



Memorandum

To: Elise Cruz
Real Estate Project Coordinator
University of Virginia Foundation

Date: October 26, 2018

Project #: 34283.00

From: Christopher Daily, P.E.
Jon Bonghi, P.E.

Re: Birdwood Mansion Zoning Map Amendment

Introduction:

At the request of the University of Virginia Foundation, VHB conducted a review of the Zoning Map amendment for the Birdwood Mansion (i.e., 500 Birdwood Drive) to modify from the current R1 zoning to a proposed HC-Highway Commercial zoning to allow the Birdwood Mansion to be utilized as an event center for special events, including weddings, business events, and other gatherings. VHB was asked to review the proposed amendment with respect to the anticipated traffic generated by the revised usage and the potential impact on the intersection of Boar's Head Drive (formerly Golf Course Drive) / Ivy Road (US 250)¹.

Anticipated Usage:

The property management staff anticipates the Mansion to annually host up to 24 weekend events for wedding/reception activities with an estimated average of 100-120 attendees, and up to 96 weekday business related gatherings with an estimated average attendance of 25-30 attendees.

New Traffic/Generated Trips:

For the purposes of reviewing traffic impacts to the public road network, the wedding events were identified as the focus of this review since these events are anticipated to produce a higher rate of attendance and therefore a higher rate of traffic/trips to and from the facility.

Typical wedding ceremonies occur outside of the peak traffic period of the adjacent road (Ivy Road), primarily on weekend afternoons. Based on a recent study performed for the Colorado Department of Transportation, the wedding party, wedding guests, and photographers/event staff represent 10% of those attending the wedding and arrive more than one hour before the ceremony. The remaining 90% arrive during the one-hour period before the ceremony.

With a conservative estimated attendance of 120 attendees, according to the 10% assumption, approximately 100 of the attendees will arrive in the hour prior to the event. Also gleaned from the Colorado DOT study, it was established that wedding attendees tend to travel together as couples, families, or groups of friends with a passenger/vehicle

¹ The portion of the entrance road that begins at the junction of the "connector road" and continues to the Golf Club House continues to be identified as Golf Course Drive.

ration of 2 to 2.5 guests per vehicle. The resulting anticipated number of **new vehicular trips arriving to the Mansion Property is 40 vehicles per wedding event.**

Trip Distribution:

Property management Staff anticipates event attendees will utilize the parking facilities at the Birdwood Golf Course located to the South of the Mansion Property at the end of Golf Course Drive. Given the location of the parking facilities it is assumed that all new vehicle trips will enter the property via the Boar's Head Drive / Ivy Road intersection. Previously accepted traffic distribution from the east and west were retained for this analysis: 80% of the new trips would be traveling from the east and making a left onto Boar's Head Drive, while 20% would be traveling from the west and making a right onto Boar's Head Drive.

Trip Origin	Percentage Trips	Number of Trips
From the East of Boar's Head Drive	80%	32 (WB Lefts)
From the West of Boar's Head Drive	20%	8 (EB Rights)

Impact on Intersection:

The peak event (i.e., wedding) trip generation will typically not occur during the normal week day peak hours. Consequently, it is unlikely that the trips generated by these events will have any significant impact on the Ivy Road / Boar's Head Drive intersection performance during the peak traffic conditions on Ivy Road. But to demonstrate the absolute worst-case condition, this analysis evaluated intersection performance if the event traffic did coincide with the PM peak of Ivy Road.

VHB did perform a sensitivity analysis using Synchro for the PM peak hour to see the comparative delay and LOS of the intersection in a worst-case scenario if event traffic were to coincide with the weekday PM peak hour, assuming the intersection continued to operate under the existing two-way stop control condition. The background volumes represent the forecasted volumes on Boar's Head Drive after renovations to the Golf Course and Tennis center and the Connector Road is in place (i.e., the volumes used in the Traffic Impact Analysis conducted in support of the Golf and Tennis SUP).

Table 1 shows that there is negligible effect on the operations along Ivy Road at the Boar's Head Drive intersection in terms of delay and queuing with the addition of the event traffic. The intersection LOS has negligible change and the queues in the westbound left-turn bay remain at approximately one vehicle length.

Table 1. – Comparison of Golf Course Drive / Ivy Road Intersection Performance Metrics w/wo Addition of Birdwood Mansion Event Trips			
Approach	Intersection LOS (delay)	WB LOS (delay)	WB Queue

Approach Level of Service (Delay), Prior to Mansion Event Trips	A (<5 sec/v)	B (9.4)	15 ft
Approach Level of Service (Delay), With Mansion Event Trips	A (<5 sec/v)	B (11.9)	21 ft

Conclusion:

Given the nature and size of the events to be held at the Birdwood Mansion and the minimal number of additional trips added to the roadway network, there would be negligible impacts to the performance and operations of the Ivy Road / Boar's Head Drive intersection.

Figure 1 - Site Location:



Figure 2 – Site Parking:

