



# **PUBLIC WORKS AND ENVIRONMENTAL SERVICES**

Quality Services for a Quality Community

## **MEMORANDUM**

**TO: Tim Dempsey, Director of Planning, Building & Development  
Pablo Majano, Community Development Analyst  
Nicole McPherson, Assistant Engineering Administrator**

**FROM: Steven Roach, Design Engineer**

**DATE: February 9, 2017**

**SUBJECT: Traffic Impact Assessment for 1100 Trowbridge Road**

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Engineering Staff has received and formally reviewed the traffic impact assessment for the proposed redevelopment located at 1100 Trowbridge Road. Trip generation data was provided on January 30, 2017 by Parsons Transportation Group, Inc. of Michigan. All data provided summarized information per the Institute of Transportation Engineer's (ITE) trip generation manual.

The trip generation analysis provided a comparison between the former and current hotel sizes and the proposed use based on data contained in the ITE manual. Originally, the site consisted of a 125 room hotel which was later reduced to 55 rooms in 2005. Pass-by and internal capture trips were considered in the analysis for the sites proposed use. Driveway trips are expected to increase slightly with the current proposal. Overall, the proposed site is expected to generate an additional 28 A.M. peak hour trips and 24 additional P.M. peak hour trips to the Trowbridge Road corridor. This was in comparison to the 125 room hotel and accounts for pass-by and internal site capture. Overall, the new use would generate approximately 66 more trips during each peak hour of travel in comparison to the current 55 room hotel.

Engineering Staff evaluated Division 4 of the City's Ordinance to determine potential traffic impact study requirements. Provided that the trip generation increase by peak hour is less than 99 directional trips, the traffic impact assessment provided by Parsons meets the traffic analysis requirements for the redevelopment of this site.

The impacts to the current intersection Level-of-Service (LOS) from this particular development are expected to be minimal. In comparison to the most recent Trowbridge Village development, the increase in each AM and PM peak was expected to be over 150, with an additional 1,200 plus trips daily. Upon being studied, the signal at Harrison experienced delay for the eastbound left to northbound Harrison movement, as well as the westbound through and right turn movements from campus. Both operate and will continue to operate at a LOS E, experiencing roughly 70 seconds of delay.

**January 30, 2017**

Ms. Terri L. Fitzpatrick, Chief Operating Officer  
Boji Group  
124 W. Allegan St.  
Ste. 2100  
Lansing, MI 48933

Subject: Trip Generation for Proposed Trowbridge Development Project, East Lansing, Michigan

Dear Ms. Fitzpatrick,

Parsons has completed a trip generation analysis for the proposed development to be located on the north side of Trowbridge Road west of Harrison Road. We have also completed an estimate of the traffic generation for the existing hotel based on our understanding that it was originally a 125 room hotel that was reduced to 55 rooms in late 2005; furthermore, there was also a full-service restaurant which included the sale of alcoholic beverages that was closed around the same time.

The trip generation analyses provide a comparison between the former and current hotel sizes and the proposed use based on data contained in the Institute of Transportation Engineer's (ITE) Trip Generation Manual, 9th Edition. Pass-by and internal capture trips were considered in the analysis; reductions for transit and other modes were not considered at this time. The results of the analysis are presented in the attached table. It may be seen that, although the driveway trips will be notably higher than its previous use, the proposed use will generate only about 28 additional A.M. peak hour trips and 24 additional P.M. peak hour trips on the street network over the prior 125 room hotel due to the pass-by and internal capture phenomena. Similarly, the new use would generate about 66 more trips during each of the peak hours than the current 55 room hotel.

Please do not hesitate to contact us should you have any questions.

Sincerely,

**PARSONS TRANSPORTATION GROUP, INC. of MICHIGAN**



Joseph A. Marson, P.E., PTOE  
Project Manager

## TRIP GENERATION COMPARISON

ITE Code	Land Use	Size	AM Peak			PM Peak		
			In	Out	Total	In	Out	Total
<b>PRIOR USE</b>								
310	Hotel (pre-2005)	125 Rooms	39	27	66	38	37	75
310	Hotel (post-2005)	55 Rooms	17	12	29	17	16	33
<b>PROPOSED USE</b>								
310	Hotel	88 Rooms	28	19	47	27	26	53
826	Specialty Retail Center <sup>(1)</sup>	4,961 sq. ft.	6	3	9	14	19	33
	Pass-by (34%) <sup>(2)</sup>		2	1	3	5	7	12
	New Trips		4	2	6	9	12	21
932	High-Turnover (Sit-Down) Restaurant	3,356 sq. ft.	20	16	36	20	13	33
	Pass-by (43%)		9	7	16	9	5	14
	New Trips		11	9	20	11	8	19
937	Coffee/Donut Shop with Drive-Through Window	2,366 sq. ft.	121	117	238	51	50	101
	Pass-by (89%)		108	104	212	45	45	90
	New Trips		13	13	26	6	5	11
Proposed Use Driveway Trips			175	155	330	112	108	220
Proposed Use New Trips			56	43	99	53	51	104
Internal Capture Trips (5%) <sup>(3)</sup>			3	2	5	3	2	5
Net Proposed Use New Trips			53	41	94	50	49	99
<b>Increase/(Decrease) over 125 room hotel</b>			<b>14</b>	<b>14</b>	<b>28</b>	<b>12</b>	<b>12</b>	<b>24</b>
<b>Increase/(Decrease) over 55 room hotel</b>			<b>36</b>	<b>29</b>	<b>65</b>	<b>33</b>	<b>33</b>	<b>66</b>

