



LINCOLN COUNTY PLANNING & INSPECTIONS DEPARTMENT
302 NORTH ACADEMY STREET, SUITE A, LINCOLNTON, NORTH CAROLINA 28092
704-736-8440 OFFICE 704-736-8434 INSPECTION REQUEST LINE 704-732-9010 FAX

To: Board of Commissioners
Planning Board

From: Randy Hawkins, Zoning Administrator

Date: January 16, 2019

Re: CUP #396
C4 CStore Holdings, LLC, applicant
Parcel ID# 71506 (1.5-acre portion)

The following information is for use by the Lincoln County Board of Commissioners and Planning Board at their joint meeting/public hearing on February 4, 2019.

REQUEST

The applicant is requesting a conditional use permit to allow a gas station/convenience store with an automatic car wash in the B-N (Neighborhood Business) district in the Eastern Lincoln Development District (ELDD). A gas station/convenience store and a car wash are conditional uses in the B-N district and in the ELDD. A site plan and a traffic impact analysis have been submitted as part of the application. This site is part of a proposed subdivision that would include four other lots for business locations. A new road off N.C. 16 Business would be built to access this site and the other lots. The new road would line up with Webbs Road and be served by an existing traffic signal. This site would also be accessed by a second driveway limited to right-in, right-out movements.

SITE AREA AND DESCRIPTION

The 1.5-acre site is located on the west side of N.C. 16 Business across from Webbs Road. It is part of a 10.9-acre parcel. The site is adjoined on all sides by property zoned B-N. Land uses in this area include business and residential. The site is part of an area designated by the Lincoln County Land Use Plan as a Suburban Commercial Center, suitable for general commercial services.



County Of Lincoln, North Carolina

Planning Board

Applicant **C4 CStore Holdings, LLC**

Application No. **CUP #396**

Location **west side of N.C. 16 Business at Webbs Road** Parcel ID# **71506 (1.5-acre portion)**

Zoning District **B-N, ELDD**

Proposed Conditional Use **gas station/
convenience store with automatic car wash**

FINDINGS OF FACT

1. The use will not materially endanger the public health or safety if located where proposed and developed according to plan. YES _____ NO _____

FACTUAL REASONS CITED: _____

2. The use meets all required conditions and specifications. YES _____ NO _____

FACTUAL REASONS CITED: _____

3. The use will not substantially injure the value of adjoining or abutting property unless the use is a public necessity. YES _____ NO _____

FACTUAL REASONS CITED: _____

4. The location and character of use, if developed according to the plan as submitted and approved, will be in harmony with the area in which it is to be located and will be in general conformity with the Land Use Plan for the area in question. YES _____ NO _____

FACTUAL REASONS CITED: _____

After having held a Public Hearing on _____ and in light of the Findings of Facts listed herein, the following action was taken by the Lincoln County Planning Board:

In recommending such Conditional Use, the following conditions were recommended by the Lincoln County Planning Board:



Conditional Use Permit Application

Lincoln County Planning and Inspections Department
Zoning Administrator
302 N. Academy St., Suite A, Lincolnton, NC 28092
Phone: (704)736-8440 FAX: (704)732-9010

PART I

Applicant Name C4 CStore Holdings, LLC

Applicant Address 121 W. Trade Street, Suite 2550 Charlotte NC 28202

Applicant Phone Number 704-561-5200

Property Owner Name H & A Investors LLC

Property Owner Address 116 Twin Oaks Place, Goldsboro, NC 27530

Property Owner Phone Number 704-735-1606

PART II

Property Location SW Corner of NC 16 Business & Webbs Road

Property ID (10 digits) Portion of 4604-38-2947 Property size 1.54 +/- AC

Parcel # (5 digits) 71506 Deed Book(s) 2468 Page(s) 260

PART III

Existing Zoning District ELDD B-N

Briefly describe how the property is being used and any existing structures.

Currently this portion of the property is vacant.

Briefly explain the proposed use and/or structure which would require a Conditional Use Permit.

Gas station with convenience retail & carwash.

APPLICATION FEE (less than 2 acres \$250, 2+ acres \$500)
MUST BE RECEIVED BEFORE PROCESSING.

I hereby certify that all knowledge of the information provided for this application and attachments is true and correct to the best of my knowledge.

405.11.18 Mmayer 12.18.18
Applicant's Signature Date

APPLICANT'S PROPOSED FINDINGS OF FACT

Application No. **CUP #396**

Applicant **C4 CStore Holdings, LLC**

Property Location **west side of N.C 16 Business at Webbs Road**

Parcel ID# **71506 (1.5-acre portion)** Zoning District **B-N, ELDD**

Proposed Conditional Use **gas station/convenience store with automatic car wash**

PROPOSED FINDINGS

1. The use will not materially endanger the public health or safety if located where proposed and developed according to plan.

The full-movement vehicular access point for the proposed development will be located on Webbs Road Extension, approximately 250 feet west of the signalized intersection of N.C. Highway 16 and Webbs Road. As a result, this full-movement vehicular access point will have the benefit of a nearby signalized intersection, and this vehicular access point will provide safe ingress to and egress from the proposed development to Webbs Road Extension and N.C. Highway 16. The other vehicular access point will be restricted to right-in, right-out movements, which will provide safe ingress to and egress from the proposed development to N.C. Highway 16. The Applicant's Traffic Impact Analysis has determined that the proposed development will generate only a minor amount of new daily vehicular trips on adjacent and nearby roadways, and these new daily vehicular trips will only slightly impact the adjacent and nearby roadways and the study intersection. Therefore, the proposed development will not materially endanger the public health and safety from a transportation and traffic standpoint.

The proposed development will meet all applicable storm water, sedimentation control and environmental regulations, and the underground fuel tanks will comply with all applicable regulations so that the proposed development will not materially endanger the public health and safety from a storm water or an environmental standpoint. The site will also accommodate emergency services vehicles.

