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September 8, 2021

Ref: 52430.26

Mr. Samuel Durfee, AICP
City of Concord Senior Planner
41 Green Street
Concord, NH 03301

Re: Second Traffic Engineer Peer Review
Proposed Integra Drive Warehouse

Dear Mr. Durfee,

Vanasse Hangen Brustlin, Inc. (VHB) conducted a peer review of the July 14, 2021 Traffic Impact Assessment prepared by Stephen G. Pernaw & Company, Inc. for a proposed warehouse development to be located at the terminus of Integra Drive in Concord, New Hampshire. The traffic peer review was summarized in an August 17, 2021 letter. Subsequently, Stephen G. Pernaw & Company, Inc. (SGP & Co., Inc.) prepared an August 27, 2021 memorandum to respond to VHB's comments. VHB has reviewed the SGP & Co., Inc. response to comments memorandum for consistency with standard traffic engineering practice and methodologies, including City of Concord guidelines and requirements, as applicable. This second peer review letter has been prepared to outline outstanding traffic-related concerns.

Future Conditions

VHB Original Comment 8

During the scoping meeting, the development team stated that ITE trip-generation methodologies would be used in estimating site trips for the proposed development. While VHB does not disagree with the methodology used within the traffic study, the Applicant should provide more detailed information for the source of the entering and exiting distribution patterns (e.g., based on traffic counts at an existing facility, number of employees per work shift for each trip type, etc.). Should this information not be readily available or deemed acceptable, the Applicant could consider using ITE trip-generation data for automobile trips, truck trips, and hourly distribution.

SGP & Co., Inc. Response

The detailed trip generation information below was provided by the Applicant and was utilized in preparing the trip generation spreadsheets found in Appendix G.

2 Bedford Farms Drive
Suite 200
Bedford, New Hampshire 03110
P 603.391.3900
F 603.518.7495

- First Shift: 6:00 AM to 2:30 PM, Opening Year = 190 employees, Horizon Year = 180 employees
- Office Shift: 8:00 AM to 5:00 PM, Opening Year = 80 employees, Horizon Year = 101 employees
- Second Shift: 3:00 PM to 11:00 PM, Opening Year = 50 employees, Horizon Year = 180 employees
- Carrier trucks: 25 per day from 7:00 AM to 2:30 PM
- Raw material deliveries: 5 per day from 9:00 AM to 2:00 PM

VHB Supplemental Comment 8

The trip-generation methodology is specific to the proposed development with defined work shifts, number of employees, and truck activity. The following provides a trip comparison between those proposed and ITE Land Use Code 150 (Warehousing):

- Weekday Daily:
  - Phase 1 Proposed = 1,126 vehicles per day (563 in and 563 out)
  - ITE (320 employees) = 1,166 vehicles per day (583 in and 583 out)
  - Full Build = 1,424 vehicles per day (712 in and 712 out)
  - ITE (461 employees) = 1,572 (786 in and 786 out)
- Weekday AM Peak Hour:
  - Phase 1 Proposed = 86 vehicles per hour (85 in and 1 out)
  - ITE (320 employees) = 171 vehicles per hour (123 in and 48 out)
  - Full Build = 107 vehicles per hour (106 in and 1 out)
  - ITE (461 employees) = 245 vehicles per hour (176 in and 69 out)
- Weekday PM Peak Hour:
  - Phase 1 Proposed = 82 vehicles per hour (1 in and 81 out)
  - ITE (320 employees) = 201 vehicles per hour (72 in and 131 out)
  - Full Build = 103 vehicles per hour (1 in and 102 out)
  - ITE (461 employees) = 287 vehicles per hour (103 in and 187 out)

This comparison shows that the proposed trip-generation methodology produces relatively the same number of trips on a weekday daily basis as the ITE trip-generation estimates. As planned, the total number of daily trips are proposed to be distributed throughout the course of a weekday based on a specific work shift schedule to reduce the traffic impacts during the weekday commuting time periods. Therefore, City of Concord officials should consider decisions on the land

development project to be dependent upon the accuracy of the Applicant provided data.

Intersection Analyses

VHB Original Comment 17

Intersection analyses were conducted under 2032 traffic-volume conditions for No-Build, Build, and Build with an exclusive pedestrian phase. A long-term plan is for the implementation of an exclusive pedestrian phase at the Manchester Street, Integra Drive, and Airport Road signalized intersection. To show the impacts of the proposed development, the Applicant should provide a comparison between 2032 No-Build conditions with an exclusive pedestrian phase and 2032 Build conditions with an exclusive pedestrian phase.

SGP & Co., Inc. Response

The requested 2032 No-Build case with an exclusive pedestrian phase is included in the re-analysis of the subject intersection, and the results are also summarized in Table 3-S.

