

Obey Creek Mixed-Use Development – Traffic Impact Study



Town Council Work Session Presentation
October 1, 2014

Presented By:

HNTB North Carolina, PC
Craig Scheffler, PE, PTOE



Obey Creek Mixed-Use Development Traffic Impact Study

Today's Presentation

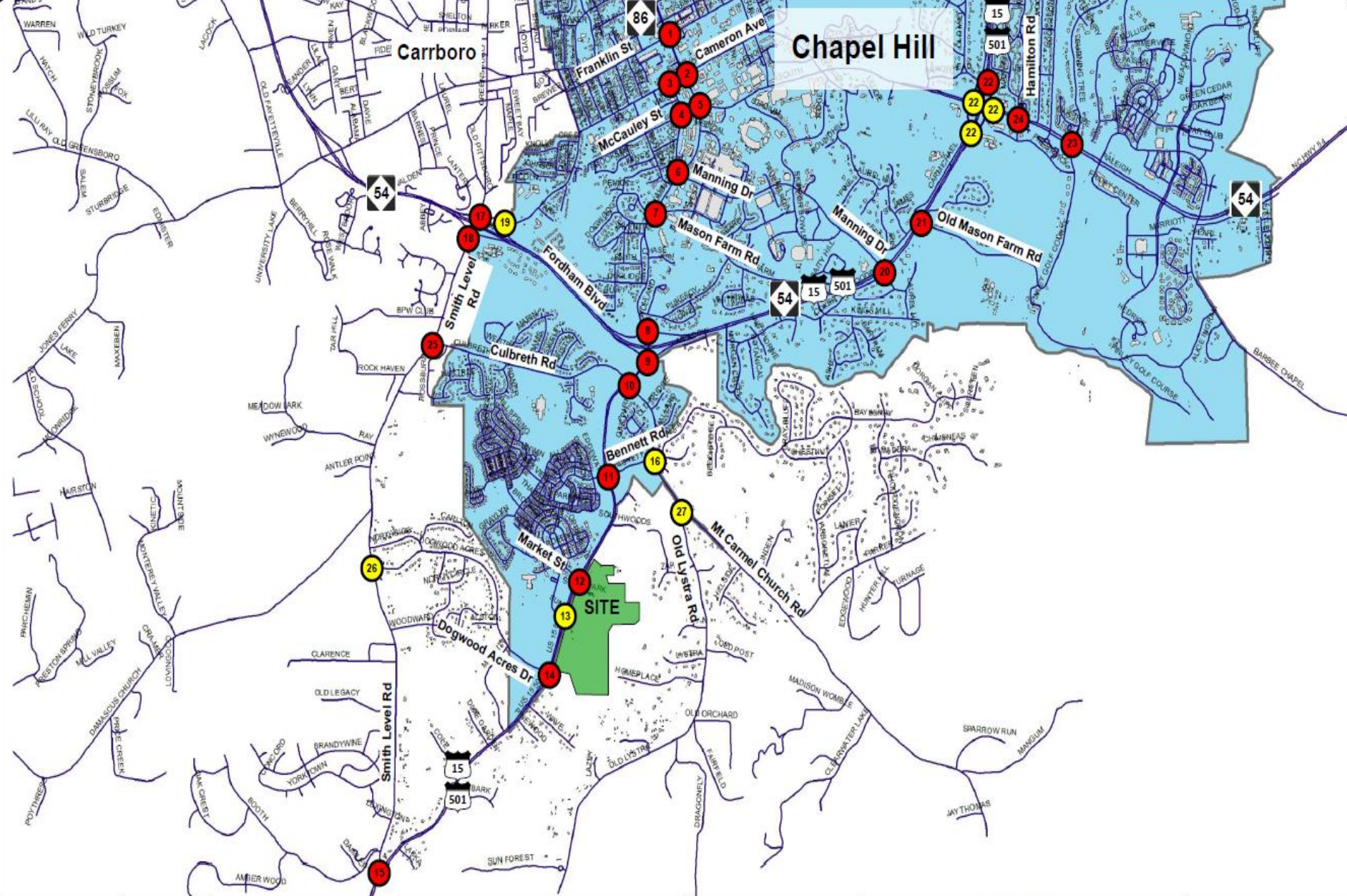
- Project Study Area
- Existing Conditions Analysis
- 2022 Concept Plan Analysis
- Trip Generation/Assignment
- Analysis Methodology
- Capacity Analysis Results
- Recommended Improvements
- Final TIS

Obey Creek Mixed-Use Development Traffic Impact Study

Existing Conditions Analysis

Project Study Area

- 30 Existing Intersections in Southern and Eastern Chapel Hill
- 22 Signalized Intersections
- US 15-501 & NC 54 Bypass (Fordham Blvd) Corridors
- Southern UNC Main Campus Area
- Multi-modal Considerations



**Obey Creek Mixed-Use Development
Traffic Impact Study**

PROJECT STUDY AREA



LEGEND	
●	= Signalized Study Area Intersection
●	= Unsignalized Study Area Intersection