2. The use meets all required conditions and specifications.

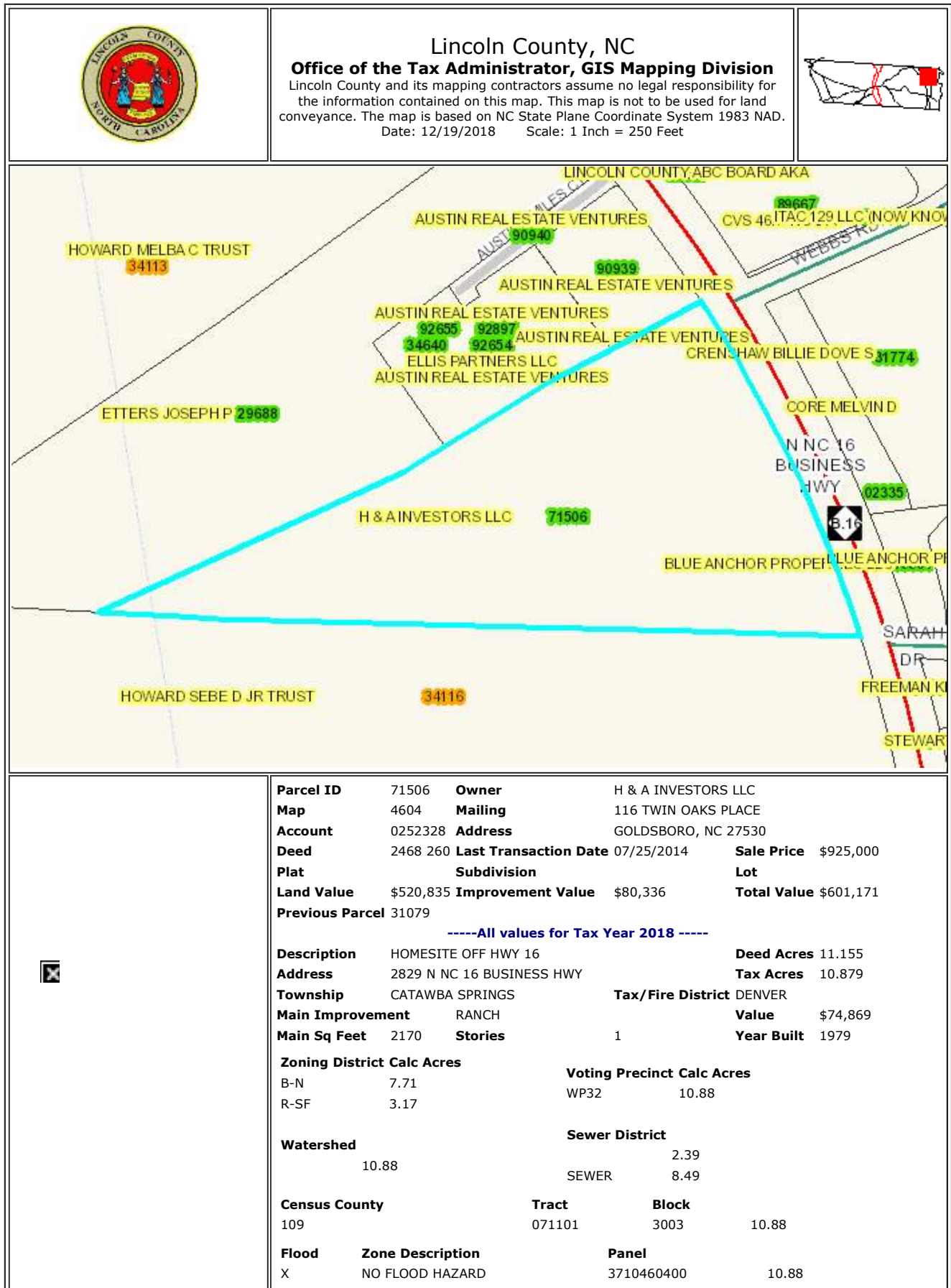
The site is zoned B-N (Neighborhood Business) and is located in the Eastern Lincoln Development District (ELDD) overlay district. The proposed development, which is a gas station with convenience retail, is a use permitted in both the B-N and ELDD districts upon the issuance of a conditional use permit by the Board of Commissioners. The Applicant's site plan and building elevations comply with all applicable regulations, standards, conditions and provisions of the Unified Development Ordinance.

3. The use will not substantially injure the value of adjoining or abutting property unless the use is a public necessity.

The proposed development will not substantially injure the value of adjoining or abutting property. The testimony of the Applicant's certified appraiser provides that the proposed development will not substantially injure the value of adjoining or abutting property. Moreover, the parcels of land that abut each side of the site are zoned for business uses, and the site is a portion of a larger tract of land that is planned to be subdivided to create multiple lots for commercial development.

4. The location and character of use, if developed according to the plan as submitted and approved, will be in harmony with the area in which it is to be located and will be in general conformity with the Land Use Plan for the area in question.

The site is located on a minor arterial (N.C. Highway 16) in an existing commercial area and across N.C. Highway 16 from a pharmacy. The site is part of an area designated by the Land Use Plan as a Suburban Commercial Center. Therefore, the proposed development, if developed in accordance with the site plan as submitted, will be in harmony with the area in which it is to be located and it will be in general conformity with the Land Use Plan for the area.



Conditional Use Permit #396
subject property is outlined in blue



0 100 200 Feet

1 inch = 200 feet

C4 CStore Holdings, LLC

1 in. = 200 ft.



SFN

SC

AUSTIN SMILES CT

WEBBS RD

WATER
HAVEN TR

SC

N NC 16 BUSINESS HWY

KATHERINE
DR

SARAH DR

SFN

SFN

Land Use Plan

-  Open Space (OS)
-  Rural Living (RL)
-  Industrial Center (IC)
-  Large Lot Residential (LLR)
-  Single-Family Neighborhood (SFN)
-  Multifamily Neighborhood (MFN)
-  Rural Crossroads (RC)
-  Suburban Commercial (SC)
-  Suburban Office (SO)
-  Special District (SD)
-  Walkable Neighborhood (WN)
-  Walkable Activity Center (WC)



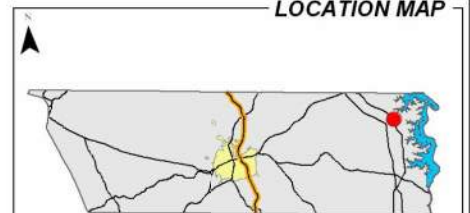
Lincoln County
Planning & Inspections
302 N. Academy St.
Suite A
Lincolnton, NC 28092

CUP #396


 - Property Location(s)

See Attached Application for Parcel Information
Property Location(s) Outlined in Green.

LOCATION MAP



1:1,000,000

 Property Location(s)

GENERAL NOTES

PORTION OF LINCOLN COUNTY PARCEL # 71506
ZONING: B-N (NEIGHBORHOOD BUSINESS WITH ELDD OVERLAY (EASTERN LINCOLN DEVELOPMENT DISTRICT))

- SETBACKS:
- FRONT -15' MIN, 90' MAX ROAD YARD
 - SIDE CORNER - 20' ROAD YARD
 - SIDE - 10' INTERIOR, 20' ADJACENT TO RESIDENTIAL OR CORNERSIDE YARD
 - REAR - 20' (30' ADJACENT TO RESIDENTIAL) YARD

BUILDING: COVERAGE LIMIT: 50%
ISA COVERAGE LIMIT: 75%

BUILDING HEIGHT: 35 FT
PARKING: 1 SPACE PER 350 GFA (9 SPACES REQUIRED)

LANDSCAPE BUFFERS: 15' ROAD YARD WITH CANOPY TREES PLANTED 40 O.C.
TYPE 'A' ALONG NC 16 HWY BUSINESS
REQUIREMENTS:
10' WIDTH (2 CANOPY, 2 UNDERSTORY, 12 SHRUB/100')
15' WIDTH (2 CANOPY, 1 UNDERSTORY, 10 SHRUB/100')
20' WIDTH (1 CANOPY, 2 UNDERSTORY, 8 SHRUB/100')

CONDITIONS:
1) CANOPY CANNOT EXCEED 20' OR EXCEED HEIGHT OF C-STORE BUILDING.

