



GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

MEMORANDUM

Date: October 28, 2016

To: Steve Norcini, P.E.
Radnor Township Public Works Director

From: Amy Kaminski, P.E., PTOE
Transportation Services Manager

cc: Kevin Kochanski, ASLA, R.L.A., Director of Community Development
John B. Rice, Esq., Grim, Biehn and Thatcher
Roger Phillips, P.E., Senior Project Manager, Gannett Fleming, Inc.
Damon Drummond, P.E., PTOE, Gilmore & Associates, Inc.

Reference: PLO Zoning Amendment
Radnor Township, Delaware County, PA
G&A 15-06038

Radnor Township Board of Commissioners directed Gilmore & Associates, Inc. (G&A) to evaluate the number of vehicular trips generated by land uses related to a PLO Zoning Amendment discussion; we offer the following information for your consideration.

I. DOCUMENTS REVIEWED

1. PLO Zoning Amendment; Chapter 280.62, October 18, 2016 version.

II. EVALUATION

To ensure a commensurable analysis for each of the land uses, the analysis must be based on a similar unit of measure. For purposes of this evaluation, the analysis is based on the common size of 100,000 SF for each of the land uses. The Institute of Transportation Engineer's (ITE) *Trip Generation Manual* provides vehicular trip generation rates based on the various independent variables for each particular land use. For example, the *Hotel* land use relies on the number of rooms in the hotel; while the *Assisted Living* land use relies on the number of beds. Therefore, it is necessary to convert the independent variables to a consistent unit of measure. The following assumptions were utilized to develop the number of vehicle trips for each land use based on the common 100,000 SF size land use as follows:

- **Hotel** assumes 910 SF/room yielding 110 rooms per 100,000 SF
- **Assisted Living** assumes 910 SF/Beds yielding 110 beds per 100,000 SF
- **Ambulatory Care** assumes 969 SF/Patient Position (PP) yielding 103 PP per 100,000 SF

TABLE 1: PLO Vehicle Trips Generated per 100,000 SF

Description	Size ²	Units	AM Peak Hour Vehicle Trips ³	PM Peak Hour Vehicles Trips ³	24 Hour Weekday ADT
General Office	100,000	SF	156	149	1,103
Medical/Dental Office	100,000	SF	239	291	3,874
Hotel	110	Rooms	74	78	990
Assisted Living	111	Beds	20	32	304
Ambulatory Care ¹	103	PP	165	109	1,856

¹ All vehicle trips were generated based on ITE *Trip Generation Manual* with the exception of the Ambulatory Care. The Ambulatory Care trips were developed utilizing a Pennoni study from three existing sites located near Radnor Township with approximately 969 SF/PP; the trip rates are as follows: 18.02 ADT Trips/Patient Position; 1.60 AM Peak Hour Trips/PP; & 1.06 PM Peak Hour Trips/PP

² The analyzed size is only provided for comparison purposes based on an assumed 100,000 sf site.

³ Total vehicular trips generated during the peak hour of the adjacent street or roadway (typically 8AM-9AM and 5PM-6PM weekdays)

The Board requested an alternative analysis of various percentages for the existing PLO by-right land uses (General Office and Medical/Dental Office) and the prospective PLO mixed uses (Hotel, Assisted Living and Ambulatory Care). Table 2 and 3 on the following page includes the development of the requested tables aggregated by *Existing PLO By-Right Uses* and *Prospective PLO Mixed Uses*, respectively; Table 4 below provides a summary of the analysis.

Table 4: Summary of Vehicle Trip Generation

LAND USE		AM	PM	ADT
BY RIGHT	100% General Office	156	149	1,103
	100% Medical-Dental Office	239	291	3,874
	50% Office-50% Medical	198	220	2,489
PROSPECTIVE USES	100% Hotel	74	78	990
	100% Assisted Living	20	32	304
	50% Hotel-50% Ambulatory	119	94	1,423
	60% Hotel-40% Ambulatory	110	90	1,336
	40% Hotel-60% Ambulatory	128	97	1,510

III. SUMMARY

Based on the requested analysis, it appears that limiting the Ambulatory Care land use to a maximum of 60% will generate less trips compared to the by-right 100% General Office land use.



Table 2: Existing PLO Vehicular Trip Generation By-Right Uses

Description	EXISTING BY RIGHT USES								
	100% GENERAL OFFICE			100% Medical-Dental Office			50% /50% General Office/Medical-Dental Office		
	AM	PM	24 HR ADT	AM	PM	24 HR ADT	AM	PM	24 HR ADT
General Office	156	149	1,103				78	75	552
Medical/Dental Office	-	-	-	239	291	3,874	120	146	1,937
TOTAL:	156	149	1,103	239	291	3,874	198	220	2,489

Table 3: Proposed PLO Vehicular Trip Generation Mixed Uses

Description	PROSPECTIVE USES														
	100% HOTEL			100% ASSISTED LIVING			50% Hotel 50% Ambulatory			60% Hotel 40% Ambulatory			40% Hotel 60% Ambulatory		
	AM	PM	24 HR ADT	AM	PM	24 HR ADT	AM	PM	24 HR ADT	AM	PM	24 HR ADT	AM	PM	24 HR ADT
Hotel	74	78	990				37	39	495	44	47	594	30	31	396
Assisted Living	-	-	-	20	32	304	-	-	-	-	-	-	-	-	-
Ambulatory Care	-	-	-				82	55	928	66	44	742	99	66	1,114
TOTAL:	74	78	990	20	32	304	119	94	1,423	110	90	1,336	128	97	1,510