DATE: May 2013

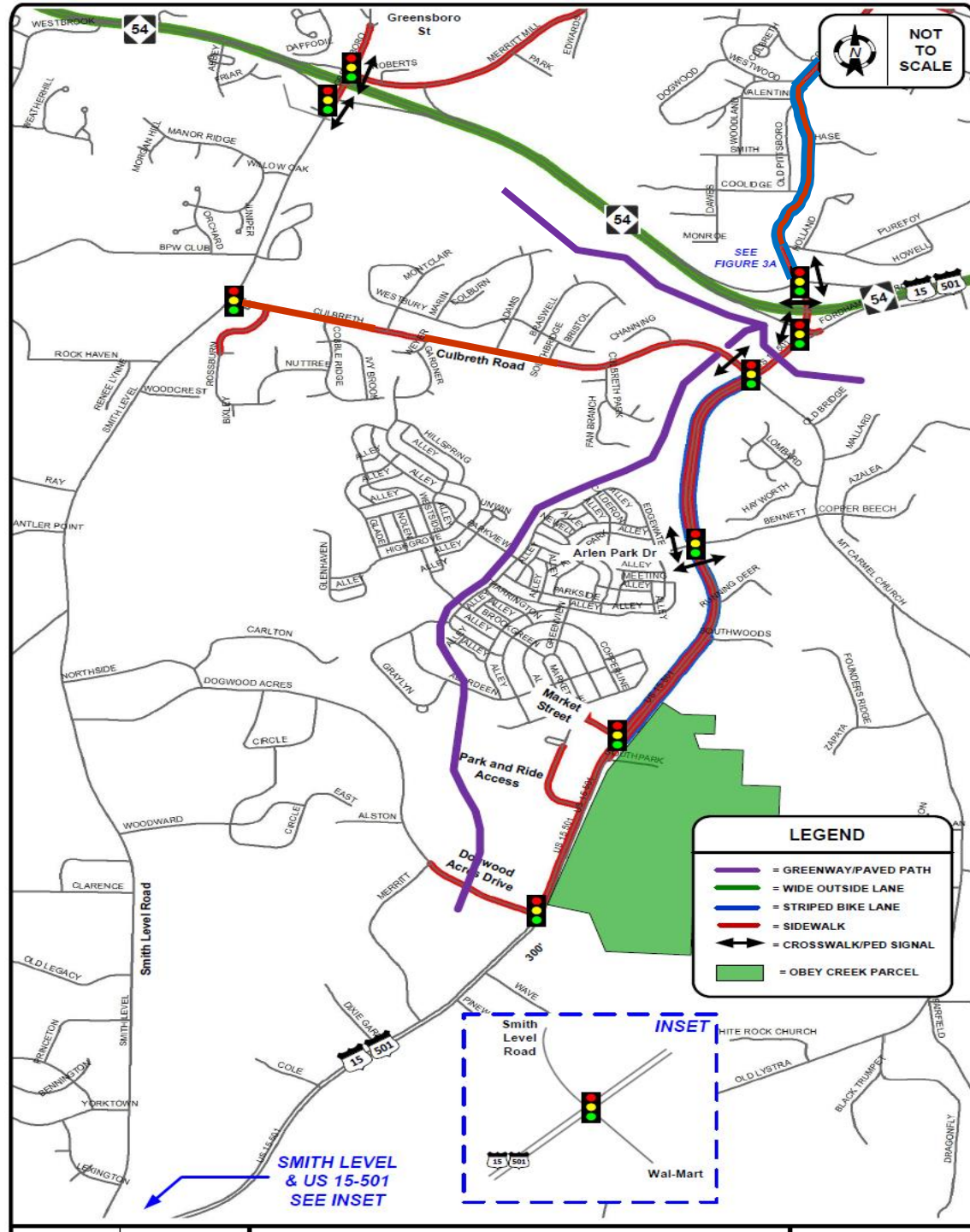
FIGURE 1

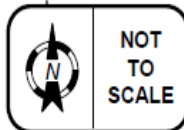
Obey Creek Mixed-Use Development Traffic Impact Study

