

Ref: 8591

May 11, 2020

Ms. Mary F. Savage Dunham, AICP, CFM
Director of Community Planning
Town of Hingham
210 Central Street
Hingham, MA 02043

Re: Traffic Engineering Peer Review
Proposed Package Delivery Station – 100 Industrial Park Road
Hingham, Massachusetts

Dear Mary:

Vanasse & Associates, Inc. (VAI) has completed a review of the materials submitted on behalf of JEB Group LLC (the “Applicant”) in support of the proposed renovation of the existing warehouse building located at 100 Industrial Park Road in Hingham, Massachusetts, to accommodate a package delivery station (hereafter referred to as the “Project”). The Applicant is requesting Site Plan Approval and a Special Permit A3 (Parking Determination) for the Project. Our review focused on the following specific areas as they relate to the Project: i) vehicle and pedestrian access and circulation; ii) Massachusetts Department of Transportation (MassDOT) design standards; iii) Town Zoning requirements as they relate to access, parking and circulation; and iv) accepted Traffic Engineering and Transportation Planning practices. The Applicant has submitted the following supporting materials which are the subject of this review:

1. *Application for Special Permit A3, Parking Determination*, JEB Group LLC; March 6, 2020;
2. *Application for Site Plan Approval*, JEB Group LLC; March 6, 2020;
3. *Project Narrative* for 100 Industrial Park Road, Hingham, Massachusetts; BL Companies; March 6, 2020;
4. *Land Development Plans*, 100 Industrial Park Road, Hingham, MA; BL Companies; March 6, 2020, no revisions (the “Site Plans”); and
5. *Traffic Study*, Proposed Delivery Station Building, 100 Industrial Park Road, Hingham, MA; BL Companies; February 2020.

In addition, VAI reviewed the site locus in order to validate the existing conditions context of the Project and the study area that was assessed in the February 2020 Traffic Study, and to observe factors that could impact the design and location of the access to the Project site and potential off-site improvements.

Based on our review of the February 2020 Traffic Study and the accompanying Site Plans, we have determined that the materials were prepared in a professional manner and following the applicable standards of care. That being said, the Applicant should address the following comments that were identified as a part of our review, a detailed summary of which is attached:

February 2020 Traffic Study

- T1: A letter should be provided by the Professional Engineer attesting to their oversight in preparing the February 2020 Traffic Study and providing their Massachusetts Professional Engineer Registration number and discipline.
- T2: The Project may require the issuance of a State Highway Access Permit for so called “indirect access” to Route 3 by way of Derby Street and, as such, may be subject to a filing under the Massachusetts Environmental Policy Act (MEPA). The Applicant should provide a review of the MEPA Transportation thresholds as they relate to the Project and consult with the Massachusetts Department of Transportation (MassDOT) to determine if a State Highway Access Permit will be required.
- T3: At a minimum, the study area should be expanded to include the Derby Street/Old Derby Street intersection given that the traffic signals within the Route 3/Derby Street interchange are coordinated with the traffic signal at the Derby Street/Old Derby Street intersection and proximity of the Old Derby Street intersection to the Route 3 northbound ramps.
- T4: The description of existing conditions within the study area should be updated to reflect the improvements that have been completed along Derby Street.
- T5: The raw traffic counts and back-up data for the seasonal adjustment should be provided for review in order to validate the existing conditions traffic volumes. We note that it is not customary to reduce traffic volumes when the seasonal variation data indicates that traffic volumes during the month in which the traffic counts were performed may be representative of above-average conditions. We would suggest that the raw, unadjusted traffic count data be used and appropriately balanced between the study intersections.
- T6: A 48-hour automatic traffic recorder count should be conducted on Industrial Park Road in the vicinity of the Project site to include vehicle travel speed data in order to document existing traffic flow patterns and to allow for an evaluation of sight distances.
- T7: A description of pedestrian and bicycle facilities within the study area should be provided in order to understand the availability of these accommodations and their relationship to the Project site.
- T8: A description public transportation services within the study area should be provided in order to understand the availability of these accommodations and their relationship to the Project site.
- T9: Recognizing that the Derby Street corridor was recently reconstructed as a part of the Derby Street improvement project and included specific traffic control and geometric improvements to address both traffic operations and safety, we would recommend that a safety assessment be completed as a part of a Traffic Monitoring Program for the Project.
- T10: The future condition traffic volume projections should be revised to reflect a 2027 horizon year in accordance with MassDOT *Transportation Impact Assessment (TIA) Guidelines*.
- T11: The Town of Hingham Director of Community Planning and the Town of Weymouth Planning & Community Development Department should be contacted in order to obtain a list of specific development projects by others that are expected to be complete with 7-year planning horizon. At a minimum the future condition traffic volumes should include trips associated with: i) reoccupancy of vacant space located within South Shore Park; ii) the expansion of the Derby Street Shoppes; and



iii) trips attributable to the Union Point (Southfield) mixed-use development. In addition, a review the build-out analysis contained in the South Hingham Transportation Master Plan should be completed.

