni) has performed a Phase I Environmental Site Assessment (ESA) of the property located at 700 Packer Avenue in Philadelphia, Pennsylvania.

Pennoni conducted the Phase I ESA in general conformance with the scope and limitations of the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation E 1527-05. The procedures included in the ASTM E1527-05 standard comply with the United States Environmental Protection Agency (USEPA) 40 CFR Part 312, Standards and Practices for All Appropriate Inquiries; Final Rule.

ASTM E 1527-05 is a voluntary consensus standard that constitutes "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice." The ASTM practice is intended to permit a User (i.e., the party seeking to complete an environmental site assessment of the subject property, in this case, Penn National Gaming, Inc.) to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) liability (i.e., landowner liability protections or LLPs). The practice does not address whether requirements in addition to all appropriate inquiry have been met in order to qualify for LLPs (e.g., continuing obligations not to impede the integrity and effectiveness of AULs, the duty to take reasonable steps to prevent releases, or the duty to comply with legally required release reporting obligations).

ASTM E 1527-05 does not include any testing or sampling of materials (e.g., soil, water, air, building materials).

This report presents the findings, opinions, and conclusions, and supporting documentation for the Phase I ESA of the subject property, completed by Pennoni as of the date of this report. Information made available to Pennoni after this date, which would change the conclusions of this report, will be forwarded upon receipt.

1.1 Purpose

The purpose of the assessment was to identify recognized environmental conditions (RECs) in connection with the subject property. A REC is defined as the presence or likely presence of any hazardous substance or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

1.2 Scope of Work

Pennoni's Phase I ESA for the subject property included a records review, site reconnaissance, interviews with owners, operators, and occupants of the subject property, interviews with local, state, and federal government officials, review of information provided by the User, and preparation of this report presenting Pennoni's findings, opinions, conclusions and supporting documentation.

The environmental professionals responsible for the preparation of this Report have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and

setting of the subject property. The Report was reviewed by Mr. William Schmidt, PE, Associate Vice President of Pennoni Associates Inc. Mr. Schmidt was supported by various staff, including Ms. Jennifer Higgins, Project Environmental Scientist, with Pennoni. Mr. Schmidt and Ms. Higgins meet the definition of an "Environmental Professional" as defined in the ASTM standard and AAI regulation. The Environmental Professional Statement and Signature are presented in Section 9.0 of this report.

1.3 Limitations, Exceptions, Special Terms and Conditions

Pennoni conducted a Phase I ESA of the subject property in general conformance with the scope and limitations of ASTM Standard E 1527-05. The Phase I ESA for the subject property did not deviate from this standard. Data gaps that would affect the ability of the environmental professional to identify conditions indicative of releases or threatened releases of pollutants, contaminants, petroleum and petroleum products are identified in Section 8.0 of this report. This Phase I ESA is presumed to be valid provided it has been completed less than 180 days prior to the acquisition of the subject property or the date of the intended transaction. Recognizing that the passage of time affects the information provided in the reports; our opinions relating to site conditions are based upon information that existed at the time our conclusions were formulated.

1.4 User Reliance

This Report and findings, conclusions, and recommendations contained herein, are furnished for the sole use and benefit of the Client to aid in understanding the environmental condition and potential liabilities of the subject property. This Report may not be assigned, quoted, reproduced, relied upon, or otherwise used without the express prior written consent of Pennoni.

All documents prepared by Pennoni Associates Inc. are the instruments of service in respect of the project. They are not intended or represented to be suitable for reuse by owner or others on extensions of the project or on any other project.

Any reuse without the written verification or adaptation by Pennoni Associates Inc. for the specific purpose intended will be at owner's sole risk and without liability or legal exposure to Pennoni Associates and owner shall indemnify and hold harmless Pennoni Associates Inc. from all claims, damages, losses, and expenses arising out of or resulting there from.

2.0 SUBJECT PROPERTY DESCRIPTION

The following paragraphs provide a description of the subject property including its location, general characteristics, and current use. Current uses of adjoining properties and properties in the surrounding area are also described below.

2.1 Property Location and Legal Description

The subject property is located in Philadelphia, Pennsylvania along the south side of Packer Avenue between Darien and South 7th Streets. The property can be found on the United States Geological Survey (USGS) 7.5- minute topographic quadrangle for Philadelphia, Pennsylvania-New Jersey at map coordinates longitude 75.162093 West, latitude 39.908892 North. A copy of a topographic map is provided in Appendix A.

The subject property is identified on the City of Philadelphia Tax Map 48-S-02 as Tax Parcel 0072. A copy of the City of Philadelphia Tax Map depicting the subject property is included in Appendix A.

2.2 Subject Property Characteristics

The following paragraphs describe the general characteristics of the subject property, including its current use and a description of structures, roads, and other improvements (i.e., heating/cooling system, sewage disposal, source of potable water, etc.) on the subject property.

2.2.1 Current Use of the Subject Property

The subject property is identified as an approximate 13.35 acre area occupied by the Philadelphia Turf Club off-track betting facility which includes tenant space occupied by the Pennsylvania Lottery offices, Catch Packer Recovery Program, PharmDoor, Verifone, and Packer Avenue Foods. The subject property also contains a vacant truck repair garage.

2.2.2 Site Structures

The subject property is improved with an approximately 120,218 square foot mixed use commercial building which contains an off track betting lounge, vacant warehouse space, warehouse space occupied by Packer Avenue Foods, a garage used for installation of taxi radios by Verifone, and office space occupied by PharmDoor, Catch Packer Recovery Program, and the Pennsylvania Lottery. Additionally, the subject property contains an approximately 9,000 square foot vacant truck repair garage. Based on a review of historical documentation, the subject property buildings were constructed in 1969.

2.2.3 Site Utilities

The subject property is serviced by standard utilities. Sanitary sewer and water service are provided by the Philadelphia Water Department. Electrical service is provided by PECO and natural gas service is provided by the Philadelphia Gas Works.

2.3 Current Uses of Adjoining Properties and Properties in the Surrounding Area

Adjoining properties, and properties and roads in the area surrounding the subject property, are identified below.

- North – Packer Avenue borders the subject property to the north, followed by a grass area and I-76, the Schuylkill Expressway.
- South – A warehouse building is located adjacent to the south of the subject property, followed by a parking lot for Citizens Bank Park.
- East – South 7th Street is located adjacent to the east of the subject property, followed by an industrial property occupied by Sysco Philadelphia.
- West – South Darien Street borders the subject property to the west followed by a Holiday Inn hotel.

3.0 USER PROVIDED INFORMATION

3.1 Chain of Title Information

Chain of title information was not provided by the User for review and inclusion in this report.

3.2 Environmental Liens and/or Activity and Use Limitations

The Client is not aware of any environmental liens that are filed or recorded against the subject property. Furthermore, the Client is not aware of any activity and use limitations (AULs) (e.g., engineering controls, land use restrictions, or institutional controls) that are in place on the subject property or that have been filed or recorded in a registry under federal, tribal, state, or local law. Pennoni reviewed the current deed for the subject property as part of this Phase I ESA; based upon this review, Pennoni has concluded that the subject property is not subject to environmental liens, institutional controls, or engineering controls.

3.3 Specialized Knowledge and Interviews

The Client does not have any specialized knowledge or experience related to the subject property or nearby properties.

According to Mr. Frank Costello, representative of the subject property owner, Philadelphia Suburban Development Corporation, who was interviewed during the site inspection, the vacant warehouse space located on the first floor of the Turf Club building was formerly occupied by a tire dealer and a hardware store. Mr. Costello also informed Pennoni that the truck garage on the subject property has been vacant for a while; however, a more specific estimate of the amount of time was not known.

3.4 Commonly Known or Reasonably Ascertainable Information

The Client is not aware of commonly known or reasonably ascertainable information about the property that would help the Environmental Professional to identify conditions indicative of releases or threatened releases. The Client is not aware of specific chemicals that are present or once were present on the subject property; spills or other chemical releases that have taken place at the subject property, or any environmental cleanups that have taken place at the subject property.

3.5 Valuation Reduction for Environmental Issues

In the Client's opinion, the purchase price being paid for subject property reasonably reflects the fair market value of the subject property.

3.6 Presence or Likely Presence of Contamination at the Subject Property

Based on their knowledge and experience related to the subject property, the Client is not aware of any obvious indicators that point to the presence or likely presence of contamination at the subject property.

3.7 Previous Reports

Previous environmental reports pertaining to the subject property were not provided by the User for review and inclusion in this report.

4.0 PHYSICAL SETTING

4.1 Topography/Regional Drainage

The subject property is located on the Philadelphia, PA-NJ 7.5-minute USGS topographic quadrangle at an approximate elevation of 20 feet above mean sea level. Surface water on the subject property is expected to runoff the impervious areas of the subject property via sheetflow and drain into the Philadelphia Water Department storm water inlets located throughout the asphalt-paved parking areas of the subject property. Storm water running off the property is expected to ultimately discharge to the east towards the Delware River, which is located approximately 1.45 miles to the east of the subject property.

4.2 Soils

A review of the USDA-NRCS Web Soil Survey published by the United States Department of Agriculture-Soil Conservation Service (USDA-SCS) revealed that the soils present on the subject property consist primarily of Urban Land (UR) soils. This land type consists of cut and fill areas, most of which have been developed for residential, commercial, or industrial use or for multilane highways. During development, the original soil horizon was destroyed in at least 70 percent of the area. Areas of both cut and fill are moderately or rapidly permeable. Where the original soil was removed and the substratum exposed, the material remaining is rapidly permeable and extremely low in organic-matter content and fertility.

4.3 Underlying Formation

Based on the Pennsylvania Department of Conservation and Natural Resources (DCNR), Bureau of Topographic and Geological Survey's *Physiographic Provinces of Pennsylvania (Map 13)*, 4th Edition, 2000, the subject property lies within the Atlantic Coastal Plain Physiographic Province, which consists of unconsolidated to poorly consolidated sand and gravel, which are underlain by highly folded and faulted schist, gneiss and other metamorphic rock. The underlying formation, as determined by DCNR's *Atlas of Preliminary Geologic Quadrangles (Map 61)*, Fourth Series, 1981 and the *Geologic Map of Pennsylvania (Map 7)*, 3rd edition, 1990, is the Quaternary-aged Trenton Gravel Formation (geologic symbol Qt).

According to DCNR's *Engineering Characteristics of the Rocks of Pennsylvania* (Environmental Geology Report 1), 2nd edition, 1982, the Trenton Gravel is approximately 30 feet thick and consists of gray to pale-reddish-brown, very gravelly sand, inter-bedded with cross-bedded sand and silt layers. The Trenton Gravel occurs at between 0 and 20 feet above mean sea level in the Delaware River Valley and was deposited by the alluvial processes of the Delaware River. Porosity and permeability are high and wells may have yields in excess of 1,000 gallons per minute.

4.4 Groundwater

Groundwater is expected to flow to the east, parallel to the surface gradient. Groundwater would be expected to be located in the joints and fractures of the underlying formation. In order to further determine groundwater conditions on the subject property, however, a property-specific hydrogeologic investigation would be necessary.

4.5 Water Migratory Pathways

Potential migratory pathways for surface water and groundwater entering and exiting the subject property are important in establishing the potential for surrounding areas to impact the subject property or for the subject property to impact neighboring properties that are down gradient. Local topography slopes slightly to the east. Surface water and groundwater, therefore, are expected to migrate from the properties located to the west. Storm drainage and surface water flow drains into storm water inlets located on the subject property into the Philadelphia combined sanitary and storm water system. Regionally, the area is drained by the Delaware River, which is located approximately 1.45 miles to the east of the subject property.

5.0 HISTORICAL RECORDS

The purpose of consulting historical records is to develop a history of the previous uses of the subject property and surrounding area in order to help identify the likelihood of past uses having led to RECs in connection with the subject property.

ASTM E 1527-05 requires identification of all obvious uses of the subject property from the present, back to the subject property's first developed use (including agricultural uses and placement of fill dirt), or back to 1940, whichever is earlier. As such, Pennoni reviewed as many of the standard historical sources (i.e., aerial photographs, fire insurance maps, property tax files, recorded land title records, USGS topographic maps, local street directories, building department records, zoning/land use records, etc.) as were necessary and both reasonably ascertainable and practically reviewable (i.e., publicly available, obtainable from its source within reasonable time and cost constraints). In addition, the historical sources must be determined to be sufficiently useful by the environmental professional.

5.1 Aerial Photographs

Available aerial photographs were obtained from Environmental Data Resources, Inc. in an effort to determine past uses and conditions of the subject property. Aerial photographs were reviewed for the years 1940, 1957, 1967, 1981, 1999, 2005 and 2010, with a scale of one (1) inch to 500 feet. Copies of the aerial photographs reviewed by Pennoni are included in Appendix A. The following is a brief narrative of the aerial photographs reviewed:

- 1940 – The subject property and surrounding properties to the south, east and west consist of vacant land. South 7th Street is visible to the east of the subject property. Railroad tracks are visible to the north of the subject property.

- 1957 – No significant changes to the subject property or surrounding properties to the south, east or west were observed from the 1940 photograph. The railroad tracks formerly located to the north of the subject property have been replaced by the Schuylkill Expressway.

- 1967 – The current Turf Club and garage buildings are visible on the subject property. Packer Avenue is visible to the north of the subject property, followed by a baseball field and the Schuylkill Expressway, and the current warehouse building is visible to the south. Darien Street now borders the subject property to the west and an industrial building is visible to the east of the subject property across South 7th Street.

- 1981 – No significant changes to the subject property were observed from the 1967 photograph. The current hotel building is visible to the west of the subject property and a new on-ramp to the Schuylkill Expressway has been constructed to the north of the subject property across Packer Avenue.

- 1999 – No significant changes to the subject property or surrounding area were observed from the 1981 photograph.

- 2005 – No significant changes to the subject property or surrounding area were observed from the 1999 photograph, except that Citizens Bank Park has been constructed to the southwest of the subject property.

- 2010 – No significant changes to the subject property or surrounding area were observed from the 2005 photograph, except that a new industrial building has been constructed to the southeast of the subject property.

5.2 Historical Maps

Available Sanborn Fire Insurance Maps were obtained from FirstSearch Technology Corporation to determine past uses and conditions of the subject property. Sanborn Fire Insurance maps for the subject property and surrounding area were reviewed for the years 1922, 1951, 1976, and 1978. A copy of the Sanborn map reviewed by Pennoni is included in Appendix A. Historic property atlases and Land Use Maps obtained from the *Greater Philadelphia GeoHistory Network* website published by the Philadelphia Area Consortium of Special Collections Libraries, were also reviewed in order to determine the past uses and conditions of the subject property. Historic Atlases were reviewed for the years 1862, 1895, and 1910; Land Use Maps were reviewed for the years 1942 and 1962. The following is a brief narrative of the historical map review:

- 1862 – No structures are depicted on the subject property. Hollander Creek is identified running through the property. South 8th Street is identified through the subject property; neither Packer Avenue nor Darien Street are depicted on the map.

- 1895 – No significant changes to the subject property or surrounding area were observed from the 1862 map, except that the Hollander Creek is no longer depicted. The subject property is identified as part of Girard Estate.

- 1910 – No significant changes to the subject property were observed from the 1895 Atlas.

- 1922 – The subject property contains several dwellings and farm structures, identified as coops. Southwark Avenue, Geary Street, South 8th Street, and Curtin Avenue all run through the subject property. Southwark Place is identified on the southern portion of the subject property and a canal is depicted along the southern border of the subject property. Railroad tracks and a car and power house are depicted to the north of the subject property, across Packer Avenue. The car and power house contains two (2) tank structures which are identified as air compressors.

