Glen Lennox Redevelopment – Traffic Impact Study

Public Information Session Presentation

December 10th, 2013

Presented By:

HNTB North Carolina, PC
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Glen Lennox Redevelopment Traffic Impact Study

Today's Presentation

- Project Study Area
- Concept Plan
- Trip Generation/Assignment
- Analysis Methodology
- Capacity Analysis Results
- Recommended Improvements

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Glen Lennox Redevelopment Traffic Impact Study

Project Study Area

- 30 Existing Intersections on East Side of Chapel Hill
- 15 Signalized Intersections
- US 15-501 & NC 54 Corridors
- Multi-modal Analysis

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Project Study Area

RED = Signalized Intersections

YELLOW = Stop-Controlled Intersections

BLUE = Proposed US 15-501 Access

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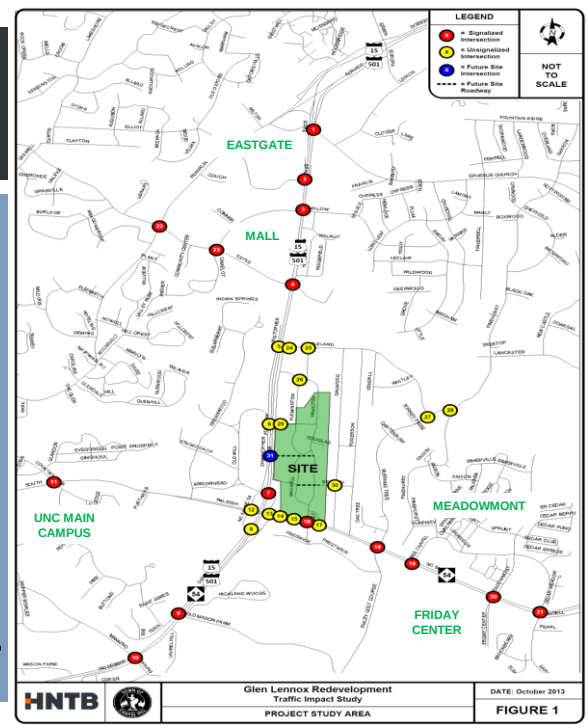

Glen Lennox Redevelopment Traffic Impact Study

Project Study Area

BICYCLE and PEDESTRIAN FEATURES

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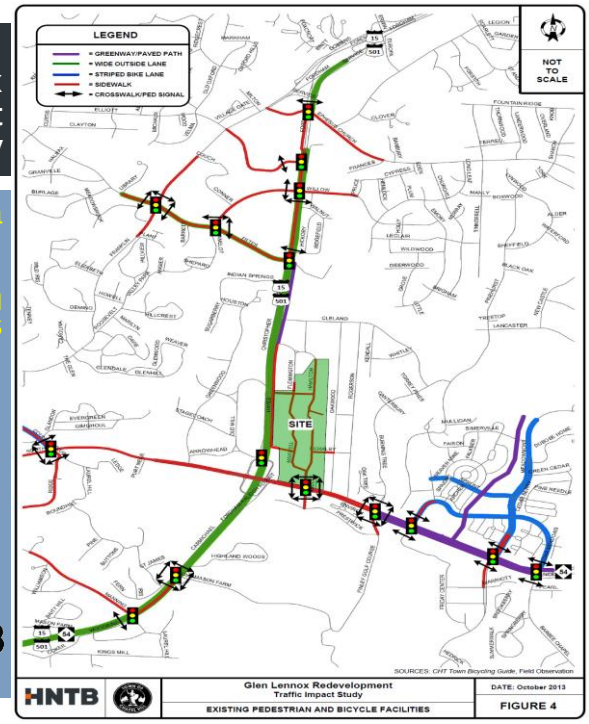

Glen Lennox Redevelopment Traffic Impact Study

Project Study Area

CHT ROUTES

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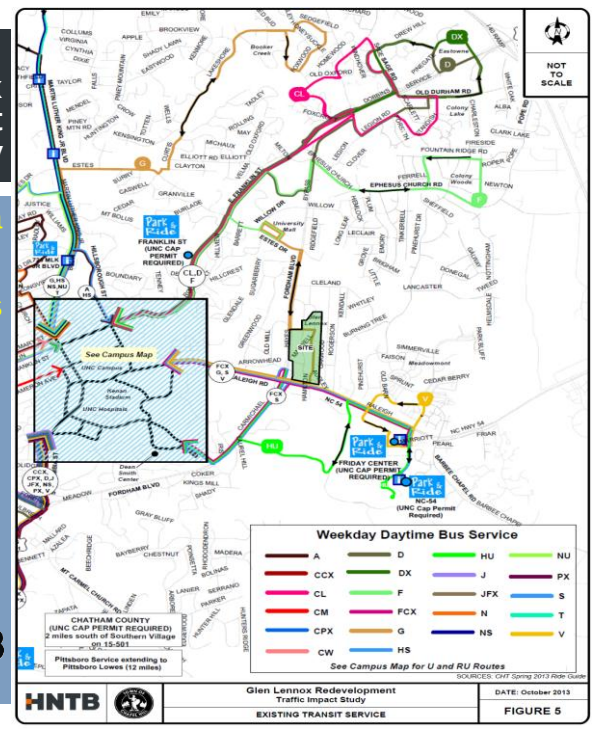

Glen Lennox Redevelopment Traffic Impact Study

Concept Plan

Phases 1-3 Analyzed

Net Traffic Impacts

Analyzed By Sub-Phase and Spatial Location

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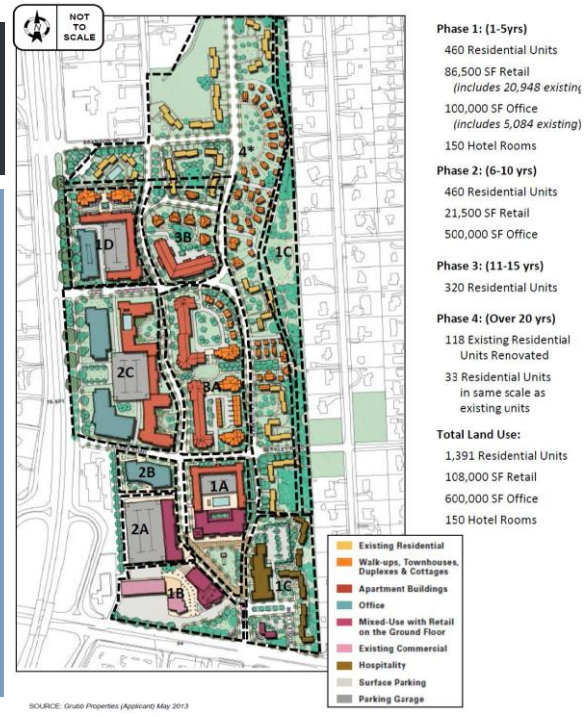