- T12: Back-up data should be provided for the trip-generation calculations including a breakdown of vehicle arrival/departure volumes over the day to substantiate the peak-hour trip estimates.
- T13: The trip distribution pattern for the Project should be reviewed and revised considering the following: Journey-to-Work data obtained from the U.S. Census for persons employed within the Town of Hingham; market area and travel routes for local deliveries and the origin of the tractor semi-trailer deliveries (to/from Route 3); the transportation system serving the project site; and existing traffic patterns. Separate trip patterns for each of the functional areas of the Project should be provided if appropriate.
- T14: The traffic operations analysis should be revised and expanded to reflect the comments herein and to include analyses of the following conditions in accordance with MassDOT guidelines: 2019 Existing, 2027 No-Build (without the Project), 2027 Build (with the Project) and 2027 Build with Mitigation (with the Project and any improvements that may be necessary to off-set the impact of the Project).
- T15: The peak-hour factors that are used in the analysis should be based on those reflected in the traffic counts and not a uniform value of 0.92 or 1.00 unless substantiated. Further, the existing peak-hour factors are likely to be lower than the default factors that were used, particularly at the Project site driveway intersections given the operation of the Project where both delivery and employee vehicle arrivals and departures will be concentrated and not dispersed over the peak hour (releasing 20 DSP vans from the facility simultaneously will lower the peak-hour factor resulting in increased delays and residual vehicle queuing that is not reflected in the current analysis).
- T16: A sight distance assessment should be performed for the Project site driveways along both Industrial Park Road and Commerce Road and at the Industrial Park Road/Commerce Road intersection following the methodology defined by the American Association of State Highway and Transportation Officials (AASHTO)¹ and using the measured 85th percentile vehicle travel speed along Industrial Park Road and Commerce Road or the posted speed limit, whichever is higher. Both the Stopping Sight Distance (SSD) along Industrial Park Road and Commerce Road approaching the intersections and the Intersection Sight Distance (ISD) for a motorist exiting the minor (stop controlled) approach should be provided and compared to the AASHTO recommended values. To the extent that the sight lines do not meet the recommended minimum value, the Applicant should identify the corrective measures that will be undertaken and include the necessary modifications on the Site Plans.
- T17: In advance of receipt of the information that has been requested as a part of this review, we would suggest that consideration be given to the following measures as a part of any subsequent submissions:

Safety:

(See Traffic Monitoring)

¹*A Policy on Geometric Design of Highway and Streets*, 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2018.



Traffic Operations:

Within 90-days after receipt of a Certificate of Occupancy for the Project and subject to receipt of all necessary rights permits and approvals, design and implement an optimal traffic signal timing and phasing plan for the Derby Street coordinated traffic signal system to include the following intersections:

1. Industrial Park Road
2. Route 3 southbound ramps
3. Route 3 northbound ramps
4. Old Derby Street
5. Derby Street Shoppes
6. Cushing Street

Transportation Demand Management:

Implement a comprehensive Transportation Demand Management (TDM) plan consisting of the following elements:

- Assign a transportation coordinator to coordinate the TDM program;
- Post information regarding commuting options in a central location and/or otherwise make available to employees of the project;
- Implement a rideshare matching program for employees facilitated by the transportation coordinator to encourage carpooling;
- Provide a “welcome packet” to employees detailing available commuter options, the contact information for the transportation coordinator and information for employees to enroll in the rideshare program;
- Provide specific amenities to discourage off-site trips, including a break-room equipped with a microwave and refrigerator; offering direct deposit of paychecks; coordinating with a dry-cleaning service for on-site pick-up and delivery; allowing telecommuting or flexible work schedules; and other such measures to reduce overall traffic volumes and travel during peak traffic volume periods;
- Incorporate pedestrian accommodations within the Project site; and
- Provide secure bicycle parking at an appropriate location within the Project site.

Traffic Monitoring:

Implement a traffic monitoring program consisting of the following information:

- Performing a 7-day, week-long automatic traffic recorder counts on the Project site driveways to include vehicle classification;
- Performing manual turning movement counts and vehicle classification counts at the Project site driveway intersections with Industrial Park Road and Commercial Road during the



weekday morning (6:00 to 9:00 AM), weekday midday (11:00 AM to 1:00 PM) and weekday evening (4:00 to 6:00 PM) peak periods; and

- Obtaining motor vehicle crash data for the most recent one-year period from the Hingham Police Department for the Project site driveway intersections with Industrial Park Road and Commercial Road and at the following locations:
 1. Industrial Park Road/Commercial Road
 2. Derby Street/Industrial Park Road
 3. Derby Street/Route 3 Southbound Ramps
 4. Derby Street/Route 3 Northbound Ramps
 5. Derby Street/Old Derby Street

The monitoring program should commence within 90 days of the issuance of a Certificate of Occupancy for the Project and be repeated within 1-year thereafter. The results of the traffic monitoring program shall be summarized in a report or technical memorandum provided to the Director of Community Planning and the Building Commissioner within one-month of the completion of the data collection effort and should include the following information and analyses:

- Comparison of the measured traffic volumes (trucks and passenger vehicles) to the traffic volume projections for the Project as presented in the February 2020 Traffic Study and as may be subsequently modified;
- An evaluation of motor vehicle crash rates at the monitored intersections; and
- Traffic operations analysis for the monitored intersections.