- 1942 – The subject property is identified as vacant land and farms. No significant changes to the surrounding properties were observed from the 1922 map.

- 1951 – The subject property contains two (2) structures identified as dwellings and is labeled as City Dump/Public Dump. Southwark Avenue still runs through the subject property in addition to several unopened streets including Curtin Avenue, Geary Street, and South Franklin Street. Darien Street is identified to the west of the subject property and is labeled as not opened. A canal is identified along the southern border of the subject property, followed by residential dwellings located along South 7th Street. Railroad tracks are depicted to the north of the subject property, across Packer Avenue.

- 1962 – The use of the subject property and surrounding properties are not identified.

- 1976 – The subject property is improved with the current structures. The Turf Club building is identified as Abbott's Dairies a Division of Fairmont Foods Co.; the map indicates that the building was constructed in 1968. The use of the garage structure on the subject property is not identified. The adjacent property to the west contains the current hotel structure identified as the Philadelphia Hilton Inn. The warehouse building to the south of the subject property is identified as Cason Packing Co. The adjacent properties to the east across South 7th Street are identified as Perloff Bros. Inc. (wholesale grocery and produce), and the City of Philadelphia Streets Department Maintenance Yard and Sanitation Department Southeast Service Building, which contains a filling station. The Schuylkill Expressway is depicted to the north of the subject property.

- 1978 – No significant changes to the subject property or surrounding properties were observed from the 1976 map.

5.3 Property Tax Files

Property tax files including records of past ownership, appraisals, maps, sketches, photos, or other information pertaining to the property were reviewed by Pennoni.

Pennoni obtained a current tax map for the subject property from Philadelphia Records Department; a copy of the tax map is included in Appendix A. The subject property is identified on the City of Philadelphia Tax Map 48-S-02 as Tax Parcel 0072.

5.4 Recorded Land Title Records

Recorded land title records including records of historical fee ownership, including leases, land contracts and AULs on or of the subject property were not provided to Pennoni by the Client; however, Pennoni obtained a copy of the current deed for the subject property from the City of Philadelphia Department of Licenses and Inspections (L&I). Philadelphia Suburban Development Corporation (PSDC) is the current owner of the subject property. According to the current deed, PSDC acquired the subject property from the Philadelphia Authority for Industrial Development on October 6, 1987, as recorded in Deed Book 0912, Page 502. The current deed also states that the Philadelphia Authority for Industrial Development acquired the subject property from Fairmount Foods Company on January 5, 1982. A copy of the current subject property deed is included in Appendix C.

5.5 Historical Topographical Maps

Historical Topographical Maps were not determined to be reasonably ascertainable, practically reviewable, and/or sufficiently useful.

5.6 Local Street Directories

Local Street Directories were not determined to be reasonably ascertainable, practically reviewable, and/or sufficiently useful.

5.7 Building Department Records

Pennoni obtained available zoning records from L&I via electronic mail. Review of the subject property zoning files did not reveal information regarding storage tanks or other environmental issues. The files

contained in the subject property zoning files indicate that the subject property has been occupied by the Turf Club since 1993. The permit applications contained in the files relate to interior renovations and signage for the Turf Club building; no information regarding the vacant truck repair garage on the subject property was found in the files. Additionally, documentation prior to 1992 was not available from L&I for the subject property. Copies of the documents obtained from L&I are included in Appendix C.

5.8 Zoning/Land Use Records

The subject property is zoned for use as a Food Distribution Center (FDC).

5.9 Previous Environmental Reports

Previous environmental reports pertaining to the subject property were not provided by the Client for review and inclusion in this report.

6.0 REGULATORY AGENCY RECORDS REVIEW

As part of the Phase I ESA for the subject property, Pennoni reviewed both standard and additional environmental record sources for the subject property and surrounding area. Our environmental records review consisted of a review of the following:

- the Environmental FirstSearch Report (FirstSearch Report) for the subject property provided by InfoMap Technologies Incorporated;
- information requested from the United States Environmental Protection Agency (USEPA), Region III;
- information requested from the Pennsylvania Department of Environmental Protection (PADEP); and,
- information requested from regional and local sources including, the City of Philadelphia.

6.1 Standard Environmental Record Sources, Federal and State

Pennoni contracted the services of InfoMap Technologies Corporation (InfoMap) to search both state and federal environmental databases in an attempt to identify potential concerns that may be associated with either the subject site and/or surrounding properties. The FirstSearch Report provided listings, accompanied by a map, of facilities and operations with reported environmental concerns within the ASTM E 1527-05 specified search radius around the subject property.

The federal databases searched by the FirstSearch Report included the following:

- Federal National Priorities List (NPL) site list;
- Federal Delisted NPL site list;
- Federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list;
- Federal CERCLIS No Further Remedial Action Planned (NFRAP) site list;
- Federal Resource Conservation and Recovery Act (RCRA) Corrective Action (CORRACTS) facilities list;
- Federal Treatment, Storage, and Disposal (RCRA TSD) facilities list;
- Federal RCRA (RCRA GEN) generators list;
- Federal Institutional Control/Engineering Control (IC/EC) registries; and
- Federal Emergency Response Notification System (ERNS) list.

The FirstSearch Report also searched the following state database files:

- State Hazardous Waste Sites (SHWS) list;
- State Solid Waste Facility/Landfill (SWF/LF) site list;
- State Leaking Underground Storage Tank (LUST) site list;
- State Registered Underground and Aboveground Storage Tank (REG UST/AST) site list;
- State Institutional Control/Engineering Control (IC/EC) registries;
- State Voluntary Cleanup Program (VCP) sites list; and
- State Brownfields sites list.

The FirstSearch Report is presented in Appendix B. Complete listings and descriptions of the each of the databases search are included in the FirstSearch Report.

6.1.1 Subject Property

The subject property was not identified as a regulated site in the FirstSearch Report.

6.1.2 Vicinity Properties -- Facilities of Potential Concern

The FirstSearch Report identified the following facilities located adjacent to or in close proximity to the subject property.

- Sysco Food Svc Phila
  600 Packer Ave
  Philadelphia, PA 19148

The Sysco Food Svc Phila UST and LUST site is located adjacent to the east of the of the subject property across South 7th Street. According to the FirstSearch Report, the site contains two (2) 10,000-gallon diesel ASTs which were installed in December 2010 and are currently in use. The LUST listing states that a release which occurred on August 19, 1992 achieved a cleanup completed status on April 22, 2009. Based on the location of the Sysco Food UST and LUST site relative to the subject property, and the reported regulatory status of the site, adverse impacts to the subject property are not expected.

- Tartan Sysco Foods Inc.
  666 Packer Ave
  Philadelphia, PA 19148

The Tartan Sysco Foods LUST site is located adjacent to the east of the subject property across South 7th Street. According to the FirstSearch Report, a release of diesel fuel was cleaned up at the site pursuant to Act 32. Additional details regarding the listing were not provided in the FirstSearch Report. Based on the location of the Tartan Sysco Foods LUST site relative to the subject property, and the reported regulatory status of the site, adverse impacts to the subject property are not expected.

- 2nd District Maintenance Building
  Seventh St and Hartranft Ave
  Philadelphia, PA 19148

The 2nd District Maintenance Building UST site is located adjacent to the southeast of the subject property across South 7th Street. No details regarding the tanks located at the site were provided in the FirstSearch Report. Based on the location of the 2nd District Maintenance Building UST site relative to the subject property, adverse impacts to the subject property are not expected.

- SE Transfer Station
  Room 840 Mun. Svc. Building
  Philadelphia, PA 19107

The SE Transfer Station SWL site is located adjacent to the south/southeast of the of the subject property. No details regarding the site were provided in the FirstSearch Report. Based on the

location of the SE Transfer Station SWL site relative to the subject property, adverse impacts to the subject property are not expected.

The remaining reported sites are not located on or adjacent to the subject property and are not expected to impact the subject property based on their location and/or reported regulatory status. Complete details for all of the sites listed in the FirstSearch Report are included in Appendix B.

6.1.3 Orphan Sites

The unfiltered FirstSearch Report identified five (5) orphan sites, or sites which could not be mapped due to inadequate address information. None of the identified sites appear to be located on or adjacent to the subject property based on the provided information.

6.2 Additional Environmental Records Sources – State and Federal

6.2.1 Pennsylvania Department of Environmental Protection

Pennoni submitted an records request, via facsimile, on November 1, 2012, to the Pennsylvania Department of Environmental Protection (PADEP), for information regarding environmental concerns at the subject property. A copy of the letter is contained in Appendix C. PADEP responded to our request via telephone and indicated that no files were identified for the subject property.

6.2.2 United States Environmental Protection Agency

A request was submitted online to the United States Environmental Protection Agency (USEPA), (*www.MyPropertyInfo.com*) on October 29, 2012 to search federal files for any information regarding the subject property, and any instances of illegal waste discharges, Notices of Violations, and the current regulatory status of the subject property. No records pertaining to the subject property were identified. A copy of the search record is included in Appendix C.

6.3 Additional Environmental Records Sources – Regional and Local

6.3.1 Philadelphia Water Department

Pennoni submitted a written request, in a letter dated November 5, 2012, to the Philadelphia Water Department for information regarding environmental concerns at the subject property. No response to this request has been received to date. Information received, which changes the findings of this report, will be forwarded upon receipt. A copy of the request is included in Appendix C.

6.3.2 Philadelphia Department of Licenses and Inspections

Pennoni obtained available zoning records from L&I via electronic mail. Review of the subject property zoning files did not reveal information regarding storage tanks or other environmental issues. The files contained in the subject property zoning files indicate that the subject property has been occupied by the Turf Club since 1993. The permit applications contained in the files relate to interior renovations and signage for the Turf Club building; no information regarding the vacant truck repair garage on the subject property was found in the files. Additionally,

documentation prior to 1992 was not available from L&I for the subject property. Copies of the documents obtained from L&I are included in Appendix C.

7.0 SITE RECONNAISSANCE

Pennoni personnel completed an inspection of the subject property on October 31, 2012 in order to visually inspect the property for evidence of RECs. During the site visit Pennoni was escorted by Mr. Frank Costello of Philadelphia Suburban Development Corporation (PSDC), which owns the subject property. Photographs of the significant features observed during the site visit are provided in Appendix D.

Methodology

The property was observed by visually walking the surveyed property line. Interior portions of the subject property were accessed as well. Interior spaces of buildings located on the subject property were observed in a methodical means by accessing each room and space including the basement and penthouse levels, if any. Most individual rooms were physically entered and visual observations were made.

Limitations

Access to interior areas within the buildings on the subject property was provided. The subject property Visit and observations were not limited, with the exception of the Packer Avenue Foods tenant space due to the fact that the occupant was not in at the time of the inspection.

7.1 General Observations – Exterior Areas

The subject property contains an approximately 120,218 square foot mixed use building (Turf Club) and an approximately 9,000 square foot vacant truck repair garage. Asphalt parking areas surround the subject property buildings. Three (3) vacant parking attendant booths were observed on the southwest corner of the subject property. The southern portion of the Turf Club structure on the subject property contains loading docks utilized by Packer Avenue Foods.

7.2 General Observations – Interior Areas

The northern portion of the Turf Club building is two (2) stories and contains the Turf Club on the second floor, and warehouse space and offices for the Pennsylvania Lottery, Catch Packer Recovery Program, and PharmDoor on the first floor. The first floor warehouse space is mostly vacant with a small portion utilized by the Turf Club for storage of building maintenance materials. The northeastern corner of the Turf Club building contains a garage area occupied by Verifone. The garage is used by Verifone to install radios and meters in taxi cabs; no vehicle maintenance is performed in this space. Pennoni observed a small grease trap located beneath a sink in the kitchen of the Deli within the Turf Club. Mr. Costello did not have information regarding disposal of the grease by the Turf Club. Pennoni also observed a waste oil heating unit within the vacant truck repair garage on the subject property.

7.3 Hazardous Substances in Connection with Identified Uses

Pennoni observed storage of various building maintenance supplies, including paint, in the warehouse space located on the first floor of the Turf Club building on the subject property. Additionally, Pennoni observed three (3) 55-gallon drums containing hydraulic oil in this warehouse space. Mr. Costello informed Pennoni that the hydraulic oil is stored on the subject property for use in elevators at other properties owned by PSDC. Staining or evidence of leaks was not observed on the concrete floor

surrounding the drums.

7.4 Storage Tanks

No ASTs or evidence of USTs was observed on the subject property.

7.5 Floor Drains and/or Sumps

Pennoni observed floor drains throughout the vacant truck repair garage on the subject property. Pennoni also observed two (2) manhole covers which appear to be access ways for an oil/water separator within the building; however, the presence of an oil/water separator could not be verified. Notable staining was not observed in the vicinity of the drains and no chemical or petroleum odors were observed.

7.6 Other Observations

Based on the site reconnaissance, review of records, and historical usage of the subject property, Pennoni has identified the following conditions that may impact future development of this property or present the potential for future environmental liability.

Stains or Corrosion	Not Observed
Pits, Ponds or Lagoons	Not Observed
Stained Soil or Pavement	Not Observed
Stressed Vegetation	Not Observed
Fill Material	Not Observed
Municipal Solid Waste	Stored in dumpsters and disposed by private contractors
Regulated Waste Disposal	Not Observed
Biomedical Waste Disposal	Not Observed
Waste Water	Not Observed
Wells	Not Observed
Septic Systems	Not Observed
Current/Past Agricultural Activity	Not Observed
Odors	No strong, pungent, or noxious odors were observed
Pools of Liquid	Not Observed
Drums/Containers	Three (3) drums of hydraulic oil observed in warehouse area occupied by Turf Club.
Unidentified Chemicals	Not Observed

7.7 Polychlorinated Biphenyls (PCBs)

PCBs are a class of compounds that were developed in the 1930s and became widely used in industry from the mid-1900s to the late 1970s. The flame resistance of PCBs made them ideal for use in electrical equipment and they did not break down or react with other chemicals, even under extreme conditions of high temperature and pressure. PCBs were commonly used, therefore, in hydraulic fluids, lubricating oils, and transformers, electric motors, switches, and capacitors (including fluorescent lighting ballasts), as well as in paints, plastics, and other household items.

Because PCBs persist in the environment and, because they are fat-soluble, they bio-accumulate in the food chain, the elimination of PCBs from distribution in commerce was mandated in federal legislation in the late 1970s. For economic reasons, however, the use of PCBs in existing equipment was allowed to continue for the useful or normal life of the equipment, as long as specific conditions were met. At present, many industrial facilities continue to rely upon PCB-containing equipment and transformers, while many commercial and residential structures continue to use lighting fixtures, switches, and other articles that contain some level of PCBs.

7.7.1 Transformers and Capacitors

Transformers and capacitors that contain an oil-based dielectric fluid are considered a recognized environmental condition, due to the potential presence of polychlorinated biphenyls (PCBs) in the dielectric fluid. Pennoni observed a pad-mounted transformer located in the southeast corner of the subject property. Pennoni did not observe a placard indicating the PCB-content of the transformer. No evidence of leaking or staining was observed on the concrete pad or grass surrounding the transformer.

7.7.2 Fluorescent Light Ballasts

Fluorescent light ballasts contain capacitors that may be filled with PCB-containing dielectric fluid. Fluorescent lights were observed throughout the subject property buildings. Based on the age of the buildings of the subject property building, it is possible that the ballasts contains PCBs. Evidence of staining or leaking was not observed in the vicinity of the fluorescent lights; however, it would be prudent to check the lighting for PCB labeling prior to disposal.

