



McDonough & Rea Associates, Inc.

Traffic and Transportation Consulting

Kevin P. McDonough (1953-1994)
John H. Rea, P.E.
Jay S. Troutman, Jr., P.E.
Scott T. Kennel

February 23, 2021

North Brunswick Township Planning Board
710 Hermann Road
North Brunswick, New Jersey 08902

Re: Livingston Avenue Warehouse
NJ Route 26
Lots 5.02 and 7.01 of Block 140.01
North Brunswick Township, Middlesex County
MRA File No. 21-128

Dear Board Members:

McDonough & Rea Associates (MRA) has been asked to provide the Planning Board with a *Traffic Statement* for plans to construct 2 warehouse/office buildings totaling 77,810 SF of warehouse space and 8,700 SF of office space on the noted property.

SCOPE OF STUDY

In order to prepare a *Traffic Statement* for the warehouse/office space, MRA conducted the following tasks:

1. Made field visits to the site to establish existing roadway and traffic conditions in the area.
2. Conducted traffic generation estimates for the warehouse and office space based upon Institute of Transportation Engineers (ITE) data.
3. Reviewed the *Site Plan* prepared by Menlo Engineering Associates (MEA) with respect to adherence to proper traffic engineering principles.
4. Reviewed historical traffic volume data obtained from the New Jersey Department of Transportation (NJDOT) along Livingston Avenue near the site frontage.

The following report sets forth our analysis.

Please reply to:

- 1431 Lakewood Road, Suite C, Manasquan, NJ 08736 • (732) 528-7076 • Fax (732) 528-6673
- 105 Elm Street, Lower Level, Westfield, NJ 07090 • (908) 789-7180 • Fax (908) 789-7181



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North Brunswick Township Planning Board -2-

February 23, 2021

EXISTING CONDITIONS

The subject property is located on the east side of Livingston Avenue also designated as New Jersey State Route 26 in North Brunswick Township. The property is located just north of the signalized intersection of Livingston Avenue/Route 1 ramps.

The subject property currently contains 2 driveway connections to Livingston Avenue and serves a business park with various buildings and various tenants. The new warehouse buildings (2) will be constructed to the rear of the property between the existing buildings and New Jersey State Route 1, which runs along the eastern boundary of the property.

Sight distance along Livingston Avenue from the 2 existing driveways serving the business park (*Brunswick Business Campus*) is good in both directions.

TRIP GENERATION

Estimates of traffic to be generated by the warehouse and office space were made after consulting the 10th Edition of the ITE *Trip Generation Manual*. Table I illustrates the anticipated AM and PM peak street hour traffic generation from the new buildings.

**TABLE I
TRIP GENERATION
LIVINGSTON AVENUE WAREHOUSES**

<u>USE</u>	<u>AM PSH</u>			<u>PM PH</u>		
	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>
77,810 SF Warehouse Space	27	8	35	10	27	37
8,700 SF Office Space	8	2	10	2	9	11
Total	35	10	45	12	36	48

LIVINGSTON AVENUE TRAFFIC VOLUMES

The New Jersey Department of Transportation (NJDOT's) *Historical Traffic Volume* data was consulted and counts were obtained from September 2019 (prior to the Covid 19 pandemic) for Livingston Avenue in the vicinity of the site. Based on a review of NJDOT data the following summarizes Livingston Avenue traffic volumes in the vicinity of the site:



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North Brunswick Township Planning Board -3-

February 23, 2021

- Average weekday 2-way traffic volumes – 17,000 vehicles per day
- Average AM peak street hour 2-way traffic volumes – 1,250 vehicles
- Average PM peak street hour 2-way traffic volumes -1,200 vehicles

Observations of traffic flow along Livingston Avenue revealed that the traffic signal located just south of the subject property, servicing the Rote 1 ramps, periodically produces gaps in northbound Livingston Avenue traffic flow which assists vehicles in entering and exiting the noted property.

SITE PLAN AND PARKING

The *Site Plan* prepared by MEA shows 2 connection points to the new warehouse/office buildings from the existing parking lot areas. Full circulation around both buildings is provided. A parking *Table* for the entire *Brunswick Business Campus* (prepared by MEA) shows a total required parking count of 442 spaces, whereas 513 spaces are provided. New parking areas and trailer loading areas are well distributed around the 2 new buildings.

