

City of Newton

**Examination of Potential
Changes along Herrick Road**

Newton, Massachusetts



Submitted by:

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FINAL REPORT

Executive Summary

Traffic Solutions has been retained by the City of Newton to identify potential improvements at the intersection of Herrick Road and Chase Street and Herrick Road and Braeland Avenue. Herrick Road is perceived to experience significant traffic volume at certain times of day, and very high traffic volumes on certain days. Programming associated with Prozdor (the secondary school division of Hebrew College) adds traffic to Herrick Road and nearby approaches to Herrick Road on Tuesday evenings and Sunday mornings. Based on conversations with City Officials, a study area was identified and a study methodology was developed. Speed and volume data were collected during the month of May, on typical days, and on Hebrew College event days.

Residents near Hebrew College are concerned with the vehicular volume and speeds associated with the events at the College. Based on the collected data and this analysis, the speeds and volumes are within a typical range for the street type and use. During Sunday's dismissal, Hebrew College dismissal causes a short-lived (i.e., <20 minutes) queue on Braeland and Herrick Road, resulting from operations at the intersection of Braeland Avenue and Cypress Street. During other periods, namely Sunday drop-off, and Tuesday's drop-off and pick-up, the intersection and surrounding roadways operate efficiently.

A number of improvements can be made in the area to increase multi-modal connectivity and improve driver understanding. At the intersection of Braeland Avenue at Herrick Road, a crosswalk should be installed on Braeland Avenue that will allow pedestrians to cross the Road at a designated location. At the intersection of Herrick Road and Chase Street, the STOP sign on Herrick Road should be removed and installed on Chase Street.

Some citizens have requested a multi-way stop for the intersection of Chase Street and Herrick Road. Multi-way stop signs are typically installed when the volume of traffic reaches a certain threshold, where the traffic volume is balanced from all approaches, where certain types of crashes frequently occur, or to clarify right-of-way. This intersection does not meet any of the criteria for a multi-way stop. At this intersection, since Chase Street creates a "T Intersection" with Herrick Road, we believe that the safest solution would be to move the stop sign from the Herrick Road location to the Chase Street location. This new configuration will assist drivers when they approach the intersection - it is a more standard installation - stopping on the approach base of a "T" intersection.

If the speeds increase significantly with the removal of the stop sign, a speed hump should be installed on Herrick Road (private portion) close to intersection of Herrick Road and Chase Street. During event dismissal, a Police Office could be provided at the intersection of Braeland Avenue at Cypress Street, which will ameliorate extended queues on Herrick Road.

Scope of Service

Traffic Solutions has been retained by the City of Newton to identify potential improvements at the intersection of Herrick Road and Chase Street and Herrick Road and Braeland Avenue.

Herrick Road is perceived to experience significant traffic volume at certain times of day, and higher traffic volumes on certain days. Programming associated with Prozdor (the secondary school division of Hebrew College) adds significant traffic to Herrick Road and nearby approaches to Herrick Road on Tuesday evenings and Sunday mornings. Over 800 students from all over Greater Boston come to Hebrew College for classes on Sunday mornings. Furthermore, special events at Hebrew College can cause extremely high traffic volume on Herrick Road and at nearby approaches throughout the year.

Study Area

The study area includes two intersections along Herrick Road, at the intersection of Chase Street and Braeland Avenue (Figure 1). These locations were identified through conversations with City Officials.