Existing Conditions
Analysis
Project Study Area

BICYCLE and PEDESTRIAN
FEATURES

HNTB

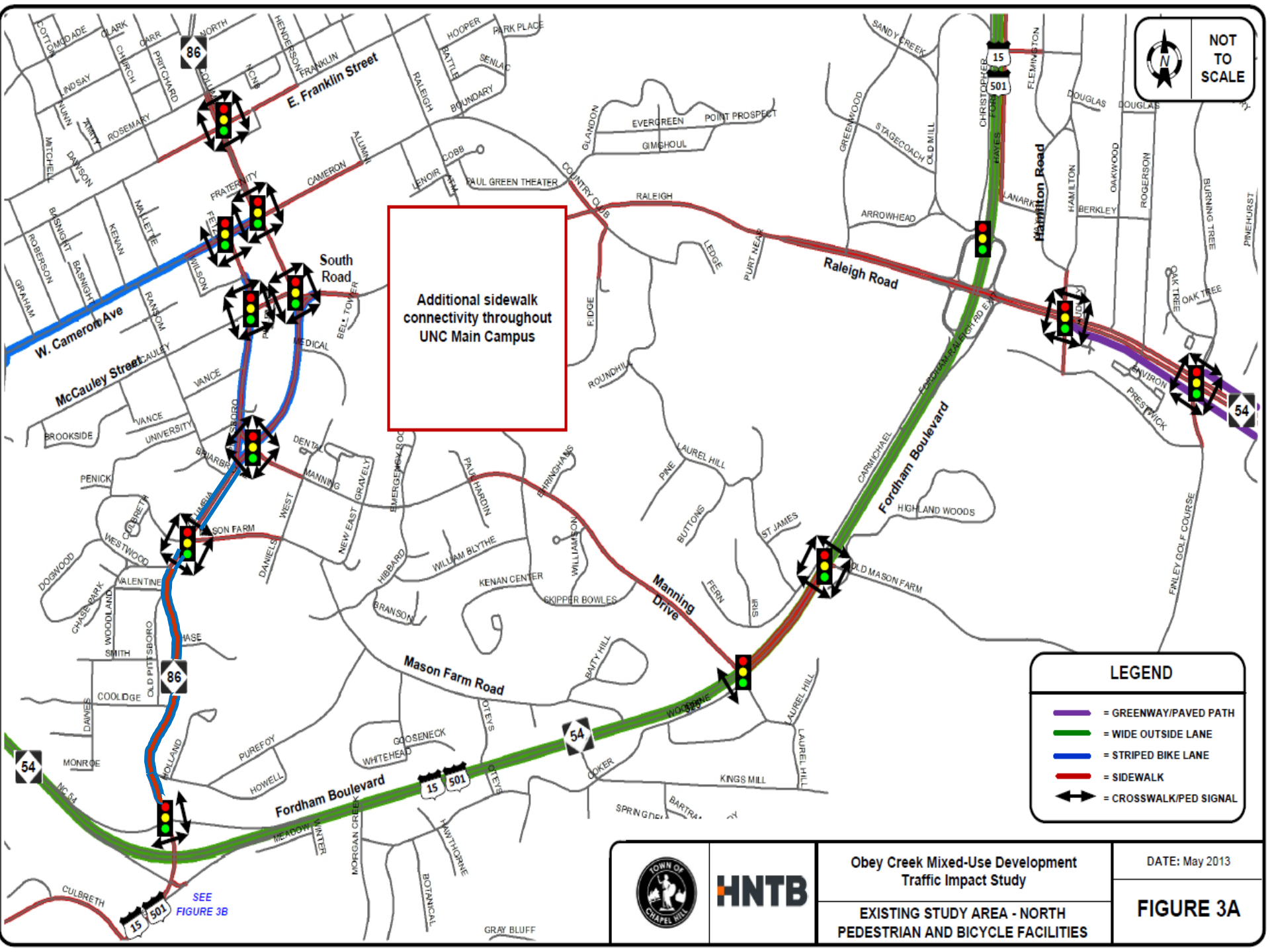




Additional sidewalk connectivity throughout UNC Main Campus

LEGEND

- = GREENWAY/PAVED PATH
- = WIDE OUTSIDE LANE
- = STRIPED BIKE LANE
- = SIDEWALK
- = CROSSWALK/PED SIGNAL



Obey Creek Mixed-Use Development
Traffic Impact Study

DATE: May 2013

EXISTING STUDY AREA - NORTH
PEDESTRIAN AND BICYCLE FACILITIES

FIGURE 3A

Obey Creek Mixed-Use Development Traffic Impact Study

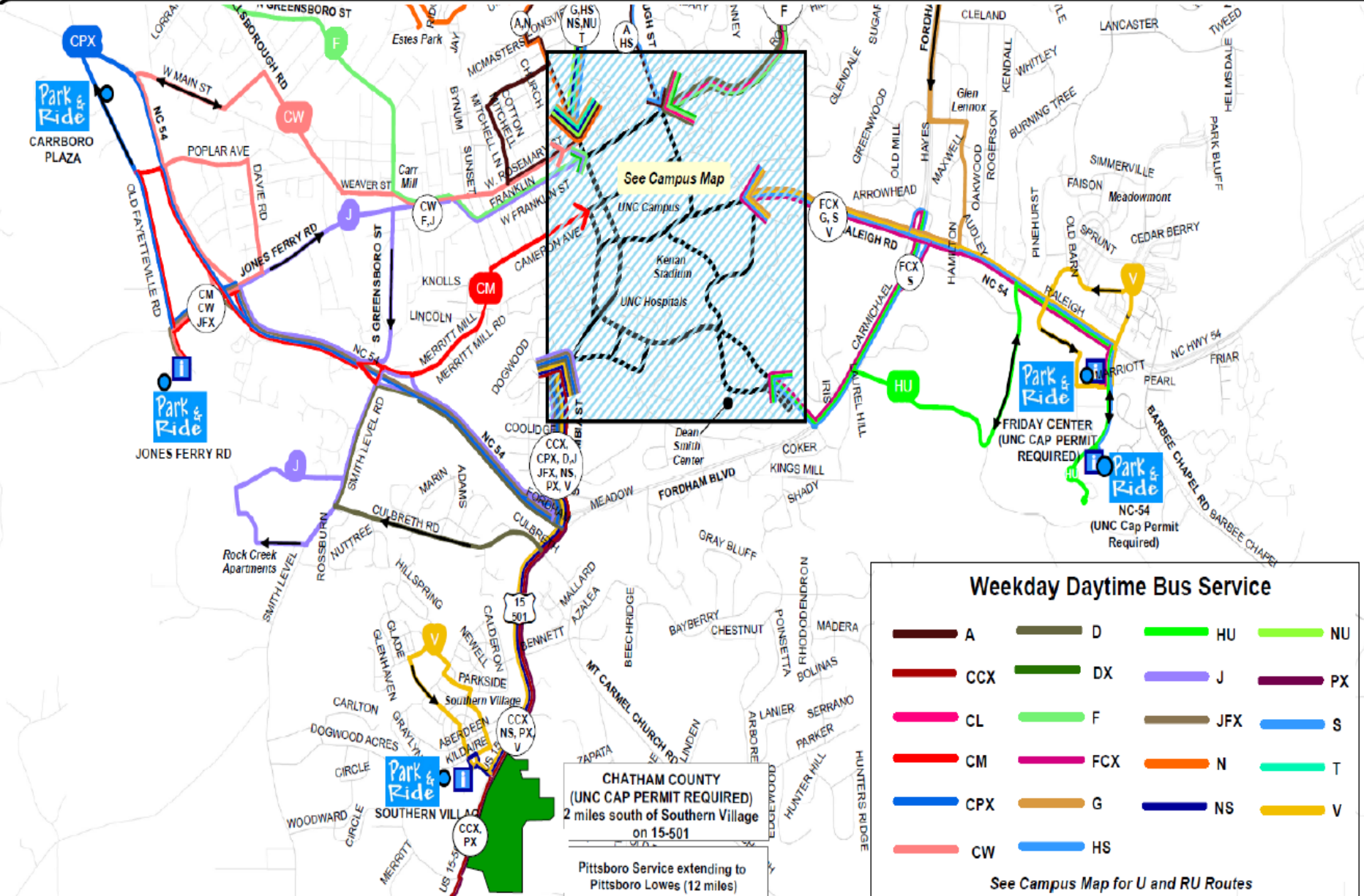
Existing Conditions
Analysis

Project Study Area

CHT Routes

HNTB

- NS & V Routes Serve Southern Village/South Chapel Hill
- 8 Fixed Route / 5 Express Routes Serve Overall Study Area
- 4 Triangle Transit Routes Serve Overall Study Area
- Compiled Ridership Data from CHT for Local Routes for Use in Trip Generation



