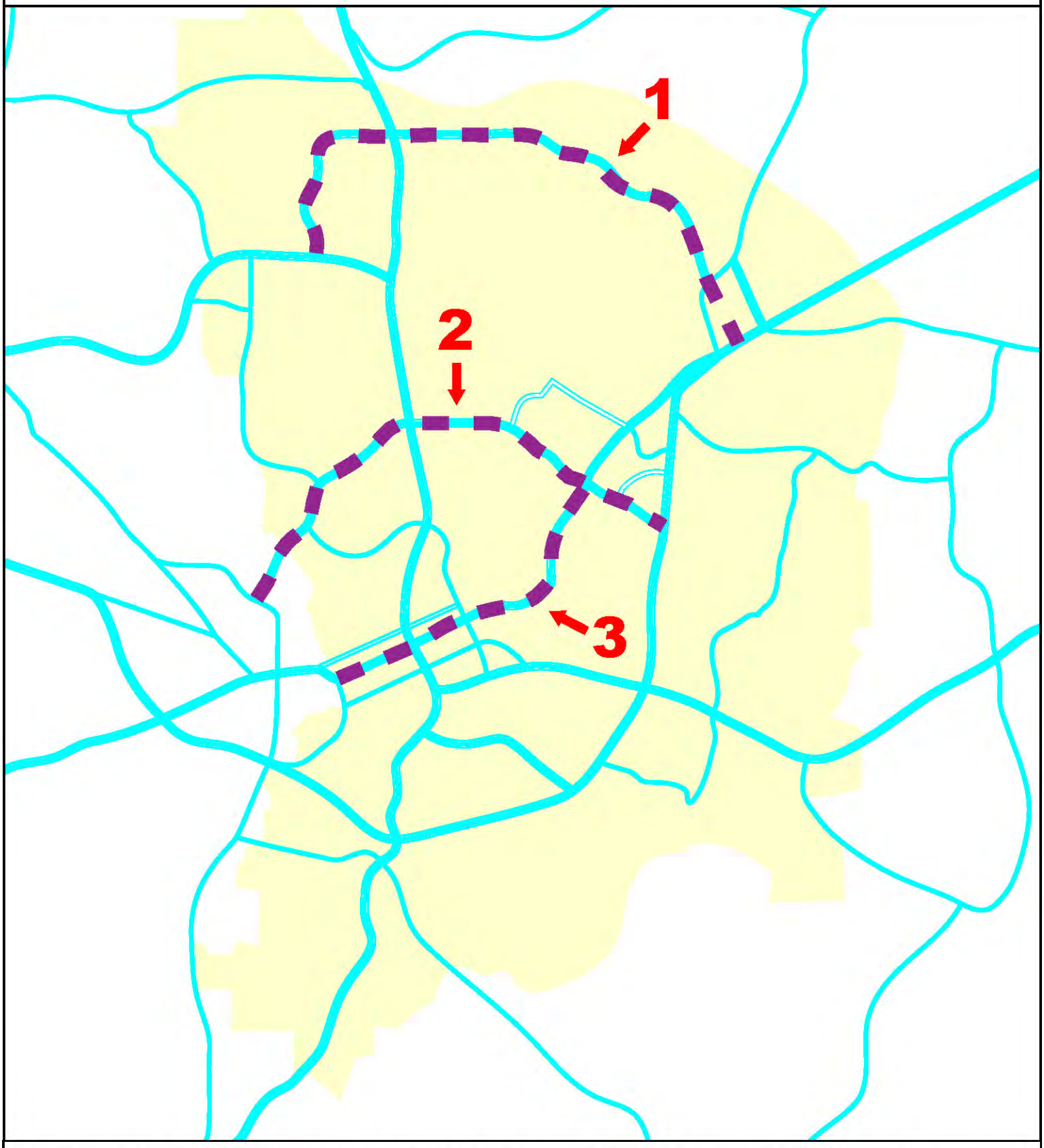
Overview

1) Existing Conditions

2) Roadway Design for Bike and Ped Facilities

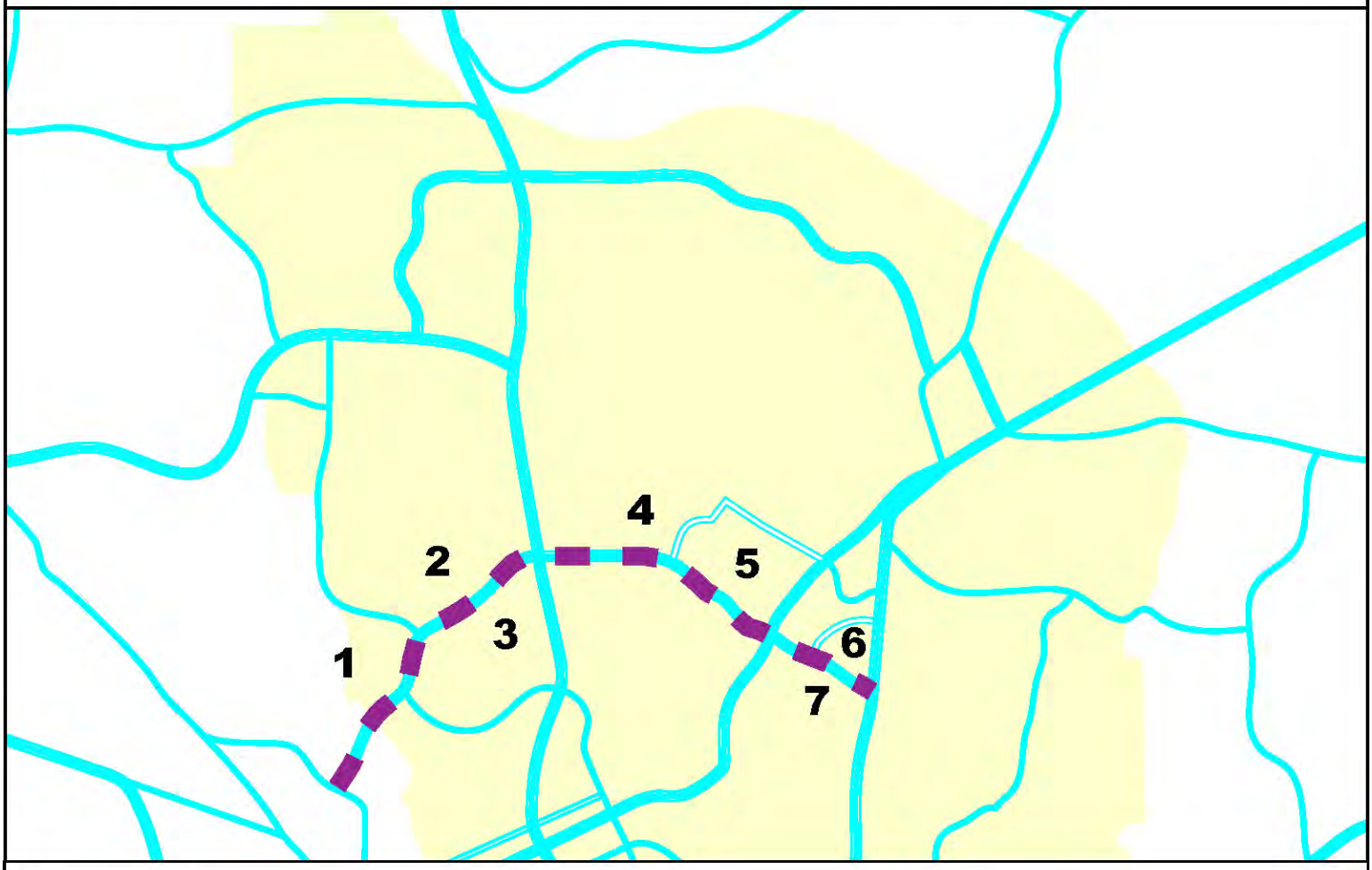
3)Trip Generation

