

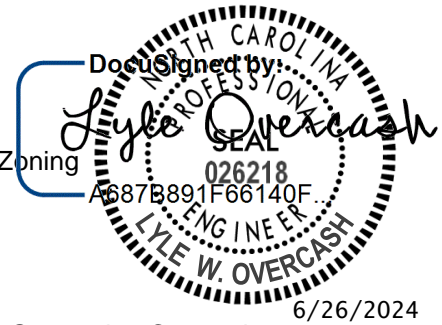
MEMORANDUM

To: Caitlin Spear – NCDOT
Jason Litteral, CFM – Currituck County, Planning & Zoning

From: Lyle Overcash, P.E.
Kimley-Horn and Associates, Inc.

Date: June 26, 2024

Subject: Flora Residential Development – Moyock, NC – Trip Generation Comparison



Kimley-Horn and Associates, Inc. has previously performed a Traffic Impact Analysis for proposed Flora Development (*Flora Retail TIA*, Kimley-Horn, November 2023). A portion of this development was assumed to consist of a 150,000 square foot (sf) shopping center. Since this TIA was performed, there have been land use updates to the proposed Flora Development. The updated plan now proposes to include 336 multi-family apartment units in lieu of the shopping center. Site access to the proposed Flora Development is anticipated to remain the same as was analyzed in the previously submitted TIA. Refer to **Figure 1** for current site plan.

The purpose of this memorandum is to provide a trip generation comparison for the previously proposed density of a 150,000 sf shopping center to the currently proposed density of 336 multi-family apartment units.

As shown in **Table 1**, the TIA estimated the retail portion of the development to generate 6,944 trips during a typical weekday with 222 total trips during the AM peak hour and 536 total trips during the PM peak hour.

Land Use Code	Land Use	Intensity	Daily		AM Peak Hour		PM Peak Hour	
			In	Out	In	Out	In	Out
820	Shopping Center (>150K)	150,000 sf	4,890	4,890	138	84	363	393
<i>Pass-By Trips</i>			1,418	1,418	0	0	110	110
Total Net New Trips			3,472	3,472	138	84	253	283

Traffic projections were prepared for the currently proposed density of 336 multi-family apartment units. Consistent with the previously submitted TIA, trip generation rates were taken from the Institute of Transportation Engineers (ITE) publication entitled *Trip Generation Manual, 11th Edition*. As shown in **Table 2**, the currently proposed residential portion of the development is estimated to generate 2,230 trips during a typical weekday with 127 total trips during the AM peak hour and 165 total trips during the PM peak hour.

Land Use Code	Land Use	Intensity	Daily		AM Peak Hour		PM Peak Hour	
			In	Out	In	Out	In	Out
220	Multi-Family Housing (Low-Rise)	336 units	1,115	1,115	30	97	104	61

When compared to the shopping center land use, the proposed residential land use will generate fewer overall trips during AM and PM peak hours, as well as over the course of a day, as detailed in **Table 3**, below.

Scenario	Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Previously Proposed Retail Development	6,944	138	84	222	253	283	536
Currently Proposed Residential Development	2,230	30	97	127	104	61	165
Trip Difference	-4,714	-108	+13	-95	-149	-222	-371

As depicted in **Table 3**, the currently proposed residential development is expected to generate approximately **68%** fewer daily trips, approximately **43%** fewer AM peak hour trips, and approximately **69%** fewer PM peak hour trips when compared to the previously proposed shopping center development. Therefore, the analysis in the TIA would be considered conservative and there would be no changes in the recommendations from the TIA.