LOT ACREAGE: 1.54

ZONING: B-N
NEIGHBORHOOD BUSINESS

ZONING: B-N
NEIGHBORHOOD BUSINESS

OAK

ENGINEERING

828 EAST BVD - CHARLOTTE, NC 28203
NORTH CAROLINA FIRM LICENSE #171742
oak.engineering

PE SEAL:

NORTH CAROLINA
PROFESSIONAL
SEAL
33996
ENGINEER
GREGORY T. WELSH

12/20/2018

7-ELEVEN

HIGHWAY 16
DENVER, NORTH CAROLINA

SITE PLAN

- REVISIONS:
1. 10/11/18 - PER NCDOT COMMENTS
 2. 10/22/18 - PER CROSLAND COMMENTS
 3. 11/30/18 - PER CROSLAND COMMENTS
 4. 12/04/18 - ADDED CARWASH
 5. 12/07/18 - MOVED CARWASH PER UDO
 6. 12/20/18 - PER COUNTY COMMENTS

ENGINEER: LJB
DRAWN BY: LJB
CHECKED BY: CTW

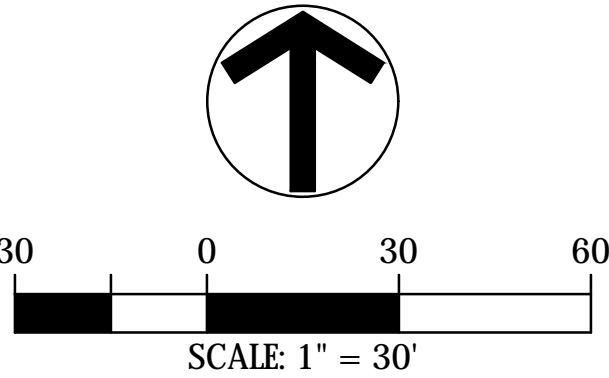
PROJECT #: 018.CSE.001

SHEET

EX1

SHEET 1 OF 1

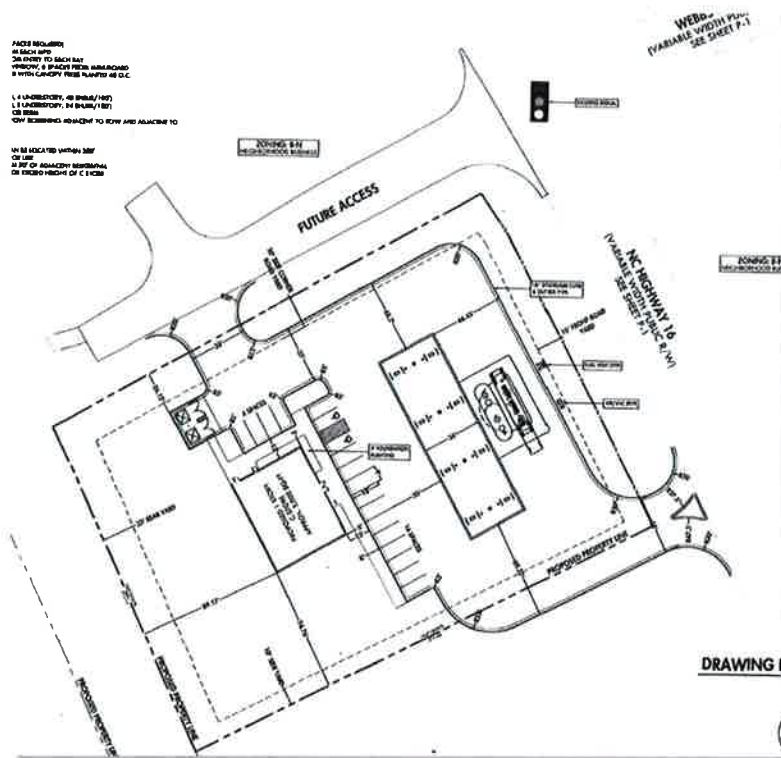
DRAWING INFORMATION



TRAFFIC IMPACT ANALYSIS

7-ELEVEN NC BUSINESS 16 & WEBBS ROAD

Southwest quadrant of the intersection of NC Business 16 and Webbs Road
Denver, North Carolina



for

CROSLAND SOUTHEAST

DECEMBER 2018

584-006 (C-2165)

2459 Wilkinson Boulevard, Suite 200
Charlotte, NC 28208

704.343.0608
www.drgrp.com



12/12/18



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EXECUTIVE SUMMARY

Crosland Southeast intends to construct a 3,000 SF convenience market with gas pumps on the southwest quadrant of the intersection of NC Business 16 and Webbs Road in Denver, NC. The site is expected to be fully developed in 2019 (see Figure 1).

This report provides an analysis of the traffic operations within the area of influence, according to the standards set by the North Carolina Department of Transportation's (NCDOT) "Policy on Street and Driveway Access to North Carolina Highways, Chapter 4 Part C" and Lincoln County's UDO Section 9.8 for TIAs. It provides recommended access management for the site and intersection improvements needed for mitigating traffic impacts. This study evaluates the following scenarios:



**NC Bus. 16 Facing South at
Webbs Road**

- 2018 AM & PM Peak existing traffic conditions
- 2019 No Build AM & PM Peak
- 2019 Build AM & PM Peak

The area of influence of the study site are listed below and includes an existing signalized intersection and two proposed unsignalized intersections:

1. NC Business 16 & Webbs Road/Webbs Road Extension
2. Webbs Road Extension & Proposed Access "A" (Full Movement)
3. NC Business 16 & Proposed Access "B" (RI/RO)

Access to the development is expected to occur via one full movement unsignalized location on Webbs Road Extension and one right-in-right-out (RI/RO) only location on NC Business 16, respectively (see Test Fit Exhibit (Site Plan)):

- Proposed Access "A" (Full Movement) – located approximately 250 feet west of NC Business 16.
- Proposed Access "B" (RI/RO) – located approximately 250 feet south of Webbs Road Extension.

The trip generation results indicate that the development is expected to generate 46 new AM peak hour trips and 50 new PM peak hour trips.

Currently, the signalized study intersection of NC Business 16 & Webbs Road operates with a LOS "B" in both peak hours. Typically, an intersection is said to be operating at capacity at a volume-to-capacity (v/c) ratio of 1.00 and acceptable at a LOS "D" or better. The results of the existing and future analysis scenarios are presented in Table 3.



With the results of our analyses (specifics are described in the Traffic Analysis section of this report) we suggest the following improvements/modifications at the study intersections and proposed accesses:

2019 Build w/Offsite Analysis Results/Suggested Recommendations:

2. Webbs Road Extension & Proposed Access “A” (unsignalized – full movement)

We propose the following intersection configuration:

- One ingress lane and one egress lane (combined left-right lane on Access “A”)

Assuming this configuration, the worst leg of the intersection (northbound) operates at a LOS “A” in both peak hours.

3. NC 16 & Proposed RI/RO Only Access “B” (unsignalized)

We propose the following intersection configuration:

- One ingress lane and one egress lane (terminating right turn lane on Access “B”)
- Install a new concrete median on NC Business 16 to restrict the access to RI/RO only

Assuming this configuration, the worst leg of the intersection (northbound) operates at a LOS “A” in the AM peak hour and a LOS “B” during the PM peak hour.