SOURCE: Grubb Properties (Applicant) May 2013

Phase 1: (1-5yrs)
460 Residential Units
86,500 SF Retail
(includes 20,948 existing
100,000 SF Office
(includes 5,084 existing)
150 Hotel Rooms

Phase 2: (6-10 yrs)
460 Residential Units
21,500 SF Retail
500,000 SF Office

Phase 3: (11-15 yrs)
320 Residential Units

Phase 4: (Over 20 yrs)
118 Existing Residential Units Renovated
33 Residential Units in same scale as existing units

Total Land Use:
1,391 Residential Units
108,000 SF Retail
600,000 SF Office
150 Hotel Rooms

Glen Lennox Redevelopment Traffic Impact Study

Site Trip Generation Details

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- Determined Existing Glen Lennox Vehicle/Transit/Bike/Pedestrian Trip Levels
- Calculated Future “Net” Trips Using ITE Trip Generation Methods (New Construction – Demolished Existing)
- Adjusted Raw Trips For Internal Capture, Transit, Pass-by Trips
- Distribute Vehicle Trips By Existing Trip Patterns
- Assign Trips

Phase	Sub-Phase	Timeline	Proposed Land Use	Density	Existing Development Demolished	Net ITE Trip Generation
1	1A	2013-2018	Apartments	280 units	48 apartments	292 units – LUC 220 Apartments
			Retail	25,000 sf		
	1B		Retail	80,000 sf	5,084 sf Office 20,948 sf Retail 26 apartments	94,916 sf – LUC 710 General Office Building
	1C	2014-2018	Retail	15,000 sf	51 units	99,052 sf – LUC 820 Shopping Center
			Hotel	150 rooms		
	1D		Apartments	180 units	43 apartments	150 rooms – LUC 310 Hotel
			Office	100,000 sf		
2	2A	2019-2023	Apartments	60 units	27 apartments	458 units – LUC 220 Apartments
			Retail	30,000 sf		
	2B		Office	180,000 sf		500,000 sf – LUC 710 General Office Building
	2C		Apartments	480 units	55 apartments	
			Office	320,000 sf		30,000 sf – LUC 820 Shopping Center
3	3A	2024-2028	Apartments	240 units	45 apartments	428 units – LUC 220 Apartments
			Other Res.*	60 units		
	3B		Apartments	160 units	27 apartments	
			Other Res.*	40 units		
4	4A	2014-2028	Apartments	118 units	*Renovation of Existing Units*	***No Additional Trips Generated***
	4B	2018-2028	Apartments	33 units		

* - Assumed to be apartment units, but could be condominiums/townhomes

Table 19. Glen Lennox Redevelopment - Summary Trip Generation Data (Cumulative Sub-Phase)

Total External Vehicle Trips (Driveway Volumes)

Phase	24-Hour Volumes			AM Peak Hour Trips			Noon Peak Hour Trips			PM Peak Hour Trips		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
1	5,100	5,100	10,200	268	178	445	265	252	518	288	324	612
2	3,664	3,664	7,328	630	224	855	301	294	594	260	601	861
3	886	886	1,772	24	131	155	89	111	200	130	64	195
TOTALS	**9,651**	**9,651**	**19,300**	**923**	**533**	**1,455**	**655**	**656**	**1,312**	**678**	**989**	**1,668**

Total External Vehicle Trips Added to Adjacent Streets

Phase	24-Hour Volumes			AM Peak Hour Trips			Noon Peak Hour Trips			PM Peak Hour Trips		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
1	4,013	4,013	8,026	268	178	445	221	208	430	241	277	516
2	3,379	3,379	6,759	630	224	855	288	281	568	242	583	825
3	886	886	1,772	24	131	155	89	111	200	130	64	195
TOTALS	**8,279**	**8,279**	**16,557**	**923**	**533**	**1,455**	**598**	**599**	**1,198**	**613**	**924**	**1,536**

Glen Lennox Redevelopment Traffic Impact Study

Background Planning Studies

RED = U-5304 Superstreet Study

BLUE = NC 54 Corridor Land Use and Transportation Study

GREEN = Ephesus Church Road Small Area Plan

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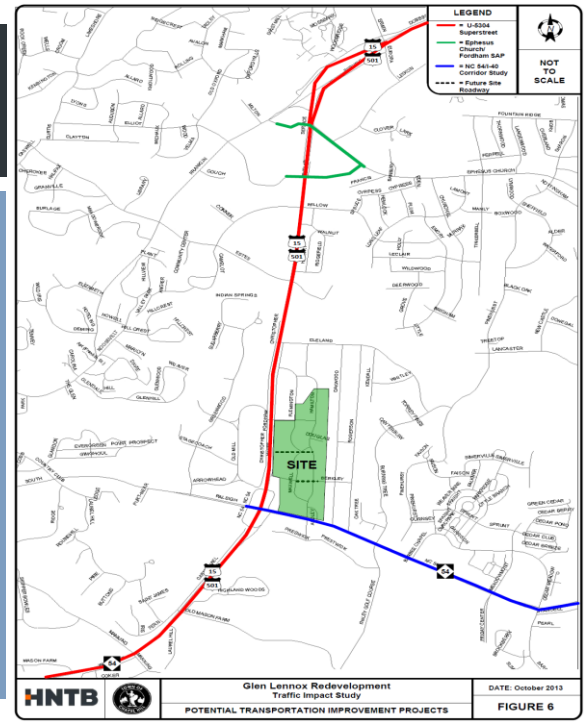

