

VIII. HUTCHISON DRIVE ACCESS

This chapter evaluates the concept of eliminating access (except for service vehicles and buses) on Hutchison Drive just east of Bioletti Way. The purpose of this evaluation is to determine if eliminating access east of Bioletti Way would reduce the improvements needed at the Hutchison Drive/Dairy Road intersection to provide acceptable operations. Traffic operations were analyzed at the Hutchison Drive/Dairy Road and Hutchison Drive/Kleiber Hall Drive intersections during the peak hours under existing and Year 2005 plus project conditions with the construction of the WEPS. The methodology and results are discussed below.

Methodology

Hutchison Drive is currently closed to through traffic from just west of California Avenue to A Street. East of Bioletti Way, Hutchison Drive serves Lots 28, 29, 43, and 43B. Since access is restricted along Hutchison Drive, vehicles accessing these lots must travel through the Hutchison Drive/Bioletti Way intersection. Therefore, peak hour traffic counts collected in March 2001 at the Hutchison Drive/Bioletti Way intersection were used to determine the number of vehicles traveling on Hutchison Drive east of Bioletti Way.

Vehicles traveling on Hutchison Drive east of Bioletti Way were divided into the following three categories:

1. Campus Service Vehicles and buses;
2. Vehicles parking in Lots 28, 29, 43, and 43B; and
3. Vehicles traveling into the central campus for pick-up/drop-off purposes.

The number of service vehicles and pick-up/drop-off trips traveling through the Hutchison Drive/Bioletti Way intersection during the a.m. and p.m. peak hour is not known. Since this analysis was conducted during the summer session, collecting additional traffic data would not reflect typical travel patterns during the Fall through Spring academic year. Therefore, trip rates developed for the WEPS were used to estimate the number of vehicles traveling to the parking lots and the remaining trips were assumed to be a combination of service vehicles, buses, and pick-up/drop-off trips.

Vehicles parking in Lots 28, 29, 43, and 43B were assumed to park in the WEPS if access was restricted on Hutchison Drive east of Bioletti Way. Since Lot 28 will be eliminated with the construction of the WEPS, vehicles were previously shifted from Lot 28 to the WEPS under existing and Year 2005 conditions as discussed in Chapters III and IV. For this

analysis, vehicles traveling to Lot 29 (51 spaces), Lot 43 (84 spaces), and Lot 43B (20 spaces) were also shifted into the WEPS during the peak hours. Based on trip rates developed for the WEPS, approximately 100 vehicles during the a.m. peak hour and 80 vehicles during the p.m. peak hour travel to/from these lots.

The following summarizes the resulting peak hour traffic volumes at the Hutchison Drive/Bioletti Way intersection after shifting vehicles from the surface lots into the WEPS:

- Approximately 100 vehicles would enter Hutchison Drive east of Bioletti Way to access the central campus and 60 vehicles would exit during the a.m. peak hour; and
- Approximately 180 vehicles would enter Hutchison Drive east of Bioletti Way to access the central campus and 150 vehicles would exit during the p.m. peak hour.

The LOS at the Hutchison Drive/Dairy Road and Hutchison Drive/Kleiber Hall Drive intersections was calculated under the following two scenarios to reflect the range in traffic volumes and resulting delays with the restricted access on Hutchison Drive:

1. Vehicles traveling to the surface lots were shifted into the WEPS, campus vehicles and buses continued to travel to/from the central campus, and pick-up/drop-off trips remained on Hutchison Drive and turned around in the area provided prior to the gate located just east of Bioletti Way; and
2. Vehicles traveling to the surface lots were shifted into the WEPS and campus vehicles, buses, and pick-up/drop-off trips no longer traveled to the central campus on Hutchison Drive.