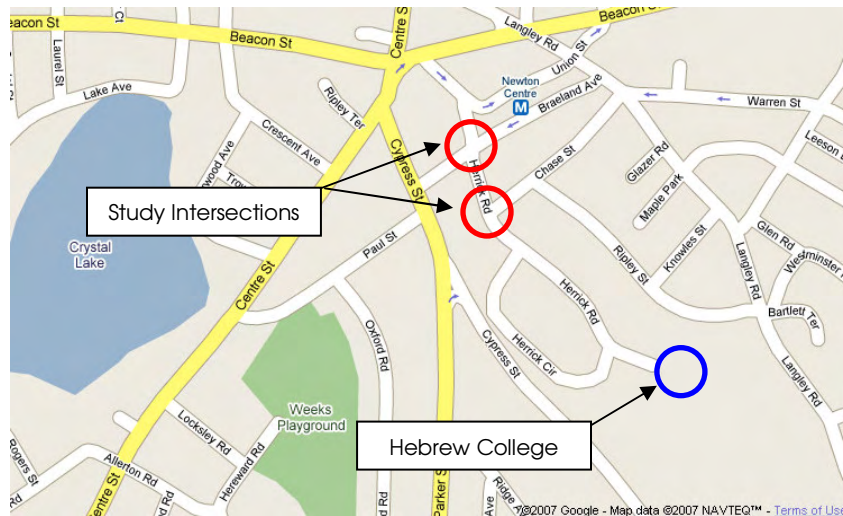


Figure 1 Locus

Study Methodology

Once the study area was identified, a study approach was identified. Working with City Officials, we identified a data collection program that would best complement the study objectives. Since the abutting citizens are concerned with the higher volumes and speeds associated with the School, a data collection program was created specifically for Hebrew College. Two types of quantitative data were collected, vehicular volumes and speeds. The speed and volume data were collected on typical days, while turning movement volume data were recorded on a Tuesday night, prior to the 6:30 event time.

Observations were also performed during dismissal for two consecutive Sunday events, on May 6, and 13, 2007. During this time, a representative of Traffic Solutions was present to observe operations not only on the Hebrew College Campus, but also on Chase Street, Herrick Road, and Braeland Avenue.

Roadways

The following section describes the study area roadways:

Herrick Road

Herrick Road, a two-lane local road, runs in a north/south direction from Union Street to Hebrew College. The segment from Union Street to Chase Street is a public way, and is private from this point south. Sidewalks are provided on both sides, for the entire length of the public way. The roadway is approximately 24 feet wide. This is the only access point to Hebrew College.

Braeland Avenue

Braeland Avenue runs from Cypress Street to Langley Road in an east-west direction. Braeland Avenue is a local road, and is a two-lane, two-way roadway from Cypress Street to Herrick Road, and changes to a one-way road (westbound) from Herrick Road to Langley Road. The roadway is approximately 24 feet wide. Parking is permitted on the north side of the one-way portion, except between 4 pm and 6 pm. Sidewalks are provided on both sides of the one-way portion of Braeland Avenue, and on the south side of the two-way portion.

Chase Street

Chase Street, a two lane local road runs from Herrick Road to Langley Road in an east-west direction. The roadway is approximately 24 feet wide. Parking is restricted on the south side of Chase Street. Sidewalks are provided on both sides of Chase Street. Parking is allowed on the north side of the street, for 2 hours, from 7 am – 10 pm, except Sundays and Holidays.

Intersections

The following section describes the study area intersections:

Herrick Road at Chase Street

The intersection of Herrick Road at Chase Street is a “T” intersection, with Chase Street ending at Herrick Road. The northbound approach, from the private section of Herrick Road operates under stop control while the other two approaches are uncontrolled. Handicapped access ramps from the sidewalks are provided on the northeastern and southeastern side of the intersection, and a driveway on the western side of the intersection provides access to the sidewalk on the western side of Herrick Road. Sight lines are limited for drivers’ approaching the intersection from the east on Chase Street by the hedge and fence.

Herrick Road at Braeland Avenue

The intersection of Herrick Road and Braeland Avenue is a four-way intersection. The intersection operates under stop control on all approaches. The stop sign's supplemental "all-way" placard is only provided on the eastern end of the two-way portion of Braeland Avenue and for northbound traffic on Herrick Road. "Do not enter" signs are provided on the western end of the one-way portion of Braeland Avenue. Signs prohibiting turns from Herrick Road onto Braeland Avenue are also provided – a no left turn legend (e.g., a symbol, no text) sign is provided for drivers traveling southbound, and a no right turn legend sign is provided for drivers traveling northbound. Crosswalks, with handicapped access ramps, are provided on the north and west side of the intersection.