To the extent that the measured traffic volumes for the Project exceed the projected traffic volumes by more than 10 percent (i.e., 110 percent of the projected traffic volumes) and/or the calculated motor vehicle crash rates exceed the MassDOT average crash rates for similar intersections, corrective actions to reduce the unmitigated impact of the Project should be proposed and implemented. The corrective actions should be documented in the traffic monitoring report and undertaken by the Applicant subject to receipt of all necessary rights permits and approvals.

Site Plans

- S1: A truck turning analysis should be performed using the AutoTurn® software package for the following design vehicles: Hingham Fire Department design vehicle, a single-unit truck (SU-30 design vehicle) and a large tractor semi-trailer combination (WB-67 design vehicle); and should include the Industrial Park Road/Commercial Road intersection. The turning analysis should demonstrate that the design vehicles can access the appropriate areas within the Project site and circulate in an unimpeded manner without intrusion into parking spaces. The fire truck turning analysis should confirm that all elements of the design vehicle are retained within the traveled-way and do not overhang the curblineline or cross into parking spaces.
- S2: “One-Way” and “Do Not Enter” signs and supplemental pavement markings should be provided for all one-way drives and aisles within the Project site, including at the Project site driveway intersection with Industrial Park Road;



- S3: Vehicles exiting the Project site should be placed under STOP-sign control with a marked STOP-line provided. In addition, a STOP-sign and marked STOP-line should be provided on the Commercial Road approach to Industrial Park Road.
- S4: A note should be added stating: “All Signs and pavement markings to be installed within the Project site shall conform to the applicable specifications of the Manual on Uniform Traffic Control Devices (MUTCD).²”
- S5: The sight triangle areas for the Project site driveway intersections should be shown on the Site Plans along with a note to indicate: “Signs, landscaping and other features located within sight triangle areas shall be designed, installed and maintained so as not to exceed 2.5-feet in height. Snow windrows located within sight triangle areas that exceed 3.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed.”
- S6: Sidewalks and crosswalks should be provided that link the parking lots to the proposed building. The pedestrian path should be direct and minimize the number of crossings that are required. All pedestrian crossings should include crosswalks with Americans with Disabilities Act (ADA) compliant wheelchair ramps.
- S7: Secure, weather protected bicycle parking should be provided for employees and shown on the Site Plans.
- S8: Consider the use of speed humps (elongated speed bumps) vs. speed bumps within the Project site as speed bumps have the potential to create inherent operational and safety impacts and may not be allowed by the Hingham Fire Department due to the impact on emergency vehicles and response times.

Parking

- P1: The Applicant should provide a breakdown of the parking demands within the Project site by functional use (i.e., associates/managers, visitors, DSP vans and drivers, etc.) in order to demonstrate that the number of parking spaces that are proposed is sufficient to meet the predicted parking demands. By way of example, if there are 118 employees on-site and 336 DSP drivers arrive, 454 parking spaces would be used.
- P2: We support the requested waiver from the dimensional requirements of Section V-A, *Off-Street Parking Requirements*, of the Town of Hingham Zoning By-Law as they relate to Aisle Width and Standard Parking Spaces as the dimensions that are proposed for the “van spaces” exceed the requirements of the Zoning By-Law and are required to accommodate the turning and maneuvering requirements of the “van” design vehicle.

Written responses to our comments should be provided so that we may continue our review of the Project on behalf of the Town.

²Manual on Uniform Traffic Control Devices (MUTCD); Federal Highway Administration; Washington, DC; 2009.



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This concludes our review of the materials that have been submitted to date in support of the Project. If you should have any questions regarding our review, please feel free to contact me.

Sincerely,

VANASSE & ASSOCIATES, INC.



Jeffrey S. Dirk, P.E., PTOE, FITE
Partner

Professional Engineer in CT, MA, ME, NH, RI and VA

JSD/jsd

Attachment



**TRAFFIC ENGINEERING PEER REVIEW
PROPOSED PACKAGE DELIVERY STATION
100 INDUSTRIAL PARK ROAD
HINGHAM, MASSACHUSETTS
MAY 11, 2020**

The following details Vanasse & Associates, Inc.'s (VAI's) review of the materials submitted in support of the proposed renovation of the existing warehouse building located at 100 Industrial Park Road in Hingham, Massachusetts, to accommodate a package delivery station (hereafter referred to as the "Project"). Our comments are indicated in *italicized* text, with those requiring responses or additional information **bolded**.

PROJECT DESCRIPTION

The Project will entail the renovation of an existing warehouse building and associated modifications to adjacent structures, parking areas and appurtenances located at 100 Industrial Park Road in Hingham, Massachusetts, to accommodate a package delivery station. Specifically, the Project will include the following elements: i) renovation of the existing 149,000± square foot (sf) warehouse building located in the northern portion of the Project site; ii) demolition of an existing 41,203 sf building in the southern portion of the Project site; and iii) modification of existing driveways, parking areas and drive aisles. The Project site encompasses approximately 17.05± acres of land located that is bounded by Industrial Park Road and commercial properties to the north; areas of open and wooded space to the south; Route 3 (a.k.a. Southeast Expressway) and commercial properties to the east; and Industrial Park Road and Commerce Road to the west. The Project site is currently occupied by commercial buildings and associated appurtenances that will be renovated, removed or otherwise modified to accommodate the Project as described above.