Source: Town of Chapel Hill Transit Ride Guide Spring 2013



Obey Creek Mixed-Use Development
Traffic Impact Study

EXISTING TRANSIT ROUTES/STOPS

LEGEND

● = BUS STOP
■ = SITE LOCATION



NOT TO SCALE

DATE: May 2013

FIGURE 4

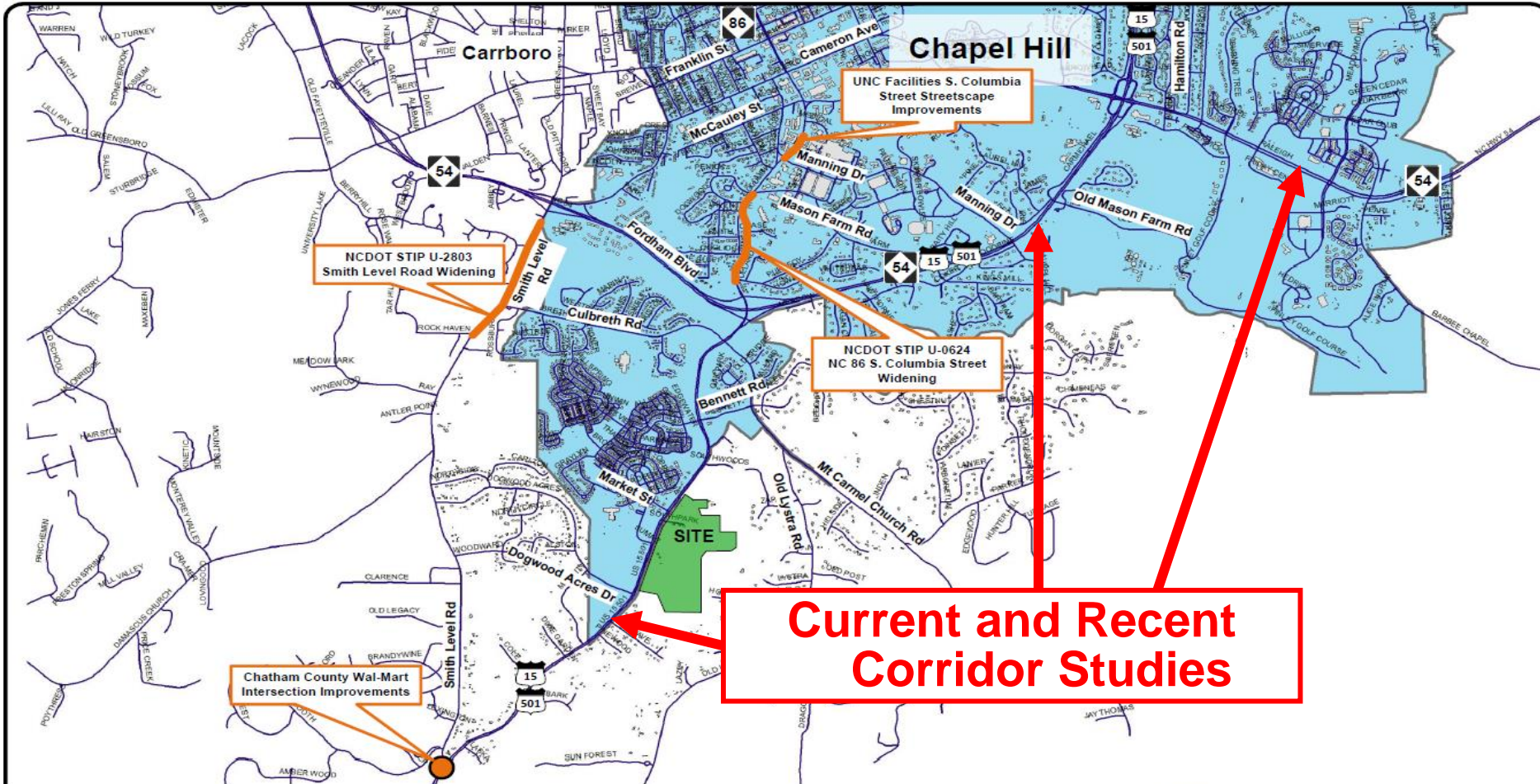
Weekday Daytime Bus Service

A	D	HU	NU
CCX	DX	J	PX
CL	F	JFX	S
CM	FCX	N	T
CPX	G	NS	V
CW	HS		

See Campus Map for U and RU Routes

Obey Creek Mixed-Use Development Traffic Impact Study

Construction Projects and Current Planning Studies



Obey Creek Mixed-Use Development Traffic Impact Study

Analysis Methodology

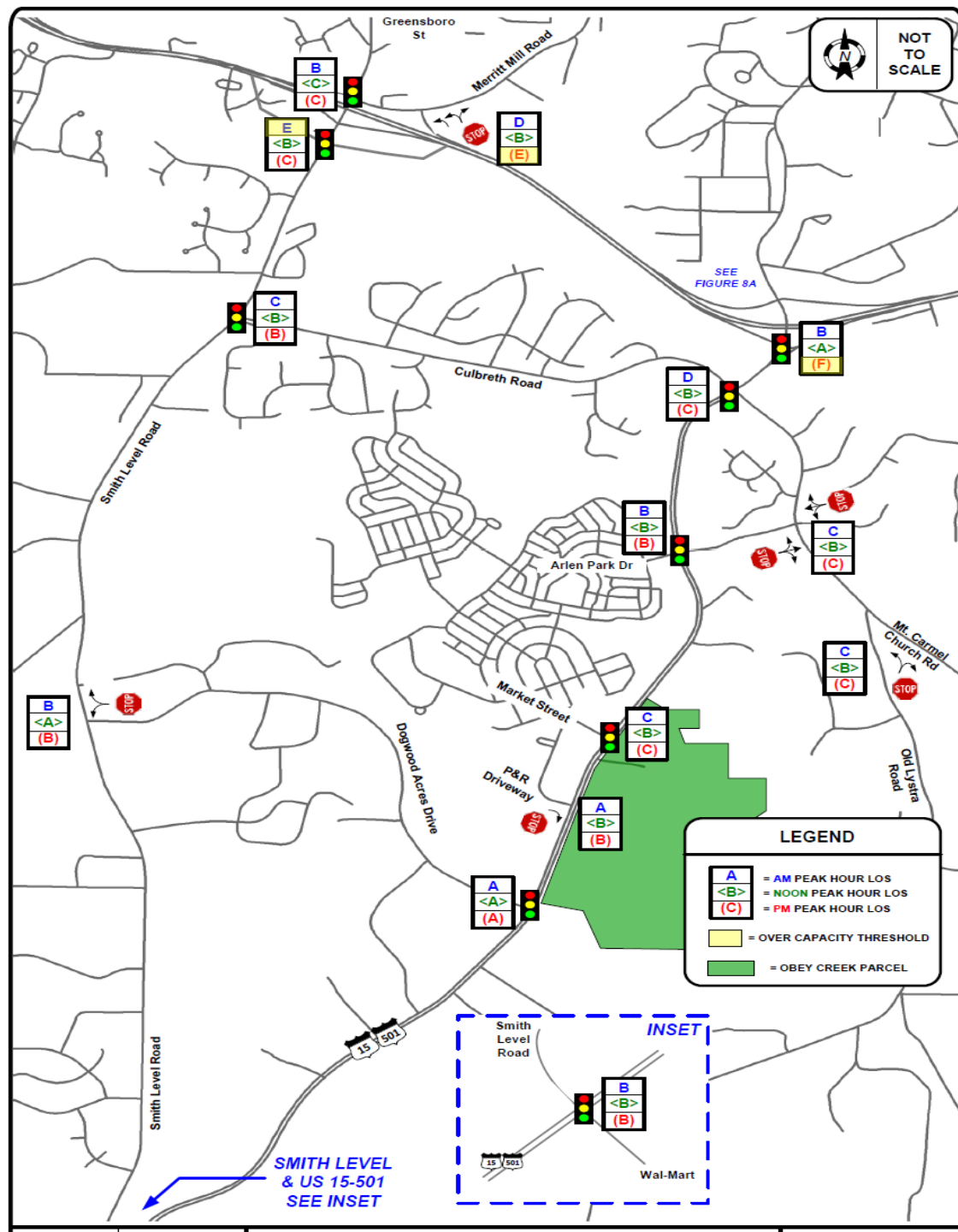
- Weekday AM/Noon/PM Peak Hour Capacity Analysis
- LOS A – F (Threshold LOS D)
- Daily Volume/Capacity Analysis
- Collect Traffic Counts, Analyze Existing Conditions
- No-Build and Build Analyses for Site Build-out Year + 1
- 2 Meetings With NCDOT/Applicant/Town Staff to Agree on Assumptions/Methods

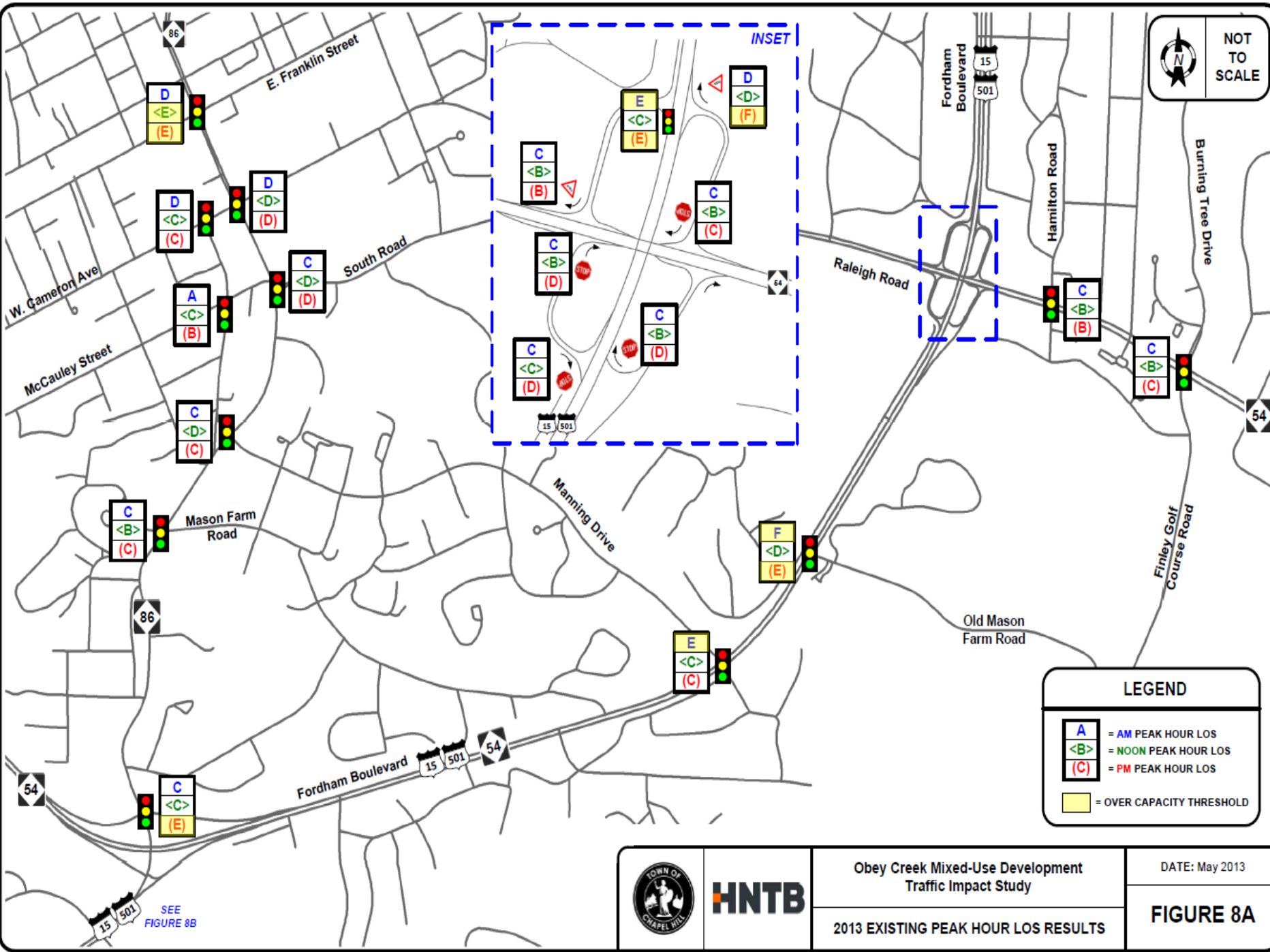
Obey Creek Mixed-Use Development Traffic Impact Study

