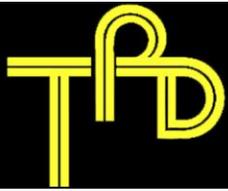


APPENDIX D

TRIP GENERATION INFORMATION



MEMORANDUM

To: Tower Entertainment, LLC

From: Traffic Planning & Design, Inc.

Date: July 29, 2013

Re: Trip Generation Analysis– 400 North Broad Development
City of Philadelphia, PA

The following memorandum includes a trip generation analysis for the proposed 400 North Broad development in the City of Philadelphia, PA. The purpose of this analysis is to update the development of proposed traffic levels for the casino and ancillary components of the proposed development based on the 4/15/13 letter from Orth-Rodgers & Associates, Inc.

TRIP GENERATION

Casino Component

TPD performed traffic observations at a local Philadelphia casino, as well as supplemental traffic observations at other local, urban-context casino locations. The following is a brief description of the selected casino locations:

- City of Philadelphia (North Delaware): This casino, located on Delaware Avenue opposite Frankford Avenue, opened in September 2010. Based on the *FY 2011-12 PGCB Annual Report*, the maximum approved gaming floor area of 53,536 square feet (s.f.) consisted of an average of 54 table games and 1,602 slot machines. The site of this casino is within a 5-mile radius of the project site. Other amenities on site include ancillary uses, such as entertainment and dining options.
- City of Chester: This casino, located in Delaware County in the City of Chester, opened in January 2007. Based on the *FY 2011-12 PGCB Annual Report*, the maximum approved gaming floor area of 106,102 square feet (s.f.) consisted of an average of 125 table games and 2,794 slot machines. The site of this casino is within a 15-mile radius of the project site. Other amenities on site include a harness race-track and ancillary uses, such as entertainment and dining options.
- City of Bethlehem: This casino, located in Northampton County in the City of Bethlehem, opened in May 2009. Based on the *FY 2011-12 PGCB Annual Report*, the maximum approved gaming floor area of 143,244 square feet (s.f.) consisted of an average of 152 table games and 3,024 slot machines. The site of this casino is within a 50-mile radius of the project site. Other amenities on site include a retail outlet center, hotel and event centers, as well as ancillary uses, such as entertainment and dining options.

Table 1 below shows the locally obtained trip/visitor generation rates during the studied time periods.



**TABLE 1
 CASINO COMPONENT TRIP/VISITOR GENERATION RATES –
 LOCALLY OBTAINED DATA**

Location	Independent Variable	Description	Rate per Gaming Position	Directional Split	
				Entering	Exiting
Friday P.M. (4:00-6:00 P.M.) Peak Hour					
City of Philadelphia (North Delaware)	2,007	Trips	$T = 0.623*(X)$	55%	45%
		Visitors	$T = 0.925*(X)$		
City of Chester	3,732	Trips	$T = 0.275*(X)$	55%	45%
		Visitors	$T = 0.464*(X)$		
City of Bethlehem	4,164	Trips	$T = 0.341*(X)$	55%	45%
		Visitors	$T = 0.526*(X)$		
Friday Evening (7:00-10:00 P.M.) Peak Hour					
City of Philadelphia (North Delaware)	2,007	Trips	$T = 0.538*(X)$	53%	47%
		Visitors	$T = 0.895*(X)$		
City of Chester	3,732	Trips	$T = 0.412*(X)$	52%	48%
		Visitors	$T = 0.689*(X)$		
City of Bethlehem	4,164	Trips	$T = 0.442*(X)$	64%	36%
		Visitors	$T = 0.661*(X)$		
Saturday Evening (6:00-9:00 P.M.) Peak Hour					
City of Philadelphia (North Delaware)	2,007	Trips	$T = 0.608*(X)$	48%	52%
		Visitors	$T = 0.982*(X)$		
City of Chester	3,732	Trips	$T = 0.378*(X)$	48%	52%
		Visitors	$T = 0.624*(X)$		
City of Bethlehem	4,164	Trips	$T = 0.382*(X)$	58%	42%
		Visitors	$T = 0.612*(X)$		

T = Total trips generated

X = Gaming Positions (includes slot machines and table games)

Based on the observations conducted at the local casino sites, TPD recommends utilizing the observed trip generation rates from the City of Philadelphia (North Delaware) casino location for the casino component of the proposed development given the proximity subject to the project site and the conservative nature of the resultant values.

