

MEMORANDUM

Date: November 9, 2022

To: Freetown Planning Board
3 North Main Street
Assonet, MA 02702

From: Jane R. Davis, P.E.
Steve Shekari

CC: Adam Kran, P.E.

Subject: 31 Innovation Way Traffic Peer Review: Review of Response to Comments (RTC)

Environmental Partners (EP) has reviewed the responses prepared by TEC, Inc. (TEC) to the traffic comments/questions raised in the Peer Review Letter 1 (dated September 28, 2022) regarding the proposed industrial warehouse development (“the Project”) located at 31 Innovation Way. The property associated with this project is located in both the City of Fall River and the Town of Freetown (“the Town”); however, our review was limited to the project’s impacts to the Town of Freetown. EP has provided a response (“EP Response 11/09/2022”) to each of the original EP comments (“EP Comment 09/28/2022”) and subsequent TEC responses (“TEC Response 10/13/2022”) as outlined below.

Rules and Regulations of the Planning Board as Site Plan Review Authority (Section II, parts B & C)

Comment 6

EP Comment 09/28/2022:

Section II. C. 2. – Sidewalks should be separated from the roadway edge by a vegetated border area of at least 5 feet to increase pedestrian safety. The current proposed sidewalk along Innovation Way is directly adjacent to the roadway, without a vegetated border area. See Capacity and Queue Analysis Comment 19 below under “Traffic Comments” for a recommendation to replace the proposed sidewalk with a shared-use path to accommodate both pedestrians and bicycles.

TEC Response 10/13/2022:

Within the Town of Freetown, Innovation Way lies under the exclusive jurisdiction of the Massachusetts Department of Transportation (MassDOT). The Applicant has already received comments back from MassDOT’s District 5 office on the Applicant’s detailed plan submittal. The Applicant has introduced a 5-

foot vegetated buffer between the curb line and the sidewalk as recommended. MassDOT did not request a shared use path layout. The scope of the planned sidewalk improvements are consistent with what MassDOT and the Town of Freetown recently approved for the Neon Marketplace project across Innovation Way.

EP Response 11/09/2022:

EP acknowledges that Innovation Way is under MassDOT jurisdiction within the Town of Freetown, and that the 5-foot vegetated border has already been sent to MassDOT for review and has received no additional comments. No further action; **Comment 6 closed.**

Town of Freetown General and Zoning By-Laws (Article 11)

Comment 2

EP Comment 09/28/2022:

Article 11.23 H. Circulation – Site plans should provide clearly marked, safe circulation patterns for both vehicles and pedestrians. Sheet C-11.2 shows the WB-67 semi truck extending into the opposite side of the double yellow line in the right-of-way in order to turn left into the site. The Applicant should consider increasing the curb radii such that the truck is not required to cross the double yellow line on Innovation Way to enter the site properly.

TEC Response 10/13/2022:

The site designer, MBL, has adjusted the corner curb radii and the truck turning exhibits to meet MassDOT's design criteria as found in their Project Development and Design Guide, Exhibit 6-15. These will be provided within MBL's next site plan submission.

EP Response 11/09/2022:

EP will review the truck-turning movements on the updated site plan once available.

Traffic Impact Assessment (TIA) Comments

Existing Conditions

Comment 1

EP Comment 09/28/2022:

The TIA indicated the posted speed limit along Innovation Way is 30-miles per hour (mph). The closest posted speed limit to the Site that EP verified is 35-mph, which is indicated by a pair of speed limit signs on both northbound and southbound directions approximately 2,200-feet north of Airport Road within Fall River.

TEC Response 10/13/2022:

There is currently no Special Speed Regulation on file with MassDOT for Innovation Way. TEC's data collection vendor documented the 85th percentile speeds along Innovation Way as 40 mph (southbound) and 44 mph (northbound) in the vicinity of the project site. TEC does not propose any changes in the speed limit and will work with MBL to verify the placement of on-site infrastructure outside the minimum safe sight line triangle of 360 feet (minimum based on stopping sight distance) exiting the proposed

driveway, which is based on the AASHTO criteria for 45 mph and up to (or beyond) the optimal intersection sight distance criteria of 500 feet.

