TRAFFIC IMPACT ANALYSIS
BRADLEY RIDGE SUBDIVISION

Chapel Hill, North Carolina

Executive Summary

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Prepared for:

The Town of Chapel Hill, NC

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E.0 EXECUTIVE SUMMARY

E.1 Project Overview

The proposed Bradley Ridge subdivision is to be located on Sunrise Lane between Sweeten Creek Road and I-40. This site is to be built on undeveloped land, which borders I-40 to the north, vacant land to the east, Ginger Road to the south and Sunrise Lane to the west (See Figure E-1). The proposed development would have access/egress to and from Sunrise Road and Sweeten Creek Road. The site is currently zoned R-2 see Figure E-2).

This study analyzes two Scenarios for the Build Conditions. Under the Build Conditions Scenario 1, the Bradley Ridge subdivision would have access/egress to Sunrise Lane across the existing YMCA driveway. Under the Build Conditions Scenario 2, the Bradley Ridge subdivision would have access/egress to Sunrise Lane via Ginger Road (south of the existing YMCA driveway).

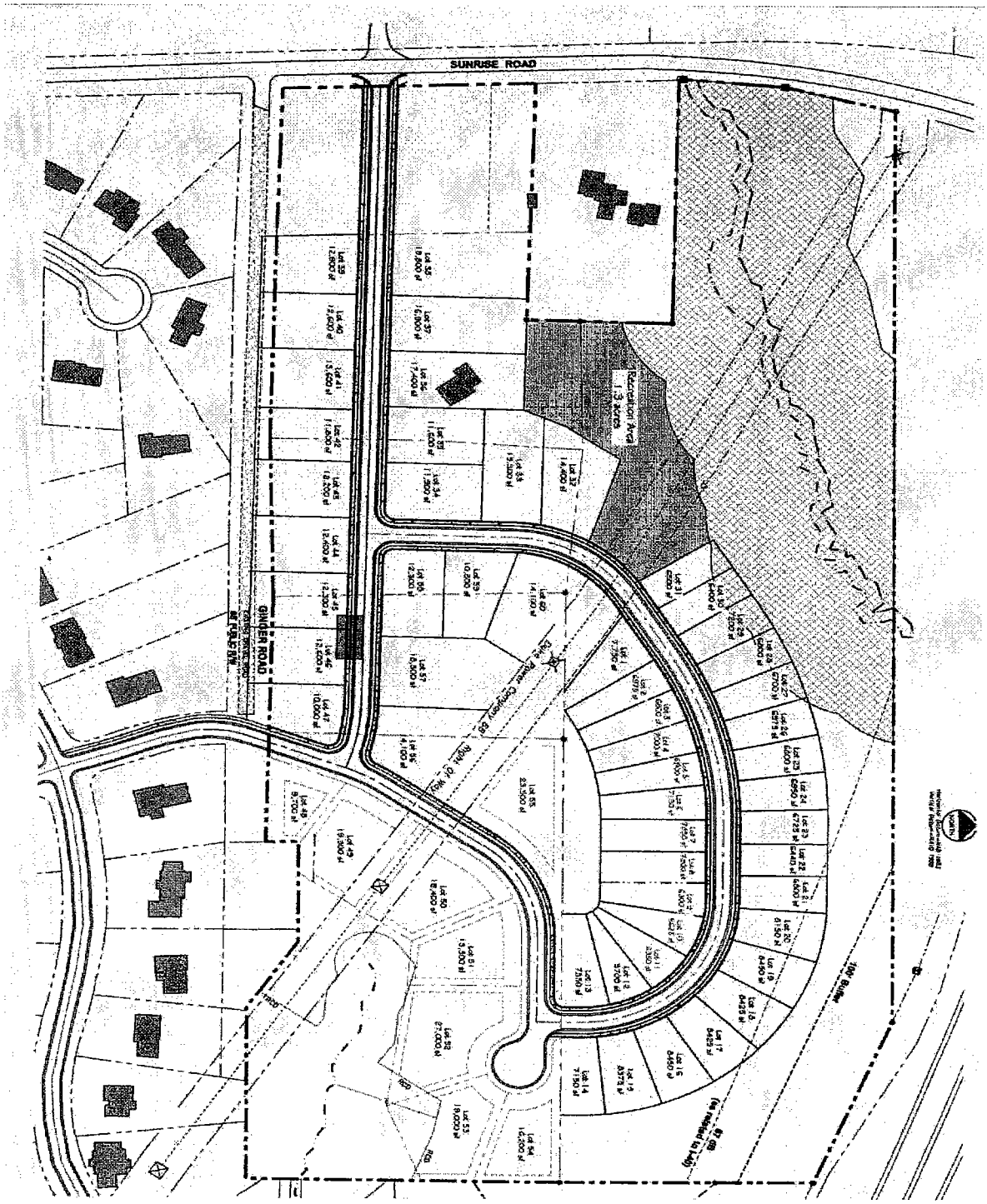
E.2 Proposed Project Traffic

The proposed Bradley Ridge Development would generate approximately 690 vehicle trips per day. Of these additional trips, 55 vehicle trips will occur during the AM peak hour, 72 vehicle trips during Mid-day peak hour, and 72 vehicle trips during the PM peak hour.

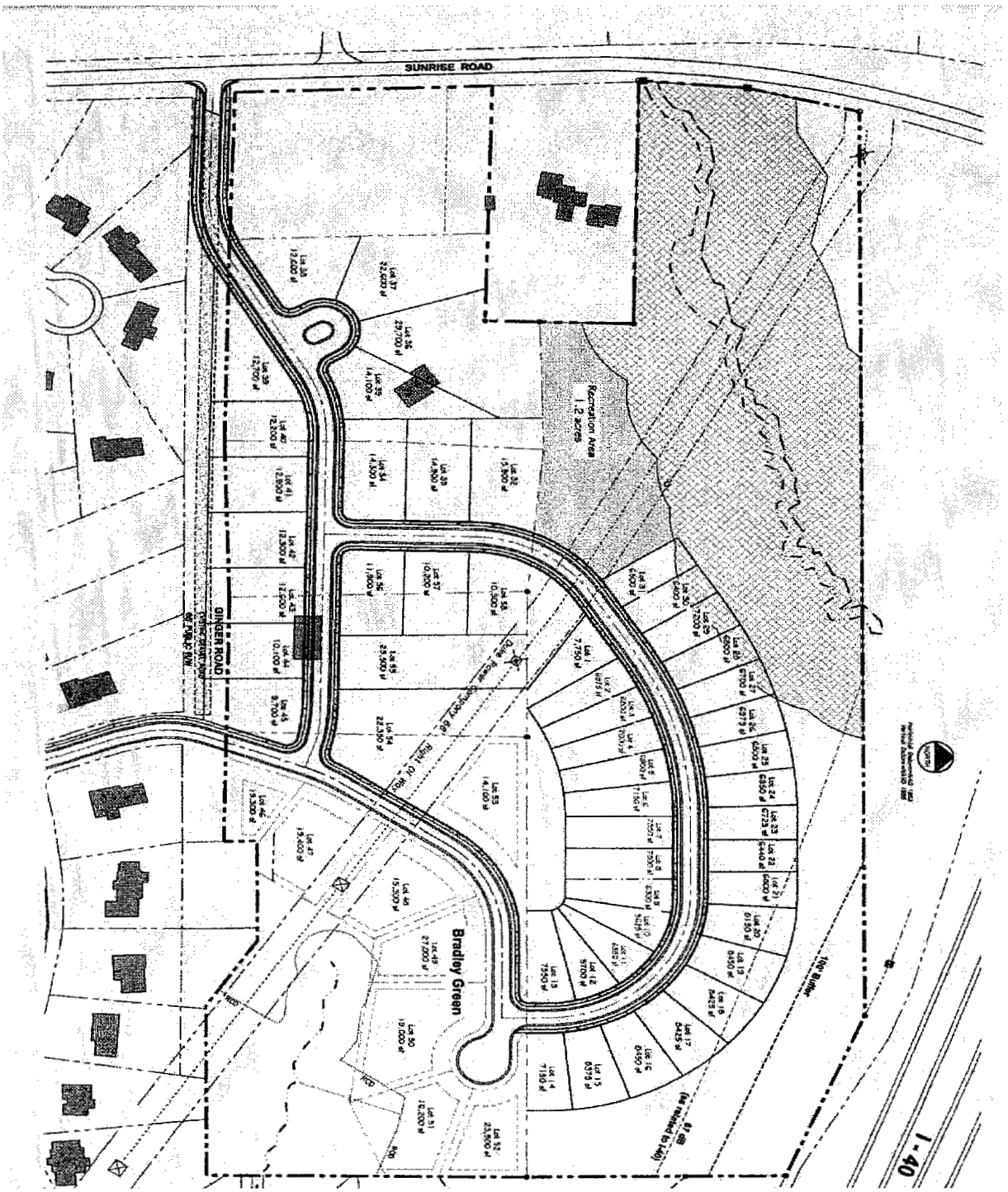
Table E-1 summarizes the trip generation rates and the number of trips generated by the proposed development during the AM, mid-day and PM peak periods of the day.