<sup>(1)</sup> Data not available for AM Peak Hour; the ratio of the AM to PM average rate was used for Land Use 820 - Shopping Center to compute the AM rate (0.96 / 3.71)

<sup>(2)</sup> Pass-by rate for Land Use 820, Shopping Center was applied to Land Use 826, Specialty Retail Center.

<sup>(3)</sup> Multi-use or mixed-use developments such as this one have the potential for trips to be made from one of the uses to another use without adding a trip to the road system. For example, an office employee may take a spin cycle class in the morning and then go to their office in the same building. Since the trips generated for each use were derived from free-standing sites, they do not account for this phenomena. The attached Table 6.1 and 6.2 show the internal person trip capture rates for mixed-use developments. It is expected the internal capture rate would only be in the 5% range due to the small development size.

**Table 6.1 Unconstrained Internal Person Trip Capture Rates  
for Trip Origins within a Mixed-Use Development**

		WEEKDAY	
		AM Peak Hour	PM Peak Hour
From OFFICE	To Retail	28%	20%
	To Restaurant	63%	4%
	To Cinema/Entertainment	0%	0%
	To Residential	1%	2%
	To Hotel	0%	0%
From RETAIL	To Office	29%	2%
	To Restaurant	13%	29%
	To Cinema/Entertainment	0%	4%
	To Residential	14%	26%
	To Hotel	0%	5%
From RESTAURANT	To Office	31%	3%
	To Retail	14%	41%
	To Cinema/Entertainment	0%	8%
	To Residential	4%	18%
	To Hotel	3%	7%
From CINEMA/ENTERTAINMENT	To Office	0%	2%
	To Retail	0%	21%
	To Restaurant	0%	31%
	To Residential	0%	8%
	To Hotel	0%	2%
From RESIDENTIAL	To Office	2%	4%
	To Retail	1%	42%
	To Restaurant	20%	21%
	To Cinema/Entertainment	0%	0%
	To Hotel	0%	3%
From HOTEL	To Office	75%	0%
	To Retail	14%	16%
	To Restaurant	9%	68%
	To Cinema/Entertainment	0%	0%
	To Residential	0%	2%

Source: Bochner, B., K. Hooper, B. Sperry, and R. Dunphy. NCHRP Report 684: *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*. Washington, DC: Transportation Research Board, Tables 99 and 100, 2011.

**Table 6.2 Unconstrained Internal Person Trip Capture Rates  
for Trip Destinations within a Mixed-Use Development**

		Weekday	
		AM Peak Hour	PM Peak Hour
To OFFICE	From Retail	4%	31%
	From Restaurant	14%	30%
	From Cinema/Entertainment	0%	6%
	From Residential	3%	57%
	From Hotel	3%	0%
To RETAIL	From Office	32%	8%
	From Restaurant	8%	50%
	From Cinema/Entertainment	0%	4%
	From Residential	17%	10%
	From Hotel	4%	2%
To RESTAURANT	From Office	23%	2%
	From Retail	50%	29%
	From Cinema/Entertainment	0%	3%
	From Residential	20%	14%
	From Hotel	6%	5%
To CINEMA/ENTERTAINMENT	From Office	0%	1%
	From Retail	0%	26%
	From Restaurant	0%	32%
	From Residential	0%	0%
	From Hotel	0%	0%
To RESIDENTIAL	From Office	0%	4%
	From Retail	2%	46%
	From Restaurant	5%	16%
	From Cinema/Entertainment	0%	4%
	From Hotel	0%	0%
To HOTEL	From Office	0%	0%
	From Retail	0%	17%
	From Restaurant	4%	71%
	From Cinema/Entertainment	0%	1%
	From Residential	0%	12%

Source: Bochner, B., K. Hooper, B. Sperry, and R. Dunphy. NCHRP Report 684: *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*. Washington, DC: Transportation Research Board, Tables 101 and 102, 2011.