7.7.3 Elevators and Hydraulic Equipment

Elevators and hydraulic equipment that contain hydraulic fluid are a potential area of environmental concern due to the potential for PCBs to be present in the hydraulic fluid. Pennoni observed evidence of six (6) in-ground hydraulic lifts which appear to have been removed and filled within the vacant truck repair garage on the subject property.

7.8 Non-Scope Considerations

7.8.1 Asbestos-Containing Material (ACM)

Asbestos is a naturally occurring mineral that has been used for centuries for variety of applications. Asbestos is a very stable crystalline mineral that forms fibers and withstands high temperature extremely well. Because of this physical and chemical property, commercial and industrial applications and usage of asbestos increased dramatically during the early 1900s. Asbestos was commonly known as a type of insulation, but it was also as a stabilizer and strengthening material in plaster, cement, and other composite materials. As such, asbestos was commonly used in building materials such as insulation, plaster, vinyl surfacing materials, and roofing and roof flashings, as well as in brake linings, caulking, and gaskets for ovens and furnaces. Because asbestos is a mineral, it can also be found in the soils of some areas around the world.

Once commercially milled, asbestos fibers are typically found at sizes that are measured in microscopic, micron particle sizes. Uncontrolled releases of asbestos fibers can remain airborne for an extended time and the particles tend to by-pass most of the defense mechanisms of the respiratory tract. As such, asbestos fibers have the ability to reach the inner portions of the lungs where they can become lodged and cause significant scarring and damage on a cellular level. Diseases attributable to asbestos exposure include asbestosis, mesothelioma, and lung cancer. Occupational exposure to asbestos is, therefore, highly regulated in the workplace.

The mere presence of ACM in a building is not necessarily cause for significant concern. So long as asbestos is not disturbed or accessible to damage or contact and does not become airborne, it poses little health risk and management of ACM in-place is considered a safe and acceptable practice. The U.S. EPA and OSHA have issued substantial guidance regarding proper procedures for the operations and maintenance of asbestos in the workplace. The U.S. EPA has also issued guidelines for home and building owners who have ACM insulation and surfacing materials such as flooring and roofing in their houses. Consequently, while most commercial production and use of asbestos was discontinued in the late 1970s and early 1980s, ACM remain in-place and in use in many commercial, industrial, and residential structures.

Asbestos regulations govern issues such as asbestos exposure and materials handling, transportation, and disposal and they place obligations upon building owners and operators to make notification to building occupants, tenants, visitors, contractors, and employees who may come in contact with the ACM.

Building owners, in particular, are responsible to make notifications regarding the presence and location of ACM. Additionally, all suspect materials are required by law to be "presumed" to be asbestos containing materials (PACM). PACM must be handled and treated as ACM until proven otherwise to be non-ACM.

Policies and procedures relating to the on-going management of PACM and ACM in occupied buildings are typically presented in written asbestos Operations and Maintenance (O&M) Plans. O&M Plans outline the various building owner responsibilities and procedures relating to the asbestos and serve as a tool to ensure consistent and proper management practices.

If a building containing ACM is to be demolished, the asbestos is typically removed prior to the demolition activities. Pursuant to the federal EPA National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations in 40 CFR 61, subpart M, ACM and asbestos-containing wastes must be removed, handled, and disposed in a manner that does not allow visible and/or uncontrolled emissions of asbestos to the environment.

Also, pursuant to the OSHA General Industry Standards 29 CFR 1910.1001 and the Construction Standards in 29 CFR 1926.1101, employers of employees who may encounter ACM are responsible to ensure that the employees are not exposed to airborne concentrations in excess of permissible exposure limits (PELs) that are based upon a time-weighted average exposure. Additionally, the employees must be properly trained so that they can recognize hazards and avoid unacceptable exposure.

No ACM was definitively identified during this ESA and no sampling was performed. During the

site visit, however, some suspect materials were observed within the subject property buildings. The materials include, but are not limited to, 12 x 12 in. vinyl floor tile and 2 x 2 ft. ceiling tile. The observed suspect materials appeared by be in fair to good condition. Whether or not these materials are asbestos containing can only be confirmed by manufacturer knowledge or by collecting samples of the materials and having them analyzed by an accredited laboratory. Prior to renovations or demotion, an ACM survey should be performed.

7.8.2 Lead-Based Paint

Lead is commonly added to paints because of its characteristic to resist corrosion. LBP was used substantially for industrial applications; it is also commonly encountered in older commercial and residential properties.

Oral ingestion may represent a major route of exposure in contaminated workplaces and houses. Lead poisoning can cause permanent damage to the brain and many other organs and causes reduced intelligence and behavioral problems. Lead can also cause abnormal fetal development in pregnant women.

The U.S. EPA estimates that approximately three quarters of the nation's housing (i.e., roughly 64 million dwellings) contain some LBP. When properly maintained and managed, this paint poses little risk. However, 1.7 million children have blood-lead levels above safe limits, mostly due to exposure to LBP hazards.

According to the Housing and Urban Development (HUD) Authority, lead-based paint LBP is defined as paint on surfaces with lead in excess of 1.0-milligrams per square centimeter (mg/cm^2), as measured by a x-ray fluorescence (XRF) detector of 0.5 percent by weight.

Use of LBP in construction was banned in 1978 and Congress passed legislation in 1992 requiring the disclosure of known information on LBP and LBP hazards before the sale or lease of most housing built before 1978. Consequently, LBP was generally phased out in commercial buildings, as well.

Similar to asbestos, OSHA has also established worker protection standards for exposure to lead. Unlike the case with asbestos, however, LBP does not need to be removed from a structure prior to demolition so long as the issue of worker exposure and adequate protection can be addressed.

If waste materials from the demolition contain quantities sufficient quantities of LBP, it may meet the definition of a hazardous waste under the U.S. EPA's Resources Conservation and Recovery Act (RCRA) found in 40 CFR 260 - 279. Therefore, the need for pre-demolition abatement of LBP must be evaluated on a case-by-case basis to determine if the abatement is warranted.

Pursuant to applicable OSHA regulations, the party that is contracting for services to perform work in the structure is required to provide notice to the contractor or employer that LBP is likely present. Most contractors will likely need to know specific locations of the paint such that many owners and managers of buildings containing LBP opt to have a survey performed so that information that is more specific is available and the matter does not delay renovation and

construction projects.

No LBP was definitively identified during the ESA; however, the subject property buildings would be expected to have one or more layer of LBP based on the dates of construction. Testing of the paint can be performed to determine if any of the older layers are lead containing, or the materials can merely be presumed to be LBP and, subsequent to receiving proper notice of the potential presence of LBP on or in the structures, renovation or demolition contractors can take appropriate precautionary measures to prevent worker exposure and proper handling during renovation or demolition activities.

7.8.3 Lead in Drinking Water

The subject property is currently provided water by the Philadelphia Water Department. Public Water Suppliers are required to monitor lead levels in supply water and maintain corrosion control programs to minimize the leaching of lead from plumbing, solder joints, and fixtures. Collection of a sample of the water supplied to this property at point of use, and subsequent analysis, would be necessary to determine if drinking water lead concentrations are of concern.

7.8.4 Wetlands

No soils or vegetation characteristic of wetlands were visible on the subject property, although a formal survey was not performed during the ESA. The U.S. Fish & Wildlife Service National Wetlands Inventory database was reviewed to determine if wetland areas have been mapped on the subject property. According to the U.S. Fish & Wildlife Service map, no wetlands are located on the subject property.

7.8.5 Radon Gas

Radon gas is a naturally occurring radioactive gas found in soils and rocks. It is generated by the decay of naturally occurring uranium as a colorless and odorless gas. Radon gas can accumulate once inside an enclosed space such as an office building or home. There is an increased risk of developing lung cancer when exposed to elevated levels of radon gas. In general, the risk increases as the concentration of radon gas and the length of exposure increases. The EPA has established 4 picoCuries per liter (pCi/L) of radon gas in indoor air as a guidance level for residences, while readings above 20 pCi/L are considered an actionable level.

According to the data obtained from the PADEP, the subject property lies within an area with an average indoor air radon concentration below 2 pCi/L. Based on the reported average concentration, and because the subject property does not contain sub-grade living or working space, health risk due to radon concentration is not a concern on the subject property. Actual radon concentration can only be determined by on-site measurement.

7.8.6 Mold

Pennoni conducted a limited visual inspection throughout the buildings to identify significant water damaged or mold-impacted building materials. The conditions of interior building components were inspected for evidence of mold, mildew, other visible contamination and/or

anomalies. Pennoni inspected the buildings for the presence of areas of significant microbial proliferation on walls, fabrics, carpets, and ceilings.

No visual evidence of significant microbial growth was observed within the subject property buildings.

8.0 DATA GAPS AND DEVIATIONS

According to the Standards and Practices for All Appropriate Inquiries, Phase I Environmental Assessments must identify data gaps that would affect the ability of the environmental professional to identify conditions indicative of releases or threatened releases of pollutants, contaminants, petroleum and petroleum products, and controlled substances on the subject properties and to explain the significance of these data gaps. The following issues represent instances when either the investigation was hindered in some way, or where some issue was identified as a potential for concern but insufficient information was available to draw a conclusion or rule out that the issue did not represent a recognized environmental condition.

1. Historic property tax files, historic topographical maps, and local street directories were not reviewed by Pennoni as part of this ESA. Pennoni determined that these standard historical resources were not reasonably ascertainable, practically reviewable, and/or sufficiently useful. Therefore, Pennoni does not consider this data gap to be a significant constraint on our ability to provide an opinion regarding RECs on the subject property.

2. Pennoni was unable to interview former owners of the subject property; however, the previous uses of the subject property are documented in the historical sources reviewed by Pennoni. Therefore, Pennoni does not consider this data gap to be a significant constraint on our ability to provide an opinion regarding RECs on the subject property.

9.0 ENVIRONMENTAL PROFESSIONAL STATEMENT AND SIGNATURE

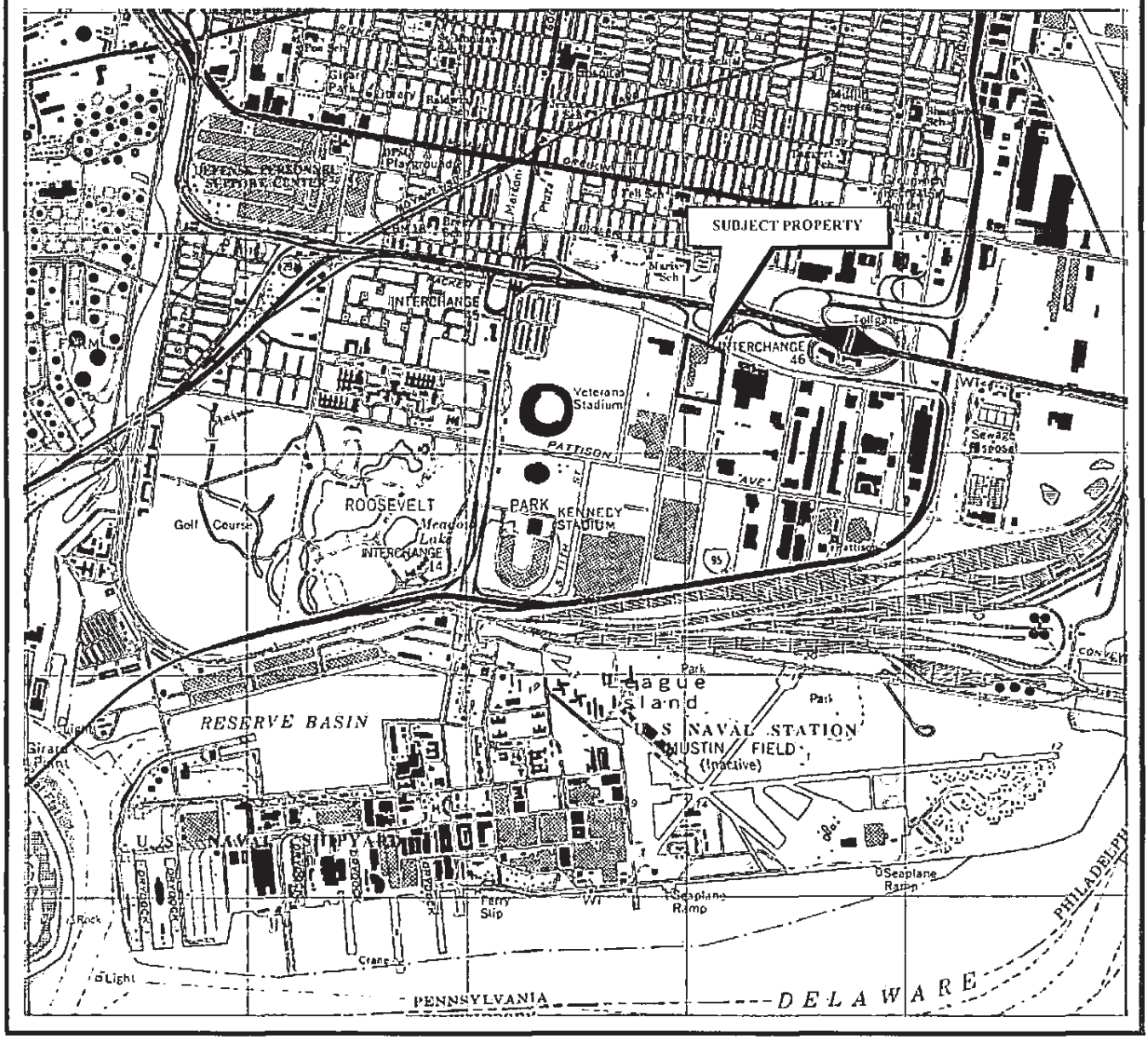
I declare that, to the best of my professional knowledge and belief, I meet the definition of an "environmental professional" as defined at 40 C.F.R. §312.10. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 C.F.R. Part 312.

