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June 3, 2021

Town of Boxborough Planning Board
Mr. Simon Corson, Town Planner
29 Middle Road
Boxborough, MA 01719

Nitsch Project #12995
1414 Massachusetts Avenue
Traffic Study Peer Review
Boxborough, MA

Dear Mr. Corson,

Nitsch Engineering (Nitsch) has been retained by Level Design Group, LLC to assess the traffic impacts associated with the full occupation of the vacant facility located at 1414 Massachusetts Avenue in Boxborough, Massachusetts (formerly the Cisco office building). To that end, Nitsch has reviewed the Traffic Impact Report (TIR) developed by VHB in January 2015 for the Jefferson at Beaver Brook residential development (now called Paddock Estates), located across Massachusetts Avenue from the proposed project site. We compared the assumed volumes VHB used in the TIR for the Cisco building at full occupancy to the projected future site-generated traffic volumes for 1414 Massachusetts Avenue to confirm that VHB's traffic impact analysis conclusion for the Jefferson at Beaver Brook development is consistent with the proposed building program for 1414 Massachusetts Avenue.

Jefferson at Beaver Brook TIR (2015)

VHB evaluated the following intersections in the Jefferson at Beaver Brook TIR for the 2014 Existing, 2021 No-Build, and 2021 Build traffic conditions:

- Massachusetts Avenue (Route 111) at I-495 Southbound Ramps
- Massachusetts Avenue (Route 111) at I-495 Northbound Ramps
- Massachusetts Avenue (Route 111) at Cunningham Road
- Massachusetts Avenue (Route 111) at Adams Place West Driveway/Gulf Station Driveways
- Massachusetts Avenue (Route 111) at Adams Place East Driveway
- Massachusetts Avenue (Route 111) at Hill Road/Burroughs Road
- Cunningham Road at Hill Road

Consistent with current traffic engineering standards, VHB researched other planned developments in the vicinity that could affect future traffic conditions. In their TIR, VHB provides the following statement:

> *The Town of Boxborough planning staff indicated that there are no other known planned developments in the area that would be expected to generate additional traffic through the study area within the Study horizon. However, the planning staff noted that Cisco, located in the Adams Place office development, may have vacancies and may not be operating at typical occupancy levels at this time. Based on discussion with the planning staff, it was determined that record traffic data collected in the area in 2007 could be more representative of typical office occupancy levels at Adams Place than those reflected in the current counts. As such, in order to account for the typical traffic flow at the Adams Place driveways, record traffic volumes at the Adams Place driveways were compared to the current traffic volumes and the difference was added to the No-Build network. This adjustment would account for the future backfill [to full occupancy] of office vacancies at Adams Place.*

Based on the 2007 traffic data, the Cisco Development generated 238 vehicle trips (185 entering / 53 exiting) during the weekday morning peak hour and 258 vehicle trips (55 entering / 203 exiting) during the weekday

evening peak hour. The volume diagram for the 2007 volumes at the Adam's Place Driveways has been attached to this memorandum.

Upon calculating the total future network volumes, VHB conducted a capacity analysis for the Existing, No-Build, and Build conditions. They concluded:

> *Detailed analyses indicate that the study area intersections currently operate at an acceptable level of service and can be expected to continue to do so in the future [under Build conditions].*

Future Development

The future development at 1414 Massachusetts Avenue will include two tenants, both consisting of research and development space and office space. Table 1 shows the future building program.

Table 1 – Future Building Program: 1414 Massachusetts Avenue

Land Use	Gross Floor Area (SF)
Tenant A – Vibalogics	
Office	16,481
Research and Development	49,442
Total	*65,923*
Tenant B – Similar Use	
Office (assume 50%)	100,158
Research and Development (assume 50%)	100,157
Total	*200,315*
Combined Building	
Office	116,639
Research and Development	149,599
Total	*266,238*

To estimate the future project-generated trips, we used the Institute of Transportation Engineers *Trip Generation Manual, 10th Edition*, which is consistent with industry-standard methodology. As the facility is expected to serve two land uses, we used both ITE Land Use Code (LUC) 760 "Research and Development Center" and LUC 710 "General Office Building." To be consistent between all uses, we used "Gross Floor Area" for the independent variable to generate the number of vehicle trips. We then compared the projected full-occupancy Cisco trips summarized in the Jefferson at Beaver Brook TIR to the future site-generated trips, which is shown in Table 2.

Table 2 – Vehicular Trip Generation Comparison

Land Use	Daily			Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Tenant A – Vibalogics									
Office	80	81	161	16	3	19	3	16	19
Research and Development	278	279	557	16	5	21	3	21	24
Tenant B – Similar Use									
Office	488	488	976	100	16	116	18	97	115
Research and Development	564	564	1,128	31	11	42	7	42	49
Combined Future Trips	**1,410**	**1,412**	**2,822**	**163**	**35**	**198**	**31**	**176**	**207**
Former Site Trips: Cisco at Full Occupancy ***from 2015 TIR by VHB***	N/A	N/A	N/A	185	53	238	55	203	258
Net Trips	---	---	---	**-22**	**-18**	**-40**	**-24**	**-27**	**-51**

N/A = Not Available in 2015 TIR by VHB

Conclusion

As shown, the number of trips VHB assumed in the 2015 TIR for the Cisco building at full occupancy exceeds the number of trips that are now expected to be generated by the future project at 1414 Massachusetts Avenue in both weekday peak hours. Since VHB's capacity analysis used an overestimate of traffic volumes to account for the 1414 Massachusetts Avenue project site, their conclusion that the study area intersections are expected to operate at an acceptable level of service under their future Build conditions still holds true for the proposed building program at that site. With a reduction in trips generated by the site compared to those assumed in the TIR, this project is expected to have even less of an impact on study-area traffic than VHB reported.

Please do not hesitate to contact us should you require any further information.

Very truly yours,

Nitsch Engineering, Inc.

Bryan Zimolka, PE, ENV SP
Project Manager