
6000 Lombardo Center, Suite 210 Cleveland, Ohio 44131 T: 216.328.3300 F: 216.328.3301

To: Kate Straub, City of Rocky River

From: Christopher A. Prisk, P.E., PTOE

Date: May 5, 2023

Re: Trip Generation Summary Memo
Roundstone
City of Rocky River, Cuyahoga County, Ohio
Langan Project No.: 400107202

Roundstone Trip Generation Summary Memo

I. Trip Generation Comparison

The proposed Roundstone project includes the development of a 58,000 square foot (SF) office building at 19621 Lake Road in the City of Rocky River, Ohio. The parcels at this location that will be consolidated currently include several existing buildings that will be removed to develop the proposed office building. The existing facilities include a 9,100 SF manufacturing building, two (2) single-family detached houses, a 1,750 SF fast-food restaurant with drive-through, and a recently demolished 10,000 SF automobile care center.

Langan estimated the overall trip generation for the existing land uses by utilizing trip generation data contained in the Trip Generation Manual, 11th Edition, published by the Institute of Transportation Engineers (ITE). According to the trip generation calculations, the existing facilities currently would generate approximately 105 AM Peak Hour trips (58 In, 47 Out), 95 PM Peak Hour trips (47 In, 48 Out), and 1,154 total Average Daily Trips (ADT). A conservative three (3) percent modal split reduction was applied to each land use to account for multimodal travel to/from the site. Pass-By reductions were also applied to the existing fast-food restaurant according to standard ITE methodology.

Langan estimated the overall trip generation for the proposed 58,000 SF office building using ITE methodology. According to the trip generation calculations, the proposed office is anticipated to generate approximately 85 AM Peak Hour trips (74 In, 11 Out), 81 PM Peak Hour trips (13 In, 68 Out), and 610 total ADT. The three (3) percent modal split reduction was also applied to the proposed office building.

Upon comparison of the existing and proposed land uses, the proposed office building is anticipated to generate 20 less AM Peak Hour trips (16 In, -36 Out), and 14 less PM Peak Hour trips (-34 In, 20 Out), and 544 less ADT. A net reduction indicates that the proposed office is anticipated to generate less trips than the combined existing land uses. The trip generation calculations for the existing and proposed land uses are included in **Table 1**.

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Client-Provided Data

In addition to the typical ITE methodology, we also performed client specific trip generation calculations. The employee information and shift structure of the proposed office provided by the client results in a lower amount of trips generated by the site in the AM peak hour, PM peak hour, and ADT when compared to standard ITE methodology. In order to be conservative, ITE methodology will be used for the comparison purposes of this trip generation memorandum. Based on input from the client, the proposed office building is anticipated to initially employ roughly 140 people, of which approximately 80 will work in the office on any given weekday. The shift structures for these employees are 7:00AM – 4:00PM, 8:00AM – 5:00PM, and 9:00AM – 6:00PM. These shift structures will result in the employees arriving and departing over a three (3) hour time window and thus reduce any potential impacts to the surrounding roadway network.

The proposed office building may potentially employ up to 250 people in approximately five (5) years, of which approximately 133 employees will work in the office on any given weekday. The shift structure will be the same as outlined above and thus reduce any potential impacts to the surrounding roadway network. The proposed employee information and shift structure provided by the client for the “5 Year Future” plan results in a comparable amount of trips to the existing land uses, and slightly more trips than the number of trips generated by the proposed office building using ITE methodology. The proposed client trip generation data is included at the bottom of **Table 1**.

II. Additional Comparisons

The client is committed to building the proposed 58,000 SF office building; however, the client mentioned that the site is suitable for numerous alternative land uses. These alternative land uses include a 100 unit multifamily housing building with a 20,000 SF strip retail plaza, a 3,000 SF fast-food restaurant with drive-through, or a 14 vehicular fueling pump gas station / convenience store. Trip generation calculations for the proposed office building and the alternative land uses are included in **Table 2**. For a point of comparison, the proposed office building is anticipated to generate less trips than all of the other alternative land uses, therefore resulting in a reduction of traffic in the surrounding area when compared to the other scenarios.

For additional context within the area, a nearby development at 19933 Lake Road included the removal of a gasoline service station with 6 vehicular fueling pumps and the construction of a 30,000 SF office building. Similar to the proposed Roundstone project, this development is also anticipated to result in a net reduction in the total number of trips generated by the site and thus improving traffic conditions on the surrounding roadway network. Trip generation calculations for the nearby site are included in **Table 3**.

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III. Parking Requirements

Based on the zoning code for the City of Rocky River, a minimum of three (3) parking spaces are required for every 1,000 SF of office gross floor area. The proposed 58,000 SF office therefore requires a minimum of 174 parking spaces but is anticipated to include 178 parking spaces on site. The proposed development thus satisfies the zoning code requirements for parking spaces.

