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Star Road Development

Traffic Impact Analysis - Update

Wake Forest, North Carolina

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TRAFFIC IMPACT ANALYSIS

FOR

STAR ROAD DEVELOPMENT - UPDATE

LOCATED

IN

WAKE FOREST, NC

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9/12/23

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TRAFFIC IMPACT ANALYSIS
STAR ROAD DEVELOPMENT
WAKE FOREST, NORTH CAROLINA

EXECUTIVE SUMMARY

1. Development Overview

A Traffic Impact Analysis (TIA) was conducted for the proposed Star Road development in accordance with the Wake Forest (Town) Unified Development Ordinance (UDO) and North Carolina Department of Transportation (NCDOT) capacity analysis guidelines. The proposed development is to be located east of Star Road and north of Via Fortunata Plaza in Wake Forest, North Carolina. The proposed development, anticipated to be completed in 2027, is assumed to consist of the following uses:

- 119,100 square feet (s.f.) General Light Industrial
- 93 student Daycare Center
- 25,600 s.f. General Office
- 20,150 s.f. Strip Retail Plaza

Site access is proposed via one full-movement driveway along Star Road.

2. Existing Traffic Conditions

The study area for the TIA was determined through coordination with the Town and NCDOT and consists of the following existing intersections:

- S Main Street and Star Road
- Capital Boulevard and Star Road Connector / Ponderosa Service Road
- Star Road and Star Road Connector
- Capital Boulevard and Height Lane / Montys Lane
- Height Lane and Star Road

Existing peak hour traffic volumes were determined based on traffic counts conducted at the study intersection listed below, in April of 2023 during weekday AM (7:00 AM – 9:00 AM) and PM (2:00 PM – 6:00 PM) peak periods:

- S Main Street and Star Road
- Capital Boulevard and Star Road Connector / Ponderosa Service Road
- Star Road and Star Road Connector
- Capital Boulevard and Height Lane / Montys Lane
- Height Lane and Star Road

Traffic volumes were balanced between intersections where appropriate.

3. Site Trip Generation

The proposed development is assumed to consist of the land uses found below:

- 119,100 square feet (s.f.) General Light Industrial
- 93 student Daycare Center
- 25,600 s.f. General Office
- 20,150 s.f. Strip Retail Plaza

Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE Trip Generation Manual, 11th Edition. Table E-1, on the following page, provides a summary of the trip generation potential for the site.

Table E-1: Site Trip Generation

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Light Industrial (110)	119,100 s.f.	500	75	10	6	40
Daycare Center (565)	93 Students	378	37	33	32	37
General Office (710)	25,600 s.f.	356	46	6	9	45
Strip Retail Plaza (822)	20,150 s.f.	1,100	29	19	66	67
Total Trips		**2,334**	**187**	**68**	**113**	**189**
*Internal Capture (3% AM & 1% PM)**			*-7*	*-1*	*-0*	*-3*
Total External Trips			**180**	**67**	**113**	**186**
Pass-By Trips: Daycare Center (44% PM)			*--*	*--*	*-15*	*-15*
Pass-By Trips: Strip Retail Plaza (29% PM)			*--*	*--*	*-19*	*-19*
Total Primary Trips			**180**	**67**	**79**	**152**

*Utilizing methodology contained in the NCHRP Report 684.

4. Future Traffic Conditions

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 3% would be used to generate 2027 projected weekday AM and PM peak hour traffic volumes. The Hawthorne Development was identified as an adjacent development to be considered under future conditions.

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- 2023 Existing Traffic Conditions
- 2027 No-Build Traffic Conditions
- 2027 Build Traffic Conditions
- 2027 Build Traffic Conditions with Improvements

5. Recommendations

Based on the findings of this study, specific geometric and traffic control improvements have been identified at study intersections. The improvements are summarized below and are illustrated in Figure E-1.

Improvements by others

Capital Boulevard and Height Lane / Montys Lane

- Extend the existing southbound left-turn lane to 500 feet of full width storage.

Recommended Improvements by the Star Road Development

Capital Boulevard and Star Road Connector

- Install signal at the western side of the existing reduced conflict intersection (Capital Boulevard and Star Road Connector). Coordinate with NCDOT to develop a coordination and timing plan for all signals along Capital Boulevard.