EP Response 11/09/2022:

No further action; **Comment 1 closed.**

[Comment 2](#)

EP Comment 09/28/2022:

The TIA described the Innovation Way westbound approach to South Main Street as having two left-turn lanes and one right-turn lane. We note that the lane configuration on this approach includes one left-turn lane and two right-turn lanes.

TEC Response 10/13/2022:

TEC acknowledges the discrepancy in the text for the approach geometry of Innovation Way at South Main Street. However, the capacity analyses provided in the TIA and associated comment responses did note and utilize the correct geometry.

EP Response 11/09/2022:

No further action; **Comment 2 closed.**

[Comment 3](#)

EP Comment 09/28/2022:

In Table 1 of the TIA (Existing Weekday Traffic Volume Summary), traffic volumes for the weekday daily, weekday morning peak hour, and weekday evening peak hour appear to be inconsistent with the collected counts and the methodology described for volume adjustments. Backups should be provided verification.

TEC Response 10/13/2022:

The traffic volumes data for Innovation Way has been updated utilizing the revised COVID-19 factor as noted blow in Comment #4. The information provided in the table is based on the Average Daily Traffic (ADT) for the Wednesday Automatic Traffic Recorder (ATR). Note that the COVID factor is different for the typical day versus the peak hours (6.9% Daily, 12.2% AM Peak, and 14.1% PM Peak).

[See RTC memorandum for Table 1 Revised.]

EP Response 11/09/2022:

EP noted discrepancies in Table 1 Revised for the weekday evening peak hour traffic volume. However, the discrepancy is not expected to impact the findings of the study; **Comment 3 closed.**

[Comment 4](#)

EP Comment 09/28/2022:

The methodology described in the TIA for obtaining COVID-19 traffic volume adjustments is inconsistent with the backups in the attachments, in that the TIA indicated that the traffic volume from 2019 used for comparison was grown by 0.5 percent per year from 2019 to 2022, whereas the backups use the 2019 volume with no annual growth to 2022. However, since the backups use the

typical methodology recommended by MassDOT, EP takes no exception to the methodology used to calculate the COVID-19 adjustment factor. We note, however, the adjustment factor is an average for the daily volume, and the peak hour adjustment factors can vary drastically. EP recommends verifying that the 8.7 percent COVID adjustment is adequate for each of the weekday morning and evening peak hours.

TEC Response 10/13/2022:

The COVID traffic adjustment factor was updated to reflect the peak hour influence. Although the peak hour factors are slightly higher, there were no measurable changes in the overall traffic volumes as a result of the COVID adjustment factor. The updated COVID adjustment factors are provided within Attachment A.

EP Response 11/09/2022:

Information provided; **Comment 4 closed.**

Safety Analysis

Comment 5

EP Comment 09/28/2022:

TEC reviewed crash data provided by MassDOT at the study intersections between January 1, 2017 and May 31, 2022. EP notes that crash data from the MassDOT database is closed only through year 2019 and any crash data provided after is subject to change. As such, evaluating full datasets up to and including 2019 is the recommended methodology. Our independent research for the five-year period of 2015 through 2019 found different results than is reported in the TIA through 2022, which in part may be associated with the changes in traffic volumes in the area due to new developments in the recent years, in particular with the construction of Amazon Fulfillment Center. For an accurate safety analysis, we recommend reviewing local police data for the most recent closed years, if available.

TEC Response 10/13/2022:

TEC reviewed the 2015-2019 crash data from MassDOT's crash portal. Of the 11 reported crashes, there were no identifiable trends that would warrant a detailed assessment. MassDOT, who owns the roadway, has not requested any supplemental analysis. The MassDOT crash data is provided within Attachment B.