In summary, the minor amount of traffic associated with the proposed convenience development that is expected to be added to the roadways will only slightly impact the nearby roadways and study intersection, especially with the implementation of the recommended access configurations.



PROPOSED DEVELOPMENT

Crosland Southeast intends to construct a 3,000 SF convenience market with gas pumps on the southwest quadrant of the intersection of NC Business 16 and Webbs Road in Denver, NC. The site is expected to be fully developed in 2019 (see Figure 1).

Access to the development is expected to occur via one full movement unsignalized location on Webbs Road Extension and one right-in-right-out (RI/RO) only location on NC Business 16, respectively (see Test Fit Exhibit (Site Plan)):

- Proposed Access "A" (Full Movement) – located approximately 250 feet west of NC Business 16.
- Proposed Access "B" (RI/RO) – located approximately 250 feet south of Webbs Road Extension.



**NC Bus. 16 Facing North at
Webbs Road**

LEGEND



Traffic Signal



Stop Sign Control



LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
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7-ELEVEN NC BUSINESS 16 & WEBBS ROAD TIA

DENVER, NC

CROSLAND SOUTHEAST
121 WEST TRADE STREET SUITE 2550
CHARLOTTE, NC 28202

Webbs Rd
Extension

Full MVMT
Access "A"

RIRO
Access "B"

AREA OF INFLUENCE

0 150' 300' N
SCALE: 1" = 300'

PROJECT #: 584-006
DRAWN BY: ART
CHECKED BY: REG

NOVEMBER 2018

REVISIONS:

1.	

Figure 1

TEST FIT DEVELOPMENT SUMMARY

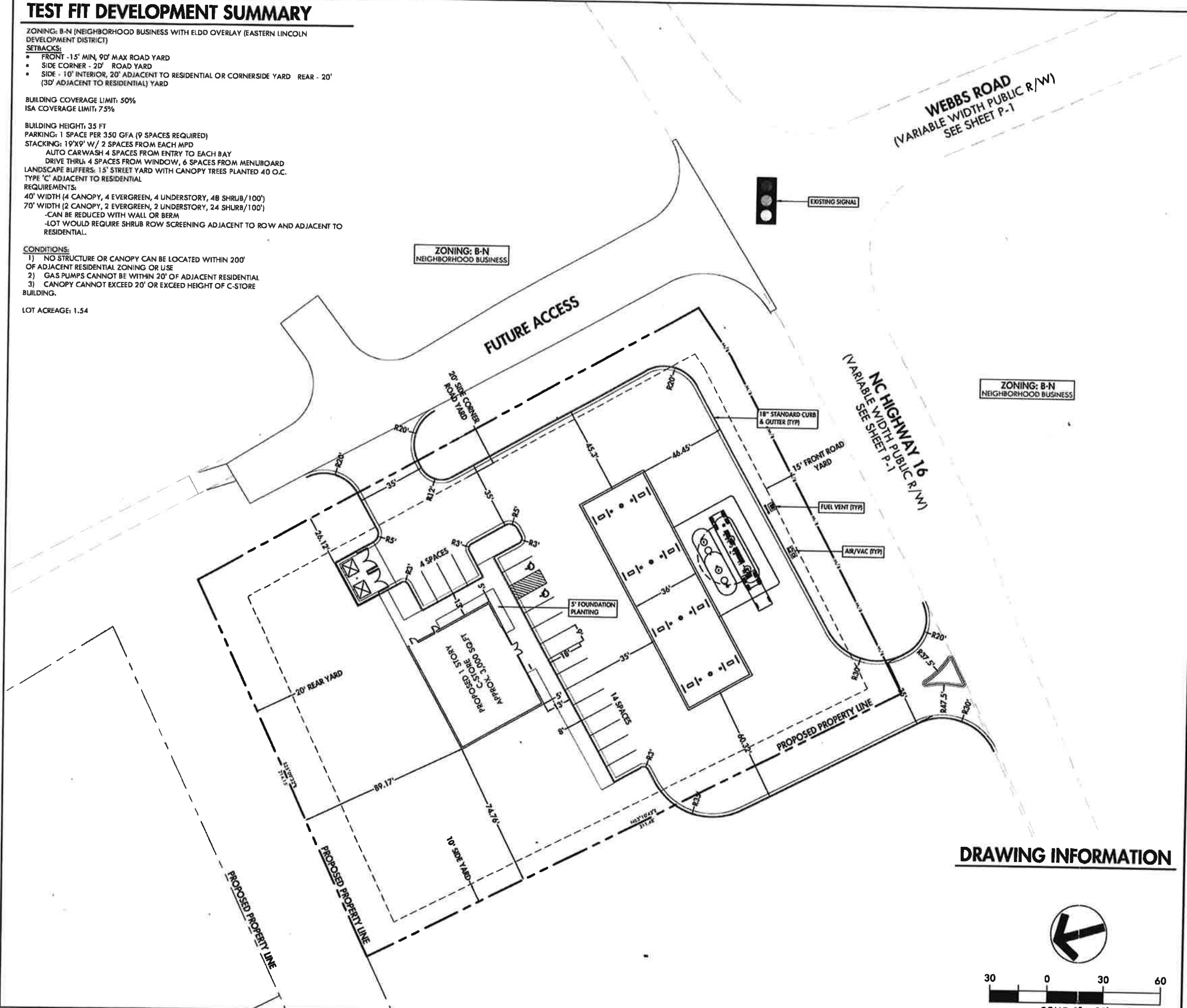
ZONING: B-N (NEIGHBORHOOD BUSINESS WITH EDD OVERLAY (EASTERN LINCOLN DEVELOPMENT DISTRICT))
SETBACKS:
• FRONT - 15' MIN, 90' MAX ROAD YARD
• SIDE CORNER - 20' ROAD YARD
• SIDE - 10' INTERIOR, 20' ADJACENT TO RESIDENTIAL OR CORNERSIDE YARD REAR - 20' (30' ADJACENT TO RESIDENTIAL) YARD

BUILDING COVERAGE LIMIT: 50%
ISA COVERAGE LIMIT: 75%

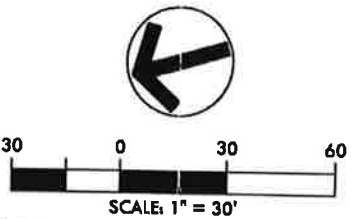
BUILDING HEIGHT: 35 FT
PARKING: 1 SPACE PER 350 GFA (9 SPACES REQUIRED)
STACKING: 19'X9' W/ 2 SPACES FROM EACH MPD
AUTO CARWASH 4 SPACES FROM ENTRY TO EACH BAY
DRIVE THRU: 4 SPACES FROM WINDOW, 6 SPACES FROM MENUBOARD
LANDSCAPE BUFFERS: 15' STREET YARD WITH CANOPY TREES PLANTED 40 O.C.
TYPE "C" ADJACENT TO RESIDENTIAL
REQUIREMENTS:
40' WIDTH (4 CANOPY, 4 EVERGREEN, 4 UNDERSTORY, 4B SHRUB/100')
70' WIDTH (2 CANOPY, 2 EVERGREEN, 2 UNDERSTORY, 24 SHRUB/100')
-CAN BE REDUCED WITH WALL OR BERM
-LOT WOULD REQUIRE SHRUB ROW SCREENING ADJACENT TO ROW AND ADJACENT TO RESIDENTIAL.

