MEMORANDUM

DATE: September 27, 2021

TO: Dawn Bellante Holland, and Ellaine Miller - Tisbury Planning Board
Town of Tisbury
P.O. Box 602
Town Hall Annex
Vineyard Haven, Massachusetts 02568

FROM: Kurt A. Fraser P.E. President Fraser Polyengineering Services (FPES)
       Maaza Mekuria PHD, P.E. PTOE – Senior Transportation Engineer FPES

SUBJECT: 65 Mechanics Street – Traffic Analysis (Fuss and O’Neill)

INTRODUCTION

Fraser Polyengineering Services (FPES) has been contracted by the Town of Tisbury to conduct a peer review of a Traffic Analysis study prepared by Fuss & O’Neill. The Traffic Analysis study was completed on behalf of Main Street Medicinal to analyze the potential impact to the existing traffic network of an adult use cannabis facility. As currently proposed, the project is to consist of a 5,500 square foot building. Main Street Medicinal, LLC intends to add 600 square feet to an existing 4,900 square foot building. The site will have a total of 23 parking spaces.

The proposed facility will be located along State Road at 65 Mechanics Street in Vineyard Haven (Tisbury), Massachusetts (See Figure #1). The proponent intends to study the feasibility of constructing an egress only driveway that will connect the south side of the site to Eleanor Street. This proposal would allow all vehicular traffic to exit the site via this driveway.
As part of our review the following applicable documents were reviewed:

- Traffic Impact and Parking Needs Memorandum. Andrew McClurg, AICP, CTP dated September 18, 2019
- Traffic Impact Assessment: Addendum. Andrew McClurg, AICP, CTP dated February 1, 2021
- Project Plans – Provided by Vineyard Land Surveying and Engineering. Dated December 8, 2020

This traffic impact peer review was conducted in accordance with the Massachusetts Department of Transportation (MassDOT) guidelines and accepted traffic engineering practices.
FIELD RECONNAISSANCE

FPES conducted a site visit on Wednesday, September 22, 2021, to observe existing geometric conditions, and to conduct an intersection sight distance analysis of the site entrance at Mechanic Street, and the proposed egress driveway that would connect the south side of the site to Eleanor Street.

The posted speed limit on State Road is 30 mph. There were no speed limit signs on Mechanics Street or Eleanor Road. The 85th percentile speed, or speed at which 85% of vehicles are traveling at or below\(^1\) was determined to be 25 mph on State Road, and 13 mph on Mechanic Street. The 85th percentile speed is often used to characterize the operating speeds on a roadway\(^2\). The 85th percentile speed data was provided by Automatic Traffic Recorder (ATR) done by consultants of Fuss & O’Neill.

INTERSECTION SIGHT DISTANCE

Intersection Sight Distance (ISD) is a measure of safety provided at intersections to allow drivers to perceive the presence of potentially conflicting vehicles, and provide them with sufficient time to stop, or adjust speed as appropriate to avoid colliding in the intersection\(^3\).

During the field reconnaissance, FPES conducted an independent assessment of the intersection sight distance at Mechanic Street and found that the sight distance for vehicles turning right was greater than 300 feet, and the sight distance for vehicles turning left was greater than 400 feet. Therefore, ISD is satisfied for federal (FHWA) and MassDOT safety standards.

FPES also looked at the Intersection Sight Distance for the potential egress that would connect Mechanics Street to Eleanor Street. Eleanor Street forms a “T” intersection with Olga Road where the Tisbury Department of Public Works facility is located. We assumed that the location of the egress driveway would be along the fence line that separated the 65 Mechanic Street site from the 336 State Road site. In the field we measured that the distance between the proposed egress driveway and the intersection of Olga Road and Eleanor Street was 32’. This limited distance could produce conflict points between vehicles exiting the egress driveway and those vehicles making a right turn from Olga Road unto Eleanor Street.

TRAFFIC STUDY AREA

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1 Mass Highway Design Guide 2006 Section 3.6.3

2 Mass Highway Design Guide 2006 Section 3.6.3

3 Mass Highway Design Guide 2006 Section 3.7.4
The study area was identified to include a total of five intersections. However, the study is missing several key midblock intersections including Kate’s Way Plaza and associated traffic counts. The specific traffic study location and Synchro Network model used for the analysis and review is shown in Figure 2.

![Figure 2 – Synchro Network Model](image)

**ADEQUACY OF TRAFFIC ANALYSIS INFORMATION PROVIDED**

FPES has determined that in general the traffic analysis conducted by Fuss and O’Neill follow standard traffic engineering guidelines for traffic impact assessments. A transportation demand management plan was offered by the proponent to reduce the number of single occupancy vehicle trips to and from the proposed cannabis dispensary. While this plan is helpful, the proponent does not offer any specific mitigation measures. Such measures may include adding turn lanes at almost all the intersection including Mechanics St at State Road intersections for left turners. Traffic calming efforts may also be needed to accommodate pedestrians, and bicyclist that were part of Travel Demand Management (TDM) scheme proposed by the project proponent. While not popular, signalization maybe needed to accommodate the conflicting movements in a safe and orderly fashion. Signalization may also help relieve users from taking risky maneuvers and may provide gaps in the traffic stream.
Some of the other issues noted in the proponent’s study are as follows:

- State Road is mistakenly labeled as State Street on page 2 multiple times and going back and forth between two names makes for a misreading of the roadway network.

