Traffic Impact Analysis 11-1-2019
Sisters and Brothers Investment Group
110 Riverside Avenue, Burlington, Vermont

Introduction

The purpose of this Traffic Impact Analysis is to update previously identified potential traffic impacts relating to the proposed construction of a 57 unit apartment building on Riverside Avenue in Burlington, Vermont. A Traffic Impact Report was conducted in 2013 for the project, which has not yet been constructed. The project is located on the south side of Riverside Avenue on the site of the former M&H Auto building. Figure 1: *Location Map* illustrates the property location in relation to the street network in the immediate area. Updates included a comparison of 2013 versus current traffic volume, an updated design hour capacity analysis, and updated crash analysis.

Figure 1: *Location Map*

Existing Conditions

Riverside Avenue is classified by VTrans as an Urban Principal Arterial, and is also known as US Route 2/7 in this location. For the purpose of this report, Riverside Ave will be referred to as running east-west. There is a single lane of travel, plus a bike lane, in each direction. The speed limit is posted at 25 miles per hour (mph) and there is an advisory speed curve warning 25 mph posted in advance of the curve in both directions. A shared-use path is located on the north side of the road, and a concrete sidewalk runs along the project's frontage on the south side of the road from the west, terminating and the eastern property boundary. An annual average daily traffic (AADT) volume of 15,900 vehicles per day was recorded in 2018 at automatic traffic recorder (ATR) station S6D156, located 0.5 miles south (or west) of Colchester Avenue. The base AADT used in the 2013 traffic study was 15,000 vpd.

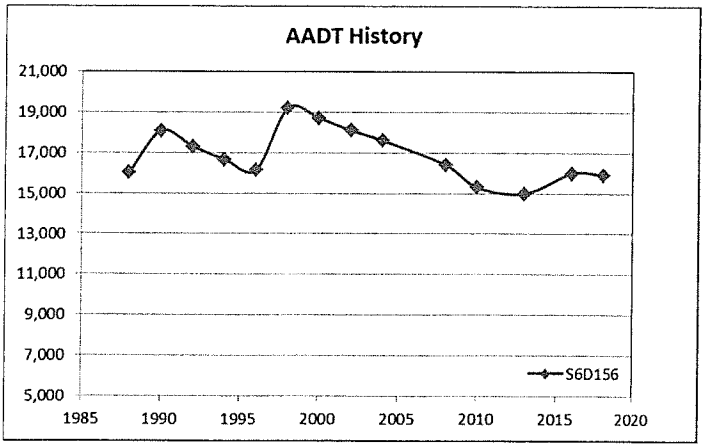
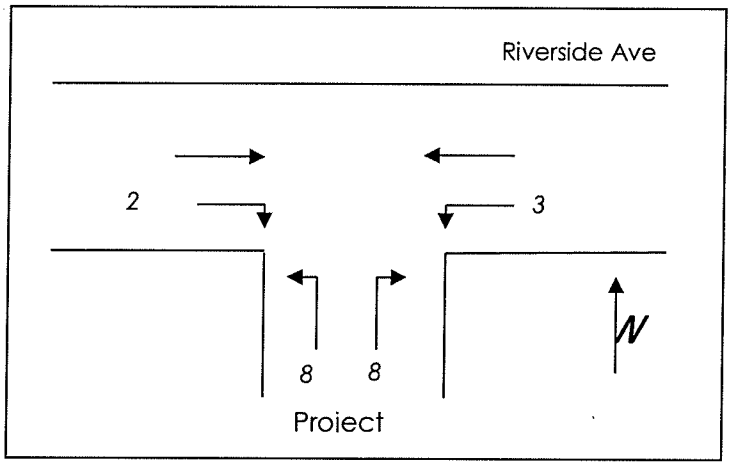


Figure 2: *Riverside Ave Traffic History*



Proposed trip distribution is based primarily on analogy to this short count. Projected traffic volumes in front of the site during morning and evening peak traffic hours are illustrated in the diagrams below.

Figure 3: *AM Peak Traffic Distribution*

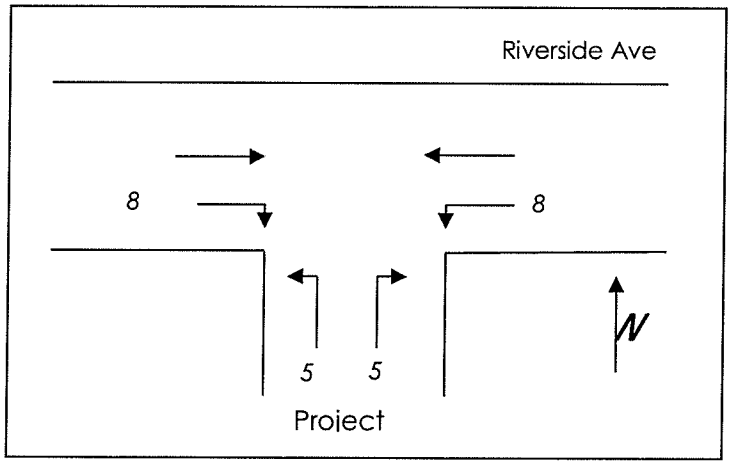


Figure 4: *PM Peak Traffic Distribution*

Level of Service Analysis – Project Driveway

A capacity analysis was performed on the intersection of the project driveway with Riverside Avenue. Because the PM Peak has a significantly higher hourly traffic volume than the AM peak (approx. 1900 vph PM Peak vs during 1150 vph AM Peak), only the PM Peak was analyzed. For analysis purposes, the eastern driveway was modeled with all of the traffic utilizing that entrance. It is anticipated that some of the right turning movements (ingress only) will take place at the western driveway. Level of Service (LOS) was calculated for the HCM2010 methodology. The HCM levels of service used in the analysis are based on control delay of critical movements and are summarized in the table below.