William F. Schmidt, PE
Associate Vice President

10.0 REFERENCES

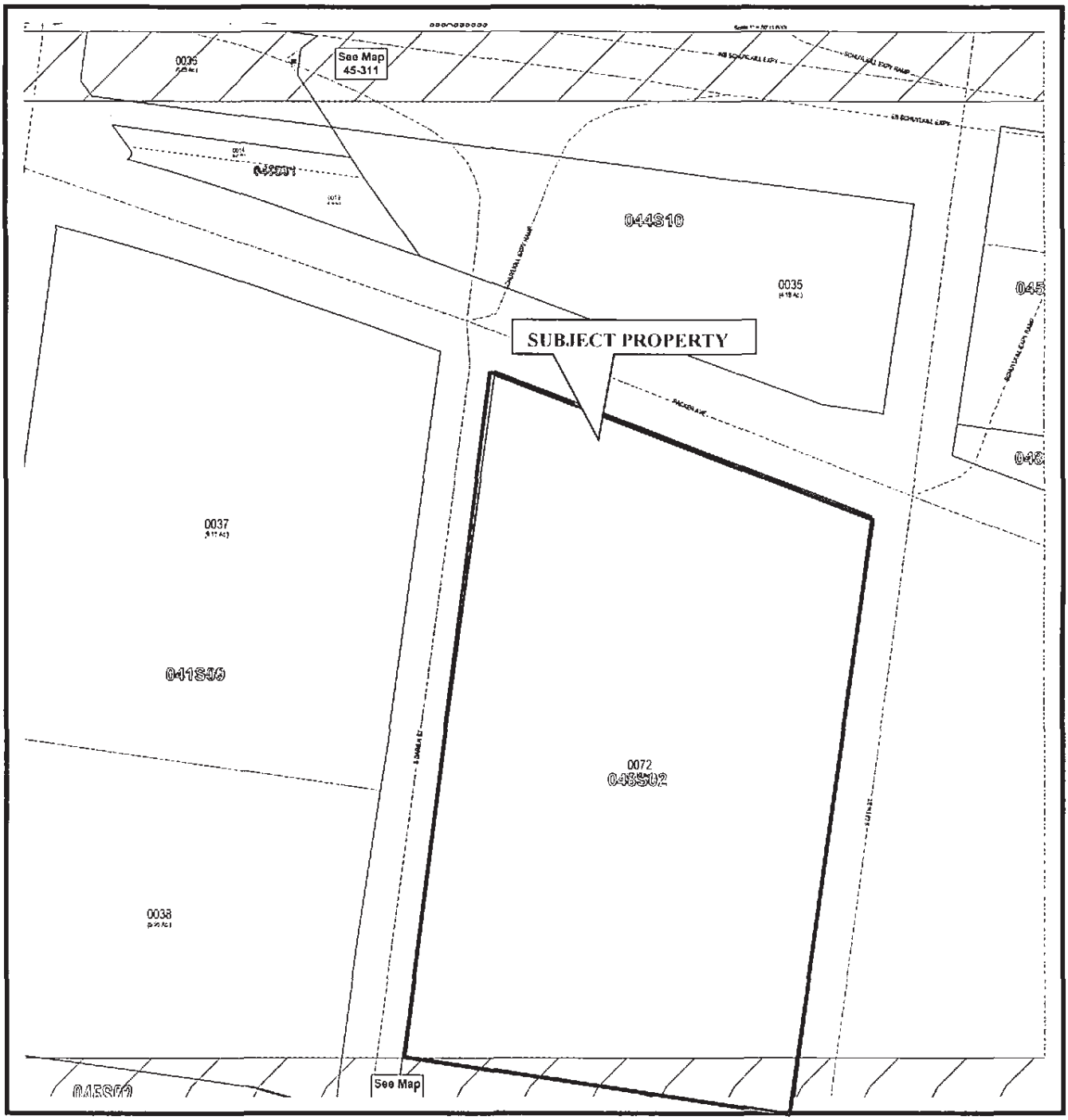
The following documents, publications, maps, etc. were used as source materials for this Phase I Environmental Site Assessment:

- ASTM Standards on Environmental Site Assessments for Commercial Real Estate (E 1527-05), Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, 2005.
- Philadelphia, PA-NJ, USGS, 7.5 minute topographic quadrangle, 1995.
- United States Department of Agriculture, Natural Resource Conservation Service *Web Soil Survey*.
- *Geologic Map of Pennsylvania*, Commonwealth of Pennsylvania Department of Environmental Resources Topographic and Geologic Survey, with a scale of 1 inch equal to 250,000 feet, 1990.
- *Physiographic Provinces of Pennsylvania (Map 13), 4th Edition*, Pennsylvania Department of Conservation and Natural Resources Bureau of Topographic and Geological Survey, 2000.
- *Engineering Characteristics of the Rocks of Pennsylvania (Environmental Geology Report 1)*, 2nd edition, Pennsylvania Department of Conservation and Natural Resources Bureau of Topographic and Geological Survey, 1982.
- Environmental FirstSearch Report, dated October 29, 2012, obtained from InfoMap Technologies Incorporated, Inquiry Number PNGI 1201.
- FirstSearch Aerial Photo Decade Package, Report No. PNGI 1201, obtained from InfoMap Technologies Incorporated.
- FirstSearch Fire Insurance Maps, FirstSearch Index No. 347199, obtained from InfoMap Technologies Incorporated.
- *Wetlands Online Mapper* website published by the United States Fish and Wildlife Service. Available on-line at: http://wetlandsfws.er.usgs.gov/wtlnds/launch.html



PHILADELPHIA, PA-NJ (1995) QUADRANGLE
U.S.G.S. 7.5 MIN. TOPOGRAPHIC MAP
CONTOUR INTERVAL 20 FEET

Pennoni PENNONI ASSOCIATES INC. CONSULTING ENGINEERS	PENNONI ASSOCIATES INC. ONE DREXEL PLAZA 3001 MARKET STREET PHILADELPHIA, PA 19104	PRELIMINARY ENVIRONMENTAL SITE SCREEN **The Turf Club** **700 Packer Avenue** **Philadelphia, PA 19148**	NORTH
JOB No.: **PNGI 1201**	SCALE: **NOT TO SCALE**	**FIGURE 1: SITE LOCATION MAP**	



Pennoni PENNONI ASSOCIATES INC. CONSULTING ENGINEERS	PENNONI ASSOCIATES INC. ONE DREXEL PLAZA 3001 MARKET STREET PHILADELPHIA, PA 19104	PHASE I ENVIRONMENTAL SITE ASSESSMENT **The Turf Club** **700 Packer Avenue** **Philadelphia, Pennsylvania 19148**	NORTH
JOB No.: **PNGI 1201**	SCALE: **NOT TO SCALE**	FIGURE 2: TAX MAP **SOURCE: RealQuest.com**	

APPENDIX 34

UTILITY REPORT AND FEASIBILITY STUDY

Penn National Gaming, Inc.
Hollywood Casino, Philadelphia
700 Packer Avenue

Utility Availability and Feasibility Report

Prepared For:

PENN NATIONAL GAMING, INC.

PENN NATIONAL GAMING, INC.
825 Berkshire Boulevard
Wyomissing, PA 19610

Prepared By:

Pennoni

PENNONI ASSOCIATES, INC.
Consulting Engineers
3001 Market Street
Philadelphia, PA 19104

November 7, 2012

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I. Executive Summary

Penn National Gaming in an effort to acquire a gaming license has an option to purchase an approximately 13 acre property, located at 700 Packer Avenue, Philadelphia, PA 19148. Prior to purchase, an investigation into various aspects of the site is necessary to better determine the feasibility of developing a first class gaming and entertainment site. The nature of this study is to review and understand the existing utility facilities in order to preliminarily determine the extent of effort necessary to accommodate the proposed development and to determine the ability of existing utilities to provide service.

From a review of available utility records, we have determined that the proposed development site will be in close proximity to existing water, sanitary sewer, natural gas, telephone, and electrical utility infrastructure facilities. Based on the available information, it is our option that the existing adjacent utility infrastructure is capable of adequately serving the scope and scale of the proposed development. As the project is advanced accurate utility demand projections will need to be made and the proposed utility service connections will need to be made coordinated with the appropriate utility company.

Presently, there is a 60' wide Right-of-Way (Former Geary Street) that bisects the site from Darien Street to 7th Street. This Right-of-Way is reserved for use as a drainage right-of-way by the Philadelphia Water Department (PWD) and contains an existing, active 6'-0" (H) x 7'-0" (W) rectangular R.C. combined sewer that conveys both storm-water and sanitary sewage. According to PWD record plans this sewer as well as the sewers in Darien Street, 7th Street and Packer Avenue adjacent to the site are constructed on timber piles due to poor soil conditions. In addition, this Right-of-Way contains an existing, active 8" water main that connects the existing 12" water main in Darien Street to the existing 12" water main in 7th Street.

For sanitary and storm-water collection services, there are public combined flow sewers in and around the proposed site. In order to avoid the encumbrance of a utility easement traversing the site, it will be necessary to relocate this existing R.C. combined sewer. We anticipate that the existing, active 8" water main that transverses the site within this Right-of-Way can merely be abandoned since there are no active service connections from this main and since it merely provides redundancy with the water distribution system.

In order to accommodate the proposed build out of the site, we have determined that it is feasible to re-route this existing R.C. combined sewer around the property via the public right-of-way of Darien Street and Packer Avenue. However as a result of

this sewer relocation it will also be necessary to relocate the existing 60" diameter RCP sewer in Packer Avenue between Darien Street and 7th Street due to a direct conflict with the relocated sewer. Due to hydraulic considerations, at this time, we recommend that the new sewers in Packer Avenue be reconstructed as a 6'-0" (h) x 7'-0" (w) twin cell reinforced concrete box sewer; however this preliminary sizing will need to be confirmed with the Philadelphia Water Department as the project is progressed. In addition as a result of this sewer relocation it will also be necessary to relocate the existing 12" water main in Packer Avenue between Darien Street and 7th Street due to a direct conflict with the relocated sewer.

It is anticipated that the relocated sewers will need to be constructed on timber piles since all of the existing sewers adjacent to the site are constructed on timber piles according to the PWD record plan information. This will need to be confirmed by soiltesting as the design of these facilities progresses.

The existing 6'-0" (H) x 7'-0" (W) rectangular R.C. combined sewer in the Former Geary Street drainage Right-of-Way would need to either be filled and abandoned or removed as necessary through the site.

Once these Philadelphia Water Department sewer and water facilities are relocated out of the Former Geary Street Drainage Right-of-Way, the Right-of-Way can be stricken and vacated by ordinance of City Council.

Please refer to FIGURE 4 for the proposed alignment of the relocated sewer(s) and FIGURE 7 for a typical section of the relocated sewer in Packer Avenue. FIGURE 5 depicts the abandonment of the existing 8" water main in the Former Geary Street Right-of-Way and the relocation of the existing 12" water main in Packer Avenue.

II. Introduction and Background Information

a.) Penn National Gaming, Inc. in an effort to acquire a gaming license has opted to purchase approximately 13 acre property, located at 700 Packer Avenue, Philadelphia, PA 19148. The property is located in South Philadelphia near the stadium district where numerous entertainment and sports venues make this an ideal location to develop a first class gaming and entertainment facility. Please refer to FIGURE 1 showing the project site with respect to the City of Philadelphia.

b.) The proposed site provides easy access to both Center City Philadelphia and Interstates I-95, and I-76 with minimal impact on the adjacent communities. The site is located less than four (4) miles from Center City Philadelphia and is immediately adjacent to Interstate I-76 and is in close proximity to Interstate

I-95. The site is also located less than eight (8) miles from the Philadelphia International Airport. Generally the commercial / industrial areas of this community are bound by I-76 to the north, I-95 to the south and east, and Broad Street (State Route 611) to the west. The proposed site and its proximity to Center City Philadelphia and I-76 / I-95 is shown on the attached Vicinity Map designated as FIGURE 2.

c.) It is our understanding that the optioned property includes the following parcel:

Address	Total Lot Area
700 Packer Avenue	13.35+/- Acres
TOTAL:	**13.35+/- Acres**

Please refer to FIGURE 3 showing the project site overlaid with a conceptual site plan.

d.) The site is located in the City's Second Council District that is represented by Councilman Kenyatta Johnson. The site is located in the City's 39th ward, which is bound by Broad Street to the West, Mifflin Street to the North, and Delaware River to the East and South.

e.) Historically, the existing site was used as an industrial type of facility. From our research of historical maps of Philadelphia, the site was developed after the 1960's. Prior to that, we believe the existing site was either used as farmland or undeveloped. In addition, we believe the existing site is located directly above or near old creek beds, namely Hollanders and Hay Creeks.

f.) The existing site is occupied by a 120,218 +/- square foot mixed use commercial building which contains an off track betting facility, vacant warehouse space, warehouse space occupied by Packer avenue Foods, a garage used for the installation of taxi radios by Verifone, and office space occupied by Catch Packer Recovery Program and the Pennsylvania Lottery. Additionally, the subject parcel contains a 9,000+/- square foot vacant truck repair garage.

g.) According to elevation data obtained from City Plan #43S, the elevations of the public streets adjacent to the site vary from +9.00 to +12.00 City Datum while the 100-year flood elevation of the Delaware River in this vicinity is elevation +4.29+/- City Datum. (Elevation +0.00 City Datum = Elevation +5.71+/- National Geodetic Vertical Datum of 1929).

The site is located on published Federal Emergency Management Agency Flood Insurance Rate Map (FIRM) panel No. 35 of 45, Community Panel No. 4207570035C with an effective date of May 29, 1981. The FIRM designation for the proposed site is Zone C, defined as areas of minimal flooding.

h.) The site is located in the proximity of the Delaware River. As such, below any fill materials that may have been placed, there is likely an alluvial soil layer that generally consists of fine sand, silt, clay and organic matter. Although no geotechnical investigation has yet been performed on the site in conjunction with this project, it is anticipated that the physical properties of this layer will make it highly compressible when loads are applied. Deposits of compact sands and gravels generally underlie the alluvial soil layer. This general information is confirmed by the available PWD record plans that indicate that the existing sewers in the area are supported by timber piles. Based on available historical information, it is anticipated that groundwater throughout the site will generally be encountered at relatively shallow depths at about 10 feet below the ground surface.

i.) The existing site conditions along Seventh Street, Packer Avenue, and Darien Street are shown in the attached Photographs numbered 1 through 7.

j.) The purpose of this Utility Availability and Feasibility Report is to review and understand the existing utility facilities in order to preliminarily determine the extent of effort necessary to accommodate the proposed development and to determine the ability of existing utilities to provide service.

In order to maximize the area available for proposed development, we have also verified the feasibility of relocating the existing Philadelphia Water Department sewer and water main facilities from the existing 60' wide Former Geary Street Drainage Right-of-Way that bisects the site from Darien Street to 7th Street so that this right-of-way can be stricken and vacated. In addition to confirming the feasibility of relocating this existing sewer and water utility infrastructure; this report also identifies an order of magnitude construction costs for these utility relocations.

III. Existing Site Utilities

a.) We contacted the Pennsylvania One Call System on October 29, 2012 and requested existing underground utility record plan information for the project area from all involved utilities. Record Plans for the following locations were requested:

LOCATION	WARD	PA ONE CALL SERIAL NO.
Packer Ave. from 10th St. to Lawrence St.	39	3030800
Darien St. from Pattison Ave. to Packer Ave.	39	3030800
7th St. from Pattison Ave. to Packer Ave.	39	3030800
Hartranft St. from Darien St. to 11th St.	39	3030800

b.) Based on utility record plans that we have compiled, it is our understanding that following companies presently maintain utilities in proximity to the project site:

1. Philadelphia Water Department
2. Philadelphia Gas Works
3. PECO Energy
4. Verizon
5. Comcast Cable
6. Zayo Bandwidth
8. Philadelphia Streets Department

c.) As part of our utility records compilation, we also obtained the Highway Supervisors Plans for the project area from the Philadelphia Department of Streets. These plans are maintained by the Philadelphia Department of Streets and are basically a compilation of the various utility record plans showing the utilities in a given area. However, these plans may not be 100% accurate as they are not continuously updated.

d.) The Philadelphia Water Department owns and maintains the potable water distribution system as well as the sanitary and storm-water collection systems in the City of Philadelphia. Additional information concerning the Philadelphia Water Department is available via their website at www.phila.gov/water. The following is a summary of the Philadelphia Water Department infrastructure within the project area:

1. Water Distribution System: The water distribution system in the project area is shown in the attached FIGURE 5. In addition to the mains themselves, there are numerous fire hydrants, valves and water service connections in the project area. The project site receives potable water from the Department's Baxter Water Treatment Plant. The Baxter Plant pumps raw water from the Delaware River at a point just north of the Pennypack Creek. The treated water is then pumped from the Lardner's Point Pumping Station and is distributed to various parts of Philadelphia.