CONDITIONS:
1) NO STRUCTURE OR CANOPY CAN BE LOCATED WITHIN 200' OF ADJACENT RESIDENTIAL ZONING OR USE
2) GAS PUMPS CANNOT BE WITHIN 20' OF ADJACENT RESIDENTIAL
3) CANOPY CANNOT EXCEED 20' OR EXCEED HEIGHT OF C-STORE BUILDING.

LOT ACREAGE: 1.54



DRAWING INFORMATION



PE SEAL:



7-ELEVEN

HIGHWAY 16
DENVER, NORTH CAROLINA

TEST FIT EXHIBIT

REVISIONS:
1. 10/11/18 - PER NCDOT COMMENTS

ENGINEER: LJB
DRAWN BY: LJB
CHECKED BY: CTW
PROJECT #: 018.CSE.001

SHEET
EX1

SHEET 1 OF 1



AREA CONDITIONS

The area of influence of the study site are listed below and includes an existing signalized intersection and two proposed unsignalized intersections:

1. NC Business 16 & Webbs Road/Webbs Road Extension
2. Webbs Road Extension & Proposed Access “A” (Full Movement)
3. NC Business 16 & Proposed Access “B” (RI/RO)



**NC Bus. 16 Facing South
Along Site**



**Webbs Road Facing East
Near NC Bus. 16**

According to NCDOT’s Roadway Functional Classification information NC 16 (SR 1383) is a minor arterial with a posted speed limit of 45 mph. NC 16 is two lanes wide (one lane in each direction) and is rural in nature along the site. The roadway has no curb/gutter, bike lanes, planting strips, or sidewalk.

According to NCDOT’s Roadway Functional Classification information Webbs Road (SR 1383) is a local roadway with a posted speed limit of 55 mph (per the NCDOT provided signal plan). Webbs Road is a two lanes wide (one lane in each direction) with occasional median (delineators) and turn lanes. The roadway has no curb/gutter, bike lanes, planting strips, or sidewalk.

Morning (7-9 AM) and afternoon (4-6 PM) peak period turning movement counts were conducted at the existing intersection between Tuesday November 13, 2018 (while school was in session). Figure 2 shows the 2018 existing traffic volumes for the AM and PM peak hours.

In addition to the intersection turning movement counts, NCDOT is the source for average annual two-way daily traffic (AADT) volumes within the area of influence. The AADT volumes are depicted in Table 1.

Table 1: Average Annual Daily Traffic Volumes (veh. per day)

Roadway	AADT (Year)
NC Business 16 north of Webbs Rd.	13,000 (2017)
Webbs Rd. east of NC Business 16	8,100 (2015)

LEGEND



Traffic Signal

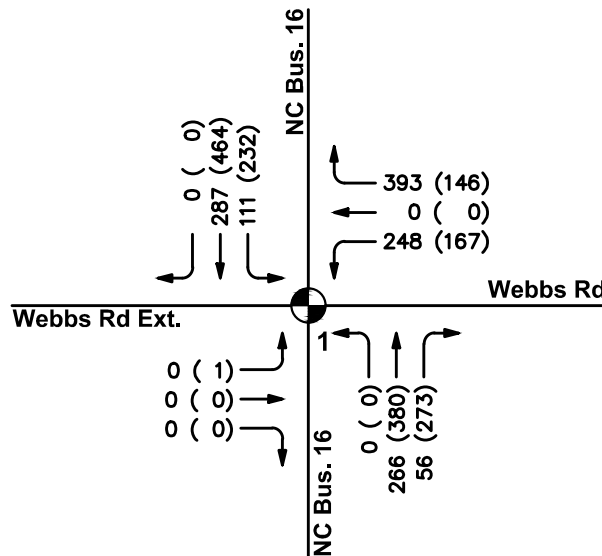


Stop Sign Control



Directional Movement

VOLUMES: AM (PM)



Count data for int. #1 was collected on
Tuesday, November 13 2018 .



LANDSCAPE ARCHITECTURE
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7-ELEVEN NC BUSINESS 16 & WEBBS ROAD TIA DENVER, NC

CROSLAND SOUTHEAST
121 WEST TRADE STREET SUITE 2550
CHARLOTTE, NC 28202

2018 EXISTING PEAK HOUR VOLUMES

0 NTS N
SCALE: NTS

PROJECT #: 584-006
DRAWN BY: ART
CHECKED BY: REG

NOVEMBER 2018

REVISIONS:

1.	

Figure 2



PROJECTED TRAFFIC

The projected background peak hour traffic volumes used in the analyses were developed from the existing (year 2018) peak-hour-turning-movement-count data. The existing intersection turning-movement volumes were increased using a 1 percent per year growth rate for the area to obtain 2019 background volumes (which was approved by NCDOT and Lincoln County). The projected traffic volumes used in the horizon year 2019 analysis are a compilation of two values: background traffic and site trip generation.

The daily and peak-hour-trip-generation data for the development is presented in Table 2. The trips generated by the site are obtained from the Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017.

Table 2: Site Trip Generation

Land Use [ITE Code]			Weekday Daily	AM Peak Hour			PM Peak Hour		
				Enter	Exit	Total	Enter	Exit	Total
Convenience w/ Gas [853]	3,000	SF	1,873	61	61	122	74	74	148
NCDOT Passby-Reduction*			-174	-38	-38	-76	-49	-49	-98
Total Trips			1,699	23	23	46	25	25	50

Reference: Trip Generation, 10th Edition, Institute of Transportation Engineers, Washington, DC. 2017.

* Passby Reduction was calculated using NCDOT Congestion Management Rate vs. Equation Spreadsheet (i.e % Passby LUC [853] AM = 63% & PM= 66%)

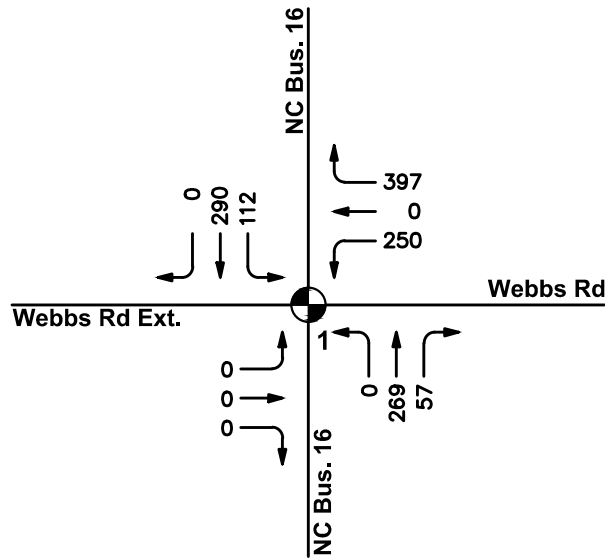
The trip generation results indicate that the development is expected to generate 46 new AM peak hour trips and 50 new PM peak hour trips.