- Several of the street networks that are dog-legged intersections are modeled as simple intersections, making the analysis unrealistic. Intersections such as High Point Lane / State Road/ Plaza (Pine Village Shopping) Drive; Pine Tree Road / Cook Road; Mechanics St. / Little House Cafe Drive are not regular four-legged intersections, and the simplification makes the results unrealistic as these intersections act independent of each other in terms of driveway geometry and operational characteristics and conflict patterns.

- Mid-Block intersections and associated counts at locations such as Kates Way Plaza were not included in the study. The traffic volume between High Point Lane and Mechanics Street shows significant increase (>15%) in weekday traffic volume showing significant activity that happens in that section. This renders the analysis to be unrealistic.

- The Trip Distribution assumes 50-50 split and yet Census Population count on the eastern side of (12,261) Mechanics Street is three times the count from the Western portion (4199). The 75-25 split would appear more appropriate unless other considerations are present to justify the current directional distribution.

ADEQUACY OF VEHICLE TRIP GENERATION/DISTRIBUTION ASSUMPTIONS

The assumption that a 50-50 split of traffic movement to and from the project site is not plausible. This can be seen from 2010 census data which shows inconsistency of the methodology used to distribute the generated traffic. To further stress these points, Figure 3 below shows a census block population map of Martha’s Vineyard Streets, and Figure 4 shows an estimate of the population contribution to various trips throughout the island. A 75-25 split is more appropriate according to the demographic data and routing plan.
Crash Analysis

Crash data was provided in the August 27, 2021, traffic analysis technical memorandum by Fuss and O’Neill. FPES reviewed Table A-1 (Accident Data Summary 2016 to 2020), and concur that there are no high accident locations in the immediate study area.
Traffic Operational Analysis

The concept of Level of Service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. Six levels of service are defined for each type of facility. They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F representing the worst. Table #1 shows the Level of service criteria for unsignalized, and signalized intersections.

<table>
<thead>
<tr>
<th>Level-of-Service</th>
<th>Average Delay (seconds per vehicle)</th>
<th>Traffic Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unsignalized</td>
<td>Signalized</td>
</tr>
<tr>
<td>A</td>
<td>( \leq 10 )</td>
<td>( \leq 10 )</td>
</tr>
<tr>
<td>B</td>
<td>( &gt; 10 ) to 15</td>
<td>( &gt; 10 ) to 20</td>
</tr>
<tr>
<td>C</td>
<td>( &gt; 15 ) to 25</td>
<td>( &gt; 20 ) to 35</td>
</tr>
<tr>
<td>D</td>
<td>( &gt; 25 ) to 35</td>
<td>( &gt; 35 ) to 55</td>
</tr>
<tr>
<td>E</td>
<td>( &gt; 35 ) to 50</td>
<td>( &gt; 55 ) to 80</td>
</tr>
<tr>
<td>F</td>
<td>( &gt; 50 )</td>
<td>( &gt; 80 )</td>
</tr>
</tbody>
</table>

Table #1 – Level of Service Criteria for Intersections

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4 Highway Capacity Manual 2000, TRB, National Research Council; Transportation Research Board; Washington, DC; 2000
CONCLUSION

The project does adversely affect all the intersections in the vicinity of the project area. These challenges cannot be addressed without expanding right of way and including other extensive travel demand measures such as providing additional storage capacity in the form of two-way turn lanes and related safety measures. Table 2 below shows the results of the Synchro Analysis for the alternatives starting from Base Year Results to 2028 build scenarios for the selected peak hours.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Base Year Weekend Midday</th>
<th>No-Build Weekend Midday</th>
<th>Build 2028 Saturday Midday</th>
<th>Base Year Weekday PM Peak</th>
<th>No-Build Weekday PM Peak</th>
<th>Build 2028 Weekday PM Peak</th>
</tr>
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<tbody>
<tr>
<td>High Point Lane</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>C</td>
<td>D</td>
<td>D</td>
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<tr>
<td>Colonial Drive</td>
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<td>F</td>
<td>F</td>
<td>E</td>
<td>F</td>
<td>F</td>
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<td>Mechanics St</td>
<td>B</td>
<td>E</td>
<td>F</td>
<td>C</td>
<td>E</td>
<td>F</td>
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<tr>
<td>Evelyn Way</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>C</td>
<td>F</td>
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<tr>
<td>Pine Tree Road</td>
<td>D</td>
<td>F</td>
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<td>D</td>
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<td>F</td>
</tr>
<tr>
<td>State Road</td>
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<td>F</td>
<td>D</td>
<td>F</td>
<td>F</td>
</tr>
</tbody>
</table>

Table #2 - Synchro Analysis Base Year Results