VHB Supplemental Comment 17

Based on a comparison of the Synchro intersection analysis worksheets for the exclusive pedestrian phase with the submitted Hoyle, Tanner Associates, Inc. (HTA) Airport Rd Signal Plan1 sheet at the Manchester Street, Integra Drive, and Airport Road signalized intersection, the computer model appears to provide more green time for the Manchester Street eastbound/westbound through/right-turn phase beyond the maximum settings.[1] Although the traffic signal timings are modeled differently than on the HTA plans and longer delays would be expected along Manchester Street than as modeled, the incremental impacts of the proposed development should be relatively similar to those presented in the traffic documents.[2]

VHB Original Comment 18

Based on standard traffic engineering practice, a roadway's capacity is reached when the vehicular demand is equivalent to the capacity (i.e., volume-to-capacity [v/c] ratio = 1.00). Oversaturated conditions at an intersection (capacity constraints) occur when the vehicular demand exceeds the capacity of the lane or movement (i.e., v/c ratio >1.00), which result in long delays (LOS F) and could lead to safety concerns.

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[1] Synchro = 85 seconds during the weekday AM peak hour and 73/74 seconds during the weekday PM peak hour. HTA plan = 56.7 seconds during the weekday AM and weekday PM peak hours.

[2] A development's impacts are measured by comparing No-Build and Build volumes and intersection operations. If the traffic signal timings change for the No-Build conditions, then the addition of site trips from the proposed development may result in the same impacts as presented (i.e., increases in delays, v/c ratios, LOS, and queues).

As presented in Table 3 of the traffic study and as reflected on the intersection analysis worksheets provided in Appendix H: Capacity and Level of Service Calculations – Signalized, the Manchester Street, Integra Drive, and Airport Road signalized intersection would operate at an overall LOS F with certain lane groups operating with capacity constraints (LOS F and v/c ratios >1.00) during 2032 Build traffic-volume conditions with an exclusive pedestrian phase. In addition, the following provides a summary of the lane groups that are shown to operate over capacity:

- 2032 No-Build weekday PM peak hour:
  - The Airport Road southbound left-turn lane
- 2032 Build weekday PM peak hour:
  - The Airport Road southbound left-turn lane
- 2032 Build with exclusive pedestrian phase weekday AM peak hour:
  - The Airport Road southbound left-turn lane
- 2032 Build with exclusive pedestrian phase weekday PM peak hour:
  - The Manchester Street eastbound left-turn through lane
  - The Manchester Street eastbound shared through/right-turn lane
  - The Airport Road southbound left-turn lane

As previously identified within [the August 17, 2021] peer review letter, there are concerns with the development of the existing and future traffic volumes. Therefore, the intersection analyses may need to be revised with updated traffic volumes.

SGP & Co., Inc. Response

See response to Comment 12 and Comment 17.

VHB Supplemental Comment 18

As reflected in Table 3-S of the response to comments memorandum, capacity constraints will be experienced at the Manchester Street, Integra Drive, and Airport Road signalized intersection with and without the exclusive pedestrian phase. Under 2032 Build weekday PM peak hour conditions with the exclusive pedestrian phase, the proposed development is shown to have a noticeable impact on overall intersection operations (i.e., increase in delay >10.0 seconds). As previously noted in VHB Supplemental Comment 8, the hourly site trips are specifically correlated with the proposed work shifts. Should any of the Applicant provided data vary, mitigation measures may be required to offset the project's traffic impacts at this intersection with or without the exclusive pedestrian phase.

Elements of a Traffic Study

VHB Original Comment 21

In compliance with Section 32.08.16 of the City's Site Plan Regulations and with the City of Concord's Driveway Permit Application, a sight distance evaluation is required to be conducted based on NHDOT Rules for the Permitting of Drives and Entrances as well as the American Association of State Highway and Transportation Officials' (AASHTO's) Policy for the Geometric Design of Highways and Streets. Although the proposed development would be located at the terminus of Integra Drive, the Applicant should confirm that sufficient sight distances will be provided at the proposed site driveways on Integra Drive and within the site. In addition, the Applicant should commit to keeping plantings, vegetation, landscaping, and signing along the site frontage and at the site driveways low to the ground or set back sufficiently from the edge of the roadways so as not to inhibit the available sight lines.

SGP & Co., Inc. Response

McCourt Engineering will provide a response to this comment.

VHB Supplemental Comment 21

Since no new information has been provided with respect to sight distances, VHB's original comment remains.

Findings

The trip-generation methodology is specific for the proposed development and any variation in site trip patterns and activity could change the findings of the traffic study. As a result, mitigation measures may be required to offset the project's impacts at the Manchester Street, Integra Drive, and Airport Road signalized intersection should there be a change in the proposed work shifts. Therefore, decisions on the proposed development should be contingent upon the accuracy of the Applicant provided trip-generation data. In addition, the Applicant should address the sight distance evaluation required in Section 32.08.16 of the City's Site Plan Regulations and with the City of Concord's Driveway Permit Application.

Please do not hesitate to contact us if you have any questions or if we can be of any further assistance.

Sincerely,

Vanasse Hangen Brustlin, Inc.

Jason R. Plourde

Jason R. Plourde, P.E., PTP

Transportation Systems Team Leader
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