Per the Lincoln County and NCDOT approved scoping document, no nearby approved (offsite) developments are included in the analysis for 2019.

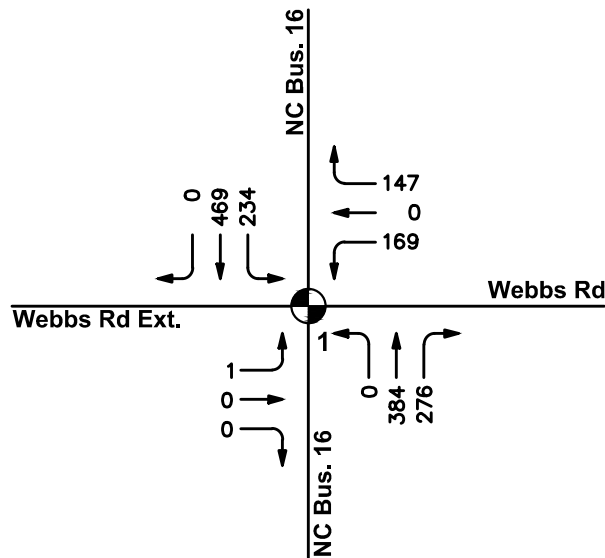
The directional trip distribution of the site traffic is provided in Figure 3. The trip assignments for the 2019 AM and PM peak hour traffic volumes are presented in Figures 4 through 6. The background traffic is indicated to the far left of the movement arrows, followed by the site traffic in parentheses. The two volumes are added to obtain the projected total traffic for that movement:

$$\underline{\text{Background} + (\text{Site}) = \text{Total}}$$

NO BUILD AM PEAK HOUR VOLUMES



NO BUILD PM PEAK HOUR VOLUMES



LEGEND

- Traffic Signal
- Stop Sign Control
- Directional Movement

VOLUMES: Grown Background Volumes



LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
TRANSPORTATION PLANNING

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7-ELEVEN NC BUSINESS 16 & WEBBBS ROAD TIA

DENVER, NC

CROSLAND SOUTHEAST
121 WEST TRADE STREET SUITE 2550
CHARLOTTE, NC 28202

2019 NO BUILD AM & PM PEAK HOUR VOLUMES



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CHECKED BY: REG

NOVEMBER 2018

REVISIONS:

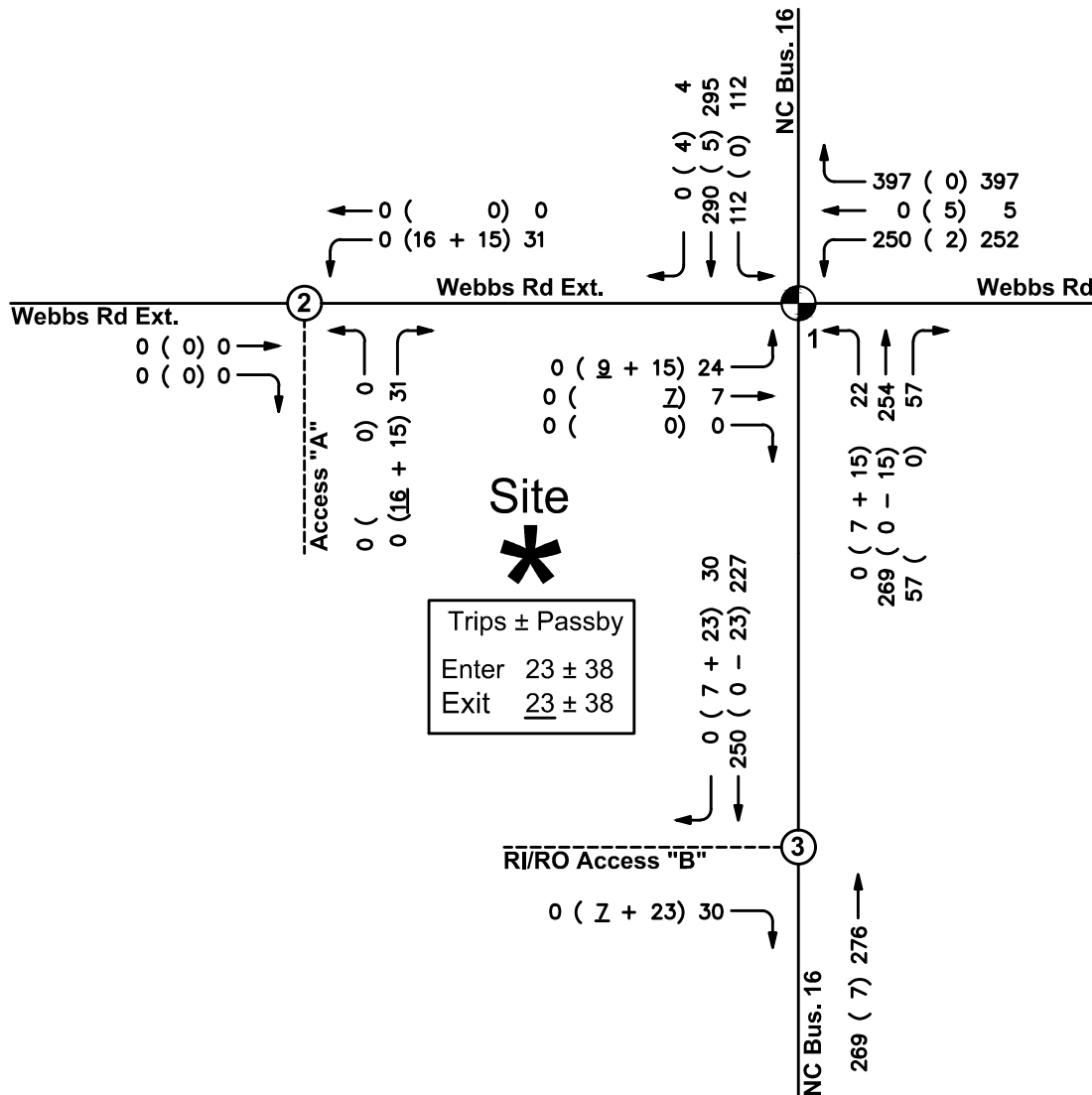
1.	

Figure 4

LEGEND

-  Traffic Signal
-  Stop Sign Control
-  Directional Movement

VOLUMES: Background (Site ± Passby) Total



7-ELEVEN NC BUSINESS 16 & WEBBS ROAD TIA

DENVER, NC

CROSLAND SOUTHEAST
121 WEST TRADE STREET SUITE 2550
CHARLOTTE, NC 28202

2019 BUILD AM PEAK HOUR VOLUMES



PROJECT #: 584-006
DRAWN BY: ART
CHECKED BY: REG

NOVEMBER 2018

REVISIONS:

1.	

Figure 5



TRAFFIC ANALYSIS

The intersections identified within the area of influence were analyzed to identify the traffic impact that the development has under the build scenario. The traffic analysis is based on the LOS analysis at the identified intersections. The intersections were analyzed assuming the completion of the project in 2019.