Table E-1
Site Trip Generation Rates and Volumes

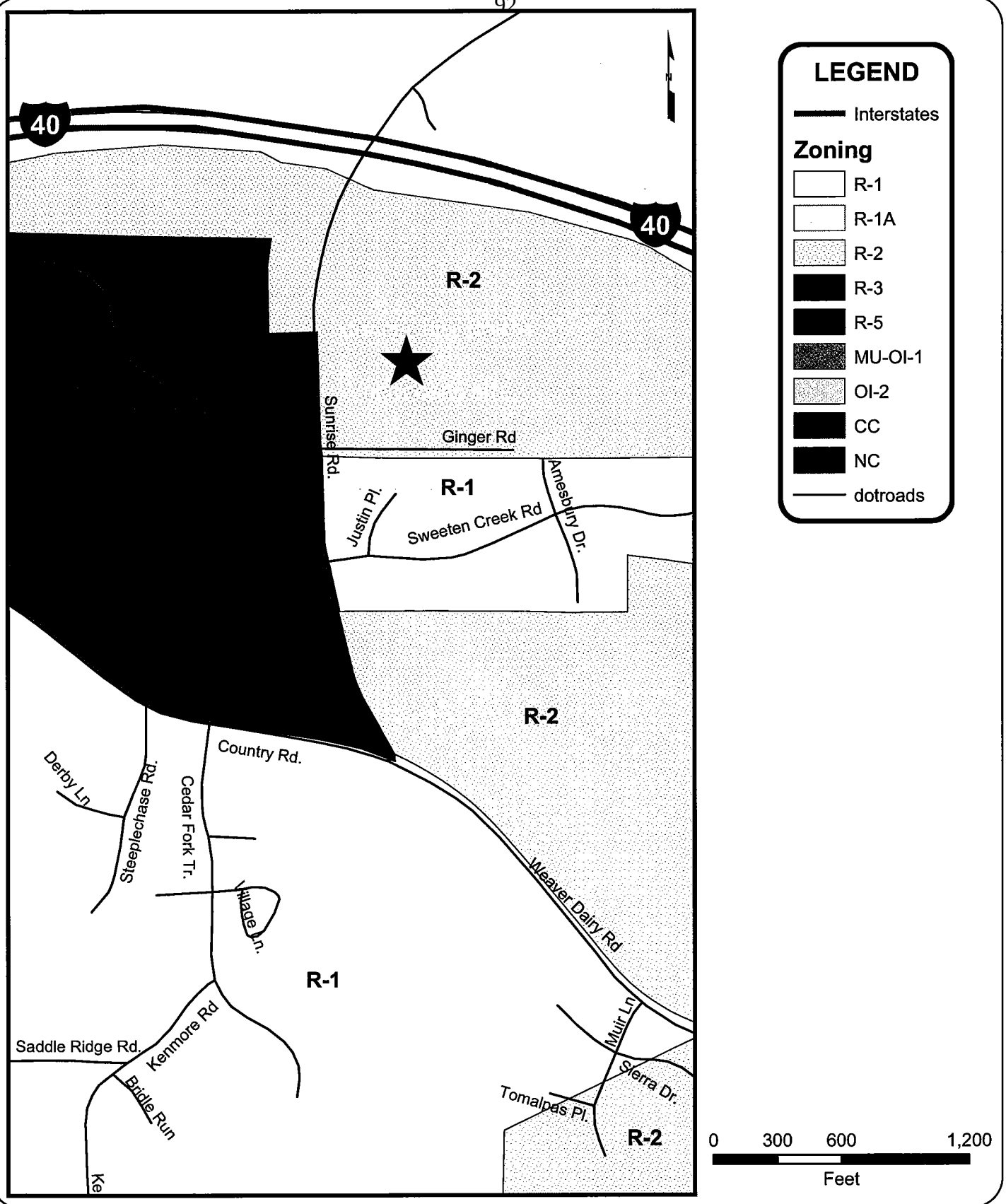
Land Use	Size	Traffic Volumes							
		Weekday (veh. per day)		AM Peak Hour (veh.per hour)		Mid-day Peak Hour (veh. per hour)		PM Peak Hour (veh. per hour)	
		Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Single-Family Housing Units	64 Units	345	345	14	41	36	36	45	27