Results

The resulting intersection operations at the Hutchison Drive/Dairy Road and Hutchison Drive/Kleiber Hall Drive intersections are summarized in Table 20. As shown, the Hutchison Drive/Dairy Road intersection would continue to operate at LOS F with the elimination of all campus vehicles, buses, and pick-up/drop-off trips on Hutchison Drive. Consequently, installing a traffic signal at the Hutchison Drive/Dairy Road intersection as discussed in Chapter V is still recommended to provide acceptable traffic operations during the a.m. and p.m. peak hours with the construction of the WEPS.

Table 20					
Hutchison Drive Intersection Operations Analysis – Existing and Year 2005 Plus Project Conditions					
Intersection	Year	Overall Delay – LOS			
		AM Peak Hour		PM Peak Hour	
		Scenario 1	Scenario 2	Scenario 1	Scenario 2
1. Hutchison Dr./Dairy Rd.	Existing Plus Project	> 50.0 - F	> 50.0 - F	> 50.0 - F	> 50.0 - F
	Year 2005 Plus Project	> 50.0 - F	> 50.0 - F	> 50.0 - F	> 50.0 - F
2. Hutchison Dr./Kleiber Hall Dr.	Existing Plus Project	15.6 - C	11.1 - B	23.4 - C	10.2 - B
	Year 2005 Plus Project	11.0 - B	10.5 - B	11.5 - B	9.5 - A
Source: Fehr & Peers Associates, 2002.					

IX. ROUNDABOUT DIMENSIONS AND OPERATIONS

University staff indicated that the Hutchison Drive/Bioletti Way intersection might be converted to a roundabout to improve opportunities for vehicles to turn around in advance of the existing gate on Hutchison Drive east of Bioletti Way.