LOS is a qualitative measurement of traffic operations. It is a measure of delay time. The Transportation Research Board's Highway Capacity Manual¹ (HCM) defines six levels of service for intersections with LOS "A" representing the best operating condition and LOS "F" the worst. The table below gives the criteria for both signalized (Exhibit 19-8) and unsignalized (Exhibit 20-2) intersections.

Intersection LOS	Exhibit 19-8 Signalized Intersection Control Delay per Vehicle (sec/vehicle)	Exhibit 20-2 Unsignalized Intersection Control Delay per Vehicle (sec/vehicle)
A	≤ 10.0	≤ 10.0
B	> 10.0 and ≤ 20.0	> 10.0 and ≤ 15.0
C	> 20.0 and ≤ 35.0	> 15.0 and ≤ 25.0
D	> 35.0 and ≤ 55.0	> 25.0 and ≤ 35.0
E	> 55.0 and ≤ 80.0	> 35.0 and ≤ 50.0
F	> 80.0	> 50.0

SYNCHRO 9.3 was the software tool used in determining the delay, capacity and corresponding level of service at the study intersections. The intersection worksheet reports are provided in the Appendix.

For the analysis of unsignalized intersections, the vehicular movements that must stop at the intersection experience delay (i.e. the minor leg of the intersection). For descriptive purposes:

- LOS results between "A" and "C" for the side (minor) street approach are assumed to represent short vehicle delays
- LOS results between "D" and "E" for the side (minor) street approach are assumed to represent moderate delays
- LOS results of "F" for the side (minor) street approach is assumed to represent long delays.

It should be noted that stop sign controlled streets/driveways intersecting major streets typically experience long delays during peak hours, while the majority of the traffic moving through the intersection on the major street experiences little or no delay.

This report provides analysis of the traffic operations within the area of influence, according to the standards set by the North Carolina Department of Transportation's (NCDOT) "Policy on Street and Driveway Access to North Carolina Highways, Chapter 4 Part C" and Lincoln County's UDO Section 9.8 for TIAs. It provides intersection improvements needed for mitigating traffic impacts. This study evaluates the following scenarios:

¹ National Research Council. Transportation Research Board. Highway Capacity Manual 6th Ed., Washington, DC. 2016.



- 2018 AM & PM Peak existing traffic conditions
- 2019 No Build AM & PM Peak
- 2019 Build AM & PM Peak

Currently, the signalized study intersection of NC Business 16 & Webbs Road operates with a LOS “B” in both peak hours. Typically, an intersection is said to be operating at capacity at a volume-to-capacity (v/c) ratio of 1.00 and acceptable at a LOS “D” or better. The results of the existing and future analysis scenarios are presented in Table 3.

NCDOT ANALYSIS REQUIREMENTS - In order to determine the mitigation responsibility of the developer, this study compares 2019 Build results to the 2019 No Build results (see Table 3).

Chapter 5, Section J of the *July 2003 NCDOT Policy on Street and Driveway Access to North Carolina Highways*, the applicant shall be required to identify mitigation improvements to the roadway network if at least one of the following conditions exists when comparing base network conditions to project conditions:

- *The total average delay at an intersection or an individual approach increases by 25% or greater, while maintaining the same level of service,*
- *The Level of Service (LOS) degrades by at least one level at an intersection or an individual approach,*
- *Or the Level of Service is “F” for an intersection or an individual approach.*

This section of the access policy also states that, *mitigation improvements shall be identified when the analysis indicates that the 95th percentile queue exceeds the storage capacity of the existing lane.*

LINCOLN COUNTY ANALYSIS REQUIREMENTS - In order to determine the mitigation responsibility of the developer, this study compares 2019 Build results to the 2019 No Build results (see Table 3).

Lincoln County’s UDO Section 9.8 for TIAs indicates the county shall utilize means by which to maintain a minimum Grade “C” level of service for intersections affected by proposed developments through impacts mandated or suggested by traffic impact analyses and through adherence to level-of-service criteria described as follows:

- *Where a proposed development lowers any intersection leg impacted by said development below a Grade “C”, the developer will be required to provide those transportation improvements necessary to retain a Grade “C”.*
- *Where an existing intersection is rated below Grade “C” prior to any proposed development, the developer will be required to maintain existing transportation levels for any/all legs impacted. Final intersection grades shall include the impact of the proposed development.*



Table 3: Levels of Service

Intersection	Intersection/ Approach	AM Peak			PM Peak		
		Delay (sec/veh)	Capacity (v/c)	LOS	Delay (sec/veh)	Capacity (v/c)	LOS
2018 Existing Conditions							
1. NC Bus.16 & Webbs Rd./Webbs Rd. Ext.	Intersection	12.0	0.60	B	12.5	0.62	B
2019 No Build w/Offsite							
1. NC Bus. 16 & Webbs Rd./ Webbs Rd. Ext.	Intersection	28.5	0.72	C	25.9	0.70	C
	Northbound	34.4	-	C	28.7	-	C
	Southbound	26.4	-	C	20.9	-	C
	Eastbound	17.0	-	B	23.6	-	C
	Westbound	27.0	-	C	31.3	-	C
2019 Build w/Offsite							
1. NC Bus. 16 & Webbs Rd./Webbs Rd. Ext.	Intersection	28.6	0.72	C	26.7	0.69	C
	Northbound	34.3	-	C	29.2	-	C
	Southbound	28.3	-	C	22.6	-	C
	Eastbound	18.1	-	B	24.1	-	C
	Westbound	26.6	-	C	30.6	-	C
2. Webbs Rd. Ext. & Prop. Access "A"	Intersection	-	-	-	-	-	-
	Northbound	8.5	-	A	8.5	-	A
	Eastbound	0.0	-	A	0.0	-	A
	Westbound	6.5	-	A	6.7	-	A
3. NC Bus. 16 & Prop. RIRO Access "B"	Intersection	-	-	-	-	-	-
	Northbound	0.0	-	A	0.0	-	A
	Southbound	0.0	-	A	0.0	-	A
	Eastbound	9.9	-	A	13.2	-	B

Table 4 shows the 2019 maximum queue lengths calculated by SimTraffic 9.3, a traffic simulation software application for unsignalized and signalized intersections, or the calculated 95th % queue in Synchro 9, - whichever produced the higher length.