TOWN OF CHAPEL HILL	BRADLEY RIDGE SUBDIVSION TRAFFIC IMPACT ANALYSIS CHAPEL HILL, NC	RS&H IMPROVING YOUR WORLD RS&H Architects-Engineers-Planners, Inc	PROJECT SITE PLAN SCENARIO 1
	RS&H ARCHITECTS-ENGINEERS-PLANNERS, INC CHARLOTTE, NORTH CAROLINA		Figure E-1A



TOWN OF CHAPEL HILL	BRADLEY RIDGE SUBDIVSION TRAFFIC IMPACT ANALYSIS CHAPEL HILL, NC	RS&H IMPROVING YOUR WORLD RS&H Architects-Engineers-Planners, Inc.	PROJECT SITE PLAN SCENARIO 2
	RS&H ARCHITECTS-ENGINEERS-PLANNERS, INC CHARLOTTE, NORTH CAROLINA		Figure E-1B



BRADLEY RIDGE SUBDIVISION
TRAFFIC IMPACT STUDY

PROJECT LOCATION

FIGURE E-2

E.3 Project Impacts

To determine the traffic impacts of the proposed site development on nearby roadways, traffic flow conditions were analyzed at the following three arterial segments and four intersections for the 2007 Existing Conditions, 2013 No Build Conditions, and 2013 Build Conditions Scenario 1 and 2:

Arterial Segments:

- Weaver Dairy Road in the vicinity of Sunrise Lane
- Sunrise Lane between Weaver Dairy Road and Ginger Road
- Sweeten Creak Road in the vicinity of Sunrise Lane

Intersections

- Weaver Dairy Road at Sunrise Lane
- Sunrise Lane at Sweeten Creek Road
- Sunrise Lane at Ginger Road (only under 2013 Build Conditions Scenario 2)
- Sunrise Lane at the YMCA entrance

Table E-2 and E-3 compare the arterial and intersection capacity analysis results for all of the scenarios analyzed in this study. Table E-4 summarizes the overall impacts of the proposed project for the year 2013 (one-year after it is built and fully occupied).

In summary, the analysis conducted in this study indicated that the traffic flow conditions for either scenario would not be significantly different from the other scenario.