2. The project is located in what is known as the East Park District service area. The static water pressure in the water distribution system at this location is reportedly just under 50 PSI, although no pressure tests have yet been performed for this project. The following table summarizes the existing water mains in each of the streets adjacent to the project:

LOCATION	WATER MAIN FACILITIES
Packer Avenue from Darien St. to 7th St.	12" Distribution Main & 24" Transmission Main
Drainage ROW from Darien St. to 7th St.	8" Distribution Main
Darien St. from Packer Ave. to Hartranft St.	12" Distribution Main
S 7th St. from Hartranft St. to Packer Ave.	12" Distribution Main & 20" Transmission Main

Generally all service connections are from the distribution water mains and the transmission water mains feed the distribution mains.

3. Sanitary and Storm-Water Collection System: In this section of the City, the sanitary sewerage and storm-water runoff are combined in a single piping system, as is common in the older areas of the City. The combined sewers in and around the project site are shown on the attached Figure 4. Under normal conditions, intercepting chambers and sewers divert the combined flow to the wastewater treatment plant. However, during severe storm events, there may be a combined sewer overflow into the river via the outfall pipe since the intercepting chambers and sewers cannot accommodate all of the runoff from the larger storms.

Sanitary sewerage from the project site is treated at Philadelphia Water Department's Southeast plant that is located at Pattison and Delaware Avenues in South Philadelphia. In addition to the sanitary sewers and storm-water conduits themselves, there are numerous inlets, manholes, and junction chambers in the project area as are indicated on attached Figure. The following table summarizes the existing sanitary and storm-water collection system facilities in each of the streets adjacent to the project:

LOCATION	SANITARY & STORM-WATER (SW) FACILITIES
Packer Avenue from Darien St. to 7th St.	60" RCP Combined Sewer

Drainage ROW from Darien St. to 7th St.	6'-0" (H) x 7'-0" (W) Rect. R.C. Combined Sewer
Darien St. from Packer Avenue to Hartranft St.	24"/30"/42" RCP Combined Sewers
7th St. from Hartranft St. to Packer Ave.	6'-0" (H) x 8'-0" (W) Rect. R.C. Combined Sewer / 42" RCP Combined Sewer

According to PWD record plans these sewers adjacent to the site are constructed on timber piles due to poor soil conditions.

e.) The Philadelphia Gas Works (PGW) owns and maintains the natural gas distribution system in the City of Philadelphia. The Philadelphia Gas Works is the largest municipally owned natural gas utility in the country. The gas mains that are owned and maintained by the Philadelphia Gas Works range in size from about 1-1/4" to 36" diameter and the pressure ranges from about 5 PSI to 150 PSI. Additional information concerning the Philadelphia Gas Works is available via their website at www.pgworks.com. Based on information received from PGW in response to our PA-One Call request, PGW maintains the following gas main infrastructure adjacent to the project site:

LOCATION	GAS MAIN FACILITIES
Packer Ave. from Darien St. to 7th St.	24" Steel HP Main (150 PSI); 6" Steel HP Main (35 PSI)
Darien St. from Packer Ave. to Hartranft St.	2" Steel HP Main (150 PSI)
7th St. from Hartranft St. to Packer Ave.	12" Steel HP Main (35 PSI)

Please refer to FIGURE 6 showing the existing gas mains adjacent to the project site. It is noted that the existing 6" steel HP gas main (35 PSI) in Darien Street from Packer Avenue to Hartranft Street solely provides service to the existing building structure at 700 Packer Avenue and as such we believe that this section of main should be abandoned in conjunction with the project. The abandonment of this main will also facilitate the sewer reconstruction described in the sewer section of this report.

In addition, to the gas mains described above, there is also an existing 3" steel HP gas service (35 PSI) extending from the 12" gas main in 7th Street approximately ninety (90) feet south of the drainage ROW that traverses the site that provides gas service to the former truck maintenance building that is located on the southerly side of the site. It is anticipated that the new gas service to the casino will be located to the north of this existing gas service

and will extend into the central plant of the new Hollywood Casino. The existing 3" steel HP gas service would then be abandoned.

In summary, we do not believe that any gas mains will need to be relocated to allow for the construction of the proposed Hollywood Casino and that gas service to the Casino can readily be supplied via existing adjacent PGW infrastructure. Gas demand projections for the project and details of the required gas service connections will be coordinated with PGW as the project is advanced.

f.) The PECO Energy Company (PECO), a division of Exelon Energy Corporation owns and maintains the electrical distribution system in the City of Philadelphia. These facilities include both aerial and underground electrical distribution and transmission infrastructure. At this time, PECO Energy has not responded to our PA-One Call request. We have obtained the following PECO infrastructure information from past records near the project site:

LOCATION	FACILITIES
Packer Ave. from Darien St. to 7th St.	20" x 21" Duct Bank; Aerial facilities.
Darien St. from Packer Ave. to Hartranft St.	Unknown
7th St. from Hartranft St. to Packer Ave.	Unknown

g.) Verizon generally owns and maintains the telephone and communications system in the City of Philadelphia. These facilities include both aerial and underground telephone and communications system infrastructure. The following is a summary of the Verizon infrastructure within the project area:

LOCATION	FACILITIES
Packer Ave. from Darien St. to 7th St.	9"x14"& 9" x 9" conduits

h.) Comcast Cable provides cable television and has not yet responded to our PA-One Call request. Therefore, they have not been identified as either having or not having existing facilities within the area.

i.) Zayo Broadband has been identified by PA-One Call as having fiber lines within close proximity to the project site. At this time, Zayo Broadband has not sent us detailed plans of their infrastructure showing size and depth of their line in the area. However, we were able to determine the presence of their fiber line from their website. The following is a summary of the Zayo Broadband facility within the project area:

LOCATION	FACILITIES
7th Street from Packer Ave. to Pattison Ave.	Size & Depth Unknown

j.) The Philadelphia Streets Department generally maintains underground and aerial traffic signal and street lighting infrastructure in the City of Philadelphia as well as the surface mounted street lights and traffic signal facilities. Based on our field view of the project site there are existing traffic signals and street lights facilities in the project area. In addition, we believe that there may be underground street lighting facilities along Packer Avenue, Darien Street, and Seventh Street since some of the existing street lights for those streets are mounted on lighting poles with no aerial feeds. These facilities may need to be relocated or adjusted as necessary to allow for the proposed development.

IV. Utility Relocation Approval Process

a.) As mentioned above, it will be necessary to relocate the existing 6'-0" x 7'-0" R.C. combined sewer and the 8" water main that are located within the Former Geary Street Drainage Right-of-Way that bisects the site from Darien Street to Seventh Street. In order to avoid the encumbrance of having a utility easement within the property, we have used public Right-of-Ways surrounding the property to relocate these lines. In order to reconstruct the 6'-0" x 7'-0" R.C. combined sewer in Packer Avenue, it will be necessary to shift the existing 60" R.C.P combined sewer further northward. This will provide the necessary trench width to construct twin 6'-0" x 7'-0" R.C. combined sewers. Furthermore, the existing 12" water main, in south side of Packer Avenue will be affected by the relocation and so this water main will require relocation as well. We have prepared conceptual utility relocation sketches showing the approximate route of each line as shown in FIGURES 4 and 5.

b.) Although the utility demands from the proposed development are unknown at this time, based on the historic industrial use of the site and area and the size of the existing adjacent utility line particularly the water, sewer and gas facilities, we anticipate that the utilities as they presently exist will be able to meet the demands of the site without significant required improvements. This will be confirmed with each respective utility owner during the design process.

c.) The relocation of any Philadelphia Water Department facilities requires the approval of the Department. If the facility is located within a city street or Philadelphia Water Department Right-of-Way, the Developer is responsible for the design and construction of the relocated facilities. The Philadelphia

Water Department refers to these projects as "Private Cost Contracts". The design of the facilities must be in accordance with Philadelphia Water Department requirement and procedures and the design plans and specifications must be approved by the Department. The general procedure for developing "Private Cost Contracts" is outlined in the attached Philadelphia Water Department publication last revised January 13, 2010 which is included as APPENDIX A.

d.) Once the contract documents are approved, the Developer must enter into a "Developer's Agreement" with the Department. A sample "Developer's Agreement" is included in APPENDIX B. The construction of the facilities must be performed by a contractor that is prequalified by the Department in accordance with the approved plans and specifications. The work is subject to inspection and approval of the Department.

e.) Once the Philadelphia Water Department sewer and water facilities are relocated out of the Former Geary Street Drainage Right-of-Way, the Right-of-Way can be stricken and vacated by ordinance of City Council.

f.) The relocation of any utility within existing street Right-of-Way will require the approval of the Philadelphia Department of Streets. If the facility is located within a city street or Right-of-Way, the Developer is responsible for the design and construction of the relocated facilities. The design of the facilities must be in accordance with Philadelphia Streets Department requirements and procedures, as well as the design requirements and procedures of the respective utility company being relocated. Plans and specifications must be approved by the Department. Also, the Department of Highway Supervisors, a division of the Streets Department must approve the relocation. The Highway Supervisors will review the effect that the relocation will have on other City and utility company facilities in the vicinity. A Highway Occupancy Permit will be issued indicating approval of the new utility location and permitting it to occupy the Right-of-Way.

V. Utility Availability & Service Connection Requirements:

a.) Storm Drainage:

1. As mentioned above, this section of the City has combined sewers which collect both sanitary and storm-water flows. The PWD is responsible for the operation and maintenance of the sewer lines in the vicinity of the site. These combined sewers capture and convey storm-water runoff from roadways and adjacent properties.

2. It is anticipated that any new development at the site would discharge into the existing PWD drainage system to the extent possible. Service connections to the PWD drainage system is allowed via permit. Such connections must comply with PWD regulations as well as the Philadelphia Plumbing Code.

3. Since we anticipate a change to the on-site grading and impervious area coverage, there could be a significant change in the storm-water run-off within the project area as a result of this development. Based on current storm-water management requirements implemented by the PWD as of January 2006, it is anticipated that on site storm-water management will be required. Essentially the regulations require that storm-water management be provided in the form of Water Quality, Channel Protection, Flood Control, and Nonstructural Site Design. The Water Quality and Nonstructural requirements must be met; whereas the other requirements may be exempt. For Water Quality runoff from the site, volume equal to 1" of precipitation over all impervious area must be infiltrated into the ground. For Flood Control, the existing site must provide storm-water detention. The PWD will require that measures be proposed to provide for Water Quality and Nonstructural Site Design such as green roof systems, disconnected impervious surface areas, etc. as means of providing for these criteria. Any waiver from the requirements of these criteria would first require review and approval from the PWD in early design meetings.

4. We anticipate that it would be unlikely that any existing on-site drainage facilities will be able to be re-used and incorporated into the new facility. If such reuse is considered, the condition and hydraulic capacity of these facilities should be investigated prior to any re-use. We suspect that the existing on site drainage systems may not be in optimal operating condition. It has been our experience that the inlets may be filled with debris and the current underground systems are usually silt laden and require cleaning and restoration to bring the operations up to an acceptable level. Therefore, the client should plan for new storm sewer inlets and piping within the site.

5. Any existing on-site drainage facilities that cannot be incorporated into the development plan will need to be abandoned or removed. Any new drainage facilities to be constructed will need to be in accordance with PWD standards and/ or the Philadelphia Plumbing Code.

b.) Sanitary Sewer:

1. As with the water and storm lines, PWD is responsible for the operation and maintenance of the sanitary sewers. As mentioned in the previous section, sanitary sewer flow is conveyed via existing combined flow sewers in this part of the City. Presently, there are large combined flow sewers in Seventh Street and the drainage Right-of-Way. However, with the box sewer, in the drainage Right-of-Way, being rerouted via Darien Street to Packer Avenue, the proposed site will have the flexibility to make sanitary connection to any of the adjacent sewers located in surrounding streets. These sewers will have the capacity to receive the flows generated from the proposed site.

2. It is anticipated that any new development at the site would discharge into the existing PWD sanitary sewer system. Service connections to the PWD combined storm and sanitary sewer system is allowed via permit. Such connections must comply with PWD regulations as well as the Philadelphia Plumbing Code.

3. An Act 537 Sanitary Sewer Planning Module must be completed for the proposed development. This information is required so that the municipality can determine if adequate conveyance and treatment facilities and capacity exists for the proposed sanitary sewerage flows. The PWD requires the completion of a Pennsylvania Act 537 sewage planning module exemption for developments generating under 65,000 gallons per day. It is anticipated that this development will qualify for an exemption request.

4. In addition an Industrial Waste Discharge Permit will be required by the PWD for the proposed restaurant uses.

c.) Water Service:

1. There are existing water mains in all three streets surrounding the proposed site that are owned and maintained by the PWD. Additionally, there is an existing 8" water main in the drainage Right-of-Way, which will be abandoned as part of this development.
2. Any of these water distribution mains may be considered as a possible water service source for domestic water service as well as for fire suppression needs of the proposed site.

3. Domestic and fire service connections to the PWD potable water system are allowed via permit. Such connections must comply with PWD regulations as well as the Philadelphia Plumbing Code. Generally once the permit fee is paid, PWD forces will make the connection to the PWD mains for the developer.

4. Proper water meters and backflow prevention facilities will also need to be installed in accordance with PWD regulations, including the Cross-Connection Control Manual. Due to the close proximity of the proposed building structures to the existing mains, it is anticipated that the required meters and backflow prevention facilities will be housed within the building envelop and not within separate meter pits and backflow prevention enclosures on the property.

5. At this time, the static pressure of the adjacent PWD water distribution system has not been confirmed through fire hydrant flow tests. The available flow and pressure would need to be confirmed with PWD prior to determining which main can best supply water for both the domestic and fire suppression needs of the site. Also, the system demands incurred by the site would need to be estimated to help in that determination. The PWD does not guarantee specific water pressures.

d.) Gas Service:

1. The current gas provider at the site is Philadelphia Gas Works (PGW).

2. As outlined above, PGW maintains high pressure 150 PSI and 35 PSI gas mains adjacent to the site. Most likely, gas service for the proposed development would be via the existing 12" steel, 35 PSI HP gas main in 7th Street and would extend into the proposed Central Plant on the site.

3. Presently, when determining reimbursable costs to provide service to a new development, PGW compares the initial construction cost to provide the service against the projected revenue based on the anticipated gas load (i.e. usage) in accordance with Rule 10. The initial cost to the developer to provide the gas service is then determined based on a pre-established formula.

4. If the pressure of the gas service will need to be reduced to approximately 5 psi, then flow through a new pressure regulation station will be necessary.

e.) Electric Service:

1. PECO Energy is the provider of electricity in the project vicinity. At this time, PECO Energy has not responded to our PA-One Call request. We were able to find PECO information for this area from past records. We will need to confirm the accuracy of this information with PECO prior to discussions pertaining to service of the proposed site. From our past records, it seems that PECO Energy may have a 20" x 21" duct bank in Packer Avenue. However, it is unclear if this duct bank is a distribution or transmission facility.

2. Service to the site may be from this duct. Service commitments and point of service availability would need to be determined based on meetings with PECO Energy. Currently, these meetings have not occurred. However, it is noted that the existing site facilities are provided electrical service by PECO.

3. A PECO Service and Meter Application will need to be completed in order to initiate the electrical service request.

f.) Telephone Service:

1. The current telephone service provider at the site is Verizon Communications. Ducts for local service area are present in Packer Avenue; however, the size and ability to service the site are yet unknown and require further investigation with Verizon to determine their availability to service the site. However, it is noted that the existing site facilities are provided telephone service by Verizon.