CONCLUSIONS

It is concluded, based on the *Traffic Statement*, prepared by MRA, that plans to construct 2 new warehouse/office buildings within the confines of the *Brunswick Business Campus*, can be approved and operate compatibly with traffic conditions in the area. The 2 new buildings will generate 45 AM peak street hour trips and 48 PM peak street hour trips, respectively, well short of the typical threshold of 100 peak hour trips requiring an off-site *Traffic Impact Analysis*.

Access to the new building will be gained from 2 existing driveways serving the *Brunswick Business Campus* to Livingston Avenue with no new driveway connections being proposed. Sight distance from the 2 existing driveways to Livingston Avenue is good in both directions.

The *Site Plan* itself has been properly prepared with respect to connections to the existing parking lot, full circulation around the new buildings and well distributed parking and trailer loading spaces for the new buildings.



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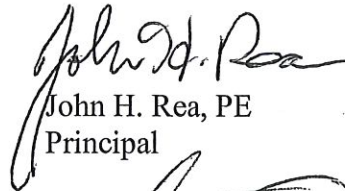
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North Brunswick Township Planning Board -4-

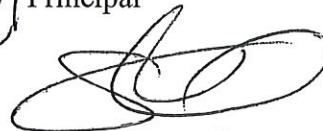
February 23, 2021

We hope the foregoing information is helpful.

Very truly yours,



John H. Rea, PE
Principal



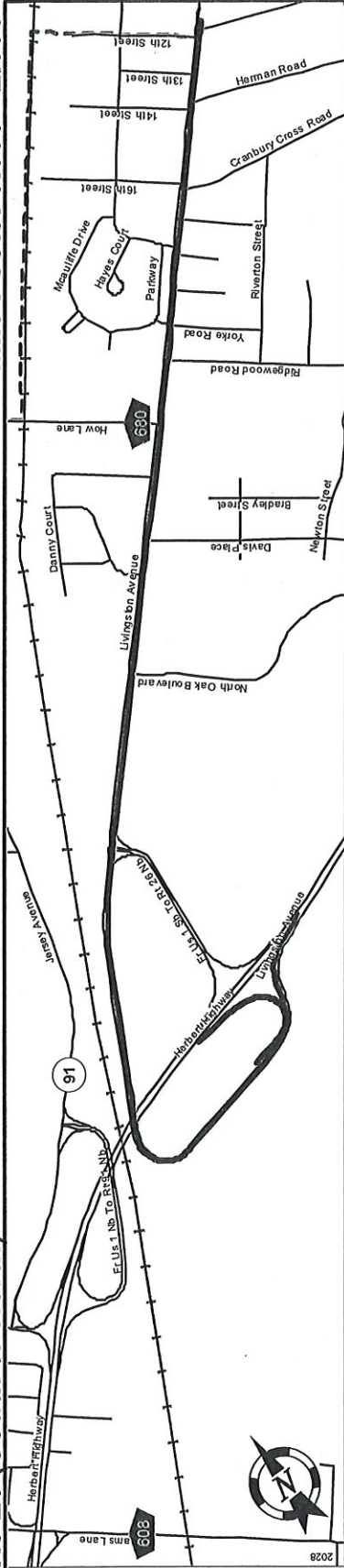
Scott T. Kennel
Sr. Associate

cc: Zev Spira
Greg Oman, PE

APPENDIX

NJ 26 (South to North)

Mile Posts: 0.000 - 2.000



Pavement	24
Shoulder	14
Number of Lanes	1
Speed Limit	30
Street Name	Livingston Avenue
Interstate Route	287
US Route	22
NJ Route	33
County Road	680
Interchange Number	2
Grade	◆
Separated Interchange	◆
Traffic Signal	◆
Traffic Monitoring Sites	WIM, AVC, VOL
Road Underpass	◆
Road Overpass	◆

Secondary Direction	1 (0.00)	1 (0.49)	1 (1.00)	1 (1.49)	1 (1.99)
Primary Direction	1 (0.00)	1 (0.49)	1 (1.00)	1 (1.49)	1 (1.99)

Street Name	Livingston Avenue
Jurisdiction	N.J.D.O.T.
Functional Class	Urban Minor Arterial
Federal Aid - NHS Sy	STP
Control Section	1215
Speed Limit	30
Number of Lanes	2
Med. Type	Curbed
Med. Width	VAR
Pavement	24
Shoulder	14
Traffic Volume	13,596 (2010)
Traffic Sta. ID	4-4-359
Structure No.	1215150
Enlarged Views	20,107 (2012)

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SRI = 00000026

Date last inventoried: May 2015

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 09/19/2019 to 09/25/2019

Site names: 4-4-359, Livingston Avenue-1, 15, 000000026_
 County: MIDDLESEX
 Funct Class: Urban Minor Arterial
 Location: Bet N Oaks Blvd and Jessica Lane

