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MEMORANDUM

Date: 17 December 2025

To: Nate Guerette, City of Laconia
Jordan Pike - HEB Engineers
Wesley Anderson – City of Laconia
Nancy Spaulding, Dana Lacasse – NHDOT District 3

From: Bob Duval, PE
Jen Porter, PE

Project: **Laconia Village**
Parade Road (NH Route 106) and Meredith Center Road, Laconia NH

Subject: **Traffic Impact and Access Study**
Response to HEB Review Comments - 25 November 2025

This memo presents our responses to the HEB review comment letter dated 25 November 2025 regarding our "Traffic Impact and Access Study" for the Laconia Village project submitted on 23 September.

We reviewed these comments and offer the following response. The HEB review comments are numbered below, followed by our responses in **bold type**.

HEB GENERAL STUDY COMMENTS:

1. Additional analysis is required for intersections with a BUILD LOS F (after mitigation). It should be determined how long the LOS F periods extend to aid in the mitigation decision-making process. If the failure is unacceptable, then the City may want to consider alternative mitigation measures, which may require additional Right-of-Way. Please see HEB Intersection Comments for additional information. Intersections of concern are listed below:
   - » Intersection #13
   - » Intersection #14
   - » Intersections #16 and #19
   - » Intersections #18 and #21

   The current traffic study represents a Masterplan-level analysis. To answer this question requires a level of analysis more appropriate to the detailed Traffic Studies required before approval of each development phase. A list of specific mitigation measures, including such considerations as you suggest, will be developed at that time for each phase.

2. If a new traffic signal is proposed as a mitigation measure, then a traffic signal warrant analysis is needed to confirm that intersection control is appropriate.

   At this time, we are presenting options for Lexington Drive including signalization and a roundabout. If signalization is considered as a mitigation measure for any particular intersection in one of the Phase Traffic Studies, signal warrants would be analyzed at that time.

3. The primary focus of the Traffic Impact and Access Study (TIAS) is to assess motorized impacts. It's recommended that the mitigation strategy also include considerations for non-motorized modes, such as the Opechee Loop shared-use pathway. Also, consider sidewalk connections from Laconia Village to Elm Street (north) and Old N. Main Street (south) along NH Route 106.

   The Masterplan includes an extensive internal network of pedestrian and bike pathways to reduce internal vehicular traffic. The Masterplan also includes provision for an extension of the WOW Trail - a paved, 10 foot wide, multi-use trail across the City of Laconia for bikers, walkers, and runners of all ages. The current location of the Trail within the Masterplan is not fixed, and a location closer to Parade Road is being considered, as suggested.

4. Adaptive Signal Control Technology or Real-Time Adaptive Traffic Control is capable of adjusting traffic signal timing plans in real time based on current traffic characteristics. This technology can be effective in reducing travel time and emissions at traffic signals with high variability in traffic flows. For example, at schools, or shift changes at an industrial complex. However, if the primary issue at an intersection is that the overall demand exceeds capacity, then these technologies may be limited in their ability to relieve congestion in peak periods. HEB believes getting a better grasp on LOS F periods, as described in comment #1 above, will help aid in the decision on whether or not to pursue adaptive technologies.

   We offer this technological option to be considered when other mitigation solutions are impractical. Although adaptive controllers do not "create" capacity, they can reduce lost time from unnecessary stops and facilitate corridor progression more than conventional controllers. The suitability of this option can be determined during evaluation of the Phase Traffic Studies.

5. Mitigation measures for Concurrent Pedestrian phasing be changed to Leading Pedestrian Interval (LPI) phasing, due to better safety performance compared to traditional Concurrent Pedestrian phasing.
   a. If LPI is recommended as a mitigation measure, all existing signals (NHDOT and City-owned) within the greater downtown area will need to include LPI phasing for user consistency. This may require equipment upgrades if existing controllers aren't compatible with accepting LPI phasing.

      We included LPI phasing in all cases where we evaluated concurrent timing. The LPI phase is shown on Synchro output as a 7 second advance "walk" display for the concurrent pedestrian movement, with "all-red" display on other signals. The need to replace controllers for this or other reasons will be determined during evaluation of the individual Phase Traffic Studies.

6. When multiple mitigation measures are proposed, it's sometimes unclear which proposed improvements are included with each mitigation in the *Summary of Operating Conditions Chart*. It's recommended to use consistent labeling and summarize which proposed improvements are included in each mitigation measure.

   We have clarified the chart labels to identify the proposed mitigation measure(s) for each intersection where the meaning is unclear.

7. SYNCHRO simulation turning speed settings should be set to 15mph for left turns and 9mph for right turns. SYNCHRO results at multiple intersections showed turning speeds of 60mph.

   The Synchro settings are already set to the default values of 15 mph and 9 mph, and those values are used in all Synchro output. The Sim settings are not used by Synchro.

HEB INTERSECTION COMMENTS:

1. Intersection #3 – NH Route 106 (Parade Road) at Right Way Path and Old N. Main Street:
   a. The proposed roundabout is overdesigned, and HEB recommends less lanes for improved safety. Single-lane roundabouts have exceptional safety performance and are a preferred intersection treatment. Multilane roundabouts can have favorable safety performance compared to signalized intersections when it comes to crash severity; however, multilane roundabouts (where two lanes entering on the approach meet two lanes circulating within the roundabout) may result in increased crashes.

      Multi-lane roundabouts often result in higher crash rates, but fewer fatal and severe injury crashes.