The table below identifies the northbound Riverside Avenue approach to the Barrett Street intersection for current traffic conditions, as identified in the Scoping Study. The distance between the intersection and the easternmost project driveway is approximately 750 feet. There are no conflicting crossings or driveways that are affected by this existing traffic queue, aside from the trailhead parking on the north side of Riverside Ave.

Table 4: *Existing Conditions - Peak Hour Analysis*

	Northbound Riverside Ave (through movement)
Traffic Volume	914 veh
Delay	65.6 s
LOS	E
Queue – 95th Percentile	572 ft
Queue – 50th Percentile	422 ft
Distance to new Drive	750 ft

The increase in traffic of 13 total trips at this intersection during the PM Peak represents less than 1% of total traffic, which is smaller than the limits of daily fluctuation in volume experienced by the intersection system.

Crash History – Project Driveway

The crash history for within a 0.2 mile (approximately 1000 ft) section of Riverside Avenue, centered on the proposed project was reviewed using the VTrans Crash Query. According to this listing, 13 crashes occurred during the five-year period between 2014 and 2018. A crash rate of 2.280 crashes per million vehicle miles (Cr/MVM) was calculated for the corridor. The critical rate calculated for Urban Principal Arterials in Vermont was noted as 7.551 Cr/MVM in the most recent Summary of Statewide Average Crash Rates, resulting in the section not being considered a high crash location.

While this section of the Riverside Ave Corridor would not be considered a High Crash Location, the adjacent intersection system includes the Colchester Ave/Barrett Street intersection, which is identified by VTrans as a High Crash Location.

Sight Distance

Sight distance measurements were taken on Riverside Avenue at the two driveway locations. The table below outlines the measured sight distance and the AASHTO recommended intersection and stopping sight distances.

Table 5: *Sight Distance*

		Measured 3/6/2013	Intersection Sight Distance[1]		Stopping Sight Distance
			Left from Stop	Right From Stop	
East Driveway	To East	342 ft	280 ft	-	155 ft
	To West	312* ft	-	240 ft	155 ft
West Driveway	To East	317 ft	280 ft	-	155 ft
	To West	676 ft	-	240 ft	155 ft

[1] Table 9-6, 9-8; A Policy on the Geometric Design of Highways and Streets, 2011, AASHTO.

intersection), and added striping for the inclusion of bicycle lanes. Several other non-pedestrian intersection improvements are recommended, including new pavement markings, protected left phase for southbound Colchester Avenue, right-turn arrow for southbound right turns, and advance lane designation signs.

The proposed project has a current Act 250 Permit (4C1282, 4C0282-1) in which they have a condition to pay a proportional fair-share monetary contribution toward the Colchester Ave/Riverside Ave/Barrett Street intersection improvements. Their contribution was calculated based on the projects proportion of overall traffic at the intersection and is in the amount of $15,260, which is to be paid prior to commencement of construction. The Burlington City Council endorsed the Short Term and 4-Way intersection improvement alternatives outlined in the report in the spring of 2019 and the City is currently pursuing implementation of these measures.

Summary of Findings

Based on review and analysis of the existing and proposed traffic conditions, the following conclusions are presented.

1. Sisters and Brothers Investment Group is proposing the construction of a 57 unit apartment building to be located at 110 Riverside Avenue in Burlington. The property is located on the south side of the road, approximately 0.15 miles west of Colchester Avenue.

2. The project will have direct access to Riverside Avenue. The eastern driveway will allow both ingress and egress, while the west driveway movements will be limited to right-in only, for direct access to the parking garage. The new driveways will replace two existing curb cuts.

3. According to ITE Trip Generation, 10th Edition, the project is expected to generate approximately 21 new trips during the AM peak, with 5 entering and 16 exiting. During the afternoon peak, the project is estimated to generate 25 trips, 15 entering and 10 exiting. The project is located on a bus line.

4. The additional 25 trips on the road resulting from the proposed project represents 1.5% of total PM design hour traffic on Riverside Avenue. The proposed trip distribution will add 13 trips to the adjacent Riverside/Barrett St intersection, an increase of just over 0.5%.

5. Level of service on Riverside Ave at the new driveway intersection is calculated as a B during the PM peak hours. Level of service at the project access will be an E (40 seconds delay) during the PM peak hour. Excessive queuing is not anticipated at the project driveway due to the low number of exiting vehicles.

6. It is estimated that the proposed project will add approximately 5 vehicles to northbound Riverside Ave at the Barrett Street/Colchester Ave intersection, and 6 vehicle trips to southbound Riverside Ave during the PM Peak. This increase is just over