EAST-WEST Connectors



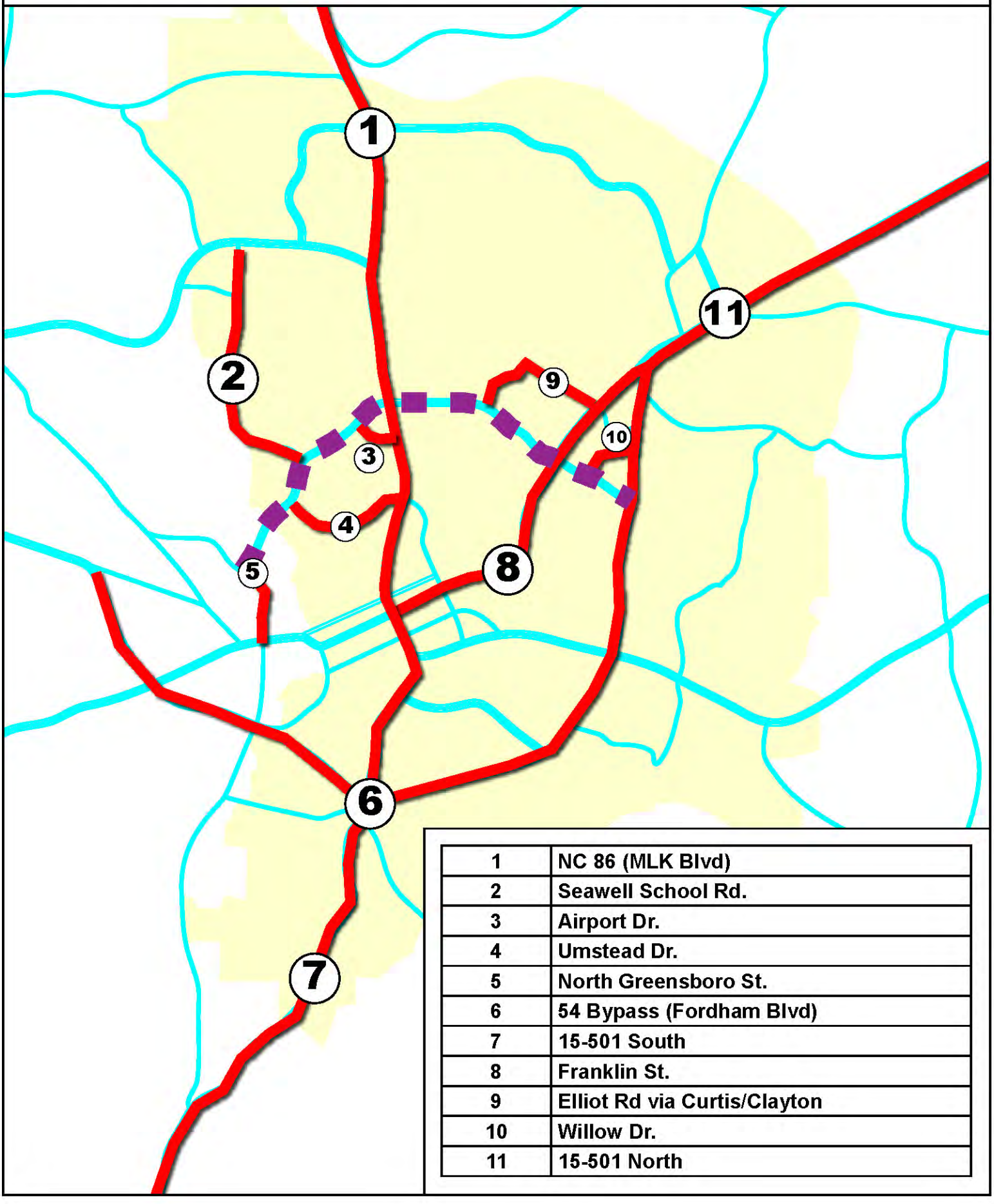
Estes Dr. is one of 3 East-West roads in Chapel Hill that provide connectivity north of UNC Main Campus.