Access to the apartment complex is proposed via the same street system as the shopping center, one (1) full-movement driveway on Survey Road, two (2) full movement driveways on Flora Boulevard, and interconnectivity to the south via Orchid Street. Preliminary construction documents for roadway improvements have been developed for the Flora Development, which include the proposed roundabout and realigned Survey Road as depicted in the current site plan. During plan development, some storage lengths in the November 2023 TIA have been adjusted. Updated roadway geometrics are detailed as follows and are recommended to be performed as part of the Flora Development:

Caratoke Highway (NC 168) at Flora Boulevard (signalized)

- Install a traffic signal
- Construct northbound approach with one ingress lane and three egress lanes. Provide exclusive dual left-turn lanes with 200 feet of storage and an exclusive right-turn lane with 200 feet of storage.
- Provide an eastbound right-turn lane on NC 168 with approximately 250 feet of storage and appropriate taper

- Stripe out approximately 200 feet of storage within the existing two-way left turn lane to provide a westbound left-turn lane on NC 168

Flora Boulevard at Survey Road (East) (roundabout)

- Construct a roundabout
- Construct westbound and southbound approaches with one ingress lane and one egress lane

Flora Boulevard at Lydia Street (unsignalized)

- Construct eastbound approach with one ingress lane and two egress lanes. Provide a shared left-through lane and an exclusive right-turn lane
- Construct a northbound left-turn lane on Flora Boulevard with approximately 100 feet of storage and appropriate taper
- Provide a southbound right-turn lane on Flora Boulevard with approximately 100 feet of storage and appropriate taper

Flora Boulevard at Eunice Street (unsignalized)

- Construct eastbound approach with one ingress lane and one egress lane
- Construct a northbound left-turn lane with approximately 50 feet of storage and appropriate taper

Survey Road at Future Access #1 (unsignalized)

- Construct northbound approach with one ingress lane and two egress lanes. Provide an exclusive left-turn lane with approximately 100 feet of storage and a right-turn lane
- Construct an eastbound right-turn lane with approximately 125 feet of storage and appropriate taper
- Construct a westbound left-turn lane with approximately 125 feet of storage and appropriate taper

The following improvements are committed to be performed by other projects in the area:

Caratoke Highway (NC 168) at Fost Boulevard (signalized)

- Install a traffic signal
- Construct an eastbound right-turn lane on NC 168 with approximately 150 feet of storage and appropriate taper
- Stripe out approximately 200 feet of storage within the existing two-way left turn lane to provide a westbound left-turn lane on NC 168
- Construct Fost Boulevard (northbound approach) with one ingress lane and two egress lanes. Provide a continuous right-turn lane and a left-turn lane with approximately 250 feet of storage and appropriate taper

Flora Boulevard at Survey Road

- Construct northbound approach (Flora Boulevard) with one ingress lane and one egress lane

Flora Boulevard at Lydia Street (unsignalized)

- Construct westbound approach with one ingress lane and one egress lane
- Provide a southbound left-turn lane on Flora Boulevard with approximately 100 feet of storage and appropriate taper