EP Response 11/09/2022:

Information provided; **Comment 5 closed.**

Comment 6

EP Comment 09/28/2022:

The crash information listed in Table 2 of the TIA (Intersection Crash History Summary) is inconsistent with backups provided in the attachments.

TEC Response 10/13/2022:

See response above.

EP Response 11/09/2022:

Information provided; **Comment 6 closed.**

[Comment 7](#)**EP Comment 09/28/2022:**

TEC did not calculate crash rates at the study intersections, which are typically used to measure the safety of an intersection based on crash frequency and vehicle exposure, and to compare to MassDOT Statewide and District averages. We recommend calculating crash rates to determine if any safety mitigation needs to be considered at any of the study intersections.

TEC Response 10/13/2022:

TEC calculated the crash rate for the unsignalized intersection of Innovation Way at Amazon's northerly driveway in the Town of Freetown. There are only three documented crashes at this unsignalized intersection between 2017 (opening year for the facility) and 2019. The other crashes are distributed throughout the remainder of the 0.6-mile section of Innovation Way within the Town and some appear related to the Rt. 24/79 ramp junction with the on-ramp from Innovation Way eastbound. There are no identifiable crash trends that appear to warrant a more extensive review of police department records as the crash rate is slightly higher, but similar to other unsignalized intersections in the region and there is such a limited number of crashes. See Attachment B for the MassDOT crash rate form.

EP Response 11/09/2022:

EP notes that the calculated crash rate at the unsignalized intersection of Innovation Way and Northern Amazon Driveway is above the Statewide and District 5 averages. However, given the low total number of crashes at this location and the likelihood that they are attributed to the vehicle operations to/from Amazon, we understand the crash history may not be indicative of a particular safety deficiency at this location. EP also independently calculated the crash rate at the signalized intersection of Innovation Way and South Main Street and found the crash rate at this location to be below the Statewide and District 5 averages. **Comment 7 closed.**

[Comment 8](#)**EP Comment 09/28/2022:**

The TIA stated the Applicant is committed to provide adequate sight distances to satisfy the American Association of State Highway and Transportation Officials (AASHTO) requirements for a speed of 40-mph. Consistent with standard methodology, EP recommends using the 85th percentile speed to calculate the required sight distance. Based on the collected speed data, the 85th percentile speed along Innovation Way was approximately 40 mph and 45 mph on the southbound and northbound directions, respectively.

TEC Response 10/13/2022:

TEC's data collection vendor documented the speeds along Innovation Way as 40 mph southbound and 44 mph northbound in the vicinity of the project site. The site designer, MBL, will be including the sight lines on the site plan in the next submittal. TEC verified that the Freetown driveway can accommodate sight line triangles of 500 feet in each direction exiting the proposed driveway, which is based on the AASHTO intersection sight distance criteria for 45 mph. The vantage point for the driveway movement is within the

State's right-of-way. The Applicant does not propose plantings or other sight distance obstructions in this area.

EP Response 11/09/2022:

EP will review the sight lines on the updated site plan once available.

Comment 9

EP Comment 09/28/2022:

We request that the Applicant provide sight triangles for the proposed driveways on the Site plans to indicate areas where all objects and vegetation should be removed and/or maintained below a height of 2.5 feet.

TEC Response 10/13/2022:

The site designer, MBL, will provide the corresponding sight lines on the updated site plan drawings as requested. The Building 3 employee driveway location, which is on the outside of a horizontal curve will have sight lines in excess of 500 feet in both directions.

EP Response 11/09/2022:

EP will review the sight lines on the updated site plan once available.

Future Conditions

Comment 10

EP Comment 09/28/2022:

The TIA states that TEC coordinated with the City of Fall River and the Town of Freetown and incorporated other planned developments into the no-build conditions. While we agree with this methodology, we identified several inconsistencies and request further clarification or revision as follows:

- The TIA indicated there were several private and public development projects anticipated in the area, however only one nearby development was included.
- The TIA described a development at 30-36 Innovation Way. Based on the description and the information provided in the attachments, it appears this is the Neon Marketplace development at 38 Innovation Way.
- The TIA stated that TEC estimated the trips associated with the Neon Marketplace development using Institute of Transportation Engineers (ITE) Trip Generation 11th Edition, and distributed the trips along the roadway network based on existing traffic patterns; however, no backups have been provided for review. Regardless, it appears BETA provided a traffic study for the Neon Marketplace development. EP typically recommends using the trip generation and distribution from provided traffic studies for consistency.
- It is our understanding that there have been modifications (May 2021) to the Neon Marketplace development that have changed the trip generation since the iteration of the traffic study that was included in the attachments (October 2020). We recommend that TEC coordinate with the Town to verify the most recent iteration is included.

TEC Response 10/13/2022:

TEC has revised the traffic volumes for both the No-Build and Build conditions to reflect the above comment. Note that only one (1) specific development by others was noted to be in the general vicinity of the project that was expected to contribute noticeable traffic volume to the study area intersections. The development is the Neon Marketplace directly opposing the subject project. TEC had previously utilized the BETA traffic study as noted to project area traffic volumes; however, TEC has corrected discrepancies between the BETA study and TIA. TEC also notes that BETA Group has confirmed that the October 2020 TIA for the Neon Marketplace is the active version of the TIA and that no changes were made to the project regarding traffic for submittals completed in May 2021.

EP Response 11/09/2022:

Clarification provided; **Comment 10 closed.**

[Comments 11](#)**EP Comment 09/28/2022:**

From Figure 4 of the TIA, we noted several inconsistencies in the trip generation and distribution. When comparing the volumes at the four intersections through which all vehicles entering and exiting the project area must travel (Innovation Way at: (1) South Main Street, (2) Route 24 Southbound Ramps, (3) Route 24 Northbound Ramps, and (4) the southernmost intersection in Fall River at the Building 1 truck driveway) to the volumes established by using the percentages outlined in the trip distribution table and the entering and exiting volumes from the trip generation table, we note differences ranging from 6 to 13 vehicles. Further, by comparing the volumes established by using the percentages outlined in the trip distribution table and the entering and exiting volumes from the trip generation table, with the volumes established by summing the total number of entering and exiting trips from each driveway, we found discrepancies for all volumes, the greatest for the exiting volumes for the evening peak period, which shows a difference of 81 vehicle trips. These discrepancies using the different methodologies should be rectified and the volumes traveling through all intersections should be updated accordingly.

TEC Response 10/13/2022:

TEC has reviewed the trip generation and distribution characteristics at each of the study area intersections and revised based on the comment above. A copy of the traffic volume progression worksheet, which includes the trip generation and distribution, has been attached to simply the review. For the simplification of the peer review, only locations in Freetown are included. Note that only passenger vehicle trips for Building 4 access/egress from the site driveway within Freetown, all other site trip, whether truck or passenger vehicles, travel through NB / SB crossing the Town Line into Fall River. A copy of the modified trip generation table utilized for these projections is provided within Attachment C.

EP Response 11/09/2022:

No further action; **Comments 11.**

Comment 12

EP Comment 09/28/2022:

The traffic volumes in Figures 3 and 4 of the TIA (2029 No-Build and Build Conditions Peak Hour Traffic Volumes, respectively) at the intersection of Innovation Way and Amazon North Driveway on the southbound approach appear to be inconsistent with the collected counts and methodology set forth in the TIA.

TEC Response 10/13/2022:

The volume discrepancy appears to have been related to the specific development by other trips. The volumes have been corrected in the attached analysis and do not result in any measurable changes in intersection capacity or delays. TEC's updated and detailed traffic data worksheet, which includes the detailed distribution percentages for the morning and evening peak hours, is provided within Attachment D.

EP Response 11/09/2022:

No further action; **Comment 12 closed.**

Capacity and Queue Analysis

Comment 13

EP Comment 09/28/2022:

Peak hour factors (PHFs) appear to remain unchanged from the default value of 0.92 in the Synchro analysis. We recommend updating PHFs based on the collected counts for each approach for a more accurate analysis.

TEC Response 10/13/2022:

The peak hour factors have been updated in the attached analysis for the existing conditions and do not result in any measurable changes in intersection capacity or delays. Based on the additional trips from other developments and background growth, as well as the site's trip generation additions, the PHF has been updated to 0.92 for all non-driveway in/out movements in both the No-Build and Build to provide a comparative analysis as is typical for locations that are expected to experience a noticeable increase in traffic in the future year condition. The updated capacity analyses are provided within Attachment E.

EP Response 11/09/2022:

No further action; **Comment 13 closed.**

Comment 14

EP Comment 09/28/2022:

Heavy vehicle percentages should be updated on the Synchro analysis based on the collected counts and be provided in the reports for verification.

TEC Response 10/13/2022:

The heavy vehicle percentages have been updated in the attached analysis for the existing conditions and do not result in any measurable changes in intersection capacity or delays. Based on the additional trips from other developments and background growth, as well as the site's trip generation additions, the HV%

has been updated to account for truck growth and truck trip generation; therefore, the HV% for the existing, no-build, and build conditions for each movement may be different. The updated capacity analyses are provided within Attachment E.

EP Response 11/09/2022:

No further action; **Comment 14 closed.**

[Comment 15](#)

EP Comment 09/28/2022:

The Synchro reports show inconsistent signal timings between Existing, No-Build, and Build conditions. For a fair comparison of the three analyses in evaluating the impacts of the proposed Site, signal timings should be maintained for consistency throughout the three scenarios. If any mitigation is warranted based on impacts of the proposed Site, the mitigated scenario should be provided separately.

TEC Response 10/13/2022:

The signal timings were adjusted to be consistent between analysis scenarios. There is significant reserve capacity at the three signalized intersections, which all lie under the jurisdiction of MassDOT or Fall River. Innovation Way and the Route 24 interchange were designed with higher projected future-year traffic volumes when compared to what is constructed or currently proposed. The redevelopment area was originally anticipated to accommodate significant volumes of peak-hour office users, which is no longer proposed. No capacity-related mitigation is necessary or appropriate for these MassDOT-controlled intersections. The updated capacity analyses are provided within Attachment E.

EP Response 11/09/2022:

No further action; **Comment 15 closed.**

[Comment 16](#)

EP Comment 09/28/2022:

If the signalized intersections include an exclusive pedestrian phase, this phase should be incorporated in the signal timings and accounted for in the analysis.

TEC Response 10/13/2022:

An exclusive pedestrian phase is only present at the intersection of Innovation Way at South Main Street. TEC has not witnessed any measurable pedestrian traffic at the Route 24 interchange. The use of the pedestrian phase is not expected to result in an accurate model for the intersection capacity and would not noticeably affect the signal operations or the resultant queuing based on any infrequent pedestrian phase activation. This is consistent with Synchro methodology for locations with minimum pedestrian traffic.

EP Response 11/09/2022:

No further action; **Comment 16 closed.**

Comment 17

EP Comment 09/28/2022:

Several inconsistencies were found within Table 8 of the TIA (Capacity and Queue Analysis Summary) in comparison with Synchro reports. These include the following:

- The summary table should compare consistent reporting methodologies for each type of intersection (signalized vs. unsignalized) under all scenarios (i.e Synchro reporting or HCM reporting, including same version of HCM (6th vs. 2010)). It appears, at a minimum, the intersection of Innovation Way and South Main Street was summarized using different reports.
- The unsignalized Synchro reports for the Build condition evening peak hours have not been included in the Attachments and therefore have not been verified with the summary table in the TIA.
- Multiple inconsistencies were noted in the level-of-service (LOS) letter designations and queues in Table 8.