Trip Attractors along Estes



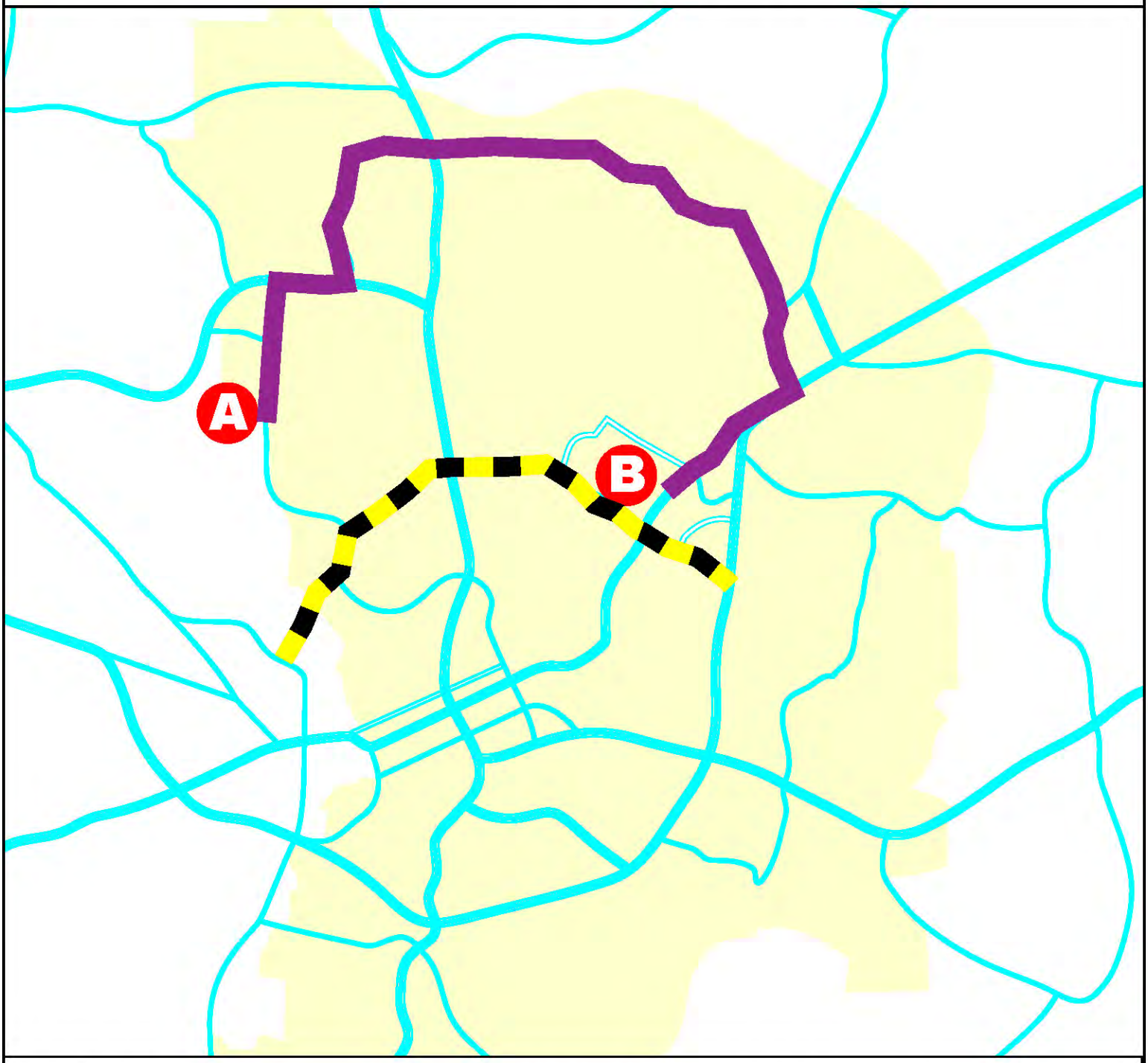
1	Carolina North Forest Access
2	Park and Ride Lot
3	UNC Facilities Complex
4	Schools
5	Chapel Hill Library
6	University Mall
7	Community Center

Roads that Connect to Estes Dr.



1	NC 86 (MLK Blvd)
2	Seawell School Rd.
3	Airport Dr.
4	Umstead Dr.
5	North Greensboro St.
6	54 Bypass (Fordham Blvd)
7	15-501 South
8	Franklin St.
9	Elliot Rd via Curtis/Clayton
10	Willow Dr.
11	15-501 North

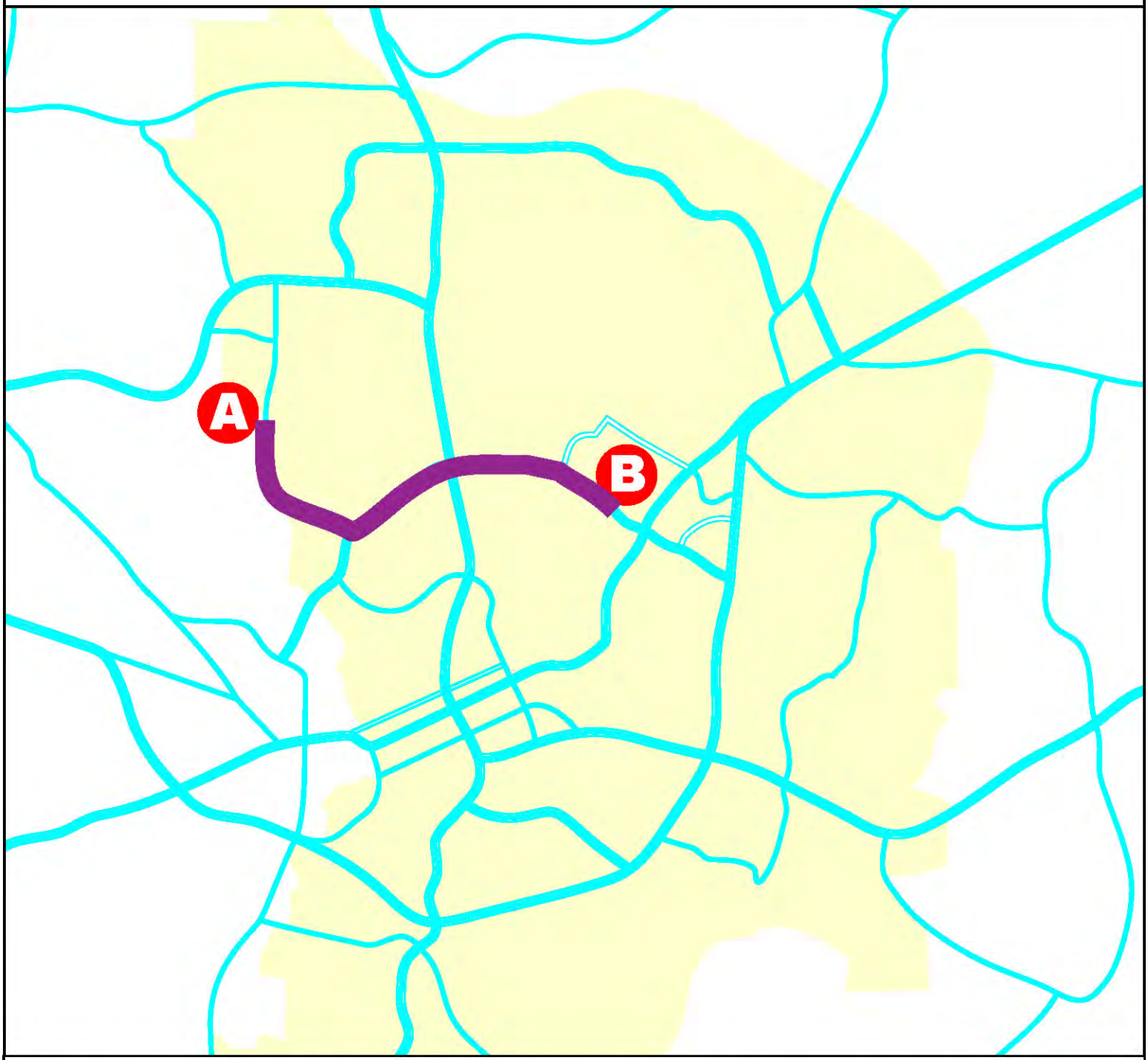
A network without Estes??



Without Estes Dr., this is the shortest route from CH. High School to the Library.

This trip is 6.9 miles.

A network without Estes??



With Estes Dr., this is the shortest route from CH. High School to the Library.

This trip is 3.3 miles.

Level of Service Definition

Roadway

A Free flow, low traffic density

B Minimum delay, stable traffic flow

C Stable condition, movements somewhat restricted due to higher volumes, but not objectionable for motorists

D Movements more restricted, travel speeds begin to decline

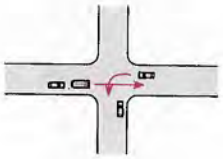
E Traffic fills capacity of the roadway, vehicles are closely spaced, incidents can cause serious breakdown

F Forced flow with demand volumes greater than capacity resulting in breakdown in traffic flow

Intersection

A Minimal delays

B Low levels of delay and queuing



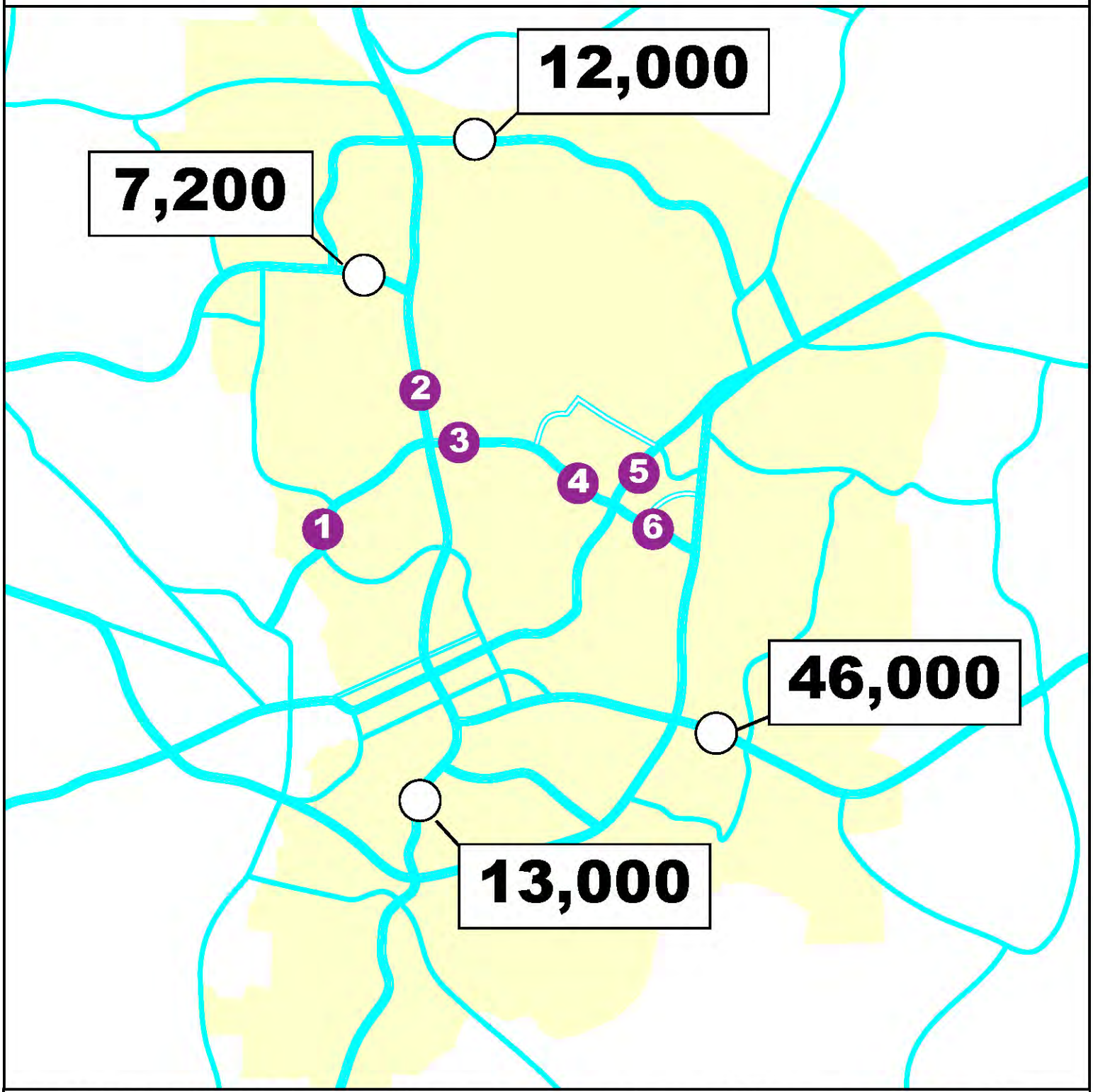
C Intermittently vehicles wait through more than one signal indication, occasionally backups may develop, traffic flow still stable and acceptable.

D Delays at intersections may become extensive, but enough cycles with lower demand occur to permit periodic clearance, preventing excessive backups. LOS D has historically been regarded as a desirable design objective in urban areas.

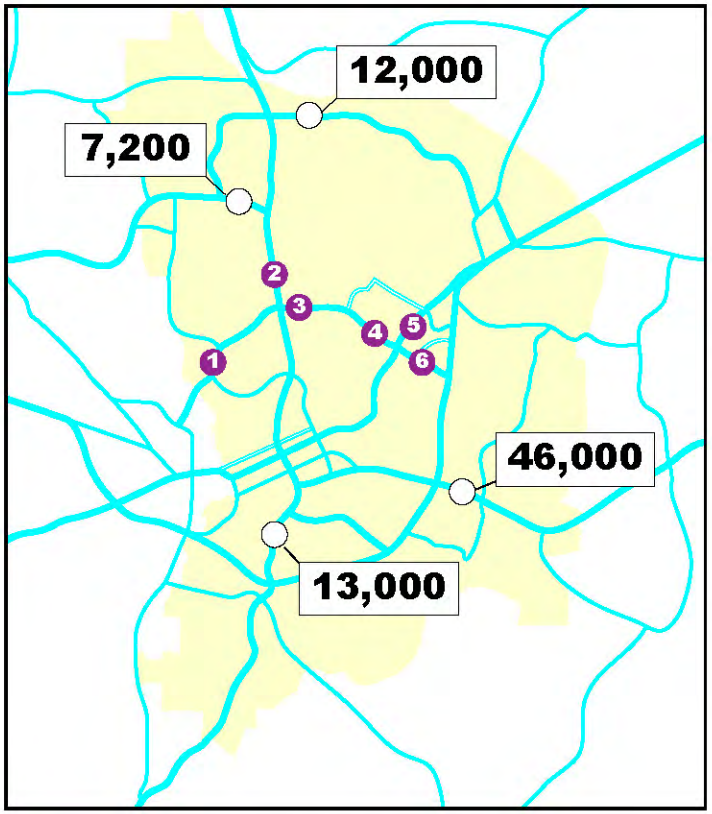
E Traffic fills intersection capacity, long queues and delays, many vehicles need to wait through more than one green indication

F Traffic demand exceeds capacity of intersection, very long queues and delays, most vehicles need to wait through more than one green indication

Average Daily Traffic Volume (AADT)

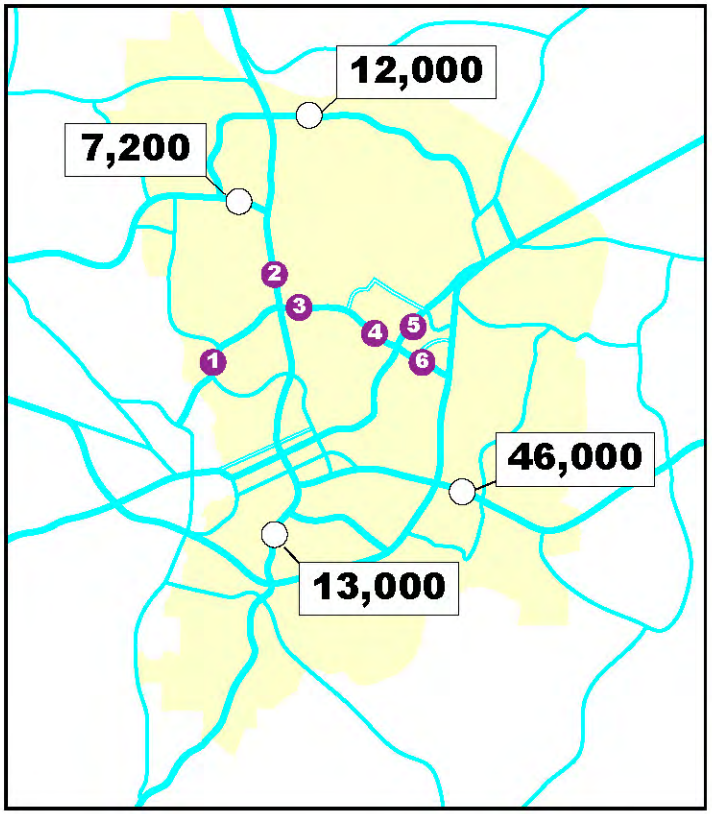


AADT Traffic Volume Maps present the traffic average for the year at specific points on North Carolina highways. Data is collected at more than 40,000 locations throughout North Carolina using Portable Traffic Count Stations. This map shows 2011 data.