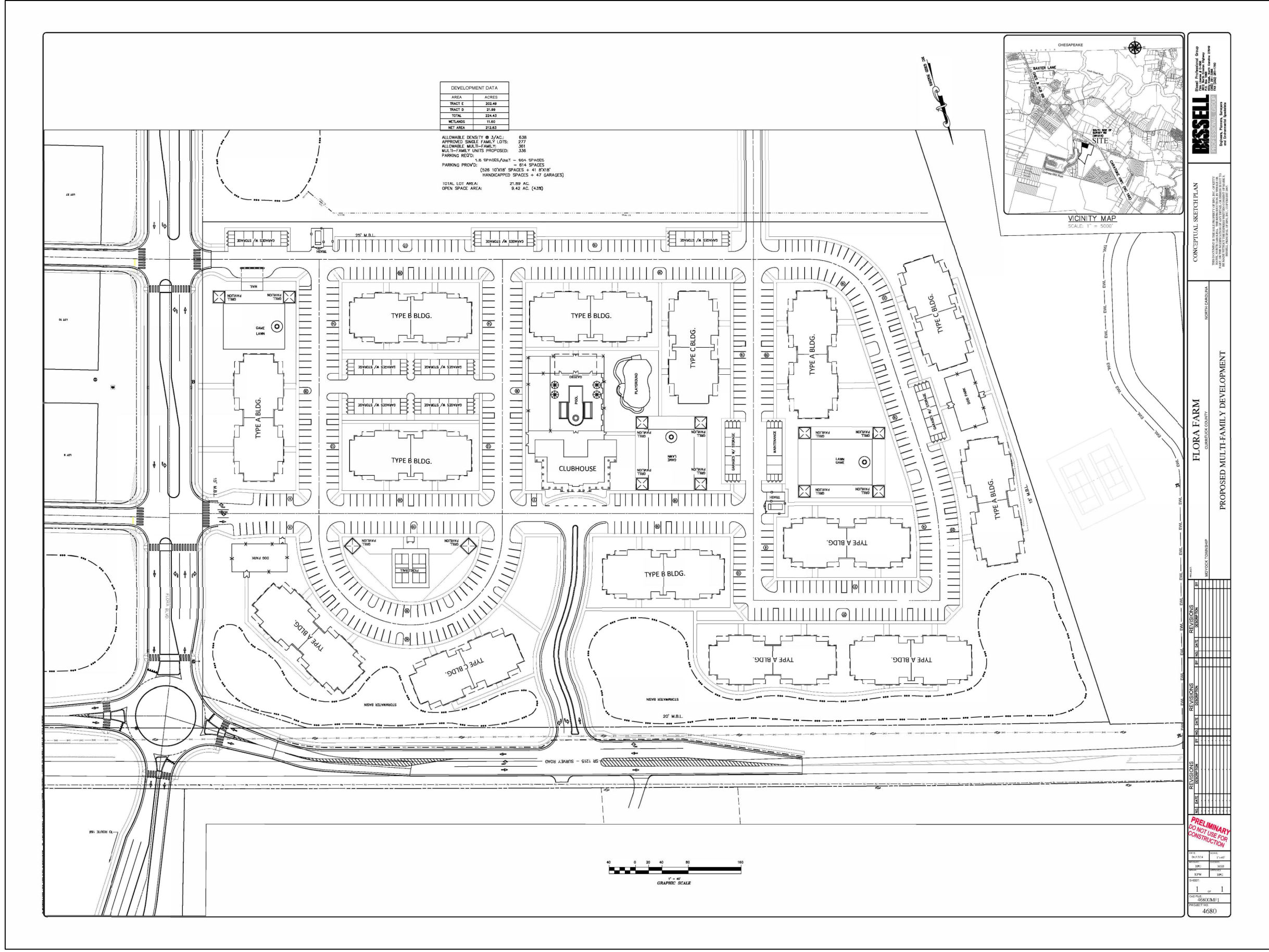
Flora Boulevard at Eunice Street (unsignalized)

- Construct westbound approach with one ingress lane and one egress lanes
- Provide a southbound left-turn lane on Flora Boulevard with approximately 100 feet of storage and appropriate taper

Figure 2 shows the committed and recommended laneage.

Should you have any questions or comments, please do not hesitate to contact me at (919) 678-4131 or lyle.overcash@kimley-horn.com.