Data Collection

Speed data were collected for six consecutive days (May 3 – May 7, 2007). These data were collected by the City of Newton using automatic traffic recorders. At two locations on Herrick Road, north of Chase Street, and South of Chase Street, on the private section of Herrick Road.

In addition to speed data, volume data were also collected at the above locations, and at two additional locations – Braeland Avenue in between Chase Street and Cypress Street and on Chase Street, just east of the Herrick Road intersection.

Finally, turning movement counts were conducted at the intersection of Herrick Road and Chase Street, and Herrick Road and Braeland Avenue. These data were collected on Tuesday, May 8, 2007 (PM), prior to a Hebrew College event and Wednesday, May 9, 2007 (AM).

Data Analysis - Volumes

The quantitative data were analyzed to identify trends in the traffic circulation associated with Hebrew College events as well as a typical day. On a typical day, 1,878 vehicles pass a point on Herrick Road, north of Chase Street (Figure 1) in both directions. This volume is very similar, in magnitude, to Daniel Street/Jackson Street in Newton, MA. The volume reduces significantly south of Chase Street, on the private section of Herrick Road. The volume at this point is 1,155 vehicles per day. Chase Street experiences an average volume of the two locations, 1,548 vehicles use Chase Street on a typical day.

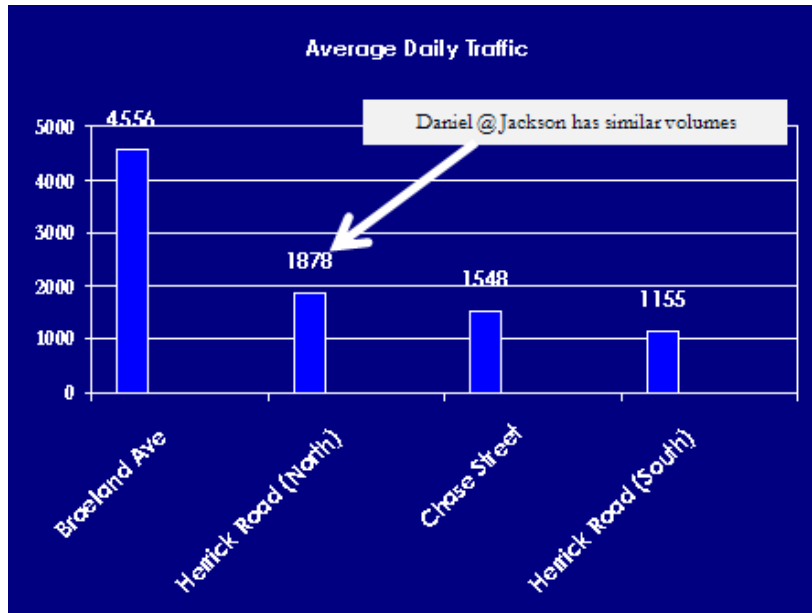


Figure 2 Volume Trends - Study Area Locations (May, 2007)

Data Analysis – Speeds

The collected speed data were also analyzed. The 85thile speed was identified from the collected data. The 85thile speed is the speed at which 85 percent of the driving population drives at or below. It is also the speed that is used to post speed limits.

The 85thile speed on Herrick Road, just south of Chase Street, on the private section, is 17 mph in the northbound direction (towards the intersection), and 23 mph in the southbound direction (away from the intersection). North of the intersection of Herrick Road and Chase Street, the 85thile speed is 20 mph in the northbound direction and 23 mph in the southbound direction.