Existing Conditions Analysis

2013 AM/Noon/PM Weekday Peak Hour LOS Results

Several Intersections Exceed
LOS D Thresholds





NOT TO SCALE

LEGEND

- A = AM PEAK HOUR LOS
- = NOON PEAK HOUR LOS
- (C) = PM PEAK HOUR LOS
- = OVER CAPACITY THRESHOLD

SEE FIGURE 8B

Obey Creek Mixed-Use Development Traffic Impact Study

2022 Concept Plan Analysis

- **Develop Trip Generation for All Modes Based on Applicant Provided Information**
- **Assess Applicant's Proposed Access Plan**
- **2022 Estimated Build-Out Year Calculations**
- **Compare No-Build and Build Conditions**
- **Develop Preliminary Recommendations**

Town of Chapel Hill
soccer fields

Town of Chapel Hill
Park & Ride

Southern
Village

Market Street

15 501



LEGEND

-  = Existing Signalized Intersection
-  = Proposed Full Access Break/Signalized Intersection
-  = Proposed RIRO Stop-Controlled Intersection

Street Level



**Obey Creek Mixed-Use Development
Traffic Impact Study**

SITE CONCEPT - PRELIMINARY PLAN



**NOT
TO
SCALE**

DATE: April 2014

FIGURE 2

Obey Creek Mixed-Use Development Traffic Impact Study

2022 Concept Plan Analysis

Detailed Site Development Breakout



Building	Shopping Center Retail	Office	Community Activi	Hotel	Condos	Notes
Anchor	135,000					1 STY + ROOFTOP PARK
JA1	29,000					1-STY
JA2	18,000					1-STY
G1	55,000					1-STY
T1	40,000					
S1	18,190					STREET LVL SHOPS (LESS LOBBY FOR USE ABV.)
S2	7,590					STREET LVL SHOPS (LESS LOBBY FOR USE ABV.)
S3	12,060					STREET LVL SHOPS (LESS LOBBY FOR USE ABV.)
S4	5,800					STREET LVL SHOPS (LESS LOBBY FOR USE ABV.)
S5	3,880					STREET LVL SHOPS (LESS LOBBY FOR USE ABV.)
S6	3,260					STREET LVL SHOPS (LESS LOBBY FOR USE ABV.)
S7	7,150					STREET LVL SHOPS (LESS LOBBY FOR USE ABV.)
S8	5,060					STREET LVL SHOPS/RESTAURANT
S9	13,335					STREET LVL SHOPS (LESS LOBBY FOR USE ABV.)
S10	28,400					STREET LVL SHOPS (LESS LOBBY FOR USE ABV.)
S11	9,200					STREET LVL SHOPS (LESS LOBBY FOR USE ABV.)
S12	13,600					STREET LVL SHOPS (LESS LOBBY FOR USE ABV.)
O1		92,750				3-STY @ 15/501 & 4-STY OVER DRIVE-THRU
O2		57,000				3 STY ABOVE SHOPS
O3		69,000				3 STY ABOVE THEATER
O4		7,500				1.5 STY OVER PARKING
O5						RESERVED
GA			48,000			2 STY BELOW + 2 AT PKG. DECK & ABOVE
H1				117,000		140 KEYS + FUNCTION 3 STY @ 15/501 & 4 STY ABOVE A1 AT MAIN
R2					78,760	4-STY ABV S1
R3					30,000	3 STY
R4					77,780	4 STY OVER SHOPS
R5					79,120	4-STY OVER SHOPS
R6					138,610	5 STY OVER SHOPS AT MAIN & 2-STY OVER SHOPS AT 15/501
R7					27,400	2 STY OVER SHOPS
R8					32,070	2 STY OVER SHOPS
R9					14,400	3 STY
R10					80,800	5 STY OVER SHOPS + 4-STY OVER GROCERY
R11					40,170	3 STY
AG1					181,400	3-STY ON 15/501 & 5-STY ON MAIN
TOTAL (SF)	404,525	226,250	48,000	117,000	780,510	
TOTAL ALL USE	809,050				1,576,285	700 RESIDENTIAL TOTAL