Glen Lennox Redevelopment Traffic Impact Study

Analysis Methodology

- Peak Hour Capacity Analysis
- LOS A – F (Threshold LOS D)
- Daily Volume/Capacity Analysis
- Crash Analysis
- Other Town-Required Analyses (Access, Signal Warrant, Acceleration/Deceleration Lanes, Transit, Bike/Ped)

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Glen Lennox Redevelopment Traffic Impact Study

2013 Existing AM/Noon/PM Weekday Peak Hour LOS Results

Several Intersections Exceed LOS D Thresholds

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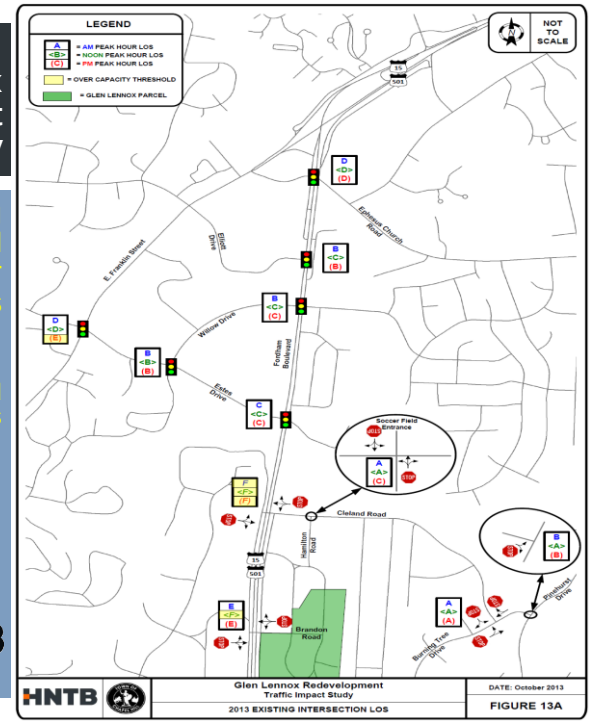