XI. Limitations and Conditions

a.) No on-site geotechnical field tests or investigations have been conducted at this time. Therefore, based on our past experience on nearby sites and available historical record information, we have made assumptions relative to the foundation support systems for the various utilities, particularly the Philadelphia Water Department's combined flow sewers.

b.) At this time, as noted above, we have not yet received PA-One Call responses from all of the utility companies.

c.) At this time, we have not yet convened any meetings with any of the involved utility companies to review and discuss their specific requirements for the project.

APPENDIX 34

ECONOMIC AND FISCAL IMPACT REPORT

Economic and Fiscal Impact of the Proposed Hollywood Casino Philadelphia in the City of Philadelphia, PA

(First Phase)

Submitted to:

Penn National Gaming, Inc.

Prepared by

Urban Partners

829 Spruce Street, Suite 204

Philadelphia, PA 19107

November 8, 2012

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0) *Executive Summary*

In response to the Pennsylvania Gaming Control Board's call for applications for Philadelphia's second casino license, Penn National Gaming, Inc. is proposing the Hollywood Casino Philadelphia on the 700 block of Packer Avenue in South Philadelphia. The first phase of the planned casino facility will include 102,000 SF of gaming floor with 2,050 slot machines and 81 table games, multiple restaurants and bars, and a 180-seat entertainment lounge.

The proposed location is adjacent to the Philadelphia Sports Complex which is comprised of three world-class sports venues and the newly opened XFINITY Live! Philadelphia. The addition of the Hollywood Casino Philadelphia in this area will result in significant economic impact for the City of Philadelphia and the Commonwealth of Pennsylvania.

In order to analyze the economic benefits of the Hollywood Casino Philadelphia, Penn National retained Urban Partners to independently assess the economic impacts of the construction and operation of the proposed facility. Our analysis of the proposed casino's economic impact focuses on three primary factors:

1) The initial construction/development period impacts;
2) The direct and indirect economic impact of the casino's on-going operations and the employment generated by this activity; and
3) The tax benefits received by the City of Philadelphia and the Commonwealth of Pennsylvania as a result of the casino.

Although additional phases of the casino are planned for the future, the economic impact analysis in this report is limited to the first phase only.

Impact of Hollywood Casino Philadelphia Construction

The construction of the first phase of the Hollywood Casino Philadelphia, which is estimated to cost $232.9 million, directly and indirectly will generate a one-time economic impact of **$246.96 million for the Commonwealth of Pennsylvania**, of which **$194.44 million is the estimated portion for the City of Philadelphia.** In addition, the construction of the casino will produce:

- 2,060 full time equivalent jobs in the Commonwealth of Pennsylvania
  - 810 full-time equivalent jobs as a result of direct impact
  - 1,250 full-time equivalent jobs as a result of indirect/induced impact
- 1,565 full time equivalent jobs in the City of Philadelphia
  - 780 full-time equivalent jobs as a result of direct impact
  - 785 full-time equivalent jobs as a result of indirect/induced impact
- $113.85 million in wages and salaries
  - $96.77 million earned within Philadelphia
  - $72.58 million is estimated to be earned by Philadelphia residents

- $7.2 million as income tax revenue
  - $3.7 million as wage tax revenue for the City of Philadelphia
  - $3.5 million as income tax revenue for the Commonwealth of Pennsylvania
- $4.34 million as sales tax revenue
  - $1.08 million for City of Philadelphia
  - $3.26 million for the Commonwealth of Pennsylvania
- $5.05 million in business/corporate & real estate tax revenue
  - $3.51 million for City of Philadelphia
  - $1.54 million for the Commonwealth of Pennsylvania

Annual Operating Impact of Hollywood Casino Philadelphia

In addition to the one-time benefits associated with the development and construction of the casino, this project will result in an on-going spending associated with the operation of the facility. The operational expenditures of the casino and the significant out-of-facility spending of casino visits will generate an **estimated annual direct and indirect/induced economic impact of $596.7 million** for the Commonwealth of Pennsylvania. In addition, casino operations will produce:

- 4,390 full time equivalent jobs in the Commonwealth of Pennsylvania
  - 3,500 full-time equivalent jobs as a result of direct impact
  - 890 full-time equivalent jobs as a result of indirect/induced impact
- 3,740 full time equivalent jobs in the City of Philadelphia
  - 3,210 full-time equivalent jobs as a result of direct impact (2,410 residents)
  - 530 full-time equivalent jobs as a result of indirect/induced impact (400 residents)
- $131.94 million in wages and salaries
  - $108.05 million earned within Philadelphia
  - $81.04 million is estimated to be earned by Philadelphia residents
- $8.18 million as income tax revenue
  - $4.13 million as wage tax revenue for the City of Philadelphia
  - $4.05 million as income tax revenue for the Commonwealth of Pennsylvania
- $12.22 million as sales tax revenue
  - $4.3 million for City of Philadelphia
  - $7.92 million for the Commonwealth of Pennsylvania
- $10 million in business/corporate & real estate tax revenue
  - $6.76 million for City of Philadelphia
  - $3.24 million for the Commonwealth of Pennsylvania
- $155.12 million in gaming tax revenue
  - $11.8 million for City of Philadelphia as host fees
  - $143.32 million for the Commonwealth of Pennsylvania

1) *Introduction*

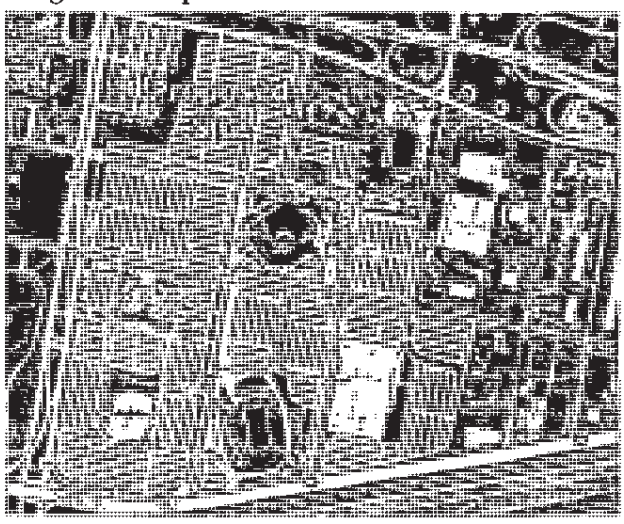
Penn National Gaming, Inc. owns, operates, or has ownership interests in gaming and racing facilities with a focus on slot machine entertainment. The company presently operates 28 facilities in 19 jurisdictions, including Colorado, Florida, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Mississippi, Missouri, Nevada, New Jersey, New Mexico, Ohio, Texas, West Virginia, and Ontario. In Pennsylvania, Penn National operates the Hollywood Casino at Penn National Race Course in Grantville, in addition to off-track wagering facilities located in Chambersburg, Lancaster, Reading, and York.

In response to the Pennsylvania Gaming Control Board's call for applications for Philadelphia's second casino license, Penn National is proposing the Hollywood Casino Philadelphia on the 700 block of Packer Avenue in South Philadelphia (see **Figure 1**). The first phase of the planned casino facility will include:

- 102,000 SF of gaming floor with 2,050 slot machines and 81 table games;
- Steakhouse restaurant/bar (125 seats)
- Noodle bar (70 seats)
- Three meal restaurant (140 seats)
- Four food courts (200 seats)
- Entertainment lounge (180 seats)
- Casino bar (20 seats)
- VIP lounge/bar (40 seats)
- 2,500 SF pre-function room
- 500 SF of retail space

The proposed location is adjacent to the Philadelphia Sports Complex which is comprised of three world-class sports venues (i.e. Lincoln Financial Field, Citizens Bank Park, and the Wells Fargo Center). According to the Sports Complex Special Services District, the Complex "hosts approximately 380 events, 8 million visitors, and 5.5 million vehicle trips each year." Complementing these sports venues is the newly opened XFINITY Live! Philadelphia, which is a dining and entertainment district that's programmed to enhance the visitor experience before and after sports and concert events. The addition of the

Figure 1: Proposed Location



Hollywood Casino Philadelphia in this area will result in significant economic impact for the City of Philadelphia and the Commonwealth of Pennsylvania.

In order to analyze the economic benefits of the Hollywood Casino Philadelphia, Penn National retained Urban Partners to independently assess the economic impacts of the construction and operation of the proposed facility. Our analysis of the economic impact of the Hollywood Casino Philadelphia facility focuses on three primary factors:

1) The initial construction/development period impacts;
2) The direct and indirect economic impact of the casino's on-going operations and the employment generated by this activity; and
3) The tax benefits received by the City of Philadelphia and the Commonwealth of Pennsylvania as a result of the casino.

Section 2 of this report discusses the methodology employed by Urban Partners, including an explanation of the input-output analysis performed using IMPLAN (IMpact analysis for PLANning). In Section 3, the development period impact is discussed, followed by an analysis of the recurring impact from on-going operations of the casino in Section 4. The various components of economic impact (i.e. direct and indirect output, employment, wages, and tax benefits to local and state governments) are included in Sections 3 and 4.

Although additional phases of the casino are planned for the future, the economic impact analysis in this report is limited to the first phase only.

2) *METHODOLOGY*

In order to calculate the potential economic and fiscal impact of the proposed Hollywood Casino Philadelphia on the City of Philadelphia and the Commonwealth of Pennsylvania, Urban Partners employed the IMPLAN (IMpact analysis for PLANning) model.[1] Developed by the U.S. Forest Service's Land Management Planning Unit and the University of Minnesota, IMPLAN utilizes the quantitative economic technique called the input-output model to track the way a dollar injected into one sector is spent and re-spent in other sectors of the economy. Through the use of IMPLAN, the economic impact of a new casino can be traced over multiple rounds of spending in the economy.

The initial round of spending is referred to as the direct impact. This figure is limited to the portion of economic activity that occurs within the local economy. In other words, the expenditures that leave the local economy (e.g. purchases from an out-of-state vendor) are excluded from the figure.

By inputting the initial round of spending into the IMPLAN model, additional effects can be measured in a local economy in two forms: indirect and induced. First, the changes in inter-industry purchases as a result of the direct effect are referred to as the indirect impact. For example, the Hollywood Casino Philadelphia will purchase goods and services from suppliers and vendors, who in turn make purchases of goods and services. Second, the induced effect refers to the impact generated by increased wages as a result of direct and indirect impacts. These wages in turn will pay for local goods and services, creating another round of economic impact. This process continues until leakages eventually stop the cycle.

The magnitude or degree in which the direct impact triggers indirect and induced impacts is referred to as the "multiplier." IMPLAN calculates different multipliers depending on the types of spending that comprises the direct impact, as well as the geographic region that's being studied. For the purposes of this analysis, the study areas are the Commonwealth of Pennsylvania and the City of Philadelphia.

[1] Data and software (IMPLAN system 3.0) furnished by Minnesota IMPLAN Group, Inc. The region data used in the model are for 2010, which are the latest data available. See **Appendix A** for a technical explanation of the IMPLAN model.

3) *DEVELOPMENT PERIOD IMPACT*

The economic impact analyses in this section are limited to the construction/development period. As shown in **Table 1** below, the total development budget for the Hollywood Casino Philadelphia is $232.9 million, of which $152.5 million is budgeted for hard costs, $62.1 million in furniture/fixtures/equipment, and $18.3 million in soft costs.

Table 1: Total Development Budget (First Phase)

Development Budget		
Construction		$152,500,000
Furniture, fixtures, and equipment		$62,100,000
Soft Costs		$18,300,000
Design & Engineering	$12,800,000	
Other Professional & Admin Costs	$5,500,000	
Total		**$232,900,000**

Source: Penn National

Of this amount, we estimate that $132.175 million can be counted as direct impact for the Commonwealth of Pennsylvania and $122.845 million for the City of Philadelphia:

	Direct Impact Pennsylvania	Direct Impact Philadelphia
• Construction labor[2]:	$61.00 million	$61.00 million
• Materials[3]:	$38.125 million	$38.125 million
• Contractor profit[4]:	$12.20 million	$7.625 million
• FF&E purchases[5]:	$6.21 million	$3.105 million
• Design & engineering[6]:	$10.24 million	$10.24million
• Professional and admin[7]:	$4.4 million	$2.75 million
TOTAL	**$132.175 million**	**$122.845 million**

[2] We apply the industry standard for calculating the labor portion of construction costs (40% of overall construction costs). All economic activity associated with construction labor will occur in the City of Philadelphia.

[3] We apply the industry standard for calculating the materials portion of construction costs (50% of overall construction costs). We estimate that 50% of construction materials purchases will occur in the City of Philadelphia.

[4] We apply the industry standard for calculating the contractor profit portion of construction costs (10% of overall construction costs). We estimate that 80% of the construction contracts will be awarded to Pennsylvania based companies and 50% of the contracts will be awarded to Philadelphia based companies.

[5] The vast majority of FF&E purchases are specialized gaming equipment that's manufactured predominantly in the State of Nevada. We estimate that 10% of FF&E purchases will be made in the Commonwealth of Pennsylvania and 5% will be made in the City of Philadelphia.

[6] We estimate that 80% of the design & engineering contracts will be awarded to Philadelphia based companies.

[7] We estimate that 80% of the professional & admin contracts will be awarded to Pennsylvania based companies and 50% of the contracts will be awarded to Philadelphia based companies.

According to IMPLAN, the multiplier for indirect and induced impacts of the development period economic activity is 0.8684 for the Commonwealth of Pennsylvania and 0.5828 for the City of Philadelphia. Applying these multipliers to the direct impact figures, the resulting indirect/induced impact for the Commonwealth of Pennsylvania is $114.781 million, and $71.594 million for the City of Philadelphia.

In total, the development of the Hollywood Casino Philadelphia will result in **$246.96 million in economic impact for the Commonwealth of Pennsylvania**, of which **$194.44 million is the estimated portion for the City of Philadelphia** (Table 2).

Table 2: Development Period Economic Impact (First Phase)
(All Estimates in Millions)

	Pennsylvania	Philadelphia
Direct Economic Impact	$132.175	$122.845
Indirect/Induced Impact	$114.781	$71.594
TOTAL ECONOMIC IMPACT	**$246.956**	**$194.439**

Source: Urban Partners

3.1) DEVELOPMENT PERIOD EMPLOYMENT IMPACT

The $246.96 million in total economic impact translates into 2,060 full time equivalent jobs – 810 full-time equivalent jobs as a result of direct economic impact and an additional 1,250 full-time equivalent jobs as a result of indirect/induced economic impact. Philadelphia's portion of the employment impact is estimated to be 1,565 fulltime equivalent jobs (see **Table 3**)

Table 3: Development Period Employment Impact

Development Period--Employment Impact	Pennsylvania	Philadelphia
Direct Employment Impact		
Annualized Construction Jobs (FTE)	560	560
Annualized Materials Jobs (FTE)	140	140
Annualized FF&E Jobs (FTE)	35	15
Annualized Professional Jobs (FTE)	75	65
Total Direct Development Period Employment (Annualized FTE)	**810**	**780**
Indirect/Induced Employment Impact	**1,250**	**785**
Total Employment Impact (Annualized FTE)	**2,060**	**1,565**

Source: Urban Partners

3.2) *DEVELOPMENT PERIOD TAX REVENUE IMPACT*

Table 4 below shows the estimated amount of tax benefits during the development period. The Hollywood Casino Philadelphia will generate approximately $16.58 million in tax revenues during this period--$8.28 million in increased tax revenue for the City of Philadelphia and $8.29 million for the Commonwealth of Pennsylvania[8].

