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RECEIVED
FEB 1 2013
Building & Planning Dept.

January 2, 2013

Mr. Rick Sudall, PE
Nolen Properties, LLC
116 Fountain Street
Philadelphia, PA 19127

RE: **Supplemental Traffic Study – 335 Righters Ferry Road Apartment Building**
Lower Merion Township, Montgomery County, PA
TPD # NOLE.A.00007

Dear Rick:

Traffic Planning and Design Inc. (TPD) has conducted a supplemental traffic study for a change to the proposed number of apartment units to the 335 Righters Ferry Road site. TPD previously prepared a transportation impact study (TIS), dated 11/21/12, in which 259 apartment units were proposed. It is TPD's understanding that the site is currently proposed to consist of 284 apartment units.

TRAFFIC VOLUME DEVELOPMENT

2015 Base (No-Build) Conditions

The 2015 base condition traffic volumes were obtained from the 11/21/12 TIS and are shown in **Figure 1**.

Trip Generation

The site trip generation for the proposed 284 units was prepared consistent with the methodology outlined in the 11/21/12 TIS. **Table 1** summarizes the number of entering and exiting trips that will be generated by the proposed Apartment Building during a typical weekday, and the weekday A.M. and the weekday P.M. peak hours.

**TABLE 1
TRIP GENERATION SUMMARY**

Time Period	284 Apartments Units		
	Enter	Exit	Total
Average Weekday	923	923	1846
Weekday A.M. Peak	29	114	143
Weekday P.M. Peak	113	61	174

Based on the trip generation analysis summarized in **Table 1**, the proposed Apartment Building will generate approximately 143 new trips during the weekday A.M. peak hour and 174 new trips during the weekday P.M. peak hour.

Based on the above weekday P.M. peak hour trip generation and the Township's impact fee of \$1,544.00/per new weekday P.M. peak hour trip, the impact fee for the proposed Apartment Building is \$268,656.00.

Trip Distribution

The site generated traffic was distributed to the study area intersections consistent with the methodology outlined in the 11/21/12 TIS. The assignment of site-generated trips for the proposed development during the weekday

A.M. and weekday P.M. peak hours are shown in **Figure 2**.

2015 Projected (Build) Conditions

The site-generated trips for the proposed development were added to the 2015 base (no-build) condition traffic volumes to develop 2015 projected (build) condition traffic volumes. Projected condition traffic volumes for the weekday A.M. and weekday P.M. peak hours are shown in **Figure 3**.

CAPACITY ANALYSES METHODOLOGY

The capacity analyses for the 2015 projected conditions in this supplemental traffic study were conducted consistent with the methodology outlined in the 11/21/12 TIS. Please note, consistent with the 11/21/12 TIS, under future (no-build and build) conditions, the study area intersections were analyzed under two scenarios; (1) with the existing intersection control and signal phasing, and (2) with the improvements outlined in the Township's Capital Improvements Plan. The 2015 projected condition capacity analyses worksheets are **attached**.

Per the Township's SALDO, "The traffic generated by the proposed use, when combined with the current use, shall not result in a level of service lower than C, or, if the level of service is already C or below, shall not alter such level of service for adjacent streets and/or the nearest intersections thereof.

In addition, per PennDOT's Transportation Impact Study Guidelines outlined in Strike-Off Letter 470-09-4, dated February 12, 2009 contain the following criteria regarding levels of service:

- Page 29 of the Guidelines state that if evaluation of the With Development Horizon Year Scenario to the Without Development Horizon Year Scenario indicates that the overall intersection level of service has dropped, the applicant will be required to mitigate the level of service if the increase in overall intersection delay is greater than 10-seconds. If the overall intersection delay increase is less than or equal to 10-seconds, mitigation of the intersection will not be required.
- Page 29 of the Guidelines state that for mitigation scenarios, applicants are expected to mitigate the overall intersection LOS to the original Without Development LOS; the 10-second delay variance is not applied to mitigation scenarios. Applicants may be required to address available storage and queue lengths at critical movements or approaches even if the overall LOS requirements are met.
- Page 31 of the Guidelines state that if signalization is the preferred alternative for mitigation, overall intersection LOS C in rural areas and LOS D in urban areas is acceptable.
- Page 31 of the Guidelines states new signalized or unsignalized intersection established to serve as access to the development shall be designed to operate at minimum level of service "C" for rural areas, and minimum level of service "D" for urban areas.

LEVEL OF SERVICE IN THE STUDY AREA

The levels of service (LOS) at the study area intersections for the weekday A.M. and weekday P.M. peak hours are summarized in **Figure 4 and 5** for the 2015 projected conditions scenarios. Level of service (LOS) matrices for the study area intersections are shown in **Table 2** for the weekday A.M. and weekday P.M. peak hours.

