

MEMO

TO: Ben Avery, BlackRock Construction

FROM: Corey Mack, PE

DATE: May 21, 2020

SUBJECT: Follow-up to May 19, 2020 DRB Hearing

RSG has developed this memo in response to two discussion points from the May 19, 2020 Hinesburg DRB hearing. Two items came up for discussion that were not addressed in the May 18, 2020 updated traffic analysis:

1. Hannaford Bros. Impact at VT-116 / Charlotte Road Intersection
2. Capacity of Internal Intersections

Hannaford Bros. Impact at VT-116 / Charlotte Road

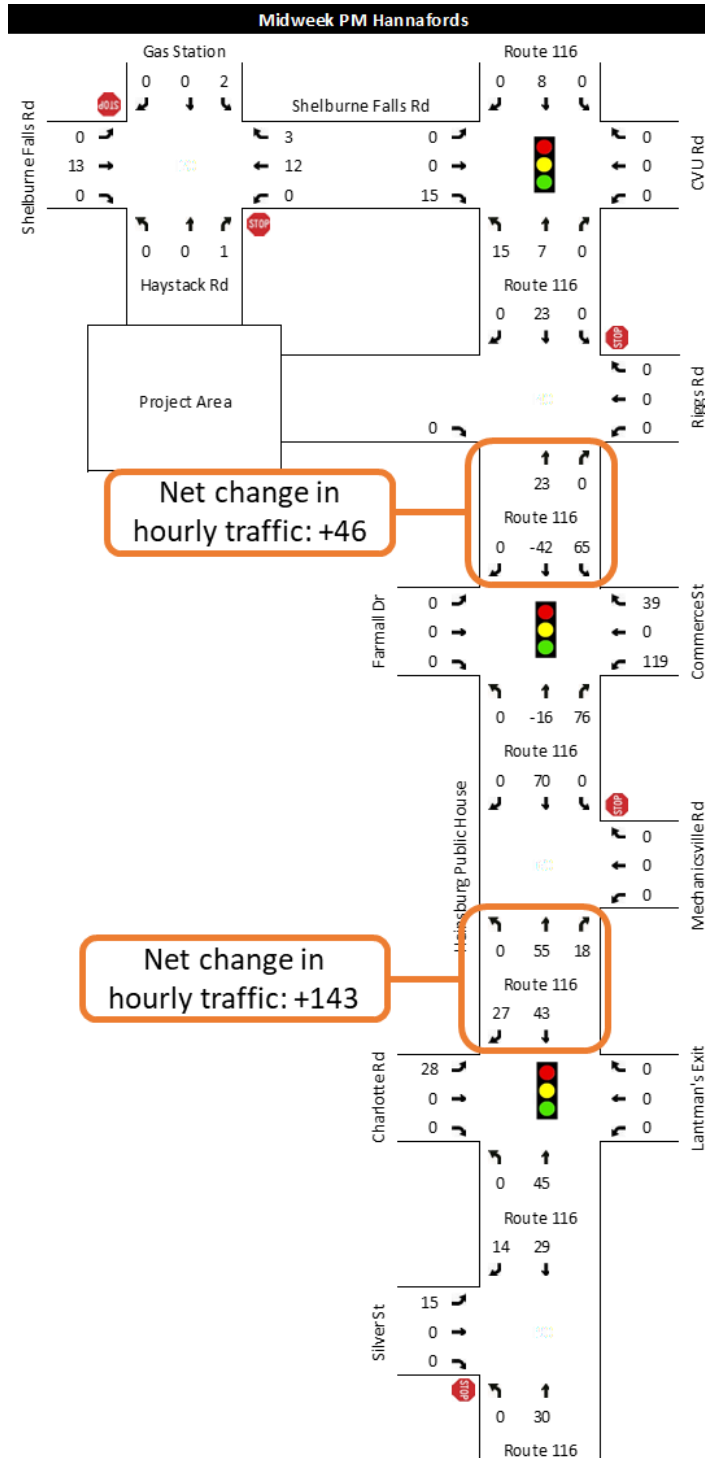
The updated traffic analysis reduced the geographic scope of the project area and only analyzed site driveways and intersections that received more than 75 trips in the peak hours. This limited the updated traffic scope of analysis to Shelburne Falls Road / Haystack Road; VT-116 / Shelburne Falls Road / CVU Road; and VT-116 / Riggs Road. The DRB expressed concern that impacts south of VT-116 / Riggs road were not being adequately studied. We believe the traffic impact associated with project generated traffic from the site is relatively negligible compared to traffic volumes and variations along the existing corridor, and the impact at Charlotte Road is minor with respect to the Hannaford Bros. project.