TEC Response 10/13/2022:

The table has been updated to reflect the revised analysis results and is included in Attachment E. Because the intersection of Innovation Way at South Main Street has non-standard NEMA phasing and is constructed with a custom lane configuration (southbound approach) the signal is analyzed using HCM 2000 methodology. For consistency, all signals in the study area have been analyzed under this methodology. All unsignalized intersections in the study area have been evaluated using HCM 6th Edition methodology. Overall, there are no significant changes to the intersection delays.

EP Response 11/09/2022:

No further action; **Comment 17 closed.**

Comment 18

EP Comment 09/28/2022:

As summarized by TEC, based on the provided analysis, it appears the traffic operations are acceptable at the intersections located within Freetown, with the exception of the Gas Station driveway. However, based on the inconsistencies outlined herein, EP cannot corroborate the findings at this time.

TEC Response 10/13/2022:

Upon review of the above comments, all locations within the Town of Freetown are not expected to experience any measurable increase in traffic impact. Innovation Way was constructed by MassDOT with considerably higher traffic volumes projected for formerly proposed office-related uses and addition reserve capacity is available for other future development. The unsignalized driveway operations in the area will remain under capacity despite the introduction of new 'through' traffic from the subject project. MassDOT has not requested any further evaluation of the private driveways are part of the Applicant's application for an access permit.

EP Response 11/09/2022:

The revised analysis shows some degradation in LOS between the 2029 No-Build and 2029 Build conditions, with some movements expected to operate at an unacceptable LOS E with a noteworthy increase in delay. EP notes, however, that the movements with poor operations are located along the Amazon and Gas Station driveways, and the movements along Innovation Way and at the other intersections are expected to operate at an acceptable LOS D or better. While EP concurs that operations are anticipated to remain below capacity, we recommend considering minor improvements, such as signal timing adjustments where applicable, to mitigate the impacts of the proposed site.

[Comment 19](#)**EP Comment 09/28/2022:**

The TIA stated the Applicant commits to providing on-site bicycle racks or storage area for employees. While EP takes no exception to this provision, we note that bicycle use to/from the Site and within the Site can be encouraged with the presence of safe and comfortable bicycle accommodations in the vicinity of the Site. Since the Applicant is providing sidewalk along Innovation Way, EP recommends considering replacing the proposed sidewalk with a shared-use path to accommodate both pedestrians and bicycles, which would be a relatively minimal increase in cost for an improvement with significant benefits.

TEC Response 10/13/2022:

Innovation Way lies under the exclusive jurisdiction of the Massachusetts Department of Transportation (MassDOT) within the Town of Freetown. The Applicant has already received comments back from MassDOT's District 5 office. MassDOT did not request shared use path infrastructure for Innovation Way. Additionally, the scope of the planned sidewalk improvements are consistent with what MassDOT and the Town of Freetown recently approved for the Neon Marketplace project across Innovation Way

EP Response 11/09/2022:

EP acknowledges that Innovation Way is under MassDOT jurisdiction within the Town of Freetown, and that MassDOT did not request additional bicycle infrastructure. No further action; **Comment 19 closed.**

[Site Plan](#)

EP understands the updated site plan is still in preparation at the time of this memorandum, and TEC has not provided responses to EP's comments/questions raised in the Peer Review Letter 1 (Comments 20-25). In addition, the plans provided by MBL Land Development and Permitting Corp. for the October 25, 2022 hearing do not include sight lines. We remain available for further review once the fully updated site plan is available or for further discussion on any of the items outlined herein. We anticipate reviewing open Site/Civil comments and Site Plan comments in the next round of stormwater and site/civil peer review.