**TABLE 2
 LEVEL OF SERVICE DELAY (SECONDS) SUMMARY**

Intersection	Movement	Existing Condition	2015 Build-Out Year			
			Base ¹	Projected ¹	Base ²	Projected ²
<i>Weekday A.M. Peak Hour</i>						
Belmont Road (SR 3045) & Righters Ferry Road	WB L	C	C	C	D	D
	WB R	C	C	B	B	B
	NB T	A	A	A	C	C
	NB R	A	A	A	B	B
	SB L	B	E	F(100.9)	C	D
	SB T	A	B	B	A	A
	ILOS	A(9.1)	C(21.5)	C(31.6)	B(19.8)	C(26.0)
Righters Ferry Road & Monument Road	EB L/R	C	F(145.2)	F(176.4)	C	C
	NB L/T	A	A	A	B	B
	SB T/R	--	--	--	B	B
	ILOS	B(12.7)	F(69.8)	F(86.3)	B(18.6)	C(20.1)
Righters Ferry Road & Full-Movement Driveway	WB L/T	--	--	A	--	A
	NB L/T	--	--	C	--	C
	ILOS	--	--	A(2.6)	--	A(2.6)
<i>Weekday P.M. Peak Hour</i>						
Belmont Road (SR 3045) & Righters Ferry Road	WB L	B	B	B	D	D
	WB R	F(103.8)	F(180.8)	F(217.6)	E	E
	NB T	C	C	C	D	E
	NB R	A	A	A	B	B
	SB L	C	F(95.4)	F(231.9)	B	B
	SB T	B	B	B	A	A
	ILOS	D(46.8)	E(70.9)	F(94.0)	D(41.6)	D(45.1)
Righters Ferry Road & Monument Road	EB L/R	F(195.3)	F(*)	F(*)	D	D
	NB L/T	A	B	B	F(88.5)	F(116.2)
	SB T/R	--	--	--	A	A
	ILOS	D(32.0)	F(1919.9)	F(1972.3)	E(60.8)	E(76.2)
Righters Ferry Road & Full-Movement Driveway	WB L/T	--	--	A	--	A
	NB L/T	--	--	C	--	C
	ILOS	--	--	A(1.6)	--	A(1.6)

*= delay cannot be calculated
 Base = No-Build scenario
 Projected = Build scenario

- 1- Based on existing intersection control and signal phasing
 2- Based on the intersection improvements outlined in the Township's TCIP:
- Phasing modifications at the Belmont Avenue intersection
 - Signalize the Monument Road intersection

As shown in **Table 2**, under the 2015 projected (build) conditions, with signal timing/phasing modifications at the Belmont Avenue/Righters Ferry Road intersection and installation of a traffic signal at the Righters Ferry Road/Monument Avenue intersection, as outlined in the TCIP, all study area intersections will operate in accordance with the level of service criteria contained in Township's SALDO and PennDOT's Transportation Impact Study Guidelines.

In addition, all turning movements and approaches at the proposed site driveway intersection will operate at LOS C or better during the weekday A.M. and P.M. peak hours.

AUXILIARY TURN LANE ANALYSIS

TPD evaluated auxiliary turn lane warrants at the proposed driveway location based on the proposed 284 apartment units. The warrant analysis was conducted according to the methodologies contained in Chapter 11 of PennDOT's *Publication 46* and Strike-Off Letter 470-08-07. Based on the aforementioned methodology, the left-turn lane warrant and right turn lane warrant are not satisfied during the weekday A.M. and weekday P.M. peak hours for this driveway. The auxiliary turn lane warrant analysis worksheets are **attached**.

SIGNAL WARRANT ANALYSIS

Based on Lower Merion Township's TCIP, future signalization of the Righters Ferry Road/Monument Road intersection has been identified. Therefore, a preliminary traffic signal warrant analysis was conducted at the intersection in accordance with PennDOT Publication 212, *Official Traffic Control Devices*, Subchapter D, "Highway Traffic Signals". The preliminary signal warrant analysis was revised based on the change to the 2015 projected condition traffic volumes due to the 284 proposed apartment units.

The results of the signal warrant analysis are consistent with the results presented in the 11/21/12 TIS, as summarized below:

Warrant 2, Four-Hour Volume Warrant

Warrant 2, Four-Hour Volume, is satisfied when for each of any four hours of an average day, the volumes are plotted on a graph which is provided as part of the warrant. If the plotted points all fall above the curve on the graph, then the warrant is met. The results of the evaluations are below:

- Existing Conditions- Not Satisfied (0 of the 4 hours satisfied);
- 2015 Base Conditions- Not Satisfied (3 of the 4 hours satisfied);
- 2015 Projected Conditions- Not Satisfied (3 of the 4 hours satisfied).

Warrant 3, Peak Hour Volume Warrant

Warrant 3, Peak Hour Volume, is intended for application when traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. To determine if the warrant is met, the volumes for both roadways are plotted on a graph which is provided as part of the warrant. If the plotted point falls above the curve on the graph, then the warrant is met. The results of the evaluations are below:

- Existing Conditions- Not Satisfied (neither AM or PM peak is satisfied)
- 2015 Base Conditions- Satisfied (AM peak hour is satisfied);
- 2015 Projected Conditions- Satisfied (Both AM and PM peak hours are satisfied).

All relevant signal warrant analyses worksheets are **attached**.

RECOMMENDATIONS

Consistent with the recommendations noted in the 11/21/12 TIS, TPD recommends the following for the proposed 284 unit apartment building:

- Remove vegetation along the site frontage to provide adequate sight lines.
- Contribute to off-site road improvements through appropriate application of the Lower Merion Township Act 209 Impact Fee, based on 174 new vehicle-trips during the weekday P.M. peak hour.

If you have any questions, please contact our office at 610-326-3100.

Respectfully submitted,
TRAFFIC PLANNING AND DESIGN, INC.



Guido W. DiMartino, P.E.
Project Manager

Attachments: Figures 1-5
Capacity Analyses Worksheets
Auxiliary Turn Lane Worksheets
Signal Warrant Analysis Worksheets