5 Franklin St. north of Estes Dr.

22,000 per day

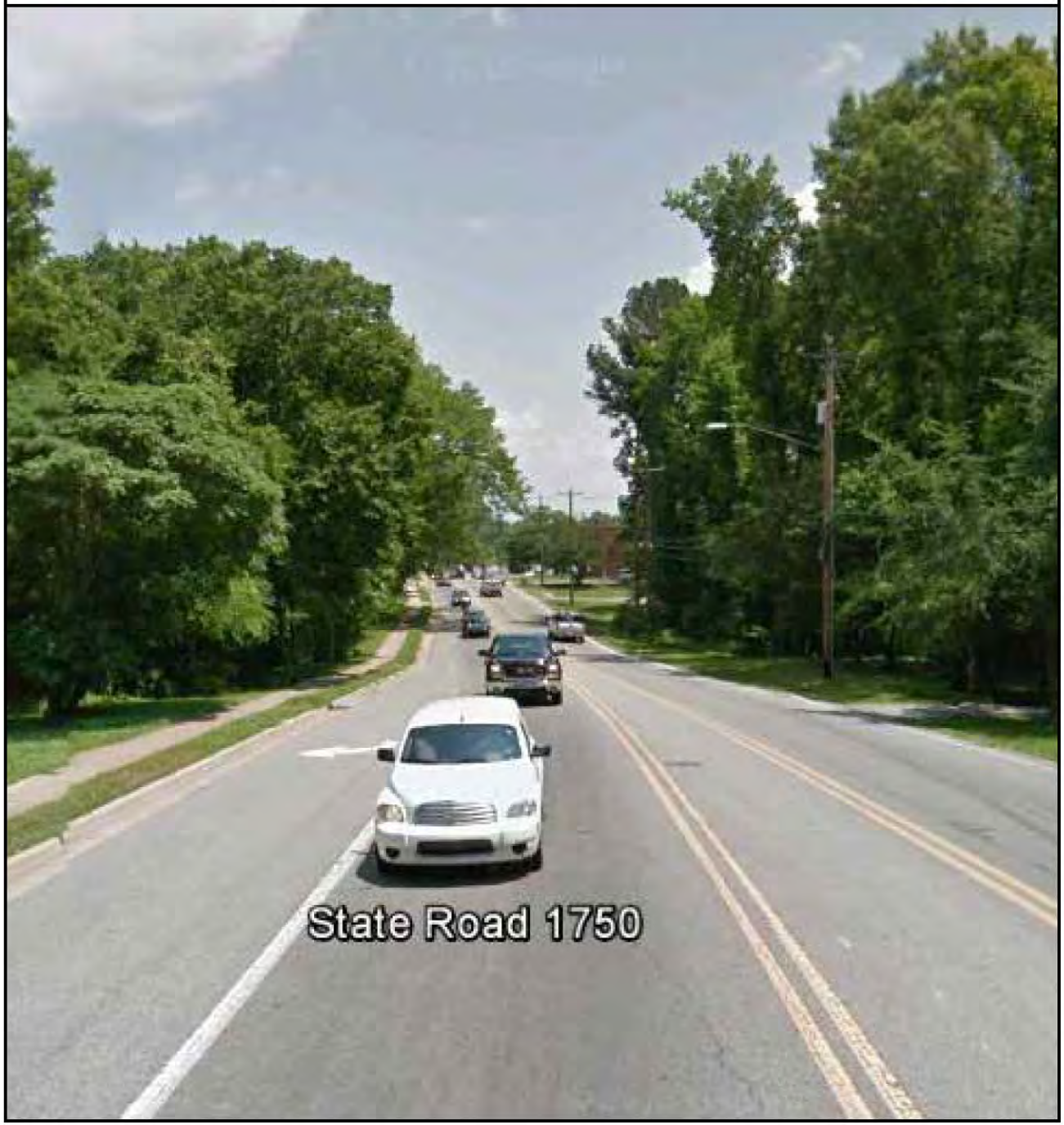


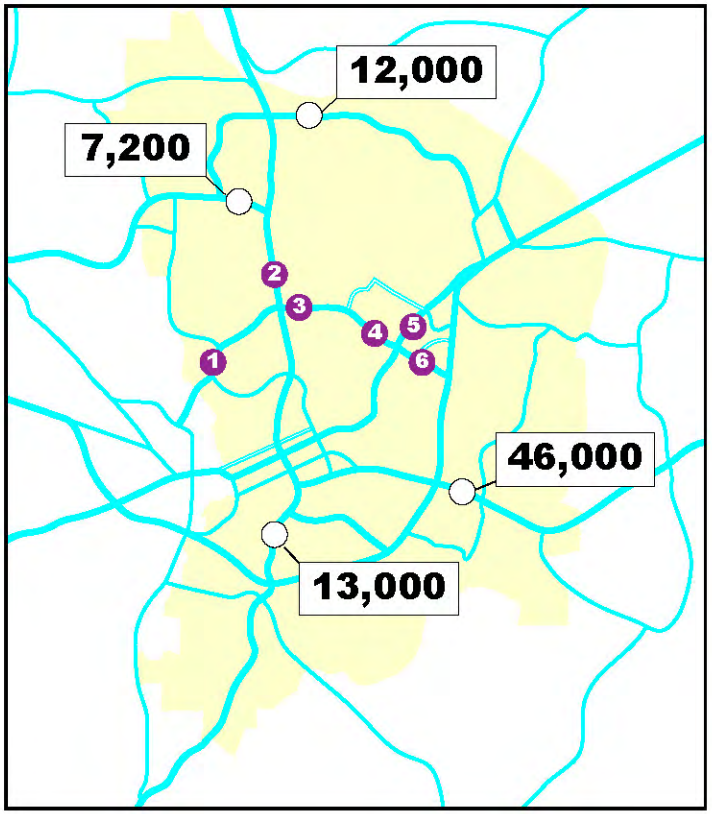
PM Auto LOS

Estes Dr from
Library Dr to
Franklin St.