Seasonal Factor Grp: rg3_4U
 Daily Factor Grp: rg3_4U
 Axle Factor Grp: rg3_4U
 Growth Factor Grp: rg3_4U

	Sun, Sep 15, 2019		Mon, Sep 16, 2019		Tue, Sep 17, 2019		Wed, Sep 18, 2019		Thu, Sep 19, 2019		Fri, Sep 20, 2019		Sat, Sep 21, 2019			
	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	
00:00									140	77	63	82	78	253	135	118
01:00									54	33	21	45	36	160	94	66
02:00									56	28	28	36	35	103	52	51
03:00									83	45	38	32	33	77	46	31
04:00									133	60	73	70	53	80	42	38
05:00									324	195	129	184	125	158	86	72
06:00									684	448	236	402	256	239	130	109
07:00									1,158	781	377	760	398	431	241	190
08:00									1,311	887	424	1,181	420	645	373	272
09:00									979	617	362	1,018	400	746	388	358
10:00									808	475	333	882	379	919	490	429
11:00									835	446	389	904	429	952	493	459
12:00									988	557	431	1,093	526	1,014	513	501
13:00									1,048	544	504	1,190	517	969	499	470
14:00									1,023	585	444	1,158	508	988	533	455
15:00									1,029	516	513	1,201	571	939	497	442
16:00									1,296	634	662	1,249	603	956	485	471
17:00									1,194	546	648	1,165	605	944	514	430
18:00									1,144	582	562	1,127	526	888	457	431
19:00									999	494	505	977	515	784	405	379
20:00									848	378	470	746	403	661	340	321
21:00									626	349	277	701	366	645	350	295
22:00									407	226	181	522	270	474	231	243
23:00									294	134	160	396	202	318	172	146
Total									17,467	9,637	7,830	18,135	9,976	14,343	7,566	6,777
AM Peak Vol.									1,311	887	424	1,181	429	952	493	459
AM Peak Fct									1	1	1	1	1	1	1	1
AM Peak Hr									8:00	8:00	8:00	8:00	11:00	11:00	11:00	11:00
PM Peak Vol									1,296	634	662	1,249	605	1,014	533	501
PM Peak Fct									1	1	1	1	1	1	1	1
PM Peak Hr									16:00	16:00	16:00	16:00	13:00	17:00	14:00	12:00
Seasonal Fct									.990	.990	.990	.990	.990	.990	.990	.990
Daily Fct									.891	.891	.891	.873	.873	1.147	1.147	1.147
Axle Fct									.488	.488	.488	.488	.488	.488	.488	.488
Pulse Fct									2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 09/19/2019 to 09/25/2019

4-4-359, Livingston Avenue-1, 15, 000000026
 MIDDLESEX
 Urban Minor Arterial
 Location: Bet N Oaks Blvd and Jessica Lane

Seasonal Factor Grp: rg3_4U
 Daily Factor Grp: rg3_4U
 Axle Factor Grp: rg3_4U
 Growth Factor Grp: rg3_4U