Access to the Project site will continue to be provided by way of the three (3) existing driveways that serve the Project site and intersect Industrial Park Road and Commerce Road, and will be configured as follows: the Industrial Park Road driveway will serve as a one-way exit for delivery vehicles exiting from the warehouse; the northern Commerce Road driveway will provide access to/from the parking field to the north of the warehouse building; and the southern Commerce Road driveway will provide access to/from the loading dock area, the delivery vehicle staging area and entrance to the warehouse, and the parking field to the south of the warehouse building.

On-site parking will be provided for 458 vehicles that will include 130 "automobile spaces" (9 feet wide and 20 feet long) and 328 "van spaces" (11 feet wide and 27 feet long). In addition, seven (7) loading dock spaces will be provided that will accommodate interstate tractor semi-trailer combinations (WB-67 design vehicle). The Applicant has indicated that waivers are required from the Hingham Zoning By-Law for the amount of parking provided, the parking space dimensions and the travel aisle width.

FEBRUARY 2020 TRAFFIC STUDY

General

Comment T1: The February 2020 Traffic Study was prepared in a professional manner and following the applicable standards of care; however, the study was not stamped and signed by the Professional Engineer in responsible charge for the preparation of the document. A letter should be provided by the Professional Engineer attesting to their oversight in preparing the document and providing their Massachusetts Professional Engineer Registration number and discipline.



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Comment T2: The Project may require the issuance of a State Highway Access Permit for so called “indirect access” to Route 3 by way of Derby Street and, as such, may be subject to a filing under the Massachusetts Environmental Policy Act (MEPA). The Applicant should provide a review of the MEPA Transportation thresholds as they relate to the Project and consult with the Massachusetts Department of Transportation (MassDOT) to determine if a State Highway Access Permit will be required.

Existing Conditions

Study Area

The study area that was assessed in the February 2020 Traffic Study consisted of Commerce Road, Industrial Park Road and the segment of Derby Street between Industrial Park Road and the Route 3 northbound ramps, and the following specific intersections:

1. Industrial Park Road at Commerce Road
2. Industrial Park Road at 100 Industrial Park Road
3. Derby Street at Industrial Park Road
4. Derby Street at the Route 3 Southbound Ramps
5. Derby Street at the Route 3 Northbound Ramps

Comment: *This study area is generally sufficient to evaluate the potential impact of the Project on the transportation infrastructure and includes all intersections where the Project is predicted to result in an increase in peak hour traffic volumes by: a) five (5) percent or more or b) by more than 100 vehicles per hour.*

Comment T3: *At a minimum, the study area should be expanded to include the Derby Street/Old Derby Street intersection given that the traffic signals within the Route 3/ Derby Street interchange are coordinated with the traffic signal at the Derby Street/Old Derby Street intersection and proximity of the Old Derby Street intersection to the Route 3 northbound ramps. Traffic volume data for the Derby Street/Old Derby Street intersection may be obtained from the February 2020 Traffic Impact Study that was submitted to the Town in support of the Ocean Honda project.*

Comment T4: *The description of existing conditions within the study area should be updated to reflect the improvements that have been completed along Derby Street. Preparation of a graphical depiction of existing traffic control, lane use, travel lane width and pedestrian and bicycle accommodations within the study area is suggested.*

Traffic Volumes and Data Collection

Traffic volume data was collected by means of manual turning movement counts (TMCs) and vehicle classification counts conducted on a weekday in September 2019 during the morning (6:00 to 9:00 AM), midday (11:00 AM to 1:00 PM) and evening (4:00 to 6:00 PM) peak periods. A review of seasonal adjustment data available from MassDOT indicated that traffic volume conditions within the study area



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during the month of September are representative of above average conditions and, as such, the raw traffic count data was adjusted downward (reduced) to average-month conditions.

Comment T5: The raw traffic counts and back-up data for the seasonal adjustment should be provided for review in order to validate the existing conditions traffic volumes. We note that it is not customary to reduce traffic volumes when the seasonal variation data indicates that traffic volumes during the month in which the traffic counts were performed may be representative of above-average conditions, particularly given that the seasonal variation data is often derived from permanent count stations on divided highways which experience more pronounced seasonal fluctuations in traffic volumes. We would suggest that the raw, unadjusted traffic count data be used and appropriately balanced between the study intersections.

Comment T6: A 48-hour automatic traffic recorder count should be conducted on Industrial Park Road in the vicinity of the Project site to include vehicle travel speed data in order to document existing traffic flow patterns and to allow for an evaluation of sight distances (discussion follows).

Pedestrian and Bicycle Facilities

A description of pedestrian and bicycle facilities within the study area was not provided.

Comment T7: A description of pedestrian and bicycle facilities within the study area should be provided in order to understand the availability of these accommodations and their relationship to the Project site. It is suggested that a graphical depiction of existing and proposed sidewalks, crosswalks and bicycle facilities be prepared for the study area, inclusive of the recently completed improvements along Derby Street. The availability of these accommodations will inform the development of the Transportation Demand Management (TDM) Program for the Project.

