

## Memorandum

By: Roger Dickinson, P.E, PTOE  
Date: July 21, 2011  
RE: Hinesburg Hannaford

During the course of the review of this Project to date by the Town of Hinesburg DRB, the traffic study has been reviewed by Jason Charest of the Chittenden County Metropolitan Planning Organization (CCMPO) and by Richard Bryant, P.E. of Llewellyn-Howley (Bryant). The traffic study has also been reviewed by the Traffic Research Section of the Vermont Agency of Transportation (VTrans).

The following outlines the major review comments made and how they have been incorporated into the Project and its new July 20, 2011 traffic study.

### CCMPO (March 11, 2011 Memorandum)

1. Used ITE supermarket trip generation average rate instead of formula  
*The average rate was selected as the basis for calculating the trip generation instead of the formula due to the very low correlation coefficient associated with the formula (0.52). A slightly lower correlation coefficient ( $\leq 0.50$ ) would have caused the ITE to not develop a formula for the supermarket category in the weekday pm peak hour time period.*
2. Vermont trip generation rates not approved by VTrans for use  
*The new traffic study uses only ITE trip generation rates.*
3. Impact of proposed pharmacy trips?  
*The originally proposed drive-up window for the pharmacy has been deleted from the Project.*
4. VT 116/Charlotte Road southbound saturation flow rate  
*The rationale for reducing the saturation flow rate from 1,900 vphg to 1,700 vphg is outlined in the traffic study (pp 17-18). At a recent meeting with the VTrans Traffic Research Section staff concerning this Project, they indicated that their own calculations had also resulted in a 1,700± vphg reduced saturation flow rate.*
5. Incorrect VT 116/Charlotte Road southbound grade in capacity analyses  
*The southbound grade used in the capacity analyses at this intersection has been corrected to be 4%.*
6. Pedestrian crossing times too low  
*The pedestrian crossing times have been increased at both the Commerce St and Charlotte Rd intersections consistent with current MUTCD requirements.*

7. Maximum queue lengths and potential overflows

*This comment focuses on the projected maximum length of the southbound queue on Route 116 approaching the Charlotte Rd intersection. The concern was that the presence of the # symbol combined with this intersection approaching capacity (v/c ratio of 0.94) in the original analyses, the reported queue lengths might be longer than reported. In the new analyses that include the effects of closing Lantman's Supermarket, the overall intersection v/c ratios have been considerably reduced (from 0.94 to 0.81).*

*In addition, Synchro itself notes that if the reported v/c ratio is less than 1.0 for the movement (it is 0.80), the methods used represent a valid method for estimating the 95th percentile queue. In practice, the 95th percentile queue shown will rarely be exceeded and the queues shown with the # footnote are acceptable for design purposes.*

8. Total Lost Time

*The CCMPO memorandum recommends that the total lost time be set to equal the Highway Capacity Manual (HCM) default of the yellow-clearance time plus all-red time. In that, the HCM assumes that only 2 seconds of the typical 4 second yellow clearance interval is used by vehicles continuing to enter the intersection. In practice, it is impossible for a vehicle to stop within 2 seconds of the yellow indication being displayed; and consequently, the entire 4 second yellow-clearance interval is typically used. The 4 second lost time used in the signalized intersection capacity analyses for this Project is consistent with that. To increase the total lost time to 6 seconds is excessively conservative.*

*At the aforementioned meeting with VTrans, it was noted that VTrans also uses Synchro 6, and that they do not change the default 4 second lost time in determining signalized intersection capacities and levels of service.*

9. Closing two Commerce St business accesses closest to Route 116

*The CCMPO memo notes that future traffic conditions at the Route 116/Commerce St intersection would benefit from the closure of the two curb cuts accessing Jolley Mobil and Firehouse Plaza closest to the intersection. The applicant has had discussions with both businesses concerning this, and will relocate Firehouse Plaza's curb cut back to its original (1996) proposed location further from the intersection.*

**Bryant (March 25, 2011 Memorandum)**

The following responds to the Recommendations contained in the above memorandum and retain their original numbers for cross-reference purposes.

1.a. Reassignment of Mechanicsville Rd traffic to Commerce St

*The new traffic study does not include reassignment of Mechanicsville Rd traffic to Commerce St in light of Mr. Bryant's observations of shorter queues and lower delays on the Mechanicsville Rd approach to its intersection with Route 116 than calculated by the intersection capacity analyses. He attributed this to "...stopped traffic on Route 116 southbound letting traffic enter from Mechanicsville Road after a very short wait time." Anecdotal evidence indicates that some motorists already choose to use Commerce St for left-turns during the pm peak hour. We believe this will continue and may increase in the future. However, while the numbers of such relocated left-turn movements are relatively small compared to other traffic on Commerce St, they will have negligible impact at the Commerce St intersection while having a material impact at the Mechanicsville Rd intersection.*

1.b. Saturday analyses

*VTrans and CCMPO automatic traffic recorder counts show that Saturday peak hour traffic volumes on Route 116 and Mechanicsville Rd are considerably less (30-40%) than weekday peak hour volumes. On Route 116, weekday peak hour volumes exceed 1,000 vph; whereas the Saturday peak hour volumes were less than 600 vph. On Mechanicsville Rd, weekday peak hour volumes equal  $\pm 330$  vph, whereas Saturday peak hour volumes equal  $\pm 230$  vph.*

*In comparison, based on ITE supermarket trip generation rates, this Project's Saturday peak hour trip generation is estimated to equal 399 vehicle trip ends per hour vs. a weekday trip generation of 386. That is only 13 vte/hr more. Even with that, the combined total of background plus supermarket traffic during the Saturday peak hour will be considerably less than during the weekday peak hour.*

1.c. Second analysis using Lantman's directional patterns

*Lantman's directional patterns are oriented much more to and from the north than the directional patterns that have been developed for this Project. Providing a second set of analyses based on Lantman's directional patterns would result in far less new supermarket trips traveling Route 116 south of Commerce St with corresponding reduced traffic impacts on the three intersections with the most congestion: Mechanicsville Rd, Charlotte Rd and Silver St. Accordingly our*

*projections are more conservative and result in greater impacts than if we had used Lantman's trip distribution.*

1.d. Raised median

*As noted earlier, the Applicant has had discussions with both Jolley Mobil and Firehouse Plaza concerning their existing curb cuts and the possibility of installing a median on Commerce St. Their response to a median have been overwhelmingly negative.*

1.e. Truck turns into Commerce St

*We understand this comment to mean trucks turning into Commerce St from Route 116 and thence traveling on Commerce St in the eastbound lane. Large semi-trailer trucks are already making this turn to and from the existing Commerce St businesses. This Project will generate several additional large semi-trailer deliveries on a daily basis; primarily during off-peak times. The required truck turning paths will be checked and accommodated in the final design of the turn lane modifications at this intersection.*

2. Identify potential traffic mitigation at Mechanicsville Rd, Charlotte Rd and Silver St.

*The purchase of Lantman's Supermarket by the Applicant will improve and completely mitigate this Project's traffic impact at the Route 116/Charlotte Rd intersection. Given the short peak hour queues observed by Mr. Bryant at the Mechanicsville Rd and Silver St intersections together with the acceptable v/c ratios at those intersections, no mitigation is proposed at those two locations other than the reduced traffic volumes that will result from closing Lantman's Supermarket upon the opening of the new Hannaford's.*

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