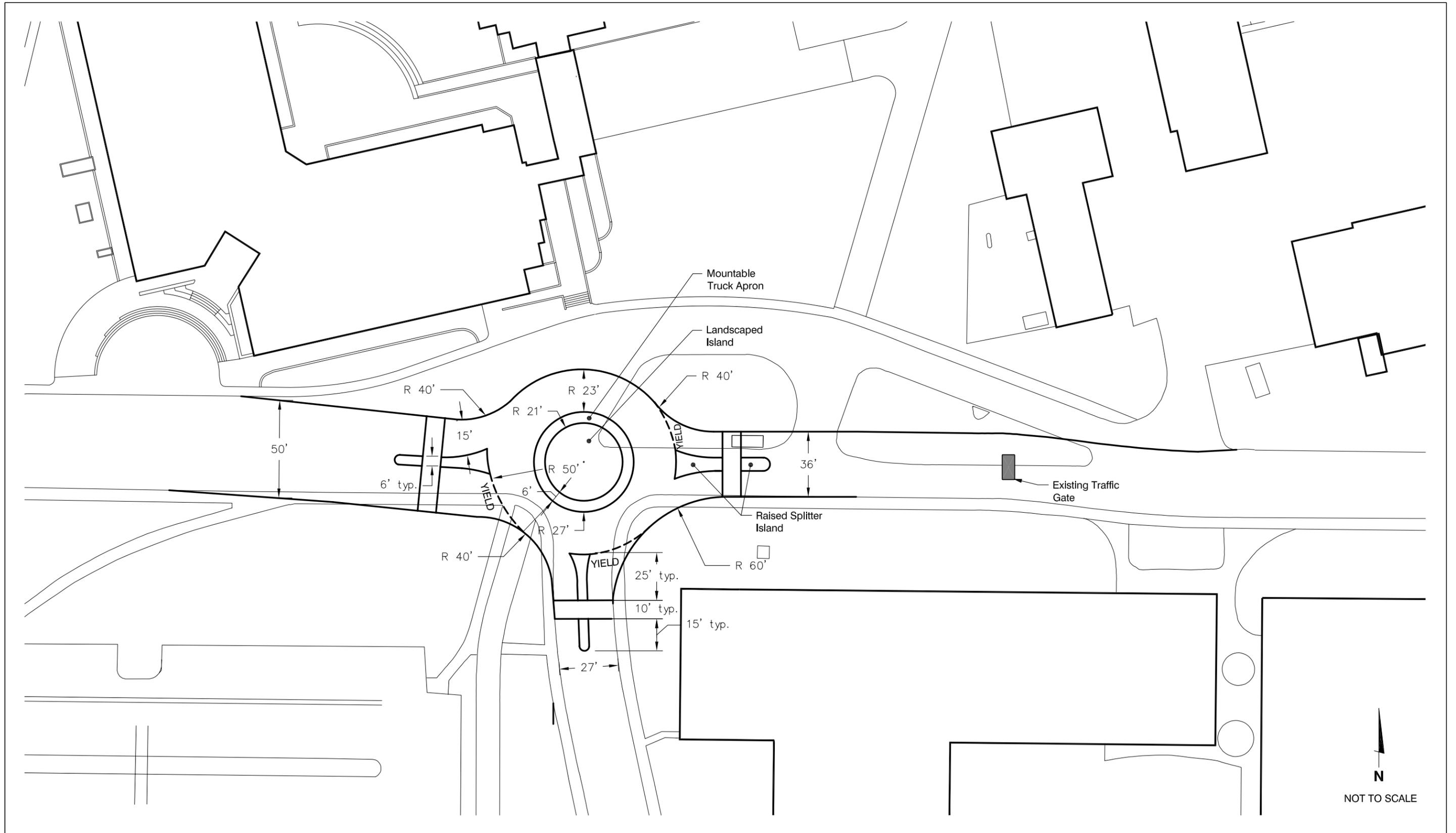
Roundabout Dimensions

To aid in planning future development in the vicinity of the Bioletti Way/Hutchison Drive intersection, key dimensions for a roundabout at this intersection were developed based on two primary references:

- *Roundabouts: An Informational Guide* (FHWA, June 2000) – containing guidelines for the application of roundabouts, given physical constraints and traffic characteristics; and
- *Traffic Calming Design Manual* (Delaware State Department of Transportation, August 2000) – the only adopted statewide traffic calming design manual in the United States, containing guidelines for the sizing of roundabouts on state highways.

The recommended dimensions are depicted in Figure 14 and listed below.

- *Inscribed Diameter*: 100 feet; *Inscribed Circle* – The roundabout should have an inscribed circle diameter of 100 feet – includes a 23-foot circulating lane, a 6-foot truck apron, and a landscaped center median with a diameter of 42 feet.
- *Entry Lanes* – The entry lanes should be 15 feet wide and should follow a 50-foot taper length to guide vehicles in the direction of the rotating lane in the roundabout. The taper length includes 15 feet adjacent to the outer splitter island, followed by a 10-foot crosswalk, followed by a 25-foot inner splitter island.
- *Crosswalks* – Crosswalks should be provided on all approaches to the roundabout with 10-foot widths, set back 25 feet from the rotating lane in the roundabout, and with a six-foot refuge in the splitter island between each entry lane and the adjacent exit lane.



NOT TO SCALE

Roundabout Operations

This intersection was analyzed as a roundabout using procedures contained in the 2000 HCM. The results of the roundabout analysis are summarized in Table 21. Detailed technical calculations are included in the separately bound technical appendix.

Table 21					
Roundabout Operations Analysis – Year 2005 Plus Project Conditions					
Bioletti Way/Hutchison Drive Intersection					
Scenario	Control	Volume-to-Capacity Ratio			
		AM Peak Hour		PM Peak Hour	
		Lower Bound	Upper Bound	Lower Bound	Upper Bound
1. Dairy Road Only	Roundabout	0.21	0.25	0.22	0.26
2. Bioletti Way Only	Roundabout	0.20	0.23	0.29	0.35
3. Dairy Road & Bioletti Way	Roundabout	0.21	0.25	0.25	0.30
Source: Fehr & Peers Associates, 2002					