Table 1 Speeds - 85thile on Herrick Road

	Northbound Speed (MPH)	Southbound Speed (MPH)
South of Chase Street	17	23
North of Chase Street	20	23

Traffic Safety – Crashes

The City’s Transportation Planner requested crash data from the City’s Police Department for the intersection of Herrick Road and Chase Street and Herrick Road and Braeland Avenue. During a five year period, from January 1, 2002 to May 1, 2007, there were no reported crashes at either location.

Operations during Prozdor Dismissal - Sunday

Based on the citizen's concern in and around Hebrew College, a representative from Traffic Solutions was on-site during dismissal on Traffic Solutions observed on-site operations during Prozdor dismissal on Sunday, May 6, and May 13, 2007. Operations at Hebrew College were observed (on-site) as well as at the study area intersections. The observations focused on traffic flow, safety, and efficiency in the study area.

On-Site Operations

Based on our observations, it appears as though the College has implemented a car pooling program. The drivers participating in the car pooling program use the turn-around in front of the school. The driver displays an orange placard on the dashboard, which allows him to enter the pick-up area.

Some drivers arrived throughout the hour, prior to the 1:30 dismissal. Most were picking up students getting out early – most used the turn-around in front of the main building. Some drivers arrived at this location early and waited for the students to be dismissed.

During Prozdor, the College has a designated a circulation route for drivers picking students up. This is broken down further into those who are carpooling and those who aren't. Drivers who are picking up a number of students take a left at the end of Herrick Road and pull around the cul-de-sac in front of the main building. Drivers who are picking up one student must travel through the Campus and drive through the parking lot on the south side of the main building.

Bus drivers take a left at the fork, and pull into the parking lot next to the main building. The buses straddle the parking lot aisle, waiting for students to board.

Off-Site Operations

Similar to the on-site operations, a representative was present to observe off-site operations from the Hebrew College dismissal on a typical Sunday. During these dismissals, short-lived, extended queues were observed along Herrick Road and Braeland Avenue.

Since there is only one way into Hebrew College, many parents, in anticipation of the extended queue park near the bottom of the private section of Herrick Road, on the public portion of Herrick Road, Chase Street, and Braeland Avenue. Rather than driving up the private portion of Herrick Road, some parents live park along Herrick Road (Figure 3), Chase Street (Figure 4) and Braeland Avenue (Figure 5).



Figure 3 Vehicles Parked on Herrick Road – East Side - North of Chase Street



Figure 4 Vehicles Parked on Chase Street - North and South Side – East of Herrick Road



Figure 5 Vehicles Parked on Braeland Ave (East) - South Side – East of Herrick Road

Under normal operation conditions, this parking may be practical; however, due to the volume of traffic that peaks during the dismissal time, this parking interferes with efficient operations (Figure 6). The parked vehicles narrow the roadway - from a two-lane roadway to a one-lane roadway. These operations limit the number of vehicle that can move through the area. Not only is traffic flow impacted on the street where the parking is, depending on the proximity of the parked vehicles to intersections, the overflow may impact operations at adjacent intersections and streets. Additionally, the parked vehicles compromise safety – drivers may be confused as to who has the right of way.



Figure 6 Herrick Road at Chase Street – Operations when Vehicles are Parked on Both Sides of Chase Street

As with school dismissals, traffic volumes increase. This peak in traffic volumes may impact operations in the immediate area for a brief period of time. This is the case with the Prozdor dismissal. If drivers choose to drive up Herrick Road and pick their child up, he may be faced with an extended, short-lived queue when approaching Chase Street.

If the driver continues on Herrick road, they may encounter a queue that begins at the intersection of Cypress Street and Braeland Road and extends up the private part of Herrick Road. This queue is short-lived. On May 6, 2007 the queue lasted for approximately 19 minutes (1:25 pm – 1:44 pm), and on May 13, 2007 (Figure 7) the queue lasted for approximately 14 minutes (1:36 pm – 1:50 pm). The extended queue is the result of drivers taking a left from Braeland Avenue onto Cypress Street.