IV. Conclusions

Based on the trip generation calculations according to ITE methodology, the proposed office building is anticipated to generate less trips than the combined existing land uses. By comparison, it will also generate less trips than other potential uses that could be developed on site. According to ODOT's State Highway Access Management Manual, a Traffic Impact Study (TIS) is required when a minimum of 200 trips (total of entering and exiting) occur during the highest peak hour. If you disregarded the existing uses, the total amount of peak hour trips generated from this proposed office is less than 100 and therefore would not require a TIS. Based on this information, it can be concluded that the minimal amount of traffic generated from this development will have little to no observable impact on the surrounding roadway network.

Table 1
Site Trip Generation Comparison
Roundstone - 19621 Lake Road

Land Use	ITE Code	Size	Units	AM Peak Hour			PM Peak Hour			Weekday
				IN	OUT	TOTAL	IN	OUT	TOTAL	ADT
EXISTING										
Manufacturing	140	9,100	SF	5	1	6	2	5	7	43
Transit, Bicycle, Pedestrian Trips				0	0	0	0	0	0	1
Total External Vehicular Site Trips				5	1	6	2	5	7	42
Single-Family Detached Housing	210	2	Units	0	1	1	1	1	2	19
Transit, Bicycle, Pedestrian Trips				0	0	0	0	0	0	1
Total External Vehicular Site Trips				0	1	1	1	1	2	18
Fast-Food Restaurant w/ Drive-Thru	934	1,750	SF	40	38	78	30	28	58	818
Transit, Bicycle, Pedestrian Trips				1	1	2	1	1	2	25
Total External Vehicular Site Trips				39	37	76	29	27	56	793
Primary Trips				20	18	38	13	12	25	483
Pass-By Trips	AM / PM	50%	55%	19	19	38	16	15	31	310
Automobile Care Center	942	10,000	SF	15	8	23	15	16	31	310
Transit, Bicycle, Pedestrian Trips				1	0	1	0	1	1	9
Total External Vehicular Site Trips				14	8	22	15	15	30	301
Total Existing External Vehicular Site Trips				58	47	105	47	48	95	1,154
Total Existing Primary Trips				39	28	67	31	33	64	844
Total Existing Pass-By Trips				19	19	38	16	15	31	310
PROPOSED										
Office (ITE Methodology - SF)	710	58,000	SF	77	11	88	14	70	84	629
Transit, Bicycle, Pedestrian Trips				3	0	3	1	2	3	19
Total External Vehicular Site Trips				74	11	85	13	68	81	610
Total Proposed External Vehicular Site Trips				74	11	85	13	68	81	610
Net Difference Development Site Generated Trips				16	-36	-20	-34	20	-14	-544
Net Difference Primary Trips				35	-17	18	-18	35	17	-234
Net Difference Pass-By Trips				-19	-19	-38	-16	-15	-31	-310
PROPOSED (CLIENT DATA)										
Office (Client Data - Current)	---	140	Employees	60	0	60	0	60	60	180
Transit, Bicycle, Pedestrian Trips				2	0	2	0	2	2	5
Total External Vehicular Site Trips				58	0	58	0	58	58	175
Office (Client Data - 5 Year Future)	---	250	Employees	100	0	100	0	100	100	286
Transit, Bicycle, Pedestrian Trips				3	0	3	0	3	3	9
Total External Vehicular Site Trips				97	0	97	0	97	97	277

Notes:

Trip generation calculations based on ITE Trip Generation Manual, 11th Edition.

Weekday ADT is a bi-directional traffic volume (In + Out).

Aerial imagery was utilized to estimate the size of the existing land uses, where necessary.

A negative "Net Difference" indicates that the proposed land use will generate less trips than the existing land use.

If no Weekday ADT information was available, the PM Peak Hour Total was assumed to represent 10% of the Weekday ADT.

Based on information provided by the client, the proposed office will have approximately 140 employees, of which approximately 80 employees will work in the office at any given time. Employee shifts would include 7AM - 4PM, 8AM - 5PM, and 9AM - 6PM.

Based on information provided by the client, the proposed office may include up to 250 employees in the future, of which approximately 133 employees will work in the office at any given time. Employee shifts would include 7AM - 4PM, 8AM - 5PM, and 9AM - 6PM.