Table 4: Summary of Development Period Tax Benefits

	For City of Phila	For State of PA	Total City & State
Taxes on Wages & Salaries	$3,697,000	$3,495,000	$7,192,000
Sales & Hotel Taxes	$1,080,000	$3,257,000	$4,337,000
Business Privilege & Net Profits Taxes	$1,464,000		$1,464,000
Real Estate Taxes Paid on Business Property	$1,353,000		$1,353,000
Use & Occupancy Taxes Paid on Business Property	$688,000		$688,000
State Corporate & Other Business Taxes		$1,541,000	$1,541,000
Total Annual Tax Benefits	**$8,282,000**	**$8,293,000**	**$16,575,000**

Source: Urban Partners

The 2,060 full-time equivalent jobs supported directly and indirectly by the development of the Hollywood Casino Philadelphia are estimated to generate wages and salaries of approximately $113.9 million (see **Table 5** on the following page). These estimates of wage and salary impact were derived using industrial sector factors developed as part of the IMPLAN analysis adjusted to 2012 dollars.

Of this $113.85 million in wages and salaries, $96.77 million is estimated to be earned within Philadelphia and $72.58 million is estimated to be earned by Philadelphia residents. In terms of tax revenue, this employment activity is estimated to generate $3.7 million as wage tax revenue for the City of Philadelphia and another $3.5 million as income tax revenue for the Commonwealth of Pennsylvania.

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[8] The following are the current tax rates for the City of Philadelphia and the Commonwealth of Pennsylvania:

City of Philadelphia

- Wage tax: 3.928% for city residents; 3.4985% for non-residents.
- Sales tax: 2%.
- Business privilege tax: 1.415 mills on gross receipts and 6.45% on taxable net income (we assume net income is 10% of gross receipts).
- Net profits tax: wage tax rates on net income less 60% of net profits portion of the Business Privilege Tax.
- Real estate tax: 9.432% on assessed value.
- Use and occupancy tax: $5.51 per annum per $100 of assessed value.

Commonwealth of Pennsylvania

- Income tax: 3.07%
- Sales tax: 6%
- Corporate net income tax: 9.9%

Table 5: Development Period Wage & Salary Impacts; Taxes on Wages and Salaries

(All Estimates in Millions)

	Within Pennsylvania	Within Philadelphia	Philadelphia Residents	Non Phila Residents
Direct Wage & Salary Impacts				
Direct Construction Wages & Salaries	$61.00	$61.00	$45.75	$15.25
Direct Material Jobs Wages & Salaries	$4.77	$4.77	$3.58	$1.19
Direct FF&E Jobs Wages & Salaries	$1.18	$0.50	$0.38	$0.13
Direct Professional/Soft Cost Wages & Salaries	$4.44	$3.83	$2.88	$0.96
Indirect/Induced Wage & Salary Impacts	$42.46	$26.66	$20.00	$6.67
Total Wage & Salary Impacts	**$113.85**	**$96.77**	**$72.58**	**$24.19**
Wage Taxes Paid To City of Philadelphia		**$3.70**	**$2.85**	**$0.85**
Income Taxes Paid To State of Pennsylvania	**$3.50**			

Source: Urban Partners

Additionally, sales taxes resulting directly and indirectly from construction of the Hollywood Casino Philadelphia are estimated to account for another $4.34 million in increased public revenue, including $1.08 million in revenue collected by the City of Philadelphia and $3.26 million in revenue collected by the Commonwealth of Pennsylvania (see **Table 6**).

Table 6: Development Period Sales Taxes

	Total	Total Paid to City of Phila	Total Paid to State of PA
Direct Economic Activity			
Sales Tax on Construction Materials	$3,051,000	$763,000	$2,288,000
Sales Tax on FF&E	$435,000	$62,000	$373,000
Total Sales Taxes on Direct Economic Activity	$3,486,000	$825,000	$2,661,000
Indirect/Induced Economic Activity			
Sales Tax on Taxable Indirect/Induced Economic Activity	$717,000	$121,000	$596,000
Liquor Tax on Indirect/Induced Economic Activity	$13,000	$13,000	
Hotel Tax	$121,000	$121,000	
Total Sales Taxes on Indirect/Induced Economic Activity	$851,000	$255,000	$596,000
Total Sales Taxes	**$4,337,000**	$1,080,000	**$3,257,000**

Source: Urban Partners

The for-profit business activity generated by the development of the Hollywood Casino Philadelphia will spur on an additional $3.51 million in additional tax revenue for the City of Philadelphia and $1.54 million for the Commonwealth of Pennsylvania (see Table 7).

Table 7: Development Period Business Tax & Real Estate Tax Benefits

	Within Pennsylvania	Within Philadelphia
Direct For-Profit Business Activity		
Construction Activity	$132,175,000	$106,750,000
FF&E Activity	$6,210,000	$3,105,000
Design, Professional & Administration Activity	$14,640,000	$12,990,000
Total Direct For-Profit Business Activity	$153,025,000	$122,845,000
Indirect/Induced For-Profit Business Activity	$99,286,000	$61,929,000
Total For-Profit Business Activity	$252,311,000	$184,774,000
Annual Business Privilege & Net Profits Taxes Paid		$1,464,000
Annual Real Estate Taxes Paid on Business Property		$1,353,000
Annual Use & Occupancy Taxes Paid on Business Property		$688,000
State Corporate and Other Business Tax Paid	$1,541,000	

Source: Urban Partners

4) *Annual Economic Impact*

In addition to the one-time benefits associated with the development and construction of the casino, this project will result in on-going spending associated with the operation of the facility. The benefit of the increased level of expenditures on the region's economy is multiplied by the fact that Philadelphia area vendors and service providers will supply a significant portion of the goods and services consumed in the operation of the Hollywood Casino Philadelphia facility. The incremental income generated by these businesses as a result of the casino's existence will further extend the economic impact on the local economy by inducing these businesses and their employees to increase their overall level of consumption.

The overall economic impact of the Hollywood Casino Philadelphia is derived from two interrelated components:

- The direct impact of the casino's economic activity, and
- The significant out-of-facility spending of visitors to the casino.

These two components of economic activity constitute the **direct economic impact** of the Hollywood Casino Philadelphia. An important third impact—the **indirect/induced economic activity** stimulated by this direct spending—can also be traced through the regional economy.

According to the IMPLAN model, the multipliers for indirect and induced impacts of the on-going operations of the casino are 0.73416 for non-payroll expenditures of the casino and 0.87521 for out-of-facility spending of casino visitors. Applying these multipliers to the direct impact figures[9], the **estimated annual direct and indirect/induced economic impact of the Hollywood Casino Philadelphia is $596.7 million** (see **Table 8**).

Table 8: Annual Economic Impact (in Millions, '12 Dollars)

Direct Economic Impact	
Casino Economic Activity	$351.00
Visitor Spending (Outside Venue)	$ 97.34
Total Direct Economic Impact in Region	$448.34
Indirect/Induced Economic Impact	
Indirect/Induced Impact of Casino Economic Activity	$ 63.17
Indirect/Induced Impact of Visitor Spending (Outside Venue)	$ 85.19
Total Indirect/Induced Economic Impact	$148.36
Total Economic Impact	**$596.70**

Source: Urban Partners

[9] The basis for calculating the indirect/induced impact for casino economic activity is $86.04 million, which is equivalent to casino's annual operating budget less non-payroll expenses that will be spent outside of the Commonwealth of Pennsylvania (10% of non-payroll expenses).

Direct Economic Impact

Urban Partners utilized the projected income and expense statements prepared by Penn National to estimate the direct economic impact generated by the Hollywood Casino Philadelphia. The projected gross revenue from casino operations is approximately **$351 million**[10] and outlays will total $95.6 million annually, which does not include taxes. These outlays include all payroll, management, security, maintenance, utilities, supplies, and services required to operate the facilities over a one-year period. Approximately 50% of this spending is anticipated to flow in the form of payroll expenses (i.e. wages, salaries and fringe benefits), and 90% of the non-payroll expenses will be spent within the Commonwealth of Pennsylvania.

In addition to the economic activity occurring within the confines of the facility, the casino is anticipated to generate significant visitor spending at other area establishments--including hotels, restaurants, and retail establishments. In order to estimate the amount of visitor expenditures outside the casino, the estimated 4.4 million visitors are first categorized into three geographical designations: 1) Philadelphia residents; 2) out-of-town visitors within 1-hr driving distance; and 3) out-of-town visitors outside of the 1-hr driving radius. Then, the estimated percentage of visitors staying overnight at hotels were calculated from survey data collected from previous economic impact studies performed by Urban Partners.[11]

As shown in **Table 9**, we estimate that seven percent of the visitors (or 308,000) are "incidental" casino visitors who may be in town for other primary reasons. For the purpose of calculating the out-of-facility visitor spending, the total number of incidental visitors are excluded from the analysis since the casino is not their primary reason for coming to Philadelphia. Of the remaining 4.092 million visitors, 35% are estimated to be Philadelphia residents and 58% are out-of-town visitors[12].

Table 9: Characteristics of Casino Visitors

Estimated Annual Visitors (First Year)	4,400,000	
Philadelphia Residents	1,540,000	35%
Non-Philadelphia Residents	2,552,000	58%
Incidentals (in town for other primary reasons)	308,000	7%

	Phila Residents	Non-Phila Residents Within 1 Hr	Non-Phila Residents Outside 1 Hr	Total
Visitor Characteristics				
Estimated Annual Visitors	1,540,000	1,914,000	638,000	4,092,000
Visitors Staying Overnight @ Hotel	-	114,840	146,740	261,580
Daytrip Visitors	1,540,000	1,799,160	491,260	3,830,420

Source: Urban Partners

[10] Annual revenue from table games: $62 million. Taxed at 16% (or $9.92 million). The tax rate will decrease to 14% after the first two years of operation. Annual revenue from slot machines: $264 million. Taxed at 55% (or $145.2 million). Food and alcohol sales: $24.85 million (50% will be food). Merchandise sales: $150,000.

[11] The breakdown of the visitors by geography were estimated using the *Report of Findings of the Philadelphia Gaming Advisory Task Force (2005)* and from survey data collected by Urban Partners for previous economic impact studies of entertainment events in the Philadelphia area.

[12] Estimate from the *Report of Findings of the Philadelphia Gaming Advisory Task Force (2005).*

The estimated percentage of out-of-town visitors who will stay overnight at hotels is extrapolated from survey data collected by Urban Partners for previous economic impact studies of entertainment events in the Philadelphia area. For visitors within a 1-hr driving distance, we estimate that 6% will stay overnight at a hotel (114,800 visitors). For visitors who are outside of the 1-hr driving distance, we estimate that 23% will use hotel lodging (146,740 visitors).

The amount of out-of-facility spending is greatly influenced by a visitor's overnight lodging plans. Visitors who stay overnight spend significantly more per person than daytrip visitors. The following is an estimated out-of-facility spending per person based on geographic breakdown and hotel lodging status[13]:

Daytrip Visitors	Dining	Shopping	Hotel	Total
• Philadelphia Residents:	$12.98	$10.63	$0	**$23.61**
• Inside 1-hr Radius:	$14.13	$5.45	$0	**$19.57**
• Outside 1-hr Radius:	$9.33	$8.17	$0	**$17.50**

Hotel Staying Visitors	Dining	Shopping	Hotel	Total
• Philadelphia Residents:	$0	$0	$0	$0
• Inside 1-hr Radius:	$22.92	$13.99	$55.43	**$92.35**
• Outside 1-hr Radius:	$9.88	$9.00	$9.00	**$42.52**

As shown below in **Table 10**, the estimated total for hotel expenditures is $10.14 million, the estimated total dining expenditures $54.07 million, and the estimated total shopping expenditures $33.13 million for a **total out-of-facility expenditures of $97.34 million**.

Table 10: Annual Out-of-Facility Commercial Demand

	Phila Residents	Non-Phila Residents Within 1 Hr	Non-Phila Residents Outside 1 Hr	Total
Visitor Characteristics				
Estimated Annual Visitors	1,540,000	1,914,000	638,000	4,092,000
Visitors Staying Overnight @ Hotel	-	114,840	146,740	261,580
Daytrip Visitors	1,540,000	1,799,160	491,260	3,830,420
Hotel Staying Visitor Expenditures				
Hotel Expenditures	-	$6,365,000	$3,770,000	$10,135,000
Dining Expenditures	-	$2,633,000	$1,576,000	$4,209,000
Shopping Expenditures	-	$1,607,000	$1,436,000	$3,043,000
Non-Hotel Staying Visitor Expenditures				
Dining Expenditures	$19,984,000	$25,416,000	$4,462,000	$49,862,000
Shopping Expenditures	$16,377,000	$9,801,000	$3,911,000	$30,089,000
Total Out-of-Facility Expenditures				**$97,338,000**

Source: Urban Partners

[13] From survey data collected by Urban Partners for previous economic impact studies of entertainment events in the Philadelphia area. Responses regarding expenditure patterns were collected for 1,900 visitors (860 surveys responses).

As shown in **Table 8**, taken together, the calculated **total direct economic impact of casino and visitor expenditures on the regional economy that are attributable to the Hollywood Casino Philadelphia is $448.34 million.**

Indirect/Induced Economic Impact

Assessing the indirect/induced economic impact involves tracking the additional rounds of spending within the region induced by businesses and their employees as a result of these direct expenditures. Inputting various expenditures by industry categories into the IMPLAN model, Urban Partners calculated the appropriate multiplier for indirect/induced economic activity resulting from the Hollywood Casino Philadelphia. The indirect/induced multiplier for casino expenditures is 0.73416 and the appropriate multiplier for indirect/induced economic activity resulting from out-of-facility visitor expenditures is 0.87521.

Applying these multipliers to the casino and visitor expenditures of the Hollywood Casino Philadelphia, a **total indirect/induced economic impact** of **$148.36 million** results.

4.1) EMPLOYMENT IMPACT FROM ON-GOING OPERATIONS

The Hollywood Casino Philadelphia will result in significant employment within the Commonwealth and within Philadelphia (see **Table 11**). The casino will employ 1,150 full-time equivalent positions and direct non-payroll expenditures by the casino will result in the support of an additional 490 full-time positions. Employment supported off-site by the out-of-facility spending of the casino visitors is estimated at 1,860 full-time equivalent positions.

Taken together, these **direct employment impacts total 3,500 full-time equivalent jobs.** Due to the proposed location of the casino and the fact that much of the visitor spending will be localized, this direct employment impact will be significantly concentrated within Philadelphia. Based on likely Hollywood Casino Philadelphia's employment patterns, the locations of its contractors/suppliers, and the employment patterns within the key industries in which visitor spending will be concentrated, we estimate that 3,210 of the total 3,500 full-time equivalent jobs supported by the Hollywood Casino Philadelphia will be located within Philadelphia and 2,410 full-time equivalent positions will be filled by City residents.

The **indirect employment impact of the casino will result in the creation of 890 full-time equivalent positions**—270 as an indirect result of the casino's expenditures, and 620 due to the indirect impact of visitor spending outside the casino. Because the indirect economic activity resulting from the Hollywood Casino Philadelphia will be more diffuse—both in terms of industrial sectors and location of employment—this employment is believed to be spread more broadly throughout the region. We estimate that approximately 530 of the 890 full-time equivalent positions supported by the indirect economic impact of the Hollywood Casino Philadelphia will be located within Philadelphia and that 400 will be filled by City residents.