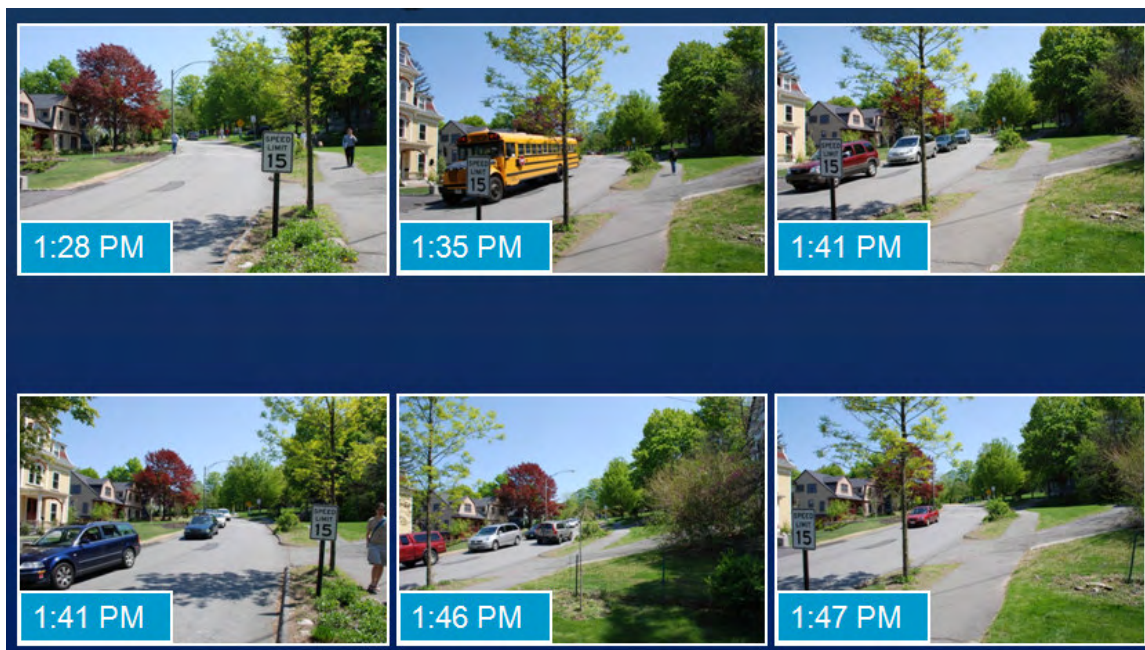


Figure 7 Hebrew College Dismissal - Looking South on Herrick Road (near Chase Street)

Operations during Prozdor Arrivals – Sunday, Arrivals and Dismissals, Tuesday

Traffic Solutions presented the findings to the Community on February 20, 2008. A number of citizens shared anecdotal information regarding drop-off operations prior to Tuesday's Prozdor class, as well as dismissal operations and its impact on Herrick Road. At the request of the City, Traffic Solutions was directed to observe operations on a Tuesday, for both drop-off and pick-up as well as drop-off operations on a Sunday.

On Sunday, April 13, 2008 a representative from Traffic Solutions observed drop-off operations for Prozdor. The class started at 9:30 AM. Because of the start-time, drivers' origins, and schedules, drop-off operations are more random and spread out when compared to Sunday's pick-up. Due to the random arrivals and departures, the impact from the traffic was minimal and as a result, the intersection of Herrick Road at Chase Street operated efficiently (Figure 8).