Public Transportation

A description of public transportation services within the study area was not provided.

Comment T8: A description public transportation services within the study area should be provided in order to understand the availability of these accommodations and their relationship to the Project site. The availability of these accommodations will inform the development of the TDM Program for the Project.

Motor Vehicle Crash Summary

Motor vehicle crash information was obtained for the study area intersections from MassDOT for the 3.5 year period from January 1, 2016 through September 2019, inclusive. Based on a review of the MassDOT data, 54 motor vehicle crashes were reported to have occurred within the study area, with the majority of the crashes (44 total) reported to have occurred at the Route 3 ramp intersections with Derby Street, both of which have been reconstructed as a part of the Derby Street improvement project and



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have been placed under traffic signal control with accompanying geometric improvements. The majority of the crashes were reported to have occurred under clear weather conditions and involved angle or rear-end type crashes that resulted in property damage only. No fatal motor vehicle crashes were reported to have occurred within the study area.

Comment: *The motor vehicle crash analysis was not completed in accordance with MassDOT standards and motor vehicle crash rate calculations were not provided. MassDOT requires an assessment of motor vehicle crash data for the most recent three-year and preferably five-year period of validated (closed) data, which is currently 2013 or 2015 through 2017. Motor vehicle crash rate calculations are required for each of the study area intersections for the three or five-year review period which are then compared to the MassDOT statewide and Highway Division District average crash rates in order to ascertain if the rate of occurrence of motor vehicle crashes is disproportionate to the volume of traffic traversing the intersection. In addition, a review of the MassDOT statewide High Crash Location List is also required in order to identify designated high crash locations within the study area that may be eligible for state funding for safety improvements.*

Comment T9: ***Recognizing that the Derby Street corridor was recently reconstructed as a part of the Derby Street improvement project which was substantially complete at the end of 2019 and included specific traffic control and geometric improvements to address both traffic operations and safety, requiring strict compliance with MassDOT standards relative to motor vehicle crash analyses would not yield useful information as it relates to the Project. As such, we would recommend that a safety assessment be completed as a part of the Traffic Monitoring Program for the Project (discussion follows).***

Future Conditions

No-Build Conditions

Future No-Build (without the Project) Traffic volumes were developed by: i) applying a background traffic growth rate to the 2019 Existing traffic volumes; and ii) adding traffic associated with specific development projects by others that may increase traffic volumes within the study area beyond that accounted for by the background traffic growth rate. The Applicant's engineer selected 2020 as the horizon year for the assessment as being representative of the year in which the Project would be operational.

A 1.0 percent per year compounded annual background traffic growth rate was established to reflect the expected growth in traffic that will occur within the 1-year time horizon of the February 2020 Traffic Study. No specific development projects by others were identified that would result in an increase in traffic volumes within the study area that would exceed the background traffic growth rate. The Applicant's engineer included the improvements associated with the Derby Street improvement project in the future conditions analyses.

Comment T10: ***MassDOT guidelines for the preparation of TIAs require that the future conditions horizon year be established as 7-years from the date of the publication of the assessment, or 2027 in the case of the February 2020 Traffic Study. As such, the Applicant's***



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engineer should revise the future condition traffic volume projections to reflect a 2027 horizon year.

Comment T11: We are in agreement with the background traffic growth rate that was used (1.0 percent per year). The Applicant's engineer should consult with the Town of Hingham Director of Community Planning and the Town of Weymouth Planning & Community Development Department in order to obtain a list of specific development projects by others that are expected to be complete with 7-year planning horizon. At a minimum the future condition traffic volumes should include trips associated with: i) reoccupancy of vacant space located within South Shore Park; ii) the expansion of the Derby Street Shoppes; and iii) trips attributable to the Union Point (Southfield) mixed-use development. In addition, the Applicant's engineer should review the build-out analysis contained in the South Hingham Transportation Master Plan.

Build Conditions

The traffic characteristics of the Project were developed by the Applicant's engineer using data obtained from the tenant and were derived using the following operational assumptions:

- 118 associates/managers on-site over the course of the day.
- 336 delivery service partner (DSP) and 38 flex drivers will be used for deliveries.
- 10 tractor semi-trailer combinations per day expected generally between 9 PM and 2 AM.
- DSP drivers (336) arrive in personal vehicles in four (4) staggered shifts between 7:30 and 10 AM, and are assigned an on-site delivery van which is pre-loaded within the facility. The delivery vans leave the facility in groups of 20 and return between 4:45 and 6:15 PM, with drivers then leaving in their personal vehicle.
- Flex drivers (38) will arrive on-site in their personal vehicle in five (5) staggered shifts at midday starting at 11:15 AM. The flex driver vehicles are loaded within the facility then depart for the day to make deliveries.

