



TMS Engineers, Inc.

Transportation Management Services

2112 Case Parkway South, #7 • Twinsburg, Ohio 44087
www.TMSEngineers.com

April 22, 2021

Mr. Jason Rice
PHN Realty, LLC
2251 Front Street, Ste #202
Cuyahoga Falls, Ohio 44221

**Re: Proposed Development
Hudson, Ohio
Trip Generation Analysis**

TMS Engineers, Inc. has performed the following trip generation analysis for a development which is to be located in the City of Hudson, Ohio. Two different land-use scenarios are being considered for the site:

1. 48 Townhomes or
2. 32 Townhomes and 60,000 Square Feet (SF) of General Office

The number of trips for both land use scenarios will be calculated in this study. The following are the results of our trip generation analysis.

Trip Generation

The calculation of future driveway trips requires an estimate of traffic the development will generate after construction. The most widely accepted method of determining the amount of traffic that a proposed development will generate is to compare the proposed site with existing facilities of the same use. This estimate is typically expressed as a trip rate. In order to estimate traffic for the development, a trip rate was calculated using data and procedures found in the Institute of Transportation Engineers (ITE) "**Trip Generation**" Manual, Tenth Edition.

The trip generation analyses utilized the Multifamily Housing land use (ITE Code 220) information for the townhomes. The trip generation analyses utilized the General Office Building land use (ITE Code 710) information for the office building. A copy of the trip generation worksheet for the various land uses can be seen in the attached **Figures 1-3**.

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Proposed Trip Generation Calculations

Based on the trip generation analysis described on the previous page, the table below shows the estimated generated traffic during the AM and PM peak hour for the townhomes and townhomes / office building based upon the national averages considering the number of dwelling units and square footage of the office building.

ITE TRIP GENERATION		Units	TRIP ENDS	
ITE Code	Description		Weekday Peak Hour Between 7-9 AM	Weekday Peak Hour Between 4-6 PM
220	Multifamily Housing (Low Rise)	48	24	31
Scenario 1 Totals			24	31
220	Multifamily Housing (Low Rise)	32	16	21
710	General Office Building	60,000 SF	83	70
Scenario 2 Totals			99	91

The previous table shows that the proposed development is expected to generate a total of 24 trips in the AM peak hour and 31 trips in the PM peak hour if the 48 townhomes are constructed on the site. The proposed development is expected to generate a total of 99 trips in the AM Peak hour and 91 trips in the PM Peak hour if the office building and townhomes are constructed on the site.

If you have any questions or need additional information, please do not hesitate to contact me.

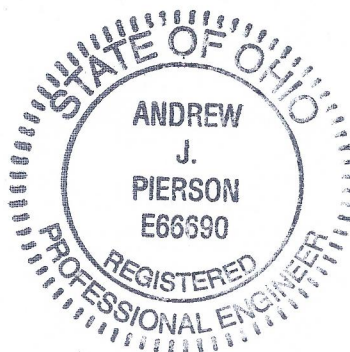
Very truly yours,

TMS Engineers, Inc.



Andrew J Pierson P.E.
Senior Traffic Engineer

Attachments



FIGURES

Multifamily Housing (Low-Rise)

ITE Code = 220

Date: **4/12/2021**

Trip Generation based on:

Size of Analysis Area: **48** Units

Dwelling Units	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
WEEKDAY				
Average Weekday 2-way Volume	6.71	1.31	1.00	322
Weekday Peak Hour of Adjacent Street Traffic				
7-9 AM Peak Hour Enter	0.13	0.00	1.00	6
7-9 AM Peak Hour Exit	0.38	0.00	1.00	18
7-9 AM Peak Hour Total	0.49	0.12	1.00	24
4-6 PM Peak Hour Enter	0.42	0.00	1.00	20
4-6 PM Peak Hour Exit	0.24	0.00	1.00	11
4-6 PM Peak Hour Total	0.64	0.16	1.00	31

****The above rates were calculated from the equations shown below:**

		% ENTER	% EXIT
WEEKDAY			
Average Weekday 2-way Volume	$T = 7.56 (X) - 40.86$	50%	50%
Peak Hour of Adjacent Street Traffic			
7-9 AM Peak Hour Total	$\ln (T) = 0.95 \ln (X) - 0.51$	23%	77%
4-6 PM Peak Hour Total	$\ln (T) = 0.89 \ln (X) - 0.02$	63%	37%

Source: Institute of Transportation Engineers
Trip Generation Manual, 10TH Edition, September 2017



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Development Comparison
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Figure 1
Attachment

Multifamily Housing (Low-Rise)
ITE Code = 220

Date: **4/12/2021**

Trip Generation based on:

Size of Analysis Area: **32** Units

Dwelling Units	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
WEEKDAY				
Average Weekday 2-way Volume	6.28	1.31	1.00	201
Weekday Peak Hour of Adjacent Street Traffic				
7-9 AM Peak Hour Enter	0.12	0.00	1.00	4
7-9 AM Peak Hour Exit	0.39	0.00	1.00	12
7-9 AM Peak Hour Total	0.50	0.12	1.00	16
4-6 PM Peak Hour Enter	0.42	0.00	1.00	13
4-6 PM Peak Hour Exit	0.25	0.00	1.00	8
4-6 PM Peak Hour Total	0.67	0.16	1.00	21

****The above rates were calculated from the equations shown below:**

		% ENTER	% EXIT
WEEKDAY			
Average Weekday 2-way Volume	$T = 7.56 (X) - 40.86$	50%	50%
Peak Hour of Adjacent Street Traffic			
7-9 AM Peak Hour Total	$\ln (T) = 0.95 \ln (X) - 0.51$	23%	77%
4-6 PM Peak Hour Total	$\ln (T) = 0.89 \ln (X) - 0.02$	63%	37%

Source: Institute of Transportation Engineers
Trip Generation Manual, 10TH Edition, September 2017



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**Figure 2
Attachment**

General Office Building
ITE Code = 710

Date: **4/22/2021**

Trip Generation based on:

Size of Analysis Area: **60.0** 1,000 SF

1,000 Square Feet Gross Floor Area	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
WEEKDAY				
Average Weekday 2-way Volume	10.77	5.15	1.00	646
Weekday Peak Hour of Adjacent Street Traffic				
7-9 AM Peak Hour Enter	1.19	0.00	1.00	71
7-9 AM Peak Hour Exit	0.19	0.00	1.00	12
7-9 AM Peak Hour Total	1.38	0.47	1.00	83
4-6 PM Peak Hour Enter	0.19	0.00	1.00	11
4-6 PM Peak Hour Exit	0.98	0.00	1.00	59
4-6 PM Peak Hour Total	1.17	0.42	1.00	70

****The above rates were calculated from the equations shown below:**

		% ENTER	% EXIT
WEEKDAY			
Average Weekday 2-way Volume	$\ln(T) = 0.97 \ln(X) + 2.50$	50%	50%
Weekday Peak Hour of Adjacent Street Traffic			
7-9 AM Peak Hour Total	$T = 0.94(X) + 26.49$	86%	14%
4-6 PM Peak Hour Total	$\ln(T) = 0.95 \ln(X) + 0.36$	16%	84%

Source: Institute of Transportation Engineers
Trip Generation, 10TH Edition, 2017



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**Development Comparison
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**Figure 3
Attachment**