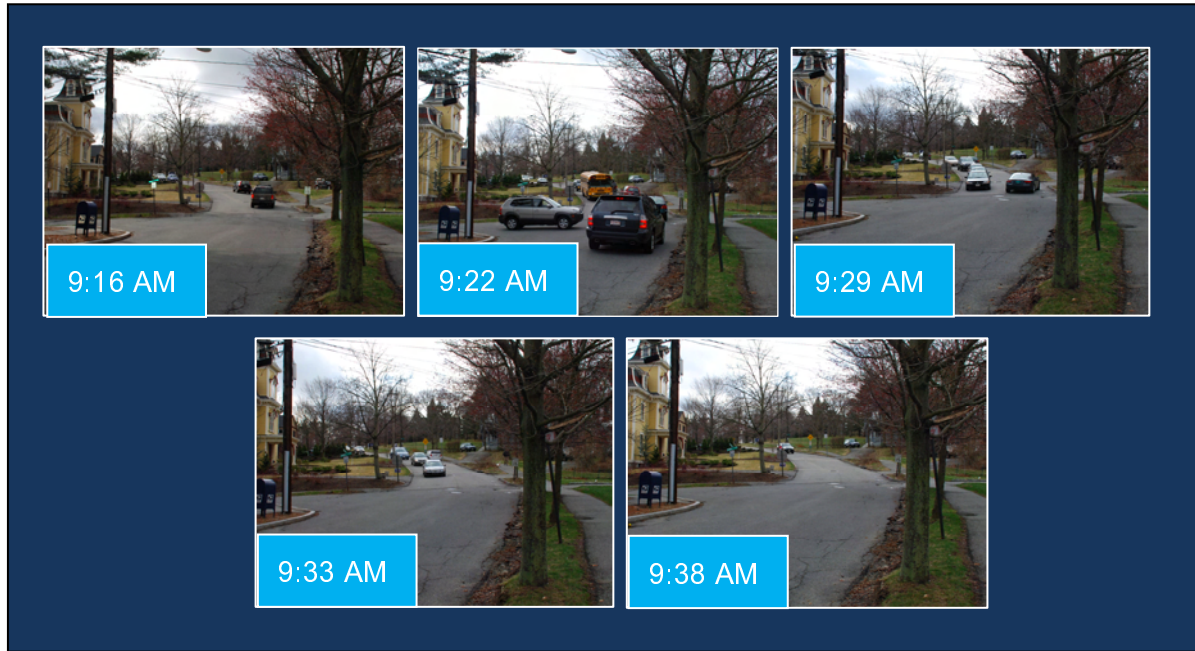


Figure 8 Hebrew College Arrival - Sunday - Looking South on Herrick Road (Near Chase Street)

On Tuesday, April 15, 2008, a representative from Traffic Solutions observed both the drop-off and pick-up operations. Class begins at 6:30. Operations were similar to the drop-off on Sunday – drivers arrival pattern was random; however, this time, most of the drivers arrived close to the beginning of class (Figure 9). The representative was on-site for dismissals as well. During Tuesday’s dismissal, the intersection and surrounding roadways operated efficiently (Figure 10).

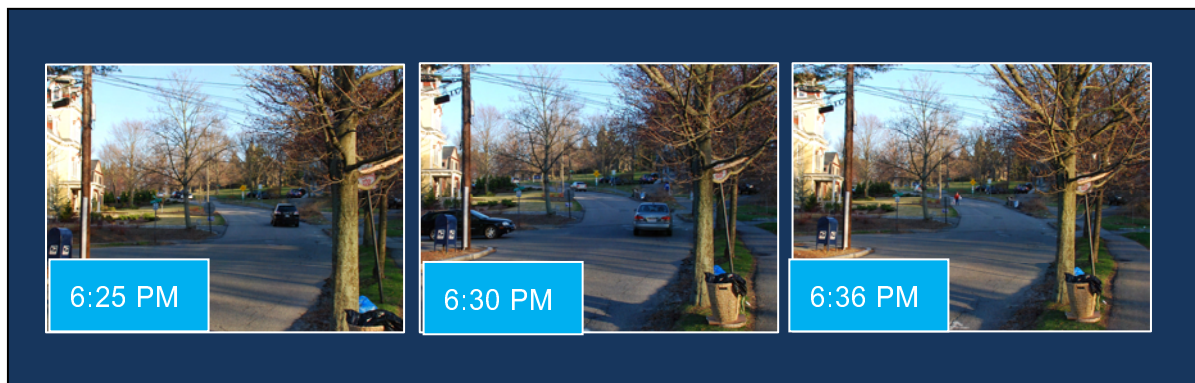


Figure 9 Hebrew College Arrival - Tuesday - Looking South on Herrick Road (Near Chase Street)