Ancillary Component

There are several ancillary uses associated with the proposed site that will likely serve as destination for external visitors as well as casino visitors. Although the locally collected data utilized for the casino component accounts for some entertainment and dining uses in the casino trip generation calculation, the ancillary component of the proposed site was determined to be in addition to the casino visitors. Therefore, trips were generated for the proposed ancillary uses based on information contained in the manual *Trip Generation*, Ninth Edition, 2012, an Institute of Transportation Engineers (ITE) Informational Report. **Table 2** shows the trip generation rates and directional splits utilized for the ancillary uses during the studied time periods.



**TABLE 2
 ANCILLARY COMPONENT TRIP GENERATION RATES –
 ITE DATA**

Time Period	Independent Variable	Size / # of Units	Rates			Directional Split	
			Trip Generation	Operation ¹	Pass-By	Entering	Exiting
Hotel – ITE Land Use #310							
Friday P.M. Peak	Occupied Rooms	126 rooms	$T = 0.70*(X)$	100%	0%	49%	51%
Friday Evening Peak			$T = 0.74*(X)$	100%	0%	57%	43%
Saturday Evening Peak			$T = 0.87*(X)$	100%	0%	56%	44%
Restaurant – ITE Land Use #932							
Friday P.M. Peak	Square Footage	80,300 s.f.	$T = 9.85*(X)$	70%	43%	60%	40%
Friday Evening Peak			$T = 11.76*(X)^2$	100%	25%	51%	49%
Saturday Evening Peak			$T = 13.14*(X)^2$	100%	25%	60%	40%
Drinking Place – ITE Land Use #925							
Friday P.M. Peak	Square Footage	43,267 s.f.	$T = 11.34*(X)$	70%	43%	66%	34%
Friday Evening Peak			$T = 15.49*(X)$	100%	25%	51%	49%
Saturday Evening Peak			$T = 15.49*(X)$	100%	25%	60%	40%
Theater – ITE Land Use #441							
Friday P.M. Peak	Square Footage	70,197 s.f.	$T = 1.11*(X)^3$	70%	0%	50%	50%
Friday Evening Peak			$T = 12.07*(X)^4$	100%	0%	75%	25%
Saturday Evening Peak			$T = 12.07*(X)^4$	100%	0%	75%	25%
Specialty Retail – ITE Land Use #826							
Friday P.M. Peak	Square Footage	72,264 s.f.	$T = 2.71*(X)$	100%	34%	44%	56%
Friday Evening Peak			$T = 3.35*(X)^2$	100%	25%	52%	48%
Saturday Evening Peak			$T = 2.10*(X)^2$	100%	25%	33%	67%

T = Total Trips

X = Independent Variable

Based on the location and the surrounding amenities (transit) available to the proposed site, TPD recommends utilizing the following trip generation adjustments:

- Internal Capture – Visitors to the proposed casino use using the other on-site ancillary uses. This adjustment will be applied to ancillary uses of the proposed site only.
- Mass Transit Ridership – Proximity to available transit. Additionally, it is anticipated that a shuttle bus will be provided to transport patrons to/from the site to destinations such as hotels.
- Pedestrian / Bicycle Reduction – Site accessed by pedestrians / bicycles rather than vehicles.
- Pass-By Trips – Motorists already traveling on study area roadways.

The *Executive Summary of the Interim Report of Findings* by the Philadelphia Gaming Advisory Task Force contains information regarding the modal split of visitors to potential casino uses based on the different locales of potential sites throughout the Philadelphia region.

¹ Operational rate assumes percentage of uses utilized/open during the time period. Several uses were assumed to be operational at a 70% level given the nature of the use and anticipated hours of operation.

² Trip generation rates based on published hourly variation data for the land use to account for the time period analyzed.

³ Based on correlation between seats to square footage.

⁴ Based on the information contained in the report by ITE Technical Council Committee 6A-50.



Based on the modal splits observed at SugarHouse, the public transit was significantly higher (**183% increase**) when compared to the *Summary*. While the *Summary* noted the difference in the public transit access between the North Delaware location and the Center City location and adjusted the expected transportation modal split accordingly; the results of the observations at the North Delaware location indicate a shift in current vs. expected modal choice for casino patrons in Philadelphia. Additionally, recent studies by the *Philadelphia Mayor's Office of Transportation & Utilities* and the *Center City District & Central Philadelphia Development Corporation* have indicated a change in modeshare for Philadelphians' in recent years away from auto. As such, TPD utilized the expected typical distribution of transportation modes for a casino located in the Center City area of the City with minor modifications to reflect local observations and recent trends. Lastly, the Applicant is committed to provide shuttle service to such locations as the convention center (less than 3 blocks away), numerous hotels, and other popular destinations where perspective patrons will be located. With a significantly closer proximity to these amenities and population centers than the North Delaware area, it is anticipated that shuttle service will also accommodate a larger percentage of visitors. Therefore, TPD adjusted the modes of transportation accordingly to accommodate this optimal location.