Based on the employment and operational characteristics of the tenant, the Applicant defined the peak-hour traffic characteristics of the Project as follows:



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**100 INDUSTRIAL PARK ROAD DELIVERY STATION
 TRIP-GENERATION SUMMARY^a**

| Time Period | Vehicle Trips | | | | |
|-----------------------------------|-------------------------|-----------|-----------|----------|-----------|
| | Associates/ Managers | DSP | Flex | Trucks | Total |
| <i>Weekday Morning Peak-Hour:</i> | | | | | |
| Entering | 43 | 42 | 0 | 2 | 87 |
| Exiting | <u>0</u> | <u>21</u> | <u>0</u> | <u>1</u> | <u>22</u> |
| Total | 43 | 63 | 0 | 3 | 109 |
| <i>Weekday Mid-Day Peak-Hour:</i> | | | | | |
| Entering | 0 | 42 | 18 | 0 | 60 |
| Exiting | <u>22</u> | <u>21</u> | <u>18</u> | <u>0</u> | <u>61</u> |
| Total | 22 | 63 | 36 | 0 | 121 |
| <i>Weekday Evening Peak-Hour:</i> | | | | | |
| Entering | 0 | 42 | 0 | 0 | 42 |
| Exiting | <u>10</u> | <u>42</u> | <u>0</u> | <u>0</u> | <u>52</u> |
| Total | 10 | 84 | 0 | 0 | 94 |

The trip-distribution pattern for the Project was developed based on a review of the population densities in the area and the location of the Project site in relation to the existing transportation infrastructure. Based on this approach, the Applicant’s engineer used the following trip assignment for the Project:

| Roadway | Direction To/From | Percent To/From |
|--------------|----------------------|--------------------|
| Route 3 | North | 20/30 |
| Route 3 | South | 30/20 |
| Derby Street | East | 10/10 |
| Derby Street | West | 40/40 |
| TOTAL: | | 100/100 |

Comment: A review of the land uses that are available in the Institute of Transportation Engineers (ITE) Trip Generation Manual³ indicates that data is not available for a use that is comparable to the Project. ITE Land Use Codes 140, Industrial Park, 150, Warehousing, and 155, High Cube Fulfillment Warehouse, were determined to be similar land uses. In accordance with the ITE trip-generation methodology, empirical trip data should be used if the ITE database does not include information for a comparable land use. We agree with the methodology that was used to develop the peak-hour trip estimates for the Project; however we cannot validate the resulting trip estimates.

³Trip Generation, 10th Edition; Institute of Transportation Engineers; Washington, DC; 2017.



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We independently derived an average weekday traffic volume for the project of 1,844 vehicle trips per day assuming the following:

- Associates/Managers (118): 118 x 2 trips/day = 236 vehicle trips*
- DSP (336): 336 x 4 trips/day = 1,344 vehicle trips*
- Flex Drivers (38): 38 x 2 trips/day = 76 vehicle trips*
- Tractor Trailers (10): 10 x 2 trips per day = 20 vehicle trips*
- Subtotal: 1,676 vehicle trips*
- Misc. Trips (i.e., visitors, UPS, FedEx, etc.): 10% x 1,676 ≈ 168 vehicle trips*
- TOTAL: 1,844 vehicle trips*

It is typical that approximately 10 percent of the daily traffic volume will occur during the peak hours, which would result in approximately 160 to 180 peak-hour trips and would better approximate the trips required to accommodate employees and the arrival and departure of DSP trips (336 DSP employees arriving and departing and 336 DSP vans departing and returning).

Comment T12: The Applicant's engineer should provide back-up data for the trip-generation calculations including a breakdown of vehicle arrival/departure volumes over the day to substantiate the peak-hour trip estimates.

The above being said, we recommend that a Traffic Monitoring Program be a condition of any approvals that may be granted for the Project in order to validate the trip estimates and to document any unmitigated impacts that may result from an underestimation of Project traffic.

The February 2020 Traffic Study states that the Project will consist of a package delivery station that is intended to serve a market area within 60-minutes of the Project site. Based on this description, we would expect a higher trip assignment to Derby Street to/from the east of the Project site for package deliveries. In addition, it is not clear why the trip assignments to Route 3 north and south are different for entering and exiting traffic. Further, it is likely that there would be three (3) different trip patterns for the Project: (1) employees; (2) deliveries; and (3) tractor semi-trailers.

Comment T13: The Applicant's engineer should review and revise the trip distribution pattern for the Project considering the following: Journey-to-Work data obtained from the U.S. Census for persons employed within the Town of Hingham; market area and travel routes for local deliveries and the origin of the tractor semi-trailer deliveries (likely to/from Route 3); the transportation system serving the project site; and existing traffic patterns. Separate trip patterns for each of the functional areas of the Project should be provided if appropriate.



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Traffic Operations Analysis

In order to assess the potential impact of the Project on the transportation infrastructure, a detailed traffic operations analysis was performed for the study intersections under 2020 Build (with the Project) conditions. In brief, traffic operations are described by six “levels of service” which are defined by letter grades from “A” through “F”, with a level-of-service (LOS) “A” representing the best operating conditions (average motorist delays of less than 10 seconds and little or no apparent vehicle queuing) and a LOS “F” representing constrained operating conditions (average motorist delays of 50 to 80 seconds or more and often with apparent vehicle queuing). A LOS of “E” is representative of an intersection or traffic movement that is operating at its design capacity, with a LOS of “D” typically representing the limit of acceptable traffic operations.