Obey Creek Mixed-Use Development Traffic Impact Study

2022 Concept Plan Analysis

Site Trip Generation Details



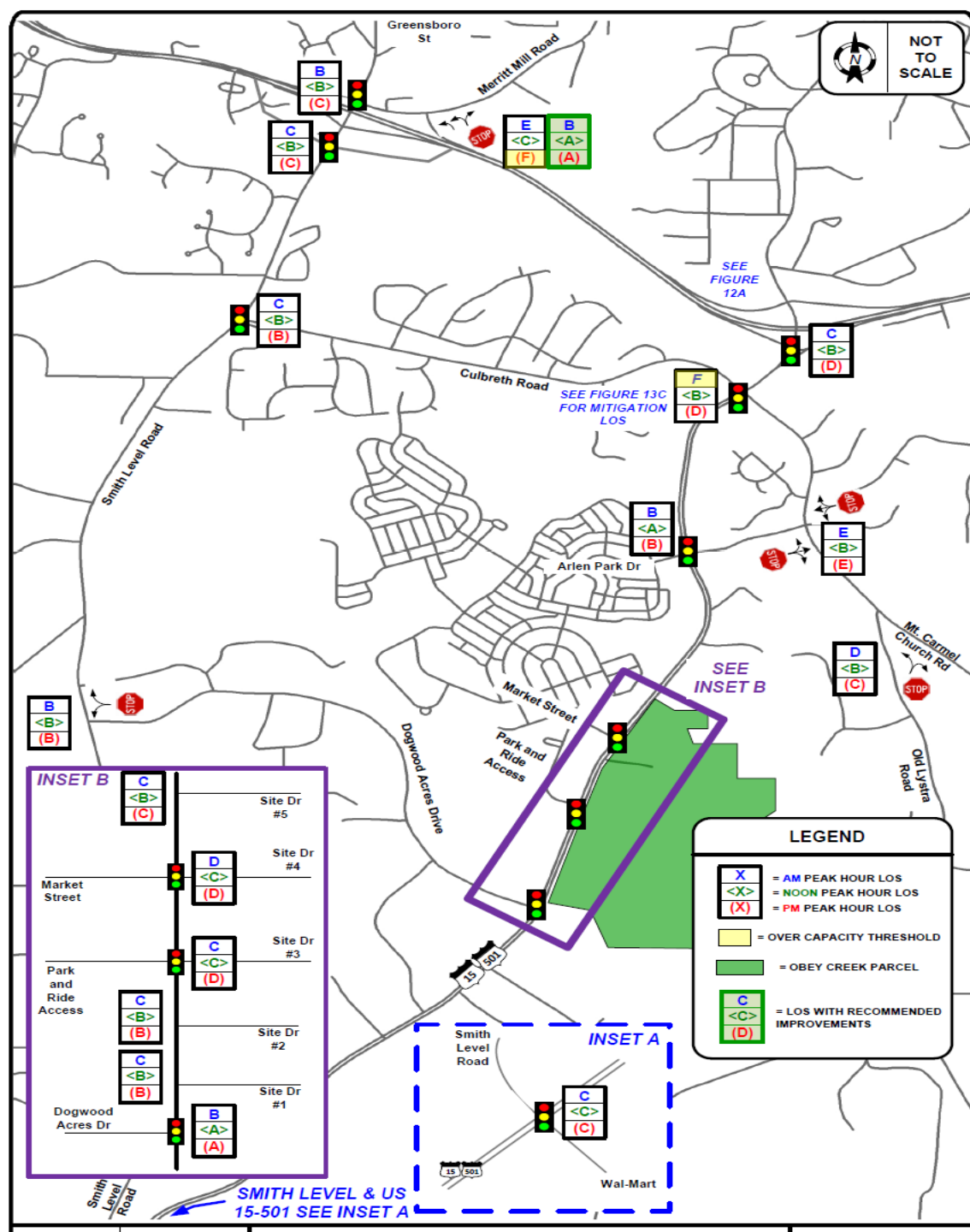
- Prepared Trip Generation Methodology Document
- Calculated Trips Using ITE Methodology and Adjusted by Field Collected Information/Research
- Adjusted Raw Trips For **Internal Capture**, **Transit**, **Pedestrian/Bicycle**, **Pass-by Trips** & **Diverted Linked Trips**
- Distribute Vehicle Trips By Existing Trip Patterns & Proposed Spatial Access
- Assign Trips

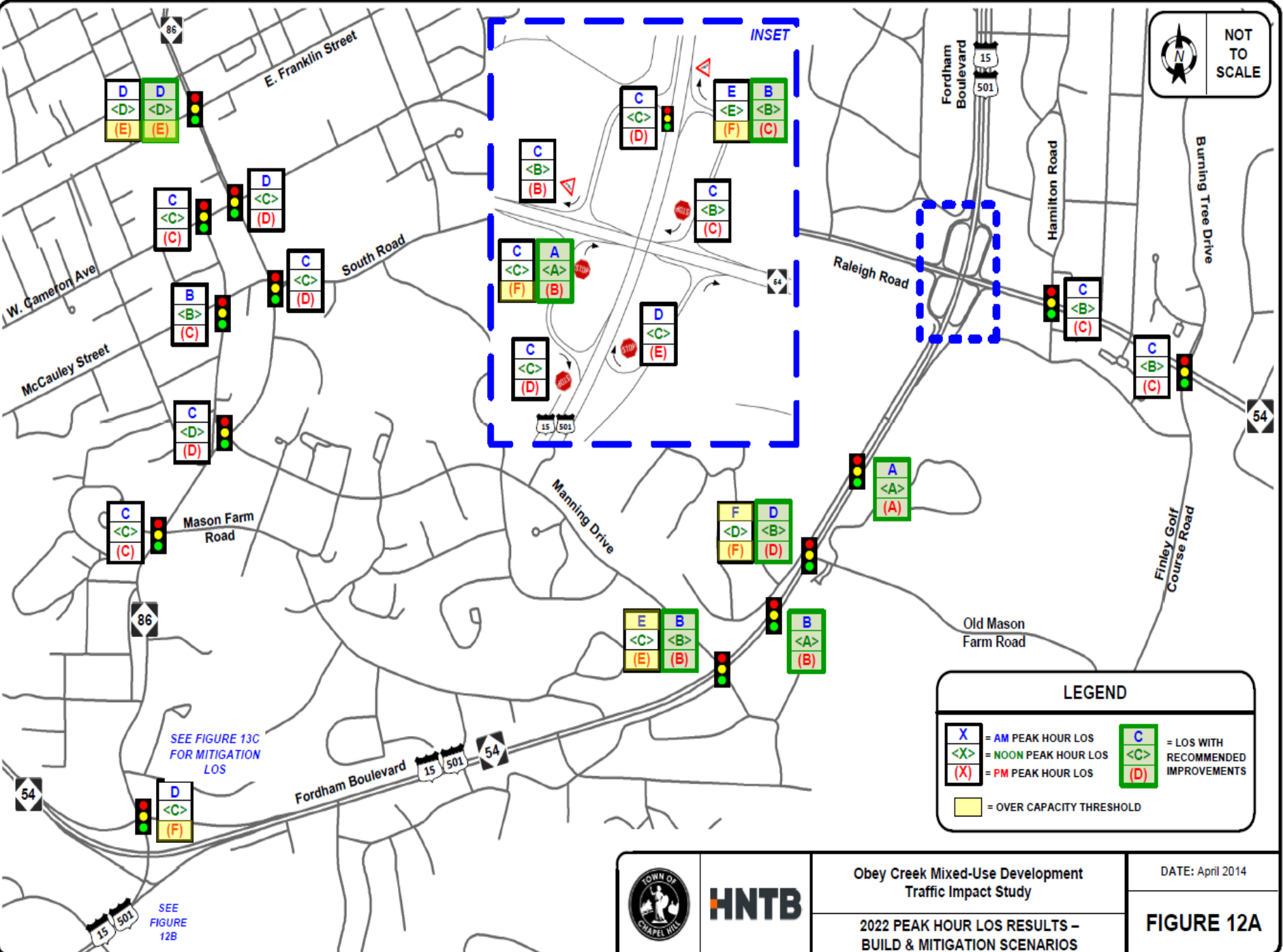
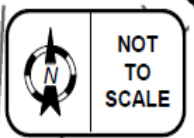
Table 15. Obey Creek Development - Summary Trip Generation Data

Trip Generation Step	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. ITE Raw Trip Generation Calculations	12,836	12,836	25,672	719	450	1,169	814	772	1,585	1,098	1,295	2,393
2. Internal Capture	-1,284	-1,284	-2,568	-46	-46	-92	-144	-144	-288	-241	-241	-482
EXTERNAL TRIP GENERATION BEFORE MODAL REDUCTION	11,552	11,552	23,104	673	404	1,077	670	628	1,297	857	1,054	1,911
3. Transit Trip Reductions	-1,282	-1,282	-2,565	-98	-63	-161	-60	-57	-116	-131	-155	-286
4. Ped/Bike Trip Reductions	-130	-130	-259	-10	-6	-16	-6	-6	-12	-13	-15	-29
TOTAL EXTERNAL VEHICLE TRIPS (DRIVEWAY VOLUMES)	10,140	10,140	20,280	565	335	900	604	565	1,169	712	884	1,596
5. Pass-By Trips	-1,213	-1,213	2,425	-0	-0	-0	-119	-119	-237	-176	-176	-352
6. Diverted Linked Trips	-999	-999	1,997	-0	-0	-0	-98	-98	-195	-145	-145	-290
TOTAL EXTERNAL VEHICLE TRIPS (NEW TRIPS)	7,928	7,928	15,858	565	335	900	387	348	736	391	563	954