The updated traffic analysis indicates the proposed Phase 1 development will generate 37 trips in the AM peak hour and 34 trips in the PM peak hour. Reviewing automatic traffic recorder data (ATR) for station D126 along VT-116 just north of Shelburne Falls Road / CVU Road, the observed weekday peak hour volume in 2015 varied from 1018 vehicles per (vph) on Tuesday to 1076 vph on the following day. This observed variation of 58 (6%) vph in one day is compounded by seasonal variations in daily traffic that can approach 18%, as reported by the Redbook for urban sites¹. Applied to VT-116 in 2021, the seasonal daily traffic may range from 1043 vph in January to 1228 vph in June, or a variation of 185 vehicles in the peak hour. This suggests that the 37 trips proposed by the project are reasonably negligible within the context of seasonal and daily traffic variation.

¹ 2018 Redbook Page 16, 2018 SEASONAL ADJUSTMENT FACTORS: AAWDT

Furthermore, the withdrawn Hannaford Bros. proposed grocery store development removed 143 trips from the VT-116 corridor approaching Charlotte Road. The development volumes associated with the Hannaford Bros. project, as developed for the original traffic analysis, are shown in Figure 1.

FIGURE 1: TRAFFIC DISTRIBUTION ASSOCIATED WITH THE WITHDRAWN HANNAFORD BROS. GROCERY STORE (NOT INCLUDED IN ANALYSIS)





As shown in Figure 1, the Hannaford Bros. project added 46 trips to VT-116 between Riggs Road and Commerce Street, and 143 trips to VT-116 between Mechanicsville Road and Charlotte Road in the PM peak hour. The existing Lantman's Grocery traffic volumes did remain in the original analysis.

Even if all 34 trips associated with the Haystack Crossing project route through the VT-116 / Charlotte Road intersection, the net difference at this intersection with the removal of the associated Hannaford project is a decrease of -109 PM peak hour trips.

Capacity of Internal Intersections

The DRB expressed concern that the internal multi-way stop controlled (MWSC) intersections may not be adequate for ultimate Phase 2 traffic demands. Under ideal circumstances and with equal volume on all four approaches, the capacity of a four approach MWSC intersection is approximately 500 vehicles per hour on each leg. An HCM 6th model of a MWSC intersection with 300 vehicles in each approach operates acceptably at an LOS of C and v/c of 0.57.

The proposed Phase 1 development program generates 120 trips in the PM peak hour. The worst-case scenario distribution would be equally on the four approaches, or 30 vehicles on each leg at one MWSC intersection. This is 10% of the volume discussed in the previous paragraph as acceptable operation. Even if a potential Phase 2 development generated two or three times the traffic associated with Phase 1, the total traffic would be well within the capacity of an MWSC intersection. We are confident the internal MWSC intersections will meet the traffic demands of Phase 1 with capacity to adequately serve future Phase 2.

Furthermore, implementing control on all approaches is subject to Manual on Uniform Traffic Control Devices (MUTCD) section 2B.07. The minimum volume warrant guideline documented in the MUTCD recommends an average 300 vph for 8-hours on the major legs, with an average of 200 vph in the same eight hours on the minor legs. Given the peak hour trip generation of 120 trips, it is extremely unlikely the volume warrant will be met even after future Phase 2. Provided adequate sight distance is attained, the only MWSC warrant that may be met is the optional warrant 2B.07.05.D: *"An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection."*

RSG recommends the internal intersections are stop controlled on minor legs only, with future implementation of MWSC when volume or neighborhood warrants are met. This stop control approach allows for a flexible response to traffic conditions. Roundabouts provide unnecessary intersection control on all four approaches when not warranted; this may increase the risk of rear end crashes and delay when compared to two-way stop-controlled intersections with low traffic volumes. We do not recommend roundabouts for the internal intersections at Haystack Crossing.