Based on this analysis, it was concluded that the study area intersections would operate at LOS B or better during the peak hours with the addition of Project-related traffic, with no individual movement operating below LOS D. All movements at the Project site driveway intersections with Industrial Park Road are expected to operate at LOS A with limited vehicle queuing (approximately one (1) vehicle).

Comment T14: The traffic operations analysis should be revised and expanded to reflect the comments herein and to include analyses of the following conditions in accordance with MassDOT guidelines: 2019 Existing, 2027 No-Build (without the Project), 2027 Build (with the Project) and 2027 Build with Mitigation (with the Project and any improvements that may be necessary to off-set the impact of the Project).

Comment T15: The peak-hour factors that are used in the analysis should be based on those reflected in the traffic counts and not a uniform value of 0.92 or 1.00 unless substantiated. Further, the existing peak-hour factors are likely to be lower than the default factors that were used, particularly at the Project site driveway intersections given the operation of the Project where both delivery and employee vehicle arrivals and departures will be concentrated and not dispersed over the peak hour. As an example, releasing 20 DSP vans from the facility simultaneously will lower the peak-hour factor resulting in increased delays and residual vehicle queuing that is not reflected in the current model.

Sight Distance

Sight distance measurements were not provided for the Project site driveway intersections or for the Industrial Park Road/Commerce Road intersection.

Comment T16: A sight distance assessment should be performed for the Project site driveways along both Industrial Park Road and Commerce Road and at the Industrial Park Road/Commerce Road intersection following the methodology defined by the American Association of State Highway and Transportation Officials (AASHTO)⁴ and using the measured 85th percentile vehicle travel speed along Industrial Park Road and Commerce Road or the posted speed limit, whichever is higher. Both the Stopping Sight

⁴A Policy on Geometric Design of Highway and Streets, 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2018.



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Distance (SSD) along Industrial Park Road and Commerce Road approaching the intersections and the Intersection Sight Distance (ISD) for a motorist exiting the minor (stop controlled) approach should be provided and compared to the AASHTO recommended values. To the extent that the sight lines do not meet the recommended minimum value, the Applicant should identify the corrective measures that will be undertaken and include the necessary modifications on the Site Plans.

Recommendations

No recommendations were offered as a part of the February 2020 Traffic Study.

Comment T17: In advance of receipt of the information that has been requested as a part of this review, we would suggest that the Applicant consider the following as a part of any subsequent submissions:

Safety:

(See Traffic Monitoring)

Traffic Operations:

Within 90-days after receipt of a Certificate of Occupancy for the Project and subject to receipt of all necessary rights permits and approvals, design and implement an optimal traffic signal timing and phasing plan for the Derby Street coordinated traffic signal system to include the following intersections:

- 1. Industrial Park Road*
- 2. Route 3 southbound ramps*
- 3. Route 3 northbound ramps*
- 4. Old Derby Street*
- 5. Derby Street Shoppes*
- 6. Cushing Street*

Transportation Demand Management:

Implement a comprehensive Transportation Demand Management (TDM) plan consisting of the following elements:

- Assign a transportation coordinator to coordinate the TDM program;*
- Post information regarding commuting options in a central location and/or otherwise make available to employees of the project;*
- Implement a rideshare matching program for employees facilitated by the transportation coordinator to encourage carpooling;*



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- *Provide a “welcome packet” to employees detailing available commuter options, the contact information for the transportation coordinator and information for employees to enroll in the rideshare program;*
- *Provide specific amenities to discourage off-site trips, including a break-room equipped with a microwave and refrigerator; offering direct deposit of paychecks; coordinating with a dry-cleaning service for on-site pick-up and delivery; allowing telecommuting or flexible work schedules; and other such measures to reduce overall traffic volumes and travel during peak traffic volume periods;*
- *Incorporate pedestrian accommodations within the Project site; and*
- *Provide secure bicycle parking at an appropriate location within the Project site.*

Traffic Monitoring:

Implement a traffic monitoring program that consisting of the following information:

- *Performing a 7-day, week-long automatic traffic recorder counts on the Project site driveways to include vehicle classification;*
- *Performing manual turning movement counts and vehicle classification counts at the Project site driveway intersections with Industrial Park Road and Commercial Road during the weekday morning (6:00 to 9:00 AM), weekday midday (11:00 AM to 1:00 PM) and weekday evening (4:00 to 6:00 PM) peak periods; and*
- *Obtaining motor vehicle crash data for the most recent one-year period from the Hingham Police Department for the Project site driveway intersections with Industrial Park Road and Commercial Road and at the following locations:*
 1. *Industrial Park Road/Commercial Road*
 2. *Derby Street/Industrial Park Road*
 3. *Derby Street/Route 3 Southbound Ramps*
 4. *Derby Street/Route 3 Northbound Ramps*
 5. *Derby Street/Old Derby Street*

The monitoring program should commence within 90 days of the issuance of a Certificate of Occupancy for the Project and be repeated within 1-year thereafter. The results of the traffic monitoring program shall be summarized in a report or technical memorandum provided to the Director of Community Planning and the Building Commissioner within one-month of the completion of the data collection effort and should include the following information and analyses:

- *Comparison of the measured traffic volumes (trucks and passenger vehicles) to the traffic volume projections for the Project as presented in the February 2020 Traffic Study and as may be subsequently modified;*



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- *An evaluation of motor vehicle crash rates at the monitored intersections; and*
- *Traffic operations analysis for the monitored intersections.*

To the extent that the measured traffic volumes for the Project exceed the projected traffic volumes by more than 10 percent (i.e., 110 percent of the projected traffic volumes) and/or the calculated motor vehicle crash rates exceed the MassDOT average crash rates for similar intersections, corrective actions to reduce the unmitigated impact of the Project should be proposed and implemented. The corrective actions should be documented in the traffic monitoring report and undertaken by the Applicant subject to receipt of all necessary rights permits and approvals.