Table 3 summarizes the expected and observed typical distribution of transportation modes.

**TABLE 3
 TYPICAL DISTRIBUTION OF TRANSPORTATION MODES**

Description	North Delaware Area			Center City Sites		
	Task Force ¹	Locally Obtained	Difference	Task Force ¹	Modifications	Utilized
Public Transit	6%	17%	+11%	20%	+11% ²	31%
Casino Bus	9%	7%	-2%	8%	+5% ³	13%
Taxi	7%	5%	-2%	11%	0%	11%
Pedestrian	0%	0%	0%	4%	+4% ⁴	8%
Auto	78%	71%	-7%	57%	-20% ⁵	37%
Total	100%	100%	0%	100%	0%	100%

¹ Executive Summary of the Interim Report of Findings by the Philadelphia Gaming Advisory Task Force

² Adjusted based on observations of public transit use at SugarHouse

³ Adjusted based on Applicant's anticipated provision of significant shuttle service

⁴ Adjusted based on recent City studies regarding modeshare

⁵ Resultant change to usage based on other modal adjustments

The utilized modal splits/reductions are summarized as follows:

Mass Transit Trip Generation Adjustment

The proposed development is adjacent or within reasonable walking distance of numerous mass transit assets as identified earlier in the report. TPD assumed a **31% trip adjustment** during the studied time periods. It is anticipated that a significant amount of visitors to the proposed site will utilize mass transit, to include people who are locally employed in the City and utilize mass transit to get to/from work. Additionally, TPD assumed an additional **13% trip adjustment** for patrons that will utilize a shuttle bus to/from the site. It is estimated that shuttles will generate approximately 12-15 new trips to the study area during the studied time periods.

Pedestrian / Bicycle Trip Generation Adjustment

Since the proposed site is in an urban area with high amounts of pedestrian traffic, a trip generation adjustment was assumed for access of the site by pedestrians / bicycles rather than vehicles or mass transit. TPD assumed an *8% trip adjustment* during the studied time periods.

Internal Capture Adjustment

The *Trip Generation Handbook* recommends that when studying multi-use developments (i.e. the proposed site), that an interaction factor be applied to the trip generation to determine the quantity of “external trips” (trips from external roadways) and “internal trips” (trips between uses on site that do not utilize the external roadways). For example, many of the on-site amenities are marketed for use by patrons of the Casino. For purposes of the study, it is recommended that a *75% trip adjustment* be applied to the trip generation for the ancillary component of the proposed development during the studied time periods.

To provide further justification for the internal capture adjustment utilized for the study, TPD reviewed the site-specific trip generation at the City of Bethlehem casino location. As previously outlined, the City of Bethlehem casino site includes a significant retail component consisting of a retail outlet center, hotel and events center, and various entertainment and dining options. Observations at the City of Bethlehem casino location indicate the total site trip generation is 1,419 trips during the Friday P.M. (4-6 PM) peak hour, 1,839 trips during the Friday evening (7-10 PM) peak hour, and 1,592 trips during the Saturday evening (6-9 PM) peak hour. If the trip generation methodology recommended for the proposed development in this memorandum (including the internal trip capture adjustment) were applied to the site specific uses of the City of Bethlehem casino location, the resultant trip generation would be higher than those observed at the City of Bethlehem casino location: 1,915 total external trips during the Friday P.M. (4-6 PM) peak hour, 1,898 total external trips during the Friday evening (7-10 PM) peak hour, and 1,892 total external trips during the Saturday evening (6-9 PM) peak hour. Therefore, this inflated trip generation justifies the use of the recommended internal capture adjustment for the ancillary component of the proposed development.

Pass-By Trips

According to the *Trip Generation Handbook*, not all of the trips generated by the proposed development will be new to the surrounding area. A distinction was made between “new” trips, which are trips made to/from the study area for the express purpose of visiting the site, “pass-by” trips, which are trips made to the site by traffic passing the retail center on the adjacent roadways en route to another destination. The pass-by trips do not add any additional traffic to the study area intersections but will result in shifts in turning movement at the site driveway intersections.