      Traffic volumes on Parade Road require two lanes in each direction for acceptable results, regardless of control type. Sidra shows a need for two circulating lanes, supplemented by slip lanes. We have provided Sidra output to show that fewer lanes result in failures of certain movements.

   b. HEB recommends further considering roundabouts at the adjacent Parade Road intersections at Elm Street/Meredith Center Road and Lexington Drive for better speed control, corridor consistency, and improved intersection flow during off-peak periods.

      We have included a roundabout option at Elm Street in addition to the signal option. As with Right Way Path, it requires two lanes in each direction.

      We added a roundabout option at Lexington Drive in addition to the signal option. Unlike Right Way Path, this is a three-leg intersection and as such requires two lane approaches, but only a single circulating lane.

2. Intersection #13 – US Route 3Bus (Union Ave.) at Elm Street and Clinton Street:
   a. Additional mitigation measures at this intersection are needed to achieve LOS D in the BUILD condition. As discussed, the following improvements should be evaluated at a minimum:
      i. The removal of parking along Union Ave. to extend the northbound left-turn lane.
         Done.
      ii. The removal of the southbound right-turn on red restriction, which may require coordination with NHDOT Bureau of Rail.
         This coordination will take place during the Phase Traffic Studies, if needed.
      iii. Additional mitigation measures may need to be considered at this location.
         We have provided an "unconstrained" model to show improvements needed to achieve overall E or better results.

b. There appear to be inconsistencies with the 95th percentile queue lengths. The NB Queue is reported to go down in the BUILD scenario prior to mitigation. Please review and correct the data recorded in the table.
Future year MOEs can show improvements due to using PHF factors of 0.90 as required by NHDOT for future year analyses.

3. Intersection #14: NH Route 106 (Parade Road/North Main Street) at Lexington Drive:
   a. There are concerns about the public's acceptance of a traffic signal at this location, which would further increase corridor delay for thru-traffic on NH Route 106.
      i. Re-evaluate a roundabout at this location. Check the traffic turning movements utilized in the roundabout analysis; they don't match the other analysis scenarios.
      Done.
      ii. The diagram for the roundabout alternative is missing on PDF page 44 of 149.
      Diagram now included in Appendix..

   b. The NB/SB thru movements should be 35 mph.
   Done.

   c. There appears to be errors with the 95th percentile queue lengths in SYNCHRO.
   Queue lengths have been checked and corrected as necessary.

4. Intersection #15 – NH Route 106 (North Main Street) at Oak Street:
   a. Provide additional information on Intersection Sight Distances, as requested by the City.
   Vegetation on private property reduces some sight distances. These restrictions are less significant at a signalized intersection, and are not related to "Build" conditions. They should be reviewed and addressed by City.

   b. Provide a conceptual design sketch on an aerial to better evaluate the turn-lane mitigation.
   Done.
   c. Please confirm SYNCHRO inputs for pedestrian calls; there appears to be a discrepancy between the analysis input and what's recorded in the Part B appendices.
   Ped calls have been checked and corrected as necessary.

5. Intersection #16 – NH Route 106 (North Main Street) at Veterans Square and Church Street and Intersection #19 – NH Route 106 (North Main Street) at New Salem Street:
   a. The "one-way pair" mitigation measure does NOT work, as it doesn't account for trucks and traffic traveling southbound via Beacon Street W. Additional analysis is required at the intersection with Pleasant Street and Beacon Steet W. to demonstrate feasibility of this concept.
   We have provided a new model that shows SB one way on New Salem only. With this and adding new lanes on N Main and Veteran's Sq, the intersection cluster operates at acceptable LOS.

   b. Additional mitigation measures should be evaluated at these intersections. These intersections are within the downtown area, and mitigation measures should consider impacts to parking and non- motorized modes.
   Done.

6. Intersection #17 – US Route 3Bus (Court Street/Union Ave.) at North Main Street and South Main Street:
    a. Currently this intersection is showing reduced queuing and delays with the proposed mitigation. If other mitigation measures change traffic patterns at this intersection, then it should be re-evaluated.
    Comment noted. This analysis would be addressed in Phase Traffic Studies.
7. Intersection #18 – US Route 3Bus (Union Ave.) at Gilford Avenue and Rite Aid Intersection #21 – US Route 3Bus (Union Ave.) at Church Street, Winter Street, and Davis Place:
    a. Queuing between the two intersections is a major concern. Additional mitigation measures should be evaluated at these intersections that aren't restricted within the Right-of-Way.
        i. Additional analysis tools (microsimulation) may be needed to better evaluate the operational effects of blocked intersections.

    An unconstrained concept has been provided that shows acceptable LOS at both intersections, by creating two through lanes at NB and SB approaches. The length of queuing between the intersections can be controlled by appropriate adjustments to splits and offsets in the final timing plan during Phase Traffic Studies.

    b. Site Composition Trips (Int. #21) should be shown similarly in the report as other intersections.
    Done.

8. Intersection #20 – US Route 3Bus (Court Street) at Fair Street
    a. There is data omitted from the Summary of Operating Conditions table. Additionally, please check the northbound queues and delays in the AM Peak Periods.
    Data has been checked and added or corrected as necessary.

    b. Site Composition Trips should be shown similarly in the report as other intersections. Done.

This *Masterplan* Traffic Study presents a masterplan-level analysis of existing and proposed traffic conditions at Full-Build. Its purpose is to identify future traffic concerns and present a range of potential mitigation measures that could be implemented to address these concerns. Some of the review questions and comments requested of the applicant in this letter are not fully defined at this level of analysis, and will be addressed in the more detailed Traffic Studies and related offsite improvement plans that will be submitted for approval prior to each phase of development.

Respectfully Submitted,
TFMoran, Inc.

Robert Duval, PE
Chief Engineer