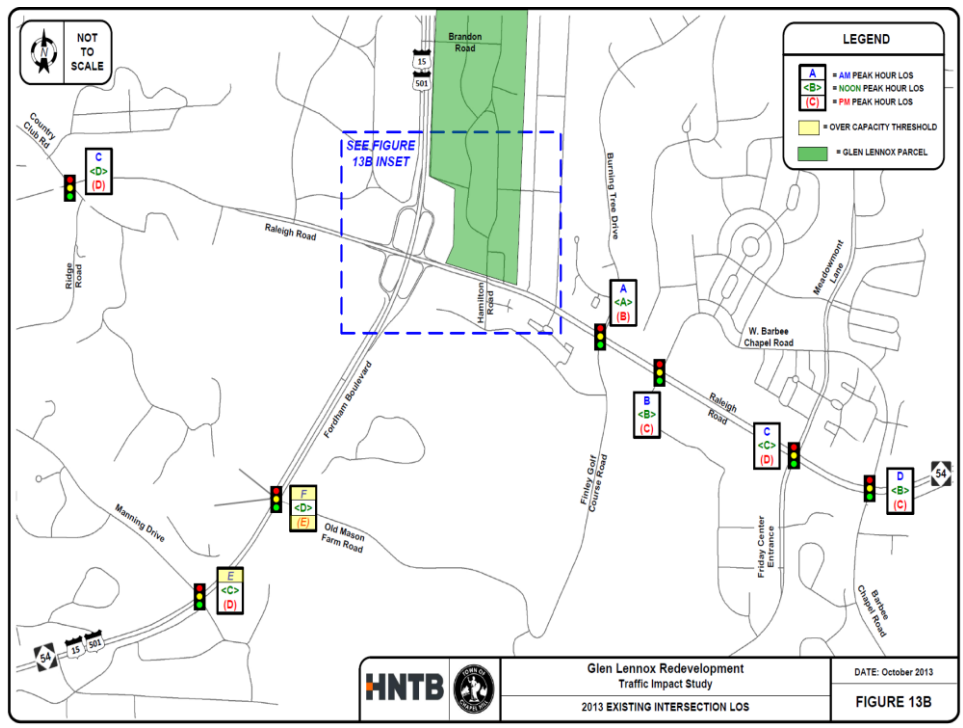

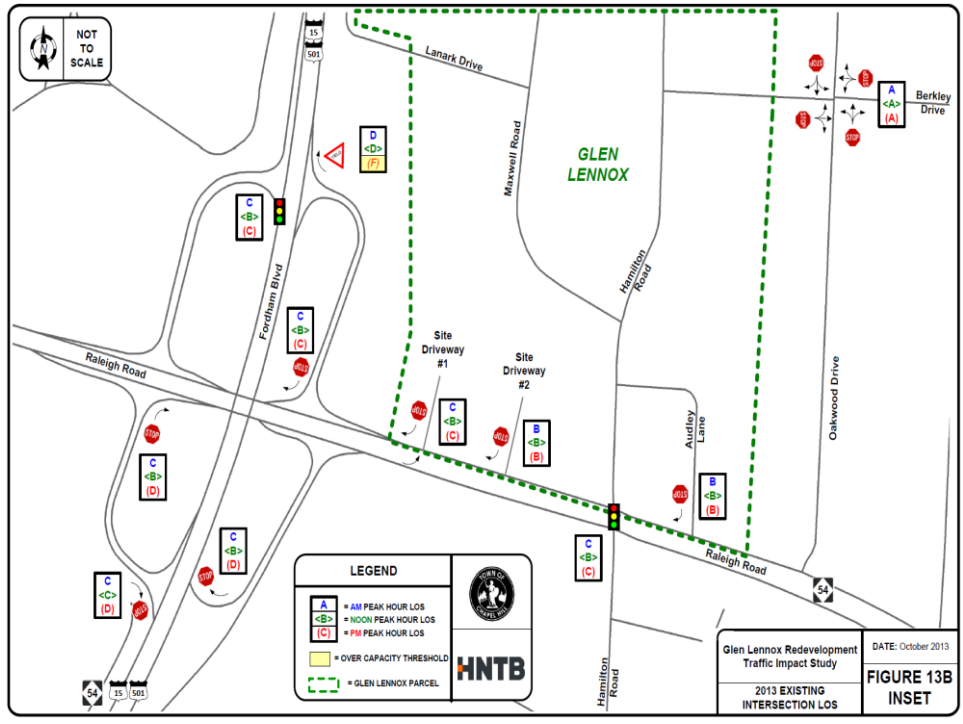

Glen Lennox Redevelopment Traffic Impact Study

2018 Phase 1

Peak Hour LOS Results

- Worst Case Results for 3 Peak Hours

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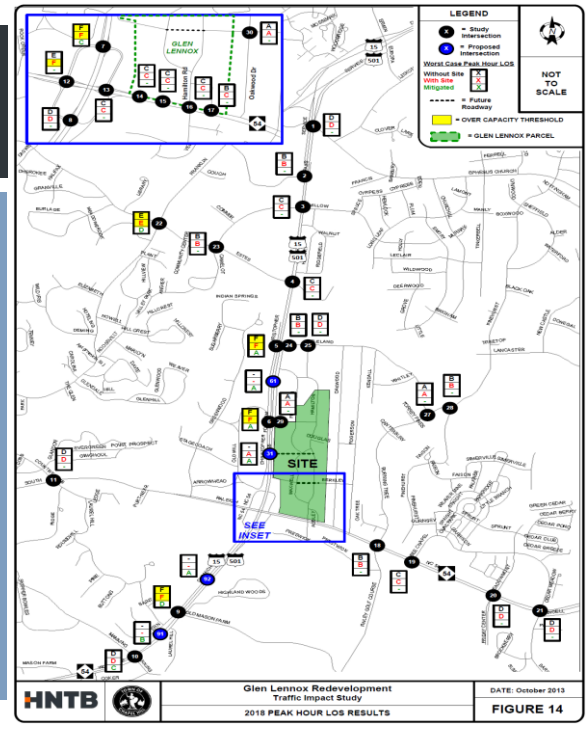

Glen Lennox Redevelopment Traffic Impact Study

2023 Phase 2

Peak Hour LOS Results

- Worst Case Results for 3 Peak Hours

- Assumes Mitigation Recommended in Phase 1 Analysis is Constructed

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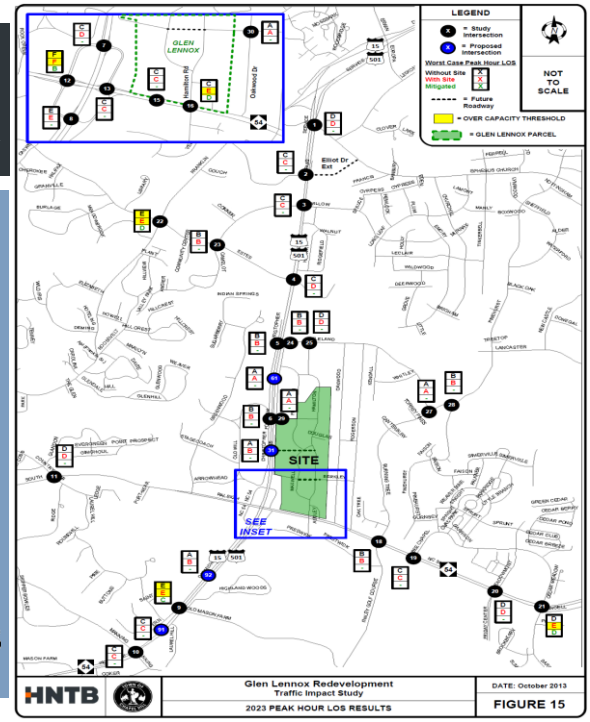

Glen Lennox Redevelopment Traffic Impact Study

2028 Phase 3

Peak Hour LOS Results

- Worst Case Results for 3 Peak Hours

- Assumes Mitigation Recommended in Phase 2 Analysis is Constructed

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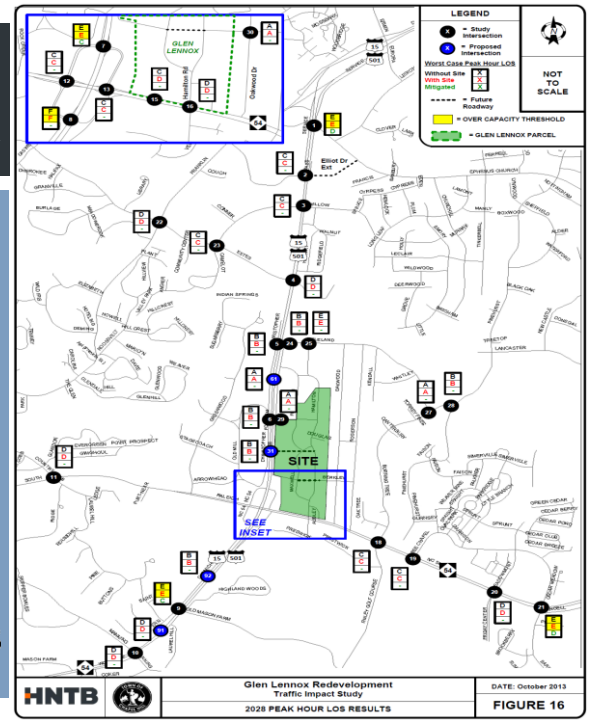