SITE PLANS

The following comments are offered with respect to our review of the *Land Development Plans* prepared by BL Companies, and dated March 6, 2020, no revisions (hereafter referred to as the “Site Plans”).

- S1:** *A truck turning analysis should be performed using the AutoTurn® software package for the following design vehicles: Hingham Fire Department design vehicle, a single-unit truck (SU-30 design vehicle) and a large tractor semi-trailer combination (WB-67 design vehicle); and should include the Industrial Park Road/Commercial Road intersection. The turning analysis should demonstrate that the design vehicles can access the appropriate areas within the Project site and circulate in an unimpeded manner without intrusion into parking spaces. The fire truck turning analysis should confirm that all elements of the design vehicle are retained within the traveled-way and do not overhang the curbline or cross into parking spaces.*
- S2:** *“One-Way” and “Do Not Enter” signs and supplemental pavement markings should be provided for all one-way drives and aisles within the Project site, including at the Project site driveway intersection with Industrial Park Road;*
- S3:** *Vehicles exiting the Project site should be placed under STOP-sign control with a marked STOP-line provided. In addition, a STOP-sign and marked STOP-line should be provided on the Commercial Road approach to Industrial Park Road.*
- S4:** *A note should be added stating: “All Signs and pavement markings to be installed within the Project site shall conform to the applicable specifications of the Manual on Uniform Traffic Control Devices (MUTCD).”⁵*
- S5:** *The sight triangle areas for the Project site driveway intersections should be shown on the Site Plans along with a note to indicate: “Signs, landscaping and other features located within sight triangle areas shall be designed, installed and maintained so as not to exceed*

⁵Manual on Uniform Traffic Control Devices (MUTCD); Federal Highway Administration; Washington, DC; 2009.



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2.5-feet in height. Snow windrows located within sight triangle areas that exceed 3.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed.”

- S6:** *Sidewalks and crosswalks should be provided that link the parking lots to the proposed building. The pedestrian path should be direct and minimize the number of crossings that are required. All pedestrian crossings should include crosswalks with Americans with Disabilities Act (ADA) compliant wheelchair ramps.*
- S7:** *Secure, weather protected bicycle parking should be provided for employees and shown on the Site Plans.*
- S8:** *Consider the use of speed humps (elongated speed bumps) vs. speed bumps within the Project site as speed bumps have the potential to create inherent operational and safety impacts and may not be allowed by the Hingham Fire Department due to the impact on emergency vehicles and response times.*

PARKING

On-site parking will be provided as follows:

- 130 “automobile spaces” (9 feet wide and 20 feet long)
- 328 “van spaces” (11 feet wide and 27 feet long)
- 7 loading dock spaces.

The Applicant has indicated that waivers are required from the Hingham Zoning By-Law for the amount of parking provided, the parking space dimensions and the travel aisle width.

Section V-A, *Off-Street Parking Requirements*, of the Town of Hingham Zoning By-Law requires that 1 parking space per 1,000 sf be provided for “Warehousing & Wholesaling”, which would result in 149 parking spaces being required for the Project, far less than the 458 parking spaces that are proposed. Given the operational description that has been provided by the Applicant, it is clear that parking in excess of that required by the Zoning Bay-Law is necessary for the Project.

Comment P1: *The Applicant should provide a breakdown of the parking demands with the Project site by functional use (i.e., associates/managers, visitors, DSP vans and drivers, etc.) in order to demonstrate that the number of parking spaces that are proposed is sufficient to meet the predicted parking demands. By way of example, if there are 118 employees on-site and 336 DSP drivers arrive, 454 parking spaces would be used.*

The aisle width behind the perpendicular (90 degree) parking spaces is 24 feet where the “automobile spaces” are to be provided and 30 feet where the “van spaces” are proposed. The 30 foot aisle width that is proposed for the “van spaces” exceeds the aisle width for 90 degree parking that is specified in the Zoning By-Law (24 feet is required). In addition, the parking space dimensions (9 feet wide and 20 feet long for “automobile spaces” and 11 feet wide and 27 feet long for “van spaces”) also exceed the parking



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space dimensions that are specified in the Zoning By-Law (9 feet wide by 18 feet (with overhang) or 20 feet (without overhang)).

Comment P2: *We support the requested waiver from the dimensional requirements of Section V-A, Off-Street Parking Requirements, of the Town of Hingham Zoning By-Law as they relate to Aisle Width and Standard Parking Spaces as the dimensions that are proposed for the “van spaces” exceed the requirements of the Zoning By-Law and are required to accommodate the turning and maneuvering requirements of the “van” design vehicle.*