Capital Boulevard and Height Lane / Montys Lane

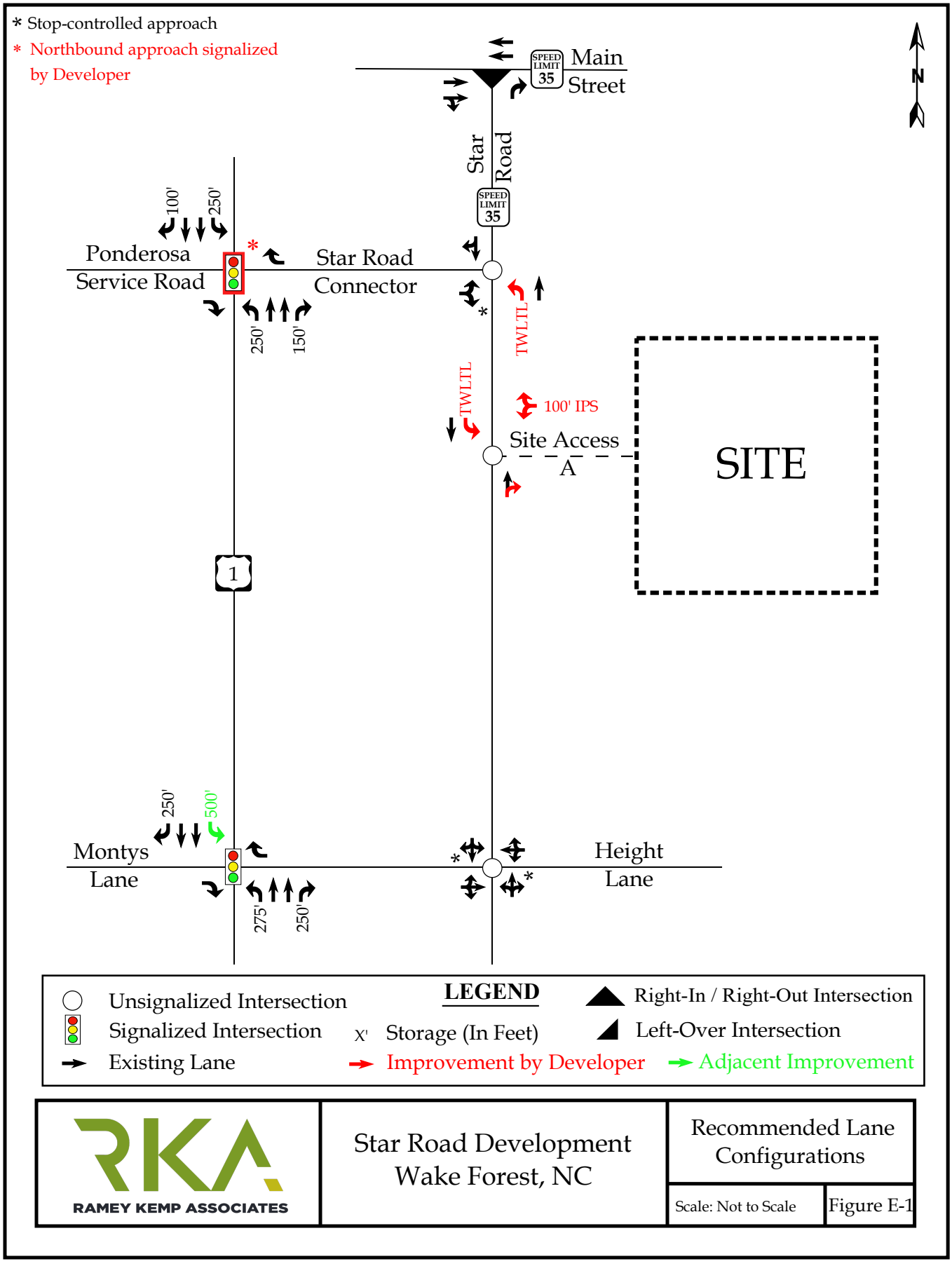
- Modify signal timings to allow more green time for minor street approach.

Star Road and Star Road Connector

- Provide a two-way left-turn lane (TWLTL) for northbound approach, extending to southbound approach of Site Access A. (~600 feet)

Star Road and Site Access A

- Construct the westbound approach as a full movement intersection with one ingress lane and one egress lane.
- Provide southbound TWLTL that extends to Star Road and Star Road Connector intersection. (~600 feet)
- Provide stop-control for westbound approach.
- Provide an internal protected stem (IPS) of at least 100 feet for westbound approach.



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Wake Forest, NC

Recommended Lane Configurations

Scale: Not to Scale

Figure E-1