Glen Lennox Redevelopment Traffic Impact Study

2018 Phase 1 – Possible Improvements

RED = Developer Required

GREEN = Necessary to Achieve LOS

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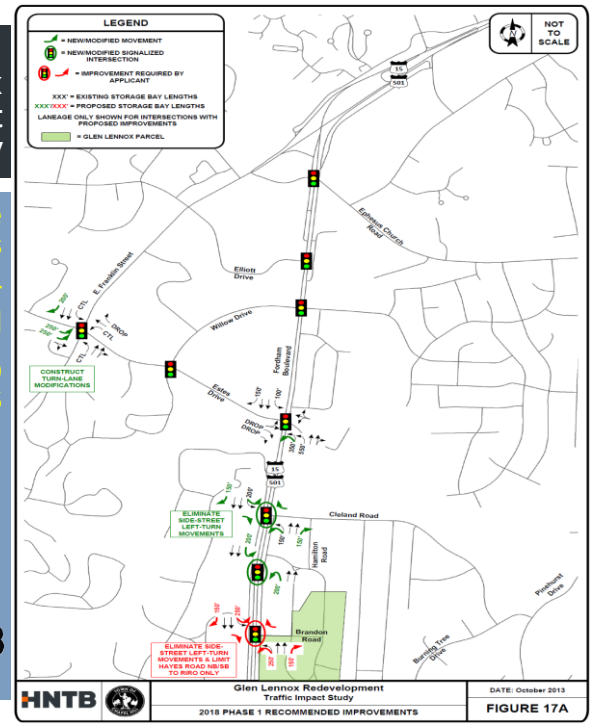