Table 4: 2019 Vehicle Queue Lengths

Intersection/ Direction		Existing (Proposed) Storage (feet)		AM Peak Queue Length (ft)			PM Peak Queue Length (ft)		
		Left	Right	Left	Thru	Right	Left	Thru	Right
2019 No Build									
1. NC Bus. 16 & Webbs Rd./Webbs Rd. Ext.	NB	100'	100'	35'	264'	172'	87'	270'	197'
	SB	250'	-	142'	221'		219'	228'	
	EB	Term.	100'	35'	31'		31'	35'	
	WB	Term.	550'	187'	262'		147'	148'	
2019 Build									
1. NC Bus. 16 & Webbs Rd./Webbs Rd. Ext.	NB	100'	100'	89'	204'	134'	94'	220'	197'
	SB	250'	-	167'	256'		224'	252'	
	EB	Term.	100'	66'	31'		61'	39'	
	WB	Term.	550'	193'	282'		179'	144'	
2. Webbs Rd. Ext. & Prop Access "A"	NB	Term.	Term.	25'	-	46'	25'	-	46'
	EB	-	-	-	0'		-	0'	
	WB	-	-	17'		-	6'		-
3. NC Bus. 16 & RI/RO Access "B"	NB	-	-	-	49'	-	-	151'	-
	SB	-	-	-	0'		-	9'	
	EB	-	Term.	-	-	57'	-	-	56'

2019 No Build w/Offsite Analysis Results:

1. NC 16 & Webbs Road/Webbs Road Extension (signalized)

The intersection operates with a LOS "C" in the AM and PM peak hours.

2019 Build w/Offsite Analysis Results/Suggested Recommendations:

When comparing the results of the 2019 No Build traffic and the 2019 Build traffic, the study intersection adheres to all NCDOT and Lincoln County parameters during both peak hours.

1. NC 16 & Webbs Road/Webbs Road Extension (signalized)

When comparing the impact of the 2019 buildout to the 2019 No Build conditions the intersection remains a LOS "C" in the both peak hours. The increase in intersection vehicle delay is less than 1% in the AM peak hour and is 4% in the PM peak hour. In addition, all approaches meet all parameters during both peak hours. **The minor traffic associated with the proposed development results in no net loss of LOS for the intersection or any of the approaches during either peak (maintains Lincoln County's requirement of LOS "C") and results in minor increases in delay; therefore, no improvements are recommended at the study intersection.**



2. Webbs Road Extension & Proposed Access “A” (unsignalized – full movement)

We propose the following intersection configuration:

- One ingress lane and one egress lane (combined left-right lane on Access “A”)

Assuming this configuration, the worst leg of the intersection (northbound) operates at a LOS “A” in both peak hours.

3. NC 16 & Proposed RI/RO Only Access “B” (unsignalized)

We propose the following intersection configuration:

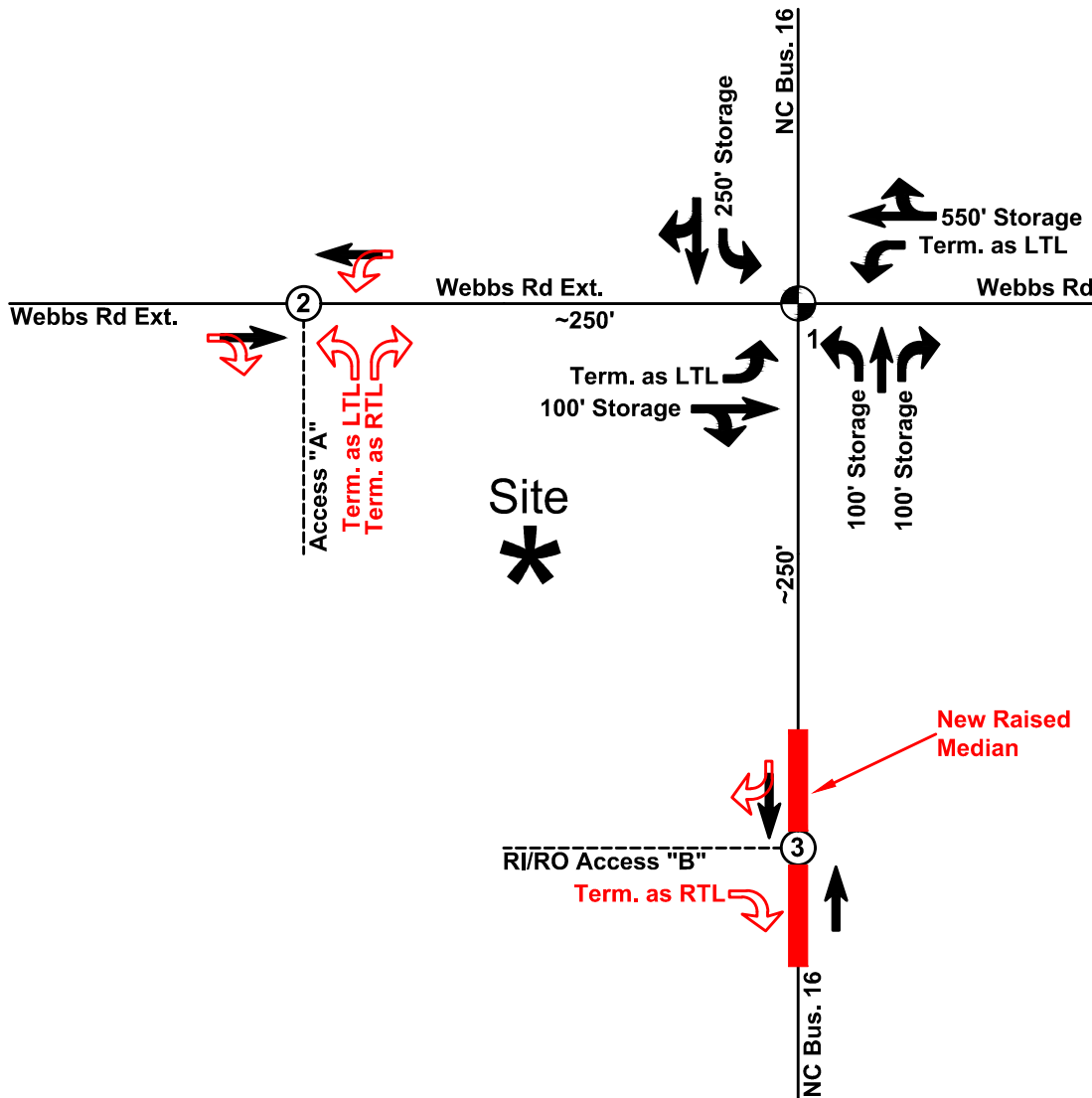
- One ingress lane and one egress lane (terminating right turn lane on Access “B”)
- Install a new concrete median on NC Business 16 to restrict the access to RI/RO only

Assuming this configuration, the worst leg of the intersection (northbound) operates at a LOS “A” in the AM peak hour and a LOS “B” during the PM peak hour.

The existing/future and recommended laneage is shown on Figure 7.

LEGEND

-  Traffic Signal
-  Stop Sign Control
-  Existing Laneage
-  Developer Responsibility



7-ELEVEN NC BUSINESS 16 & WEBBS ROAD TIA

DENVER, NC

CROSLAND SOUTHEAST
 121 WEST TRADE STREET SUITE 2550
 CHARLOTTE, NC 28202

EXISTING/FUTURE & RECOMMENDED LANEAGE

0 NTS N
 SCALE: NTS

PROJECT #: 584-006
 DRAWN BY: ART
 CHECKED BY: REG

DECEMBER 2018

REVISIONS:

1.	

Figure 7



CONCLUSIONS

In summary, the minor amount of traffic associated with the proposed convenience development that is expected to be added to the roadways will only slightly impact the nearby roadways and study intersection, especially with the implementation of the recommended access configurations.



APPENDIX