Attachments: Figures 1-2



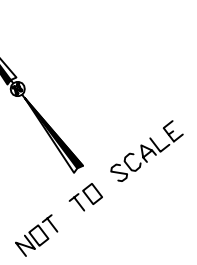
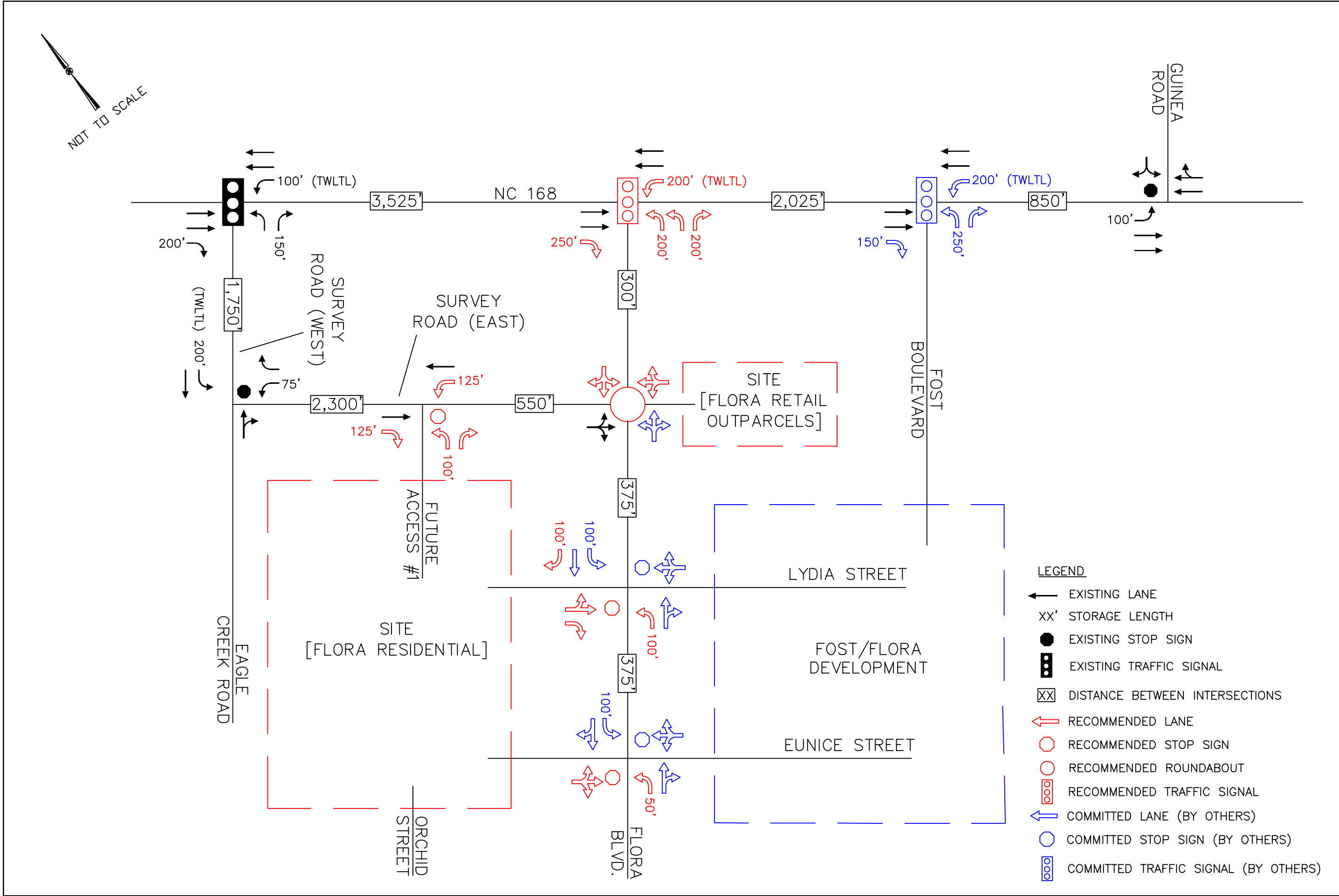
FLORA RESIDENTIAL
 MOYOCK, NC
 TRIP GENERATION COMPARISON

SITE PLAN

FIGURE
 1



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- LEGEND**
- ← EXISTING LANE
 - XX' STORAGE LENGTH
 - EXISTING STOP SIGN
 - ⬢ EXISTING TRAFFIC SIGNAL
 - XX DISTANCE BETWEEN INTERSECTIONS
 - ↔ RECOMMENDED LANE
 - RECOMMENDED STOP SIGN
 - RECOMMENDED ROUNDABOUT
 - ⬢ RECOMMENDED TRAFFIC SIGNAL
 - ↔ COMMITTED LANE (BY OTHERS)
 - COMMITTED STOP SIGN (BY OTHERS)
 - ⬢ COMMITTED TRAFFIC SIGNAL (BY OTHERS)

FIGURE 2

COMMITTED AND RECOMMENDED ROADWAY LANEA

FLORA RESIDENTIAL MOYOCK, NC TRIP GENERATION COMPARISON



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