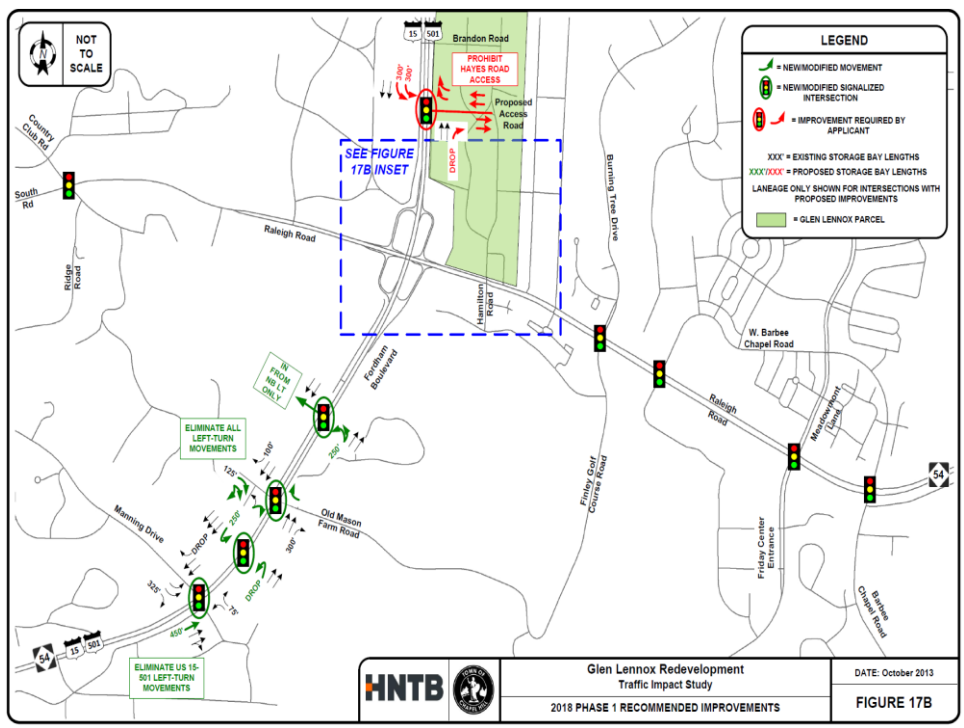

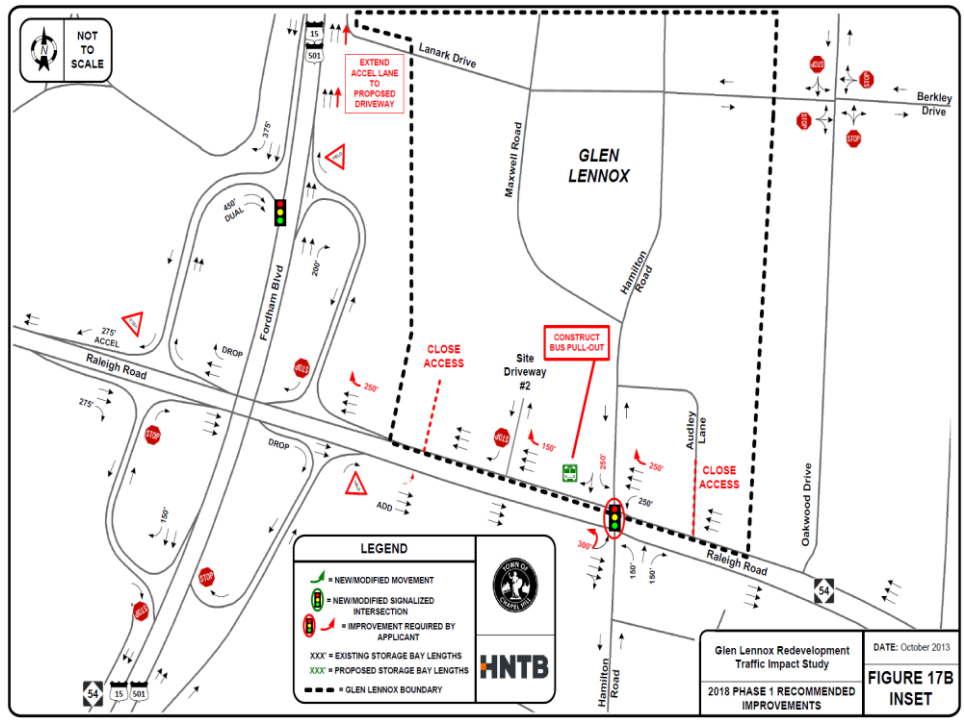

Glen Lennox Redevelopment Traffic Impact Study

2023 Phase 2 – Possible Improvements

RED = Developer Required

GREEN = Necessary to Achieve LOS

PURPLE = Ephesus Church Road SAP

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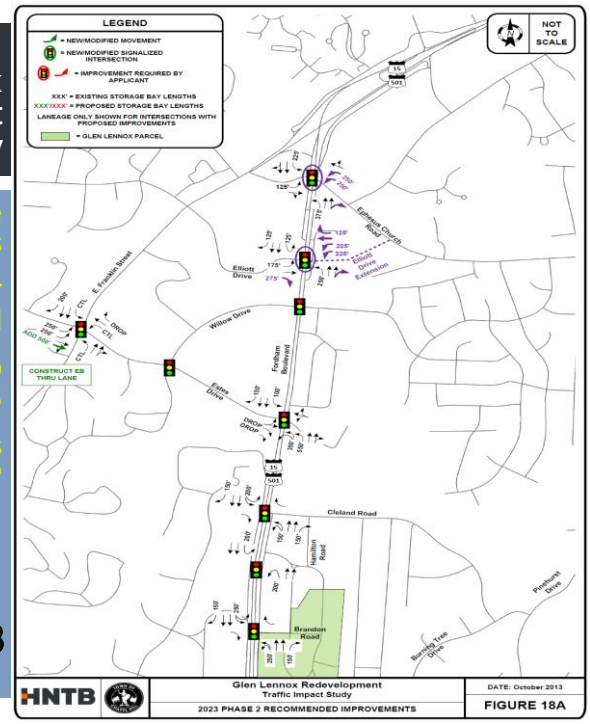
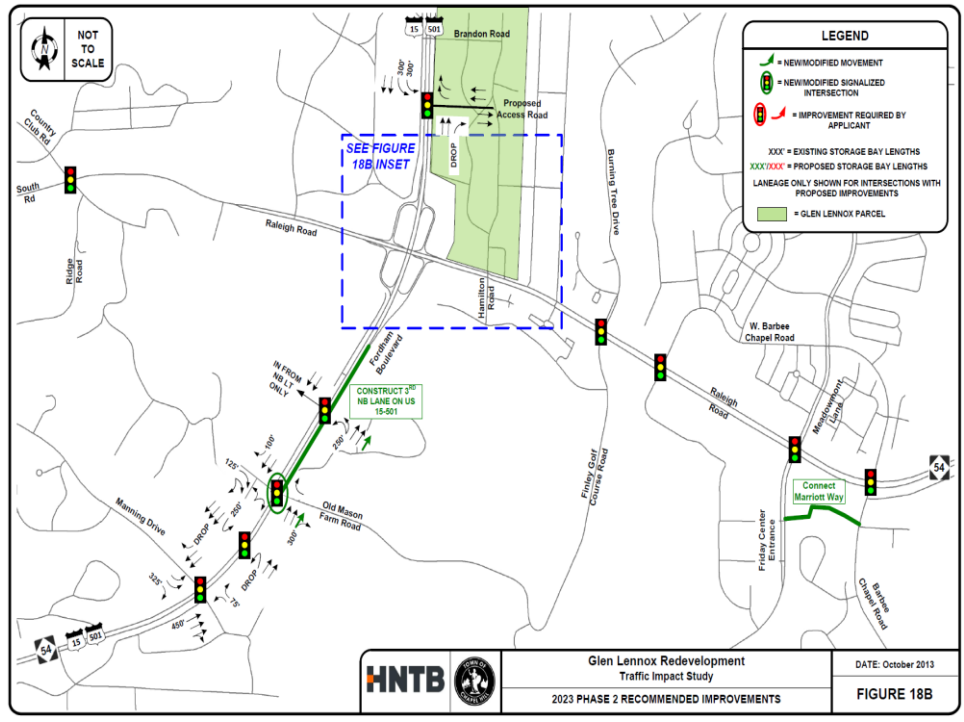
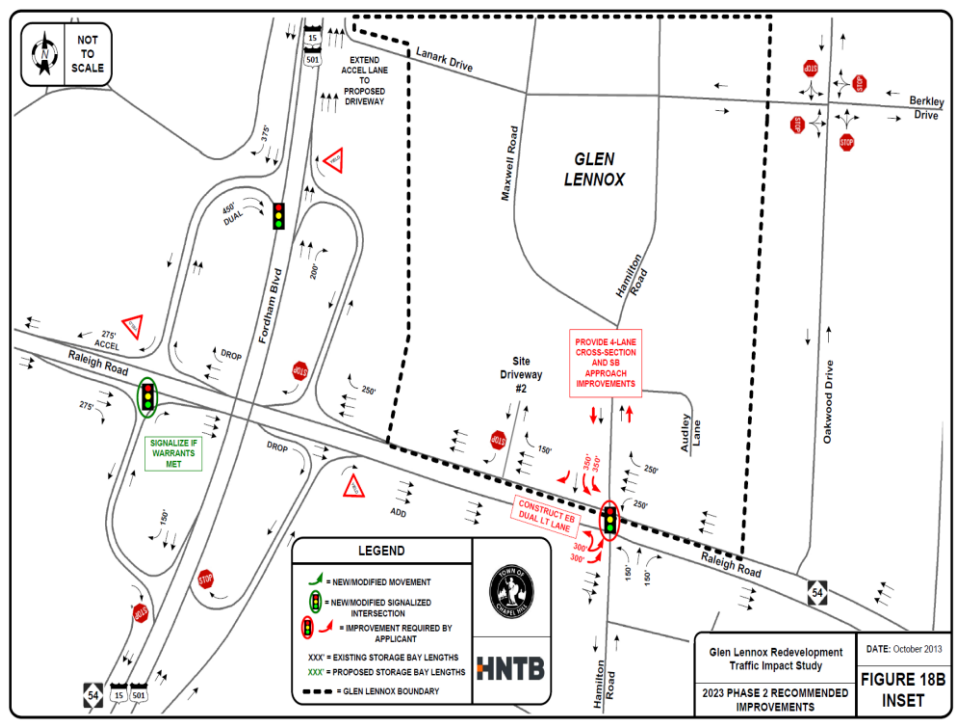