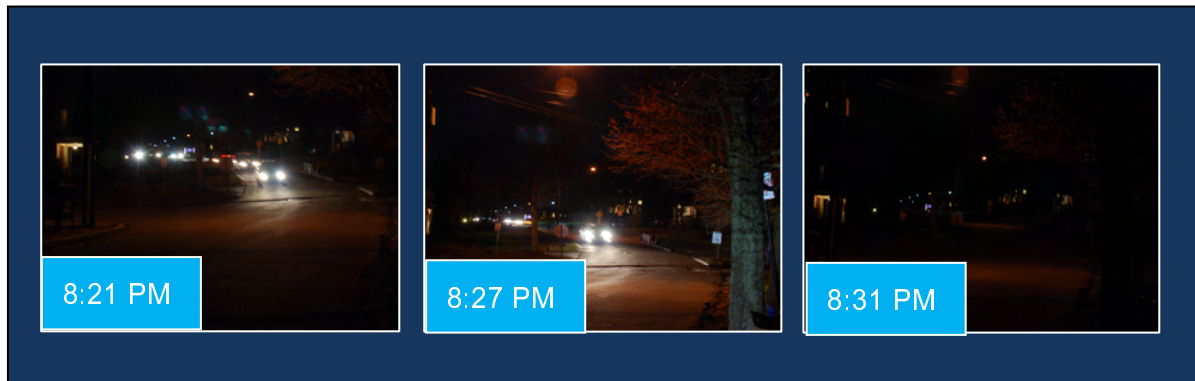


Figure 10 Hebrew College Dismissal - Tuesday - Looking South on Herrick Road (Near Chase Street)

Conclusions and Recommendations

Residents near Hebrew College are concerned with the vehicular volume and speeds associated with the events at the College. Based on the collected data and this analysis, the speeds and volumes are within a typical range for the street type and use. During Sunday's dismissal, Hebrew College dismissal causes a short-lived (i.e., <20 minutes) queue on Braeland and Herrick Road, resulting from operations at the intersection of Braeland Avenue and Cypress Street. During other periods, namely Sunday drop-off, and Tuesday's drop-off and pick-up, the intersection and surrounding roadways operate efficiently.

A number of improvements can be made in the area to increase multi-modal connectivity and improve driver understanding. At the intersection of Braeland Avenue at Herrick Road, a crosswalk should be installed on Braeland Avenue that will allow pedestrians to cross the Road at a designated location. A "phased-approach" is recommended for the intersection of Chase Street at Herrick Road. The STOP sign on Herrick Road should be removed and installed on Chase Street. After the novelty of change has worn off, vehicular speeds should be monitored. If the vehicular speeds do not significantly increase with this change, then no further modification is required. If the speeds increase significantly, a speed hump should be installed on Herrick Road (private portion) close to intersection of Herrick Road and Chase Street. During event dismissal, a Police Office could be provided at the intersection of Braeland Avenue at Cypress Street, which will ameliorate extended queues on Herrick Road.

Some citizens have requested a multi-way stop for the intersection of Chase Street and Herrick Road. Multi-way stop signs are typically installed when the volume of traffic reaches a certain threshold, where the traffic volume is balanced from all approaches, where certain types of crashes frequently occur, or to clarify right-of-way. This intersection does not meet any of the criteria for a multi-way stop. At this intersection, since Chase Street creates a "T Intersection" with Herrick Road, we believe that the safest solution would be to move the stop sign from the Herrick Road location to the Chase Street location. This new configuration will assist drivers when they approach the

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