Table 11: Permanent Employment Impacts

	Within Pennsylvania	Within Philadelphia	Philadelphia Residents
Direct Employment Impact			
Casino Employees (Annualized FTE)	1,150	1,150	860
FTE Employment Due to Non-Payroll Casino Expenditures within the Region	490	290	220
Employment Due to Visitor Spending (Outside Venue)--Annualized FTE	1,860	1,770	1,330
Total Direct FTE Employment Impact in Region	3,500	3,210	2,410
Indirect/Induced Employment Impact			
Indirect/Induced Impact of Casino Expenditures	270	160	120
Indirect/Induced Impact of Visitor Spending (Outside Venue)	620	370	280
Total Indirect/Induced Employment Impact	890	530	400
Total Employment Impact	**4,390**	**3,740**	**2,810**

Source: Urban Partners

In total, the direct and indirect/induced employment impacts of the Hollywood Casino Philadelphia will be 4,390 full-time equivalent positions, including **3,740 located within Philadelphia and 2,810 held by City residents.**

4.2) *TAX REVENUE IMPACT*

The Hollywood Casino Philadelphia will generate approximately **$185.52 million in tax revenues**–$26.99 million in increased tax revenue for the City of Philadelphia and $158.53 million for the Commonwealth of Pennsylvania (see **Table 12**).

Table 12: Summary of Annual Tax Benefits[14]

	For City of Phila	For State of PA	Total City & State
Taxes on Wages & Salaries	$4,130,000	$4,050,000	$8,180,000
Sales & Hotel Taxes	$4,300,000	$7,920,000	$12,220,000
Business Privilege & Net Profits Taxes	$2,780,000		$2,780,000
Real Estate Taxes Paid on Business Property	$2,670,000		$2,670,000
Use & Occupancy Taxes Paid on Business Property	$1,310,000		$1,310,000
State Corporate & Other Business Taxes		$3,240,000	$3,240,000
Gaming Tax - Table Games	$1,240,000	$8,680,000	$9,920,000
Gaming Tax - Slot Machines	$10,560,000	$134,640,000	$145,200,000
Total Annual Tax Benefits	**$26,990,000**	**$158,530,000**	**$185,520,000**

Source: Urban Partners

Wage Tax Revenue Impact

The 4,390 full-time equivalent jobs supported directly and indirectly by the Hollywood Casino Philadelphia are estimated to generate wages and salaries of approximately $131.94 million (see **Table 13**). These estimates of wage and salary impact were derived using industrial sector factors developed as part of the IMPLAN analysis adjusted to 2012 dollars. Of this $131.94 million in wages and salaries, $108.05 million is estimated to be earned within Philadelphia and $81.04 million is estimated to be earned by Philadelphia residents.

Table 13: Annual Wage & Salary Impacts (in Millions)

	Within Pennsylvania	Within Philadelphia	Philadelphia Residents
Direct Wage & Salary Impacts			
Casino Payroll	$40.63	$40.63	$30.47
Wages & Salaries Due to Non-Payroll Casino Expenditures within the Region	$11.92	$7.16	$5.37
Wages & Salaries Due to Visitor Spending (Outside Venue)	$36.04	$34.24	$25.68
Total Direct Wage & Salary Impacts	$88.59	$82.03	$61.52
Indirect/Induced Wage & Salary Impacts			
Indirect/Induced Wage & Salary Impact of Casino Expenditures	$13.66	$8.20	$6.15
Indirect/Induced Wage & Salary Impact of Visitor Spending (Outside Venue)	$29.69	$17.82	$13.37
Total Indirect/Induced Wage & Salary Impacts	$43.35	$26.02	$19.52
Total Wage & Salary Impacts	**$131.94**	**$108.05**	**$81.04**

Source: Urban Partners

[14] See tax rates referenced on page 9.

This employment activity is estimated to generate $4.13 million in wage tax revenue for the City of Philadelphia and another $4.05 million in income tax revenue for the Commonwealth of Pennsylvania (see **Table 14**).

Table 14: Annual Taxes on Wages & Salaries

	Total Paid within PA	Total Paid within Phila	Total Paid to Phila Residents	Total Paid within Phila to Non-Residents
Total Direct Wages & Salaries	$88,590,000	$82,020,000	$61,520,000	$20,510,000
Total Indirect/Induced Wages & Salaries	$43,350,000	$26,020,000	$19,520,000	$6,510,000
Total Wages & Salaries	$131,940,000	$108,040,000	$81,040,000	$27,020,000
Wage Taxes Paid to City of Philadelphia		**$4,130,000**	**$3,180,000**	**$940,000**
Income Taxes Paid to the Commonwealth	**$4,050,000**			

Source: Urban Partners

Sales and Hotel Tax Impact

Additionally, sales and hotel taxes directly and indirectly resulting from the on-site spending of the Hollywood Casino Philadelphia, as well as the out-of-facility spending of casino visitors, is estimated to generate another **$12.2 million in increased public revenue**, including $4.3 million in revenue collected by the City of Philadelphia and $7.9 million in revenue collected by the Commonwealth of Pennsylvania (see **Table 15**).

Table 15: Annual Sales Tax & Hotel Tax Benefits

	Total	Total Paid to City of Phila	Total Paid to State of PA
Direct Economic Activity			
Sales Tax on In-Facility Sales	$2,000,000	$500,000	$1,500,000
Sales Tax on Visitor Shopping (Outside Venue)	$2,650,000	$660,000	$1,990,000
Sales Tax on Visitor Food Spending (Outside Venue)	$3,470,000	$870,000	$2,600,000
Liquor Tax on Visitor Retail Spending (Outside Venue)	$1,080,000	$1,080,000	
Sales Tax on Hotel Rooms	$760,000	$200,000	$560,000
Gasoline Tax	$720,000		$720,000
Hotel Tax	$830,000	$830,000	
Total Sales Taxes on Direct Economic Activity	$11,510,000	$4,140,000	$7,370,000
Indirect/Induced Economic Activity			
Sales Tax on Taxable Indirect/Induced Economic Activity	$580,000	$30,000	$550,000
Liquor Tax on Indirect/Induced Economic Activity	$10,000	$10,000	
Hotel Tax	$120,000	$120,000	
Total Sales Taxes on Indirect/Induced Economic Activity	$710,000	$160,000	$550,000
Total Sales Taxes	$12,220,000	$4,300,000	$7,920,000

Source: Urban Partners

Business and Real Estate Tax Impact

Of the $596.7 million in total direct and indirect economic impact, $398.33 million is estimated to support private for-profit business activity, including $351.41 million in business activity within Philadelphia (see **Table 16**).

Table 16: For-Profit Business Activity Generated (in Millions)

	Within Pennsylvania	Within Philadelphia
Direct For-Profit Business Activity		
For-Profit Business Activity Due to Non-Payroll Casino Expenditures	$195.88	$195.88
For-Profit Business Activity Due to Visitor Spending (Outside Venue)	$97.34	$92.47
Total Direct For-Profit Business Activity	$293.22	$288.35
Indirect/Induced For-Profit Business Activity		
Indirect/Induced For-Profit Business Activity Due to Casino Expenditures	$31.42	$18.85
Indirect/Induced For-Profit Business Activity Due to Visitor Spending (Outside Venue)	$73.69	$44.21
Total Indirect/Induced For-Profit Business Activity	$105.11	$63.06
Total For-Profit Business Activity	**$398.33**	**$351.41**

Source: Urban Partners

This for-profit business activity is estimated to generate $6.76 million in additional tax revenue for the City of Philadelphia and $3.24 for the Commonwealth of Pennsylvania (see **Table 17**).

Table 17: Annual Business Tax & Real Estate Tax Benefits

	Within Pennsylvania	Within Philadelphia
Direct For-Profit Business Activity		
For-Profit Business Activity Due to Non-Payroll Organizational Expenditures	$195,880,000	$195,880,000
For-Profit Business Activity Due to Audience Spending	$97,340,000	$92,470,000
Total Direct For-Profit Business Activity	$293,220,000	$288,350,000
Indirect/Induced For-Profit Business Activity		
Indirect/Induced For-Profit Business Activity Due to Organizational Expenditures	$31,420,000	$18,850,000
Indirect/Induced For-Profit Business Activity Due to Audience Spending	$73,690,000	$44,210,000
Total Indirect/Induced For-Profit Business Activity	$105,110,000	$63,060,000
Total For-Profit Business Activity	$398,330,000	$351,410,000
Annual Business Privilege & Net Profits Taxes Paid		**$2,780,000**
Annual Real Estate Taxes Paid on Business Property		**$2,670,000**
Annual Use & Occupancy Taxes Paid on Business Property		**$1,310,000**
State Corporate and Other Business Tax Paid	**$3,240,000**	

Source: Urban Partners

Gaming Tax Impact

The operations of the Hollywood Casino Philadelphia will result in significant gaming tax revenue. Based on the proposed number of tables games and slot machines (81 and 2,050, respectively), the Hollywood Casino Philadelphia is estimated to generate $143.32 million in gaming tax revenue for the Commonwealth of Pennsylvania, and $11.8 million in host fees for the City of Philadelphia (see **Table 18**).

Table 18: Annual Gaming Tax Benefits

	For City of Phila	For State of PA	Total City & State
Tax on Table Games	$1,240,000	$8,680,000	$9,920,000
Tax on Slot Machines			
State Share		$89,760,000	$89,760,000
Local Share	$10,560,000		$10,560,000
Economic Development and Tourism Fund		$13,200,000	$13,200,000
Horse Racing Fund		$31,680,000	$31,680,000
Total Annual Gaming Tax Benefits	**$11,800,000**	**$143,320,000**	**$155,120,000**

Source: Urban Partners

5) *APPENDIX A: WHAT IS IMPLAN?*

(Adapted from the IMPLAN website)

Created by the Minnesota IMPLAN Group, Inc, the IMPLAN software system helps analysts address questions about economic study and analysis like these:

- How does the local economy function?
- What would the economic consequences of this project be?
- What would the effect of this company/base closure be?

By constructing Social Accounts that describe the structure and function of a specific economy, IMPLAN creates a localized model to investigate the consequences of projected economic transactions in a geographic region. Used by thousands of public and private institutions, IMPLAN is the most widely employed and accepted regional economic analysis software for predicting economic impacts.

IMPLAN Analysis

To ensure accuracy, IMPLAN's data is compiled from a wide variety of sources, and each Social Accounting Matrix is derived from unique local and census information. IMPLAN's data can be modified to accommodate new technologies or specifications of local industries, and is reported in a sectoring scheme roughly corresponding to NAICS.

With the IMPLAN modeling system, analysts can create an impact study which will track the effects of a modeled event on 440 unique sectors in the United States. The result is a detailed summary of economic impacts including changes in jobs, household incomes, tax impacts, and gross regional product. The summary can be used to show the effect of firms moving into an area, special events, introduction of new technologies, recreation and tourism, military base closures, changes in government spending and other similar events.

How IMPLAN works

Social Accounting: IMPLAN's Social Accounting Matrices (SAMs) capture the actual dollar amounts of all business transactions taking place in a regional economy as reported each year by businesses and governmental agencies. SAM accounts are a better measure of economic flow than traditional input-output accounts because they include "non-market" transactions. Examples of these transactions would be taxes and unemployment benefits.

Multipliers: Social Accounting Matrices can be constructed to show the effects of a given change on the economy of interest. These are called Multiplier Models. Multiplier Models study the impacts of a user-specified change in the chosen economy for 440 different industries. Because the Multiplier Models are built directly from the region specific Social Accounting Matrices, they will reflect the region's unique structure and trade situation.

Multiplier Models are the framework for building impact analysis questions. Derived mathematically, these models estimate the magnitude and distribution of economic impacts, and measure three types of effects which are displayed in the final report. These are the direct, indirect, and induced changes within the economy. Direct effects are determined by the Event as defined by the user (i.e. a $10 million dollar order is a $10 million dollar direct effect). The indirect effects are determined by the amount of the direct effect spent within the study region on supplies, services, labor and taxes. Finally the induced effect measures the money that is re-spent in the study area as a result of spending from the indirect effect. Each of these steps recognizes an important leakage from the economic study region spent on purchases outside of the defined area. Eventually these leakages will stop the cycle.

APPENDIX 34

DELIVERY NOTIFICATION

DiRienzi, Carol (Phila)

From: Richardson, Gino L. (Phila)
Sent: Thursday, November 08, 2012 5:12 PM
To: DiRienzi, Carol (Phila)
Subject: FW: American Expediting Co. Delivery Notification

Delivery Confirmation

Gino Richardson
richardsongl@ballardspahr.com

215-864-8952 (ph)

From: phl@amexpediting.com [mailto:phl@amexpediting.com]
Sent: Thursday, November 08, 2012 4:24 PM
To: Richardson, Gino L. (Phila)
Subject: American Expediting Co. Delivery Notification

Delivery Notification

Our records indicate that the following order has been delivered:
Order Number: 6450609
Order was Placed by: Isah
Pickup Address:
BALLARD
1735 Market Street/49th Fl
Phila,PA, 19103
Delivery Address:
City Hall
RM 215
Philadelphia,PA, 19102
Authorization: 00292-00990012
Delivered On: 11/8/2012 16:23
Signed By: ms freeman
You can track your shipment in more detail at any time from www.amexpediting.com

DiRienzi, Carol (Phila)

From: Richardson, Gino L. (Phila)
Sent: Thursday, November 08, 2012 5:13 PM
To: DiRienzi, Carol (Phila)
Subject: FW: American Expediting Co. Delivery Notification

Delivery Confirmation

Gino Richardson
richardsongl@ballardspahr.com

215-864-8952 (ph)

From: phl@amexpediting.com [mailto:phl@amexpediting.com]
Sent: Thursday, November 08, 2012 4:32 PM
To: Richardson, Gino L. (Phila)
Subject: American Expediting Co. Delivery Notification

Delivery Notification

Our records indicate that the following order has been delivered:
Order Number: 6450615
Order was Placed by: Isah
Pickup Address:
BALLARD
1735 Market Street/49th Fl
Phila,PA, 19103
Delivery Address:
SHELLY SMITH
1515 ARCH ST
PHILA,PA, 19102
Authorization: 00292-00990012
Delivered On: 11/8/2012 16:32
Signed By: ms brown
You can track your shipment in more detail at any time from www.amexpediting.com

Print page | Close

FedEx

Detailed Results

Tracking no.: 794034606164 Select time format: 12H

Delivered

Delivered
Signed for by: R.SPITTLER

Shipment Dates	Destination
Ship date Nov 8, 2012	Harrisburg, PA
Delivery date Nov 9, 2012 10:08 AM	Signature Proof of Delivery

Shipment Options

Hold at FedEx Location
Hold at FedEx Location service is not available for this shipment.

Shipment Facts

Service type	Priority Box	Delivered to	Receptionist/Front Desk
Weight	4.0 lbs/1.8 kg	Reference	Compliance

Shipment Travel History

Select time zone: Local Scan Time

All shipment travel activity is displayed in local time for the location

Date/Time	Activity	Location	Details
Nov 9, 2012 10:08 AM	Delivered	Harrisburg, PA	
Nov 9, 2012 8:05 AM	On FedEx vehicle for delivery	MIDDLETOWN, PA	
Nov 9, 2012 7:55 AM	At local FedEx facility	MIDDLETOWN, PA	
Nov 9, 2012 3:30 AM	Departed FedEx location	NEWARK, NJ	
Nov 8, 2012 10:12 PM	Arrived at FedEx location	NEWARK, NJ	
Nov 8, 2012 7:42 PM	Left FedEx origin facility	READING, PA	
Nov 8, 2012 3:58 PM	Picked up	READING, PA	
Nov 8, 2012 2:30 PM	Shipment information sent to FedEx		