

**TRAFFIC REVIEW MEMORANDUM**

To: Mr. John Kieley  
Chair, Temple Zoning Board of Adjustment

Date: April 14, 2021 **(Updated 4/22/21)**

Cc: Mr. Chris Drescher, Esq.  
Christopher Drescher Attorney, PLLC

Re: Ben's Sugar Shack Relocation  
on Webster Highway

From: Stephen B. Haas, PE  
Jacob Sparkowich, PE  
Hoyle Tanner & Associates, Inc.

Applicant: Brickstone Land Use Consultants,

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Hoyle, Tanner & Associates, Inc. has been retained by the Town of Temple, NH to review the Traffic Evaluation prepared by Stephen G. Pernaw for the proposed relocation of Ben's Sugar Shack on Webster Highway. As agreed, the scope of the review includes review of two traffic memos (9/10/20 & 11/16/20); the associated traffic volumes, trip generation, and intersection analysis; and the recommended driveway/offsite improvements.

The Applicant has collected and adjusted the existing traffic data in a manner consistent with good engineering practice. Although the standard practice would be to adjust traffic data to reflect average annual volumes, it is reasonable for the proposed project to instead adjust traffic volumes to the peak month of the generator as the Sugar Shack accounts for nearly 40% of the PM Peak hour traffic on Webster Highway. The "Method B" the Applicant used to determine these generated trips seems far more accurate than relying on generalized data from Institute of Transportation Engineers (ITE) Trip Generation.

**At the 4/20/21 Temple Zoning Board of Adjustment (ZBA) meeting attended by Hoyle, Tanner, we were asked to take a second look at the Trip Generation calculations with particular emphasis on the breakdown of retail offerings provided by Ben's Sugar Shack. While some of these items would be found at a convenience store or larger supermarket, the specialty and local nature of the items (as represented by the owner) and the lack of or emphasis on "quick stop" type items (i.e. alcohol, cigarettes, scratch tickets, etc.) is not anticipated to generate trips to the level of those types of establishments. Unfortunately, the ITE Trip Generation manual does not have a category for this type of specialty retail. While a retail Shopping Center (selling a variety of goods) appears to be the closest match, it is agreed that this may underrepresent the generated trips and that the manual method suggested by Mr. Pernaw would provide the most accurate information available.**

**It should be noted that there was concern raised at the ZBA meeting that the AM peak hour trips from the site seemed "too low". In the study, Mr. Pernaw has identified the AM peak hour as the peak traffic period of the adjacent roadway (i.e. NH 101) from 8-9 AM, rather than when the site development experiences its highest morning peak. This is consistent with typical engineering practice as that is often when adjacent intersections experience the largest overall volume of traffic. As shown in Attachment 8 of the 9/10/20 memo, the traffic generated by the development is expected to increase as the morning progresses, but it is not anticipated that these higher volumes latter in the morning would have as much impact on overall intersection delay since the volumes on NH 101 decrease after the 8-9 AM peak hour. We feel that Mr. Pernaw's evaluation of the selected 8-9 AM peak period is appropriate and consistent with typical engineering practice.**

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Overall, we concur that the reported "Build" volumes are conservative since the traffic for the current Sugar Shack already uses Webster Highway and has not been deducted from existing volumes.

The first memo, dated September 10, 2020, indicated that generated trips would be split equally between eastbound and westbound NH 101. The second memo revised this based on regional population data to reflect 74% of the generated traffic will come from and be destined to NH 101 east of the proposed development, with 4%, 9%, & 13% assigned to the other approaches. We find the revised trip assignment to be appropriate.

The Applicant's capacity analysis of the NH 101 / Webster Highway / NH Route 45 intersection has been reviewed and is satisfactory. While the 2032 Build PM Peak LOS for the NH 45 approach is a D, it is worth noting it is just barely outside the range of LOS C, which is 15-25 seconds. The left-turn lane, right-turn lane, and minor road approach geometry warrants all have been reviewed and we find no concerns. The capacity analysis, in conjunction with the findings of the warrant analyses, are sufficient evidence that no intersection mitigation to improve capacity should be requested of the Applicant.

We find a couple of concerns with the sight distance analyses prepared by the Applicant and offer the following comments:

1. The Applicant notes that the available sight distance for vehicles turning from Webster Highway on to NH 101 is in excess of 500', that this distance exceeds the New Hampshire Department of Transportation (NHDOT) 400-foot guideline in the "Policy for the Permitting of Driveways and Other Accesses to The State Highway System", and that this distance exceeds the AASHTO 425' stopping sight distance for 50 mph.
  - a. No figures or diagrams are provided to verify the sight distance as it was measured in the field. Since the field measured sight distance was performed with no snow on the ground, it is unclear how the Applicant can prove the sight distance is met for all-season conditions. The Applicant should provide sight distance sketches and profiles to document all-season visibility is provided.
  - b. No mention is made of the AASHTO Intersection Sight Distance (ISD). The stopping sight distance (SSD) is purportedly met, which may satisfy safety concerns, but if the ISD is not met then the operational analysis may be misleading as vehicles leaving Webster Highway may have inadequate sight lines and have a more difficult time entering the highway. As this is the intersection of a local road with a State Principal Arterial and additional traffic volume will utilize it, it is reasonable and prudent for the Applicant to provide an analysis of the intersection sight distance. If adequate sight distance is found not to be available, coordination with NHDOT may be required to determine if mitigation is necessary.
2. The findings and conclusions of the November 2020 memo recommend that clear sight triangles be established at the site driveways to provide 250' stopping sight distance. We are generally in agreement that providing stopping sight distance for mainline vehicles is sufficient at a driveway. However, in the case of the truck access driveway, the Applicant has demonstrated in the turning movements that a WB-50 exiting the site will need to use the full

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width of Webster Highway to complete the maneuver. The Applicant should demonstrate that the truck exiting the site will have enough sight distance available to judge if they can complete the maneuver without conflict.

**Subsequent to the initial submittal of this review memorandum and prior to the 4/20/21 ZBA meeting, Brickstone Land Use Consultants provided sight distance calculations for the intersections of NH 101/Webster Highway and Webster Highway/Site Driveways. Upon review of these calculations, the applicant has demonstrated that sufficient ISD and SSD exists at these intersections to allow for safe turning maneuvers while limiting impacts to the intersection's capacity.**

In summary, we find the Applicant's operational analysis of the intersection, including existing traffic volumes, trip generation and assignment, intersection analysis, and various geometry warrants to be comprehensive and find no concerns. **Furthermore, the Applicant has satisfactorily addressed the sight distance comments raised for the major intersection and for the site driveway. As such, we agree that improvements to the NH 101 / Webster Highway / NH 45 intersections do not appear to be required.**