Obey Creek Mixed-Use Development Traffic Impact Study

2022 Site Concept Plan Analysis Peak Hour LOS Results





SEE FIGURE 13C FOR MITIGATION LOS

SEE FIGURE 12B

LEGEND

X	= AM PEAK HOUR LOS	C	= LOS WITH RECOMMENDED IMPROVEMENTS
<X>	= NOON PEAK HOUR LOS	<C>	
(X)	= PM PEAK HOUR LOS	(D)	
[Yellow Box]	= OVER CAPACITY THRESHOLD		



Obey Creek Mixed-Use Development
Traffic Impact Study

2022 PEAK HOUR LOS RESULTS –
BUILD & MITIGATION SCENARIOS

DATE: April 2014

FIGURE 12A

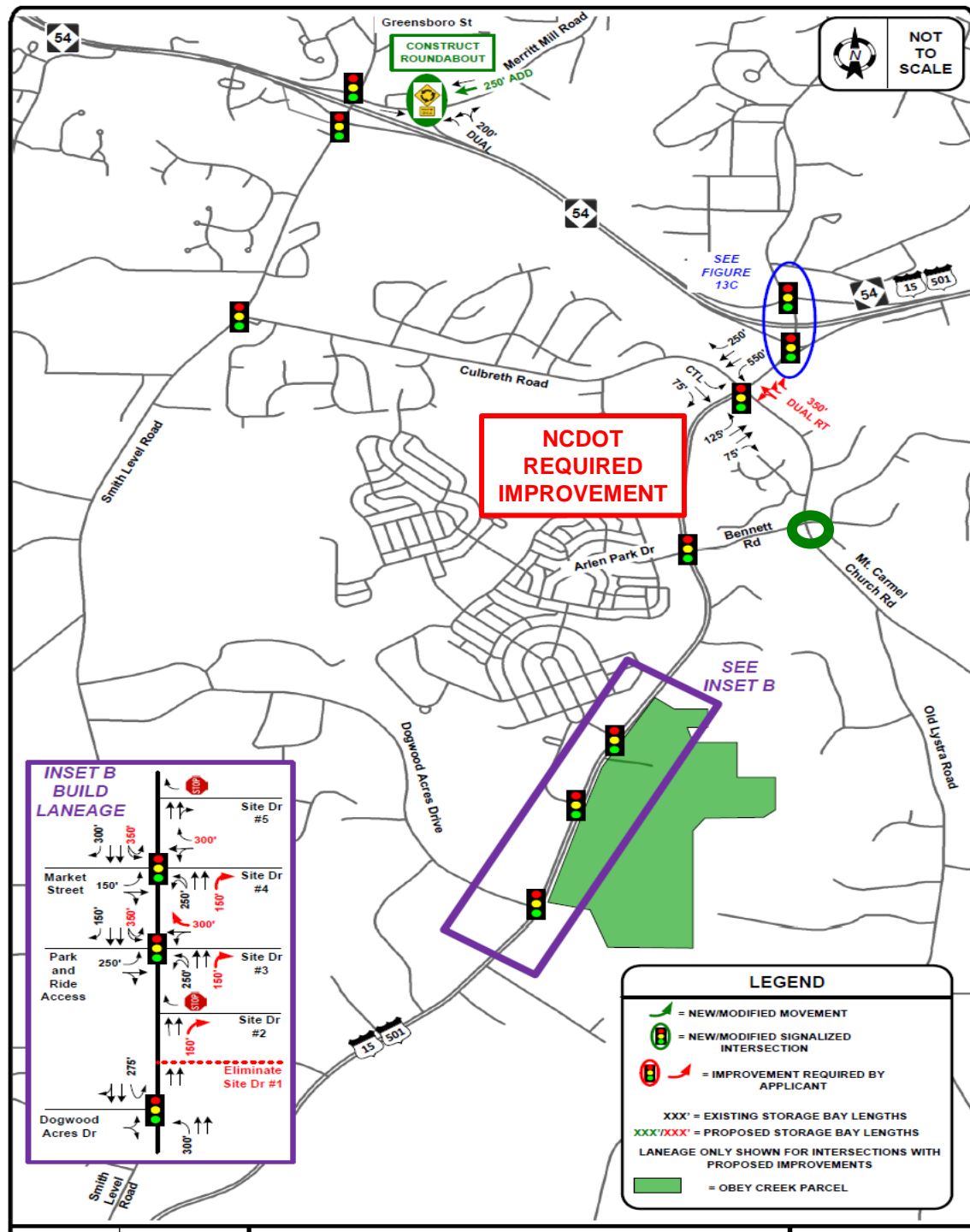
Obey Creek Mixed-Use Development Traffic Impact Study