D

4 15,000 per day



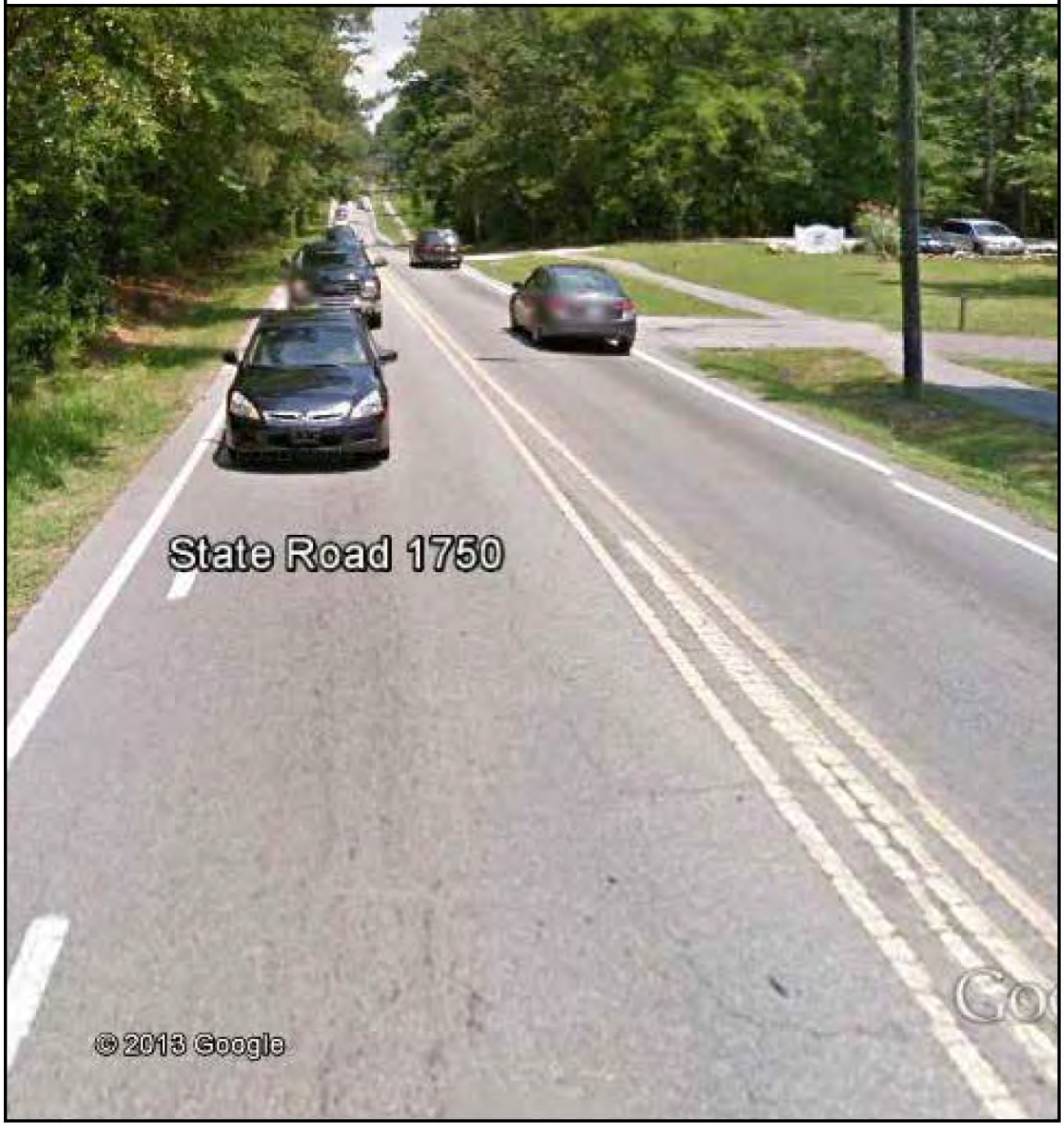


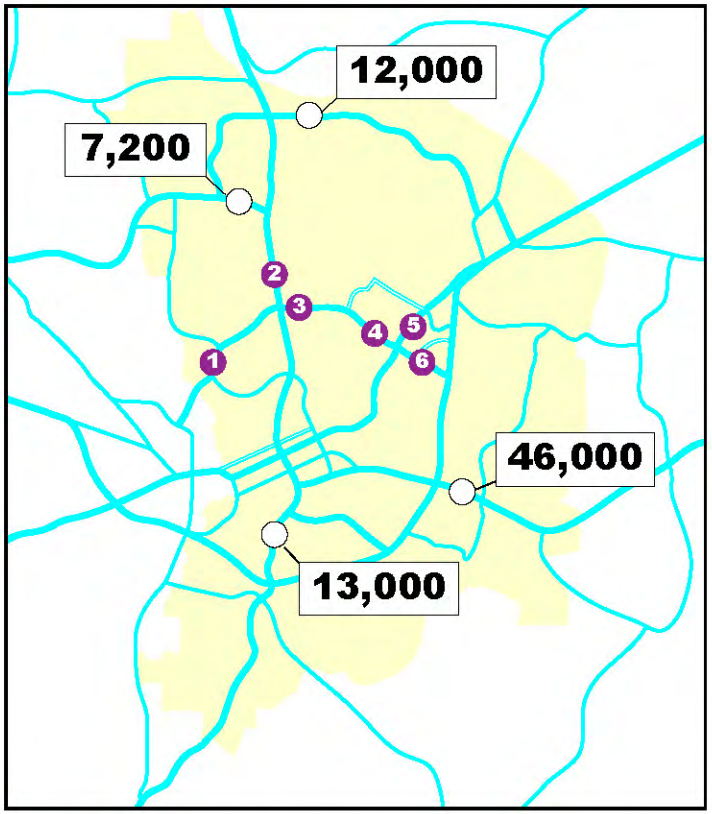
PM Peak LOS

Estes Dr from
MLK to Library Dr

C

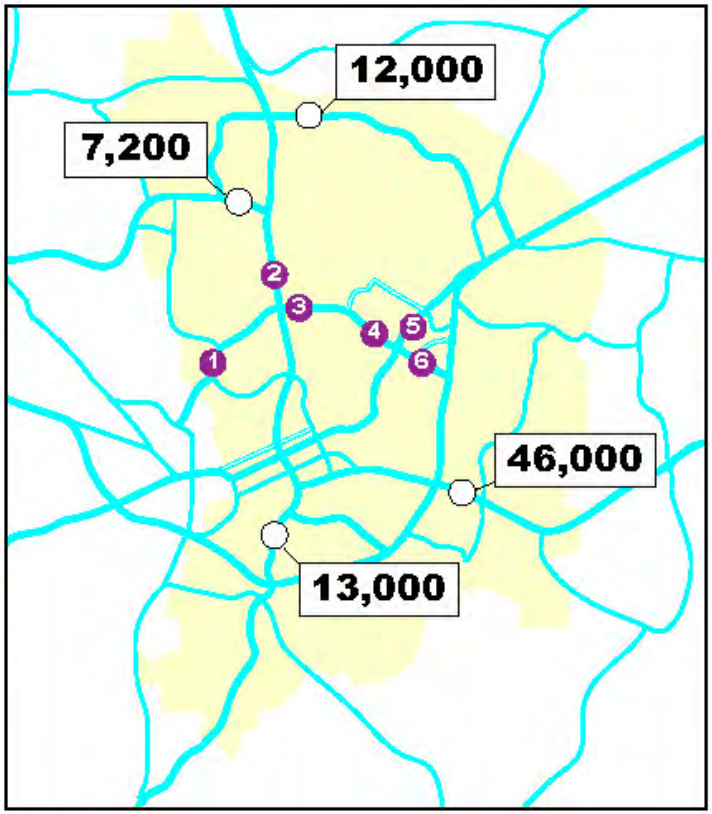
3 15,000 per day