	Sun, Sep 22, 2019		Mon, Sep 23, 2019		Tue, Sep 24, 2019		Wed, Sep 25, 2019		Thu, Sep 26, 2019		Fri, Sep 27, 2019		Sat, Sep 28, 2019		
	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S
00:00	230	121	109	92	109	58	34	109	62	47	144	84	60		
01:00	146	79	67	61	63	35	26	67	36	27	67	44	23		
02:00	131	58	73	56	60	26	30	60	33	27	81	45	36		
03:00	84	37	47	49	28	21	21	62	30	32	68	28	40		
04:00	72	34	38	98	43	55	43	125	58	58	134	67	67		
05:00	82	42	40	305	184	121	124	338	214	124	331	207	124		
06:00	141	80	61	683	419	284	693	693	454	245	711	444	267		
07:00	251	145	106	1,069	723	346	1,183	784	399	1,180	768	768	412		
08:00	389	201	168	1,252	850	402	1,310	886	424	1,204	809	395	395		
09:00	554	303	251	985	586	399	970	970	595	375	923	590	333		
10:00	766	449	317	857	492	365	795	467	328	864	490	374	374		
11:00	814	407	407	884	463	415	821	428	393	832	448	448	384		
12:00	790	407	383	1,001	525	476	904	446	446	1,035	535	500	500		
13:00	977	469	508	993	547	446	983	523	460	1,046	600	446	446		
14:00	901	457	444	1,033	590	443	1,025	576	449	1,066	605	461	461		
15:00	838	425	413	1,106	578	528	1,162	621	541	1,168	584	584	584		
16:00	765	409	356	1,289	638	647	1,248	637	609	1,285	657	628	628		
17:00	846	496	350	1,198	515	683	1,265	555	710	1,273	591	682	682		
18:00	722	375	347	1,161	492	669	1,119	512	607	1,103	518	589	589		
19:00	685	361	324	901	431	470	948	438	510	898	421	477	477		
20:00	591	308	283	623	300	300	655	332	323	661	328	333	333		
21:00	397	210	187	463	265	198	469	234	235	469	258	211	211		
22:00	329	188	141	313	178	135	370	218	152	368	197	171	171		
23:00	181	90	91	212	121	91	212	93	119	253	111	142	142		
Total	11,662	6,151	5,511	16,680	9,098	7,582	16,893	9,241	7,652	17,164	9,429	7,739	7,739		
AM Peak Vol	814	449	407	1,252	850	415	1,310	886	424	1,204	809	412	412		
AM Peak Fct	1	1	1	1	1	1	1	1	1	1	1	1	1		
PM Peak Vol	11:00	10:00	11:00	8:00	8:00	11:00	8:00	8:00	8:00	8:00	8:00	8:00	7:00		
PM Peak Fct	1	1	1	1	1	1	1	1	1	1	1	1	1		
Seasonal Fct	13:00	17:00	13:00	16:00	17:00	17:00	17:00	16:00	16:00	16:00	16:00	16:00	17:00		
Axle Fct	.990	.990	.990	.990	.990	.990	.990	.990	.990	.990	.990	.990	.990		
Pulse Fct	1,469	1,469	1,469	1,040	1,040	1,040	934	934	898	898	898	898	898		
	488	488	488	488	488	488	488	488	488	488	488	488	488		
	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000		

ITE Land Use: 710, General Office Building

Size of Development: 8,700 SF

10th

Time Period	Average Rate	Studies	Avg. Size	R ²	Trips	Equation	Trips	Split
Weekday Daily	9.74	66	171	0.83	84.7	$\ln(T) = 0.970 \ln(X) + 2.500$	99.3	50 50
AM Peak Street Hour	1.16	35	117	0.85	10.1	$T = 0.940 (X) + 26.490$	34.7	86 14
PM Peak Street Hour	1.15	32	114	0.88	10.0	$\ln(T) = 0.950 \ln(X) + 0.360$	11.2	16 84
AM Peak Hour of Generator	1.47	228	209	0.84	12.8	$\ln(T) = 0.880 \ln(X) + 1.060$	19.4	88 12
PM Peak Hour of Generator	1.42	243	205	0.82	12.4	$T = 1.100 (X) + 65.390$	75.0	18 82
Saturday Daily	2.21	5	94	NG	19.2	Not Given	N/A	50 50
Saturday Peak Hour of Generator	0.53	3	82	NG	4.6	Not Given	N/A	54 46
Sunday Daily	0.70	5	94	NG	6.1	Not Given	N/A	50 50
Sunday Peak Hour of Generator	0.21	3	82	NG	1.8	Not Given	N/A	58 42

ITE Land Use: 150, Warehousing		77,810 SF		10th											
Size of Development:															
Time Period	Average Rate	Studies	Avg. Size	R ²	Trips	Equation	Trips	Equation	Trips	Split					
Weekday Daily	1.74	29	285	0.93	135.4	T= 1.580	168.5	(x)+ 45.540	50	50					
AM Peak Street Hour	0.17	34	451	0.69	13.2	T= 0.120	34.7	(x)+ 25.320	77	23					
PM Peak Street Hour	0.19	47	400	0.65	14.8	T= 0.120	37.2	(x)+ 27.820	27	73					
AM Peak Hour of Generator	0.22	23	274	0.85	17.1	T= 0.110	38.6	(x)+ 30.070	65	35					
PM Peak Hour of Generator	0.24	25	275	0.91	18.7	T= 0.150	34.2	(x)+ 22.520	24	76					
Saturday Daily	0.15	3	226	NG	11.7	Not Given	N/A		50	50					
Saturday Peak Hour of Generator	0.05	2	129	NG	3.9	Not Given	N/A		64	36					
Sunday Daily	0.06	3	226	NG	4.7	Not Given	N/A		50	50					
Sunday Peak Hour of Generator	0.04	2	129	NG	3.1	Not Given	N/A		52	48					