Table E-2
Arterial Capacity Analysis Summary

Facility Type	Segment	Direction of Travel	No. of Lanes (one direction)	Threshold Capacity (vehicles per hour per direction)*	2007 Existing Conditions (Volume-to-Capacity Ratio)			2013 No Build Conditions (Volume-to-Capacity Ratio)			2013 Build Conditions Scenario 1 (Volume-to-Capacity Ratio)			2013 Build Conditions Scenario 2 (Volume-to-Capacity Ratio)		
					AM Peak	Mid-day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak
Major Arterial	**Weaver Dairy Road**	Northbound	1	800	0.87	0.47	0.69	1.23	0.66	0.96	1.24	0.68	0.98	1.24	0.68	0.98
		Southbound	1	800	0.5	0.44	0.69	0.66	0.63	0.89	0.67	0.64	0.91	0.67	0.64	0.91
Minor Arterial	**Sunrise Lane**	Northbound	1	550	0.35	0.12	0.25	0.42	0.13	0.3	0.44	0.2	0.37	0.44	0.2	0.37
		Southbound	1	550	0.27	0.11	0.3	0.32	0.13	0.37	0.36	0.17	0.4	0.36	0.17	0.4
	Sweeten Creek Road	Eastbound	1	550	0.03	0.03	0.09	0.04	0.05	0.11	0.05	0.06	0.13	0.05	0.06	0.13
		Westbound	1	550	0.05	0.05	0.04	0.11	0.05	0.07	0.13	0.07	0.07	0.13	0.07	0.07

* *Guidelines for Traffic Impact Analysis, Town of Chapel Hill, October, 2001.*

Table E-3
Intersection Capacity Analysis Summary

Intersection	Traffic Movement		2007 Existing Conditions (Level of Service)			2013 No Build Conditions (Level of Service)			2013 Build Conditions Scenario 1 (Level of Service)			2013 Build Conditions Scenario 2 (Level of Service)		
			AM Peak	Mid-day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak
Weaver Dairy Road at Sunrise Lane (North-South Stop Controlled)	**Eastbound**	LR	A	A	A	A	A	B	A	A	B	A	A	B
	Westbound	L	F	C	E	F	D	F	F	D	F	F	D	F
		TR	B	B	C	B	B	C	B	B	C	B	B	C
Sunrise Lane at Sweeten Creek (East - West Stop Controlled)	**Westbound**	LR	B	A	B	B	A	B	B	A	B	B	A	B
	Southbound	L	A	A	A	A	A	A	A	A	A	A	A	A
Sunrise Lane at Ginger Road (East - West Stop Controlled)	**Westbound**	LR	NOT APPLICABLE									B	A	B
	Southbound	L										A	A	A
Sunrise Lane at YMCA Driveway (East - West Stop Controlled)	**Eastbound**	LTR	A	A	A	A	A	A	A	A	A	A	A	A
	Westbound	LTR	NOT APPLICABLE						B	A	B	NOT APPLICABLE		
	Northbound	L	A	A	A	A	A	A	A	A	A	A	A	A
	Southbound	L	NOT APPLICABLE						A	A	A	NOT APPLICABLE		