2022 Site Concept Plan Analysis

Possible Improvements

RED = Developer
Required

GREEN = Necessary to
Achieve LOS



Obey Creek Mixed-Use Development Traffic Impact Study

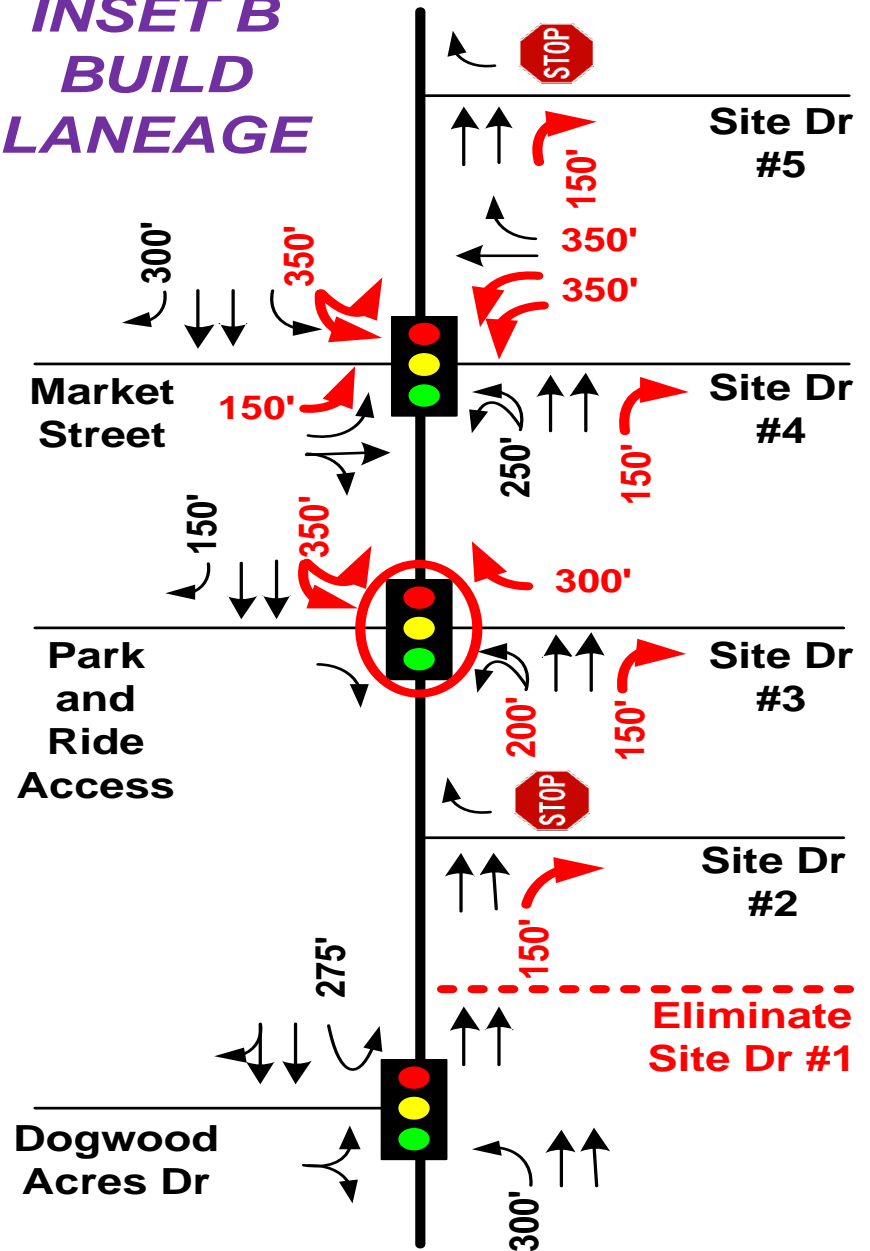
2022 Site Concept Plan Analysis

NCDOT Required
Improvements

RED = Developer
Required

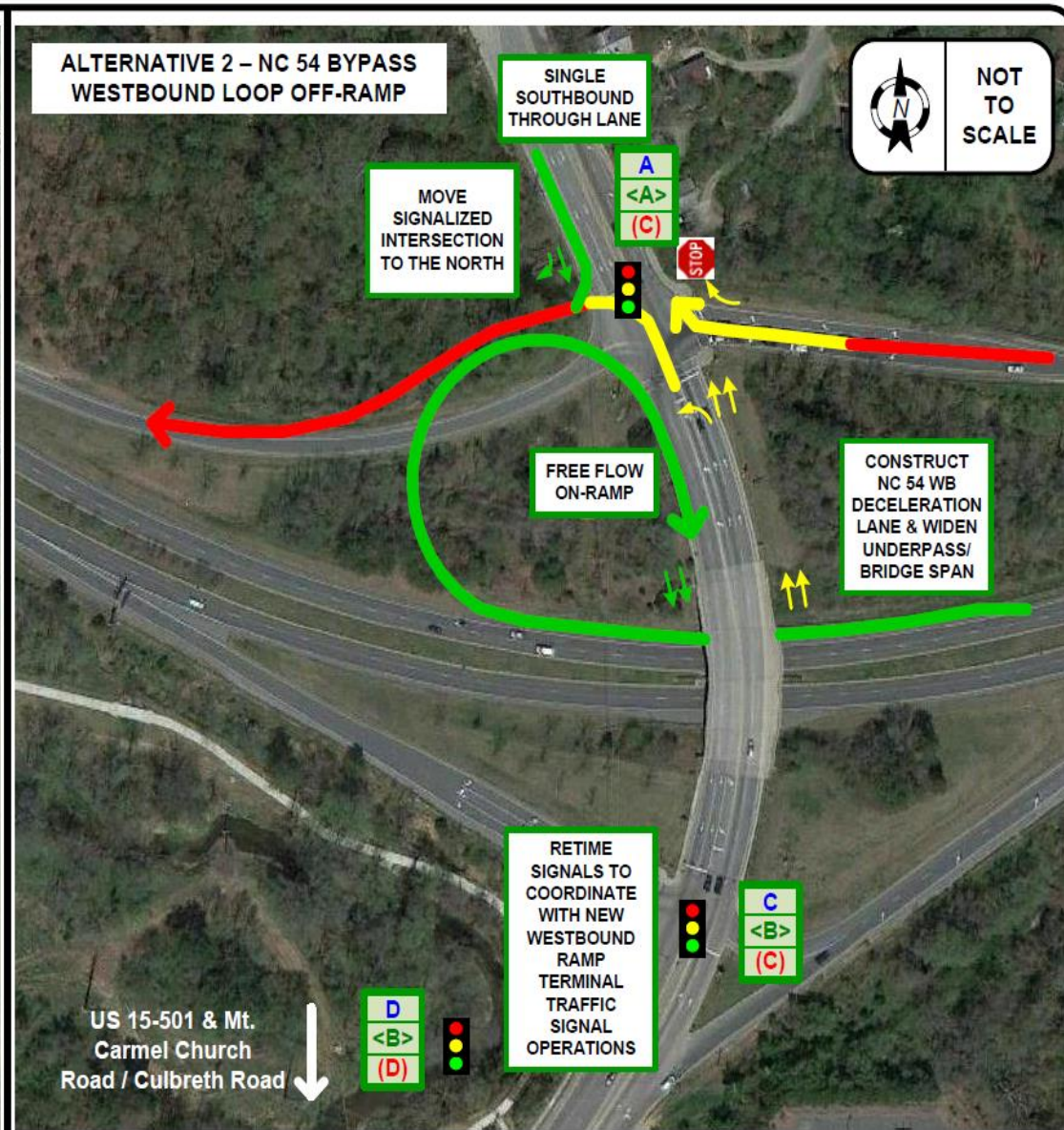
HNTB

INSET B BUILD LANEAGE



Obey Creek Mixed-Use Development Traffic Impact Study

NCDOT Recommended
NC 54 Bypass
Improvements



LEGEND

- = PROPOSED TRAFFIC CONTROL
- = PROPOSED TRAFFIC CONTROL
- = PROPOSED TRAFFIC MOVEMENTS/LANEAGE

- YELLOW = NORTHBOUND MOVEMENTS
- GREEN = SOUTHBOUND MOVEMENTS
- RED = RAMP MOVEMENTS

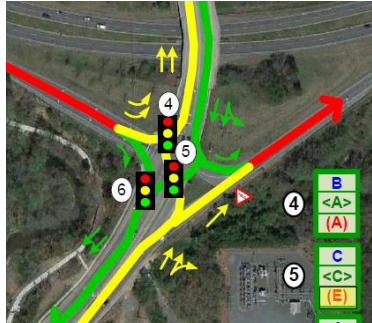
- = LOS WITH RECOMMENDED IMPROVEMENTS
- = LOS WITH RECOMMENDED IMPROVEMENTS
- = OVER CAPACITY THRESHOLD

Obey Creek Mixed-Use Development Traffic Impact Study

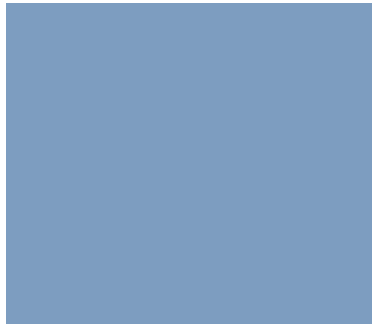
Final TIS Current Timeline & Content



- Reviewed by NCDOT – Approved with Conditions
- Incorporate Comments into Final TIS Document
- Include Crash Analysis
- Include 2040 Long-Term Planning-Level Analysis
- Include Other Town-Required Analyses (Access, Signal Warrant, Acceleration/Deceleration Lanes, Transit, Bike/Ped)



Obey Creek Mixed-Use Development Traffic Impact Study



QUESTIONS AND DISCUSSION