Trip Generation Summary – Proposed Development

The calculated trip generation for the proposed development is shown in **Tables 4 through 6** for the studied time periods. It should be noted that the proposed development assumed in the November 7, 2012 *Transportation Impact Study* consisted of a casino use with 3,000 slot machines and 150 tables games and ancillary uses based on information provided by Tower Entertainment, LLC. It is TPD’s understanding that the casino component has been modified to accommodate a total of 3,300 slot machines, and as such, the calculated trip generation for the proposed development includes the casino component as currently proposed.



TABLE 4
TRIP GENERATION SUMMARY – FRIDAY P.M. (4:00-6:00 P.M.) PEAK HOUR

Land Use	Size / Units (X)	Total Trips	Int. Trips	External Trips					
				Mass Transit ¹	Ped-Bike	Pass-by	New Vehicle Trips ²		
							Total	Enter	Exit
Casino Use									
Casino	3,300 slots / 150 tables	2,505	---	1,247	322	---	922	510	412
			<i>Shuttle Bus Trips</i>			14	7	7	
Ancillary Uses									
Hotel	125	88	66	7	2	0	13	6	7
Restaurant	56,210 ³	554	416	43	11	30	54	32	22
Drinking Place	30,287 ³	343	257	27	7	20	32	21	11
Theater / Clubs	49,148 ³	55	41	4	1	0	9	7	2
Retail	72,264	196	147	15	4	10	20	9	11
Subtotal – Ancillary Trips		1,236	927	96	25	60	128	75	53
Total Site Trips		3,741	927	1,343	347	60	1,064	592	472

Int. = Internal Capture Trips X = Independent Variable (Size in KSF, Gaming Positions, Units)
¹ Includes visitors who are employed locally and use transit ² New trips include passenger cars and taxis
³ Assumes 30% of space not utilized/open during Friday P.M. (4-6 PM) peak hour

TABLE 5
TRIP GENERATION SUMMARY – FRIDAY EVENING (7:00-10:00 P.M.) PEAK HOUR

Land Use	Size / Units (X)	Total Trips	Int. Trips	External Trips					
				Mass Transit ¹	Ped-Bike	Pass-by	New Vehicle Trips ²		
							Total	Enter	Exit
Casino Use									
Casino	3,300 slots / 150 tables	2,425	---	1,207	312	---	893	475	418
			<i>Shuttle Bus Trips</i>			13	7	6	
Ancillary Uses									
Hotel	125	93	70	7	2	0	14	8	6
Restaurant	80,300 ¹	944	708	73	19	30	114	58	56
Drinking Place	43,267 ¹	670	503	52	13	22	80	54	26
Theater / Clubs	70,197 ¹	847	635	66	17	0	129	97	32
Retail	72,264	242	182	19	5	8	28	15	13
Subtotal – Ancillary Trips		2,796	2,098	217	56	60	365	232	133
Total Site Trips		5,221	2,098	1,424	368	60	1,271	714	557

Int. = Internal Capture Trips X = Independent Variable (Size in KSF, Gaming Positions, Units)
¹ Includes visitors who are employed locally and use transit ² New trips include passenger cars and taxis



TABLE 6
TRIP GENERATION SUMMARY – SATURDAY EVENING (6:00-9:00 P.M.) PEAK HOUR

Land Use	Size / Units (X)	Total Trips	Int. Trips	External Trips					
				Mass Transit ¹	Ped-Bike	Pass-by	New Vehicle Trips ²		
							Total	Enter	Exit
Casino Use									
Casino	3,300 slots / 150 tables	2,661	---	1,324	342	---	980	467	513
			<i>Shuttle Bus Trips</i>				15	8	7
Ancillary Uses									
Hotel	125	110	83	8	2	0	17	10	7
Restaurant	80,300 ¹	1,055	791	82	21	34	127	76	51
Drinking Place	43,267 ¹	670	503	52	13	22	80	54	26
Theater / Clubs	70,197 ¹	847	635	66	17	0	129	97	32
Retail	72,264	152	114	12	3	6	17	6	11
Subtotal – Ancillary Trips		2,834	2,126	220	56	62	370	243	127
Total Site Trips		5,495	2,126	1,544	398	62	1,365	718	647

Int. = Internal Capture Trips **X** = Independent Variable (Size in KSF, Gaming Positions, Units)
¹ Includes visitors who are employed locally and use transit ² New trips include passenger cars and taxis

If any of you have any questions or concerns, please do not hesitate to contact us.