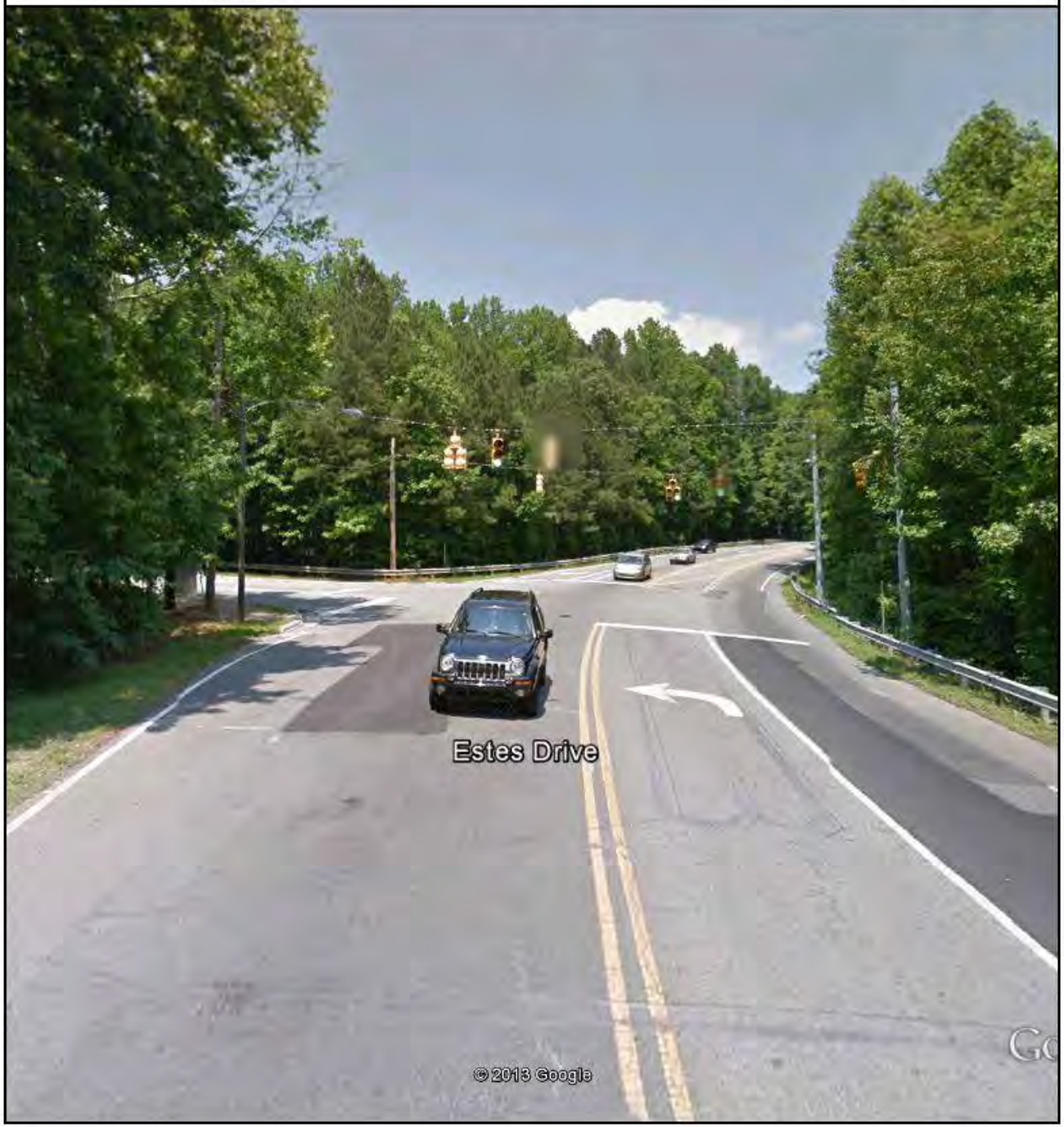


2 MLK Blvd north of Estes Dr.

28,000 per day



13,000 per day

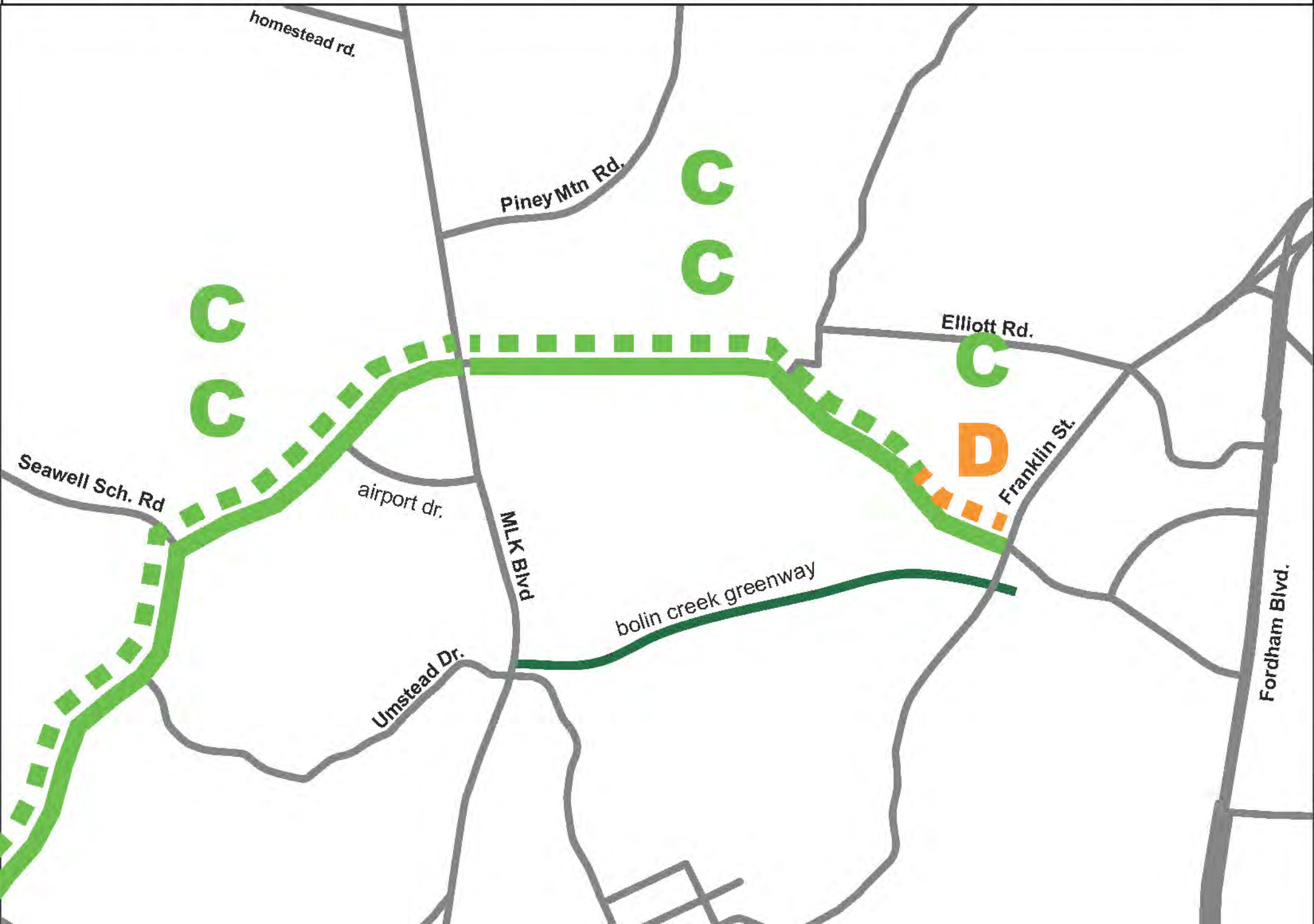


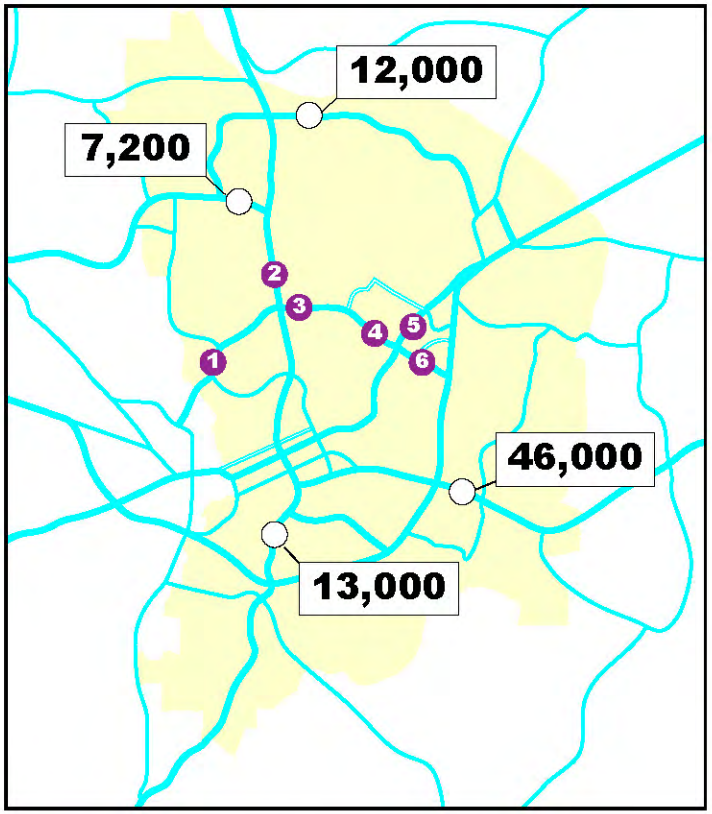
PM Peak LOS

Estes Dr from
Village Dr to MLK

C