Table 2
Site Trip Generation Calculations - Alternative Land Use Options
Roundstone - 19621 Lake Road

Land Use	ITE Code	Size	Units	AM Peak Hour			PM Peak Hour			Weekday
				IN	OUT	TOTAL	IN	OUT	TOTAL	ADT
<u>PROPOSED</u>										
<u>Office (ITE Methodology)</u>	<u>710</u>	<u>58,000</u>	<u>SF</u>	<u>77</u>	<u>11</u>	<u>88</u>	<u>14</u>	<u>70</u>	<u>84</u>	<u>629</u>
Transit, Bicycle, Pedestrian Trips		3%		3	0	3	1	2	3	19
Total External Vehicular Site Trips				74	11	85	13	68	81	610
Total Proposed External Vehicular Site Trips				74	11	85	13	68	81	610
<u>ALTERNATIVE PROPOSED LAND USES</u>										
Multifamily Housing (Mid-Rise)	221	100	Units	9	28	37	24	15	39	454
<u>Strip Retail Plaza (<40k GFA)</u>	<u>822</u>	<u>20,000</u>	<u>SF</u>	<u>28</u>	<u>19</u>	<u>47</u>	<u>66</u>	<u>66</u>	<u>132</u>	<u>1,089</u>
Transit, Bicycle, Pedestrian Trips		3%		1	2	3	3	2	5	46
Total External Vehicular Site Trips				36	45	81	87	79	166	1,497
Primary Trips				27	39	66	59	52	111	947
Pass-By Trips	AM / PM	33%	43%	9	6	15	28	27	55	550
<u>Fast-Food Restaurant w/ Drive-Thru</u>	<u>934</u>	<u>3,000</u>	<u>SF</u>	<u>68</u>	<u>66</u>	<u>134</u>	<u>51</u>	<u>48</u>	<u>99</u>	<u>1,402</u>
Transit, Bicycle, Pedestrian Trips		3%		2	2	4	2	1	3	42
Total External Vehicular Site Trips				66	64	130	49	47	96	1,360
Primary Trips				33	32	65	21	22	43	830
Pass-By Trips	AM / PM	50%	55%	33	32	65	28	25	53	530
<u>Convenience Store / Gas Station (GFA 2-4k)</u>	<u>945</u>	<u>14</u>	<u>VFP</u>	<u>113</u>	<u>112</u>	<u>225</u>	<u>129</u>	<u>129</u>	<u>258</u>	<u>3,712</u>
Transit, Bicycle, Pedestrian Trips		0%		0	0	0	0	0	0	0
Total External Vehicular Site Trips				113	112	225	129	129	258	3,712
Primary Trips				27	27	54	32	32	64	1,772
Pass-By Trips	AM / PM	76%	75%	86	85	171	97	97	194	1,940

Notes:

Trip generation calculations based on ITE Trip Generation Manual, 11th Edition.

Weekday ADT is a bi-directional traffic volume (In + Out).

Land use information provided by the client on Thursday, April 20, 2023.

If no information was available, the AM Peak Hour Pass By Percentage was assumed to be 10% less than the PM Peak Hour Pass By Percentage.

Table 3
Site Trip Generation Calculations
Nearby Site - 19933 Lake Road

Land Use	ITE Code	Size	Units	AM Peak Hour			PM Peak Hour			Weekday	
				IN	OUT	TOTAL	IN	OUT	TOTAL	ADT	
<u>EXISTING</u>											
<u>Gasoline Service Station</u>	<u>944</u>	<u>6</u>	<u>VFP</u>	<u>31</u>	<u>31</u>	<u>62</u>	<u>42</u>	<u>41</u>	<u>83</u>	<u>1,032</u>	
Transit, Bicycle, Pedestrian Trips		0%		0	0	0	0	0	0	0	
Total External Vehicular Site Trips				31	31	62	42	41	83	1,032	
Primary Trips				11	12	23	18	18	36	562	
Pass-By Trips		AM / PM	63%	57%	20	19	39	24	23	47	470
Total Existing External Vehicular Site Trips				31	31	62	42	41	83	1,032	
Total Existing Primary Trips				11	12	23	18	18	36	562	
Total Existing Pass-By Trips				20	19	39	24	23	47	470	
<u>PROPOSED</u>											
<u>Office</u>	<u>710</u>	<u>30,000</u>	<u>SF</u>	<u>40</u>	<u>6</u>	<u>46</u>	<u>7</u>	<u>36</u>	<u>43</u>	<u>325</u>	
Transit, Bicycle, Pedestrian Trips		3%		1	0	1	0	1	1	10	
Total External Vehicular Site Trips				39	6	45	7	35	42	315	
Total Proposed External Vehicular Site Trips				39	6	45	7	35	42	315	
Net Difference Development Site Generated Trips				8	-25	-17	-35	-6	-41	-717	
Net Difference Primary Trips				28	-6	22	-11	17	6	-247	
Net Difference Pass-By Trips				-20	-19	-39	-24	-23	-47	-470	

Notes:

Trip generation calculations based on ITE Trip Generation Manual, 11th Edition.

Weekday ADT is a bi-directional traffic volume (In + Out).

A negative "Net Difference" indicates that the proposed land use will generate less trips than the existing land use.