Table E-4
Summary of the Proposed Project's Impacts

Analyses	Impacts
Peak Hour Arterial Capacity	Traffic demand on the segment of Weaver Diary Road in the vicinity of Sunrise Lane would exceed the roadway capacity limits during both the AM and PM peak hour in at least one direction under both the No Build and Build Conditions.
Site Access	The two driveways shown in the proposed site plan should be sufficient to accommodate the site traffic as estimated for the proposed development.
New Signal Location	A signal warrant analysis for the intersection of Weaver Diary Road and Sunrise Lane indicated that this intersection does not meet the signal warrant requirements for warrants 2 and 7 under the 2007 Existing Conditions. However, a more detailed study might be needed to determine if this intersection warrants a traffic signal in the future.
Traffic Signal Phasing	All the intersections analyzed in this project are unsignalized under the 2007 Existing and 2013 Future Conditions (No Build and Build) and hence no signal phasing analysis was performed.
High Crash Locations	Crash data were obtained from the North Carolina Department of Transportation (NCDOT) for 36-month period for locations most likely to be impacted by the proposed development. This crash data indicated that the travel conditions in the study area are relatively safe today.
Traffic Signal Progression	All the intersections analyzed in this project are unsignalized under the 2007 Existing and 2013 Future Conditions (No Build and Build) and hence no progression analysis was performed.
Peak Hour Intersection Capacity	The peak hour intersection capacity analysis indicates that traffic demand at the unsignalized intersection of the Weaver Dairy Road and Sunrise Lane exceeds the intersection capacities under the 2007 Existing and the 2013 No Build and Build Conditions. It should be noted that the unsignalized intersection capacity analysis is extremely conservative and this intersection should be monitored to determine if traffic demand at this intersection warrants a traffic signal in the future.
Turn Lane Storage Requirements	The capacity analysis indicates that no separate left-turn lanes or additional storage lengths will be necessary at any of the intersections analyzed for this study.
Intersection Sight Distance	At the intersection of Sunrise Lane with Driveway #1, improvements such as removal of vegetation are recommended to provide a safe sight distance as recommended by AASHTO Green Book.
Appropriateness of Acceleration/Deceleration Lanes	The speed limit on Sunrise Lane is 35 miles per hour. Since the speed limits for the roadways are low, acceleration/ deceleration lanes are not needed at the proposed site driveway.
Pedestrian and Bicycle Facilities	There are no sidewalks along Sunrise Lane in the site vicinity, and the site plan does not include provisions for sidewalk along its frontage. There are no bicycles lanes or bicycle trails in the vicinity of the site.
Public Transportation Facilities	The proposed development is not served by Chapel Hill Transit. The nearest transit route is the "T" route, which runs along Weaver Dairy Road past Sunrise Lane to East Chapel Hill High School.

E.4 Mitigation Measures/Recommendations

Roadway improvements are divided into four categories: improvements already planned by the Town or NCDOT; those required regardless of development at the proposed site; improvements proposed as part of the site development; and any additional improvements required as a result of site development.

Planned Improvements

NCDOT has proposed a corridor upgrade of Weaver Dairy Road from NC 86 to SR 1734/Erwin Road. The proposed project will widen the roadway section from a two-lane road to a two-lane road with a continuous center lane for left turns. A signal at the intersection of Weaver Dairy Road and Sunrise Lane is also included in the project. However, as this project might not be completed before 2013 (one-year after the proposed development is completed and fully occupied), this analysis does not include these improvements.

Background Committed Improvements

No other roadway improvements that directly impact this analysis are committed by other development projects in the area.

Applicant Committed Improvements

The proposed site will have access to Sunrise Lane and Sweeten Creek Road. At this new roadway, improvements required to accommodate site traffic are limited to one approach lane and one exit lane.

Recommended Improvements

Under the Build Conditions Scenario 1, the required intersection sight distance at the intersection of Sunrise Lane with YMCA Driveway/proposed development's Driveway #1 is 335 feet for right-turns from a stopped position and 390 feet for left-turns from a stopped position. During the field visit it was observed that the existing vegetation along the eastern side of Sunrise Lane might create obstructions to the driver's view. To improve the sight distance at this intersection, removal of vegetation along the eastern side of Sunrise Lane should be considered.

Under the Build Conditions Scenario 2, the required intersection sight distance at the intersection of Sunrise Lane with Ginger Road/proposed development's Driveway #1 is 335 feet for right-turns from a stopped position and 390 feet for left-turns from a stopped position. During the field visit it was observed that the existing vegetation and mailboxes along the eastern side of Sunrise Lane might create obstructions to the driver's view. To improve the sight distance at this intersection, relocation of mailboxes and removal of vegetation along the eastern side of Sunrise Lane should be considered.