NOT TO SCALE
LEGEND
= NEW/MODIFIED MOVEMENT
= NEW/MODIFIED SIGNALIZED INTERSECTION
= IMPROVEMENT REQUIRED BY APPLICANT
XXX' = EXISTING STORAGE BAY LENGTHS
XXX'/XXX' = PROPOSED STORAGE BAY LENGTHS
LANEAGE ONLY SHOWN FOR INTERSECTIONS WITH PROPOSED IMPROVEMENTS
= GLEN LENNOX PARCEL
SEE FIGURE 18B INSET
Brandon Road
Proposed Access Road
DROP
Country Club Rd
South Rd
Ridge Road
Raleigh Road
Hamilton Road
Burning Tree Drive
W. Barbee Chapel Road
Fordham Boulevard
IN FROM NB LT ONLY
CONSTRUCT 3RD NB LANE ON US 15-501
Manning Drive
Old Mason Farm Road
Finley Golf Course Road
Montpelier Lane
Connect Marriott Way
Friday Center Entrance
Barbee Chapel Road
Glen Lennox Redevelopment
Traffic Impact Study
2023 PHASE 2 RECOMMENDED IMPROVEMENTS
DATE: October 2013
FIGURE 18B


NOT TO SCALE
EXTEND ACCEL LANE TO PROPOSED DRIVEWAY
Lanark Drive
Berkley Drive
Maxwell Road
GLEN LENNOX
Hamilton Road
Fordham Blvd
Raleigh Road
Site Driveway #2
PROVIDE 4-LANE CROSS-SECTION AND SB APPROACH IMPROVEMENTS
SIGNALIZE IF WARRANTS MET
CONSTRUCT EB DUAL LT LANE
Audley Lane
Oakwood Drive
LEGEND
= NEW/MODIFIED MOVEMENT
= NEW/MODIFIED SIGNALIZED INTERSECTION
= IMPROVEMENT REQUIRED BY APPLICANT
XXX' = EXISTING STORAGE BAY LENGTHS
XXX' = PROPOSED STORAGE BAY LENGTHS
= GLEN LENNOX BOUNDARY
Glen Lennox Redevelopment
Traffic Impact Study
2023 PHASE 2 RECOMMENDED IMPROVEMENTS
DATE: October 2013
FIGURE 18B INSET

Glen Lennox Redevelopment Traffic Impact Study

2028 Phase 3 – Possible Improvements

RED = Developer Required

GREEN = Necessary to Achieve LOS

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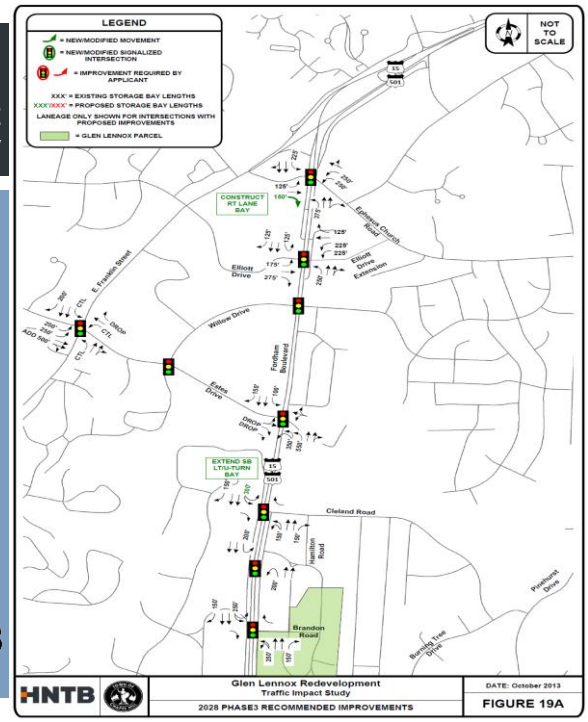

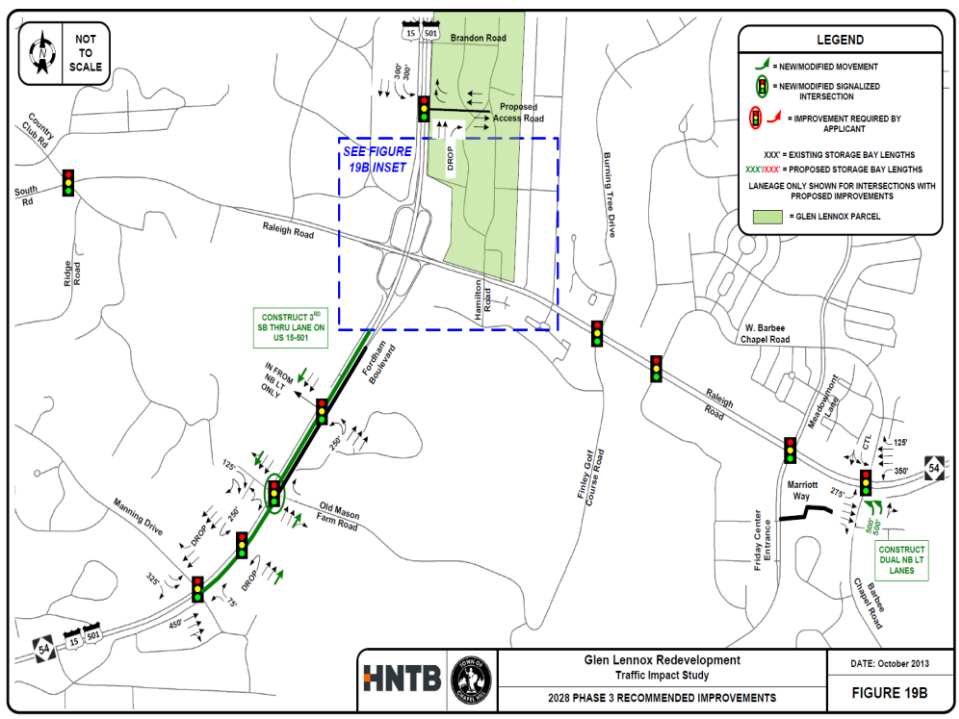

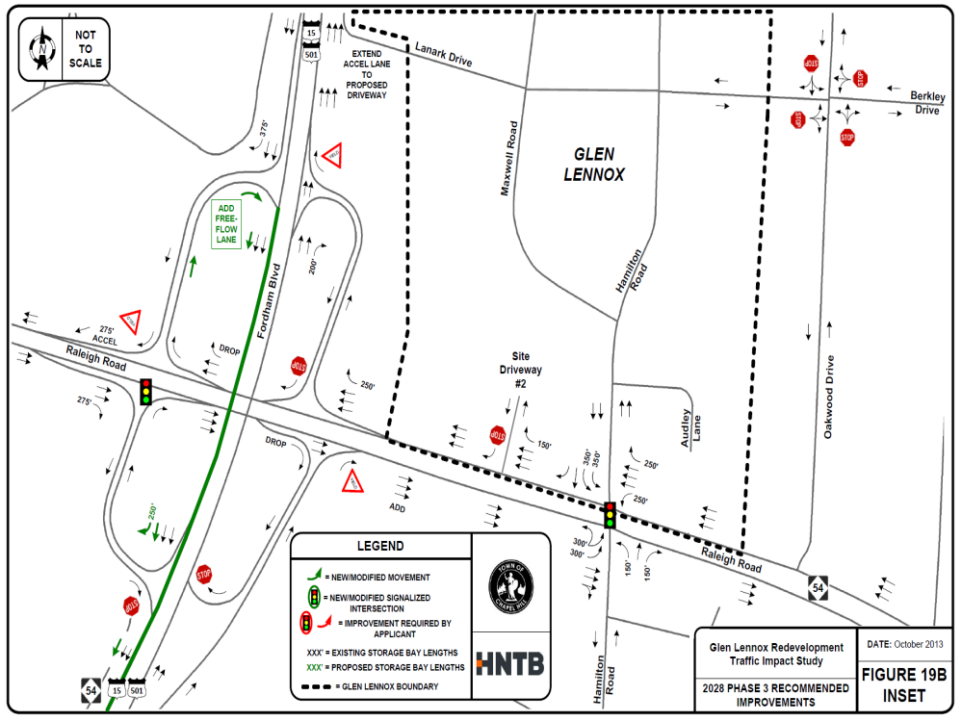

Glen Lennox Redevelopment Traffic Impact Study

"Superstreet" Concept

- Basic Details

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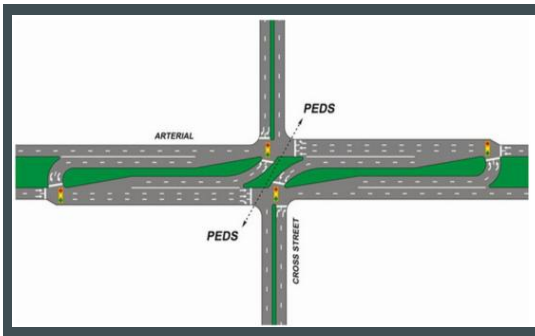
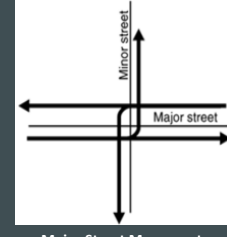
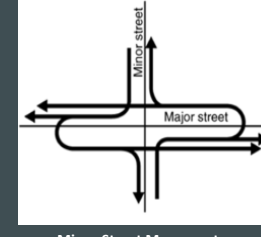




Major Street Movements



Minor Street Movements

Glen Lennox Redevelopment Traffic Impact Study

US 17 Corridor – Leland, NC

Glen Lennox Redevelopment Traffic Impact Study

"Superstreet" Concept

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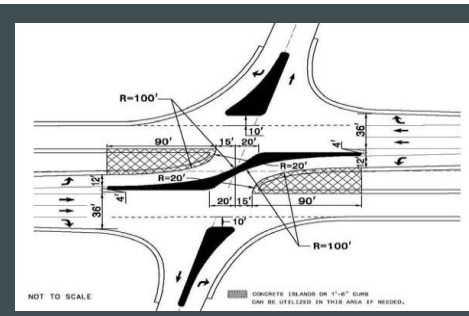
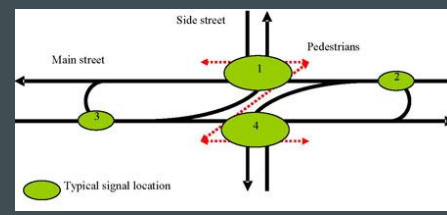


Four-Lane Superstreet Standard Intersection Design Details



"Z" Pedestrian Accommodation and Two-Phase Signal Locations

30

Glen Lennox Redevelopment Traffic Impact Study

"Superstreet" Concept

- Safety

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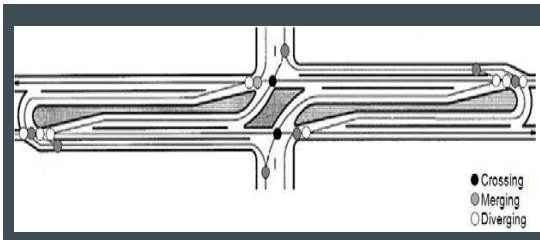
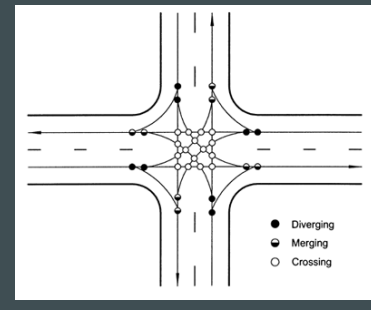


18 Conflict Points Versus 32 For Full Movement Intersection



Glen Lennox Redevelopment Traffic Impact Study

"Superstreet" Concept

- Operational Advantages

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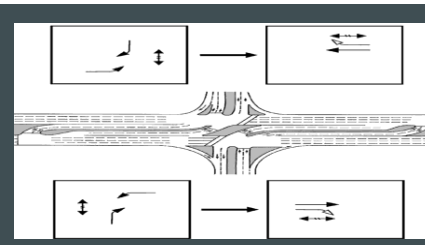

Superstreet – 2 Phase Signal Allows Maximum Efficiency for Main Street Through Traffic + Signal Progression in Both Directions

Can Have Shorter Cycle Length

Traditional Full Movement 8-Phase Traffic Signal – Less Green Time Available for Main Street, Bidirectional Progression Hampered

Needs Longer Cycle Length

Glen Lennox Redevelopment
Traffic Impact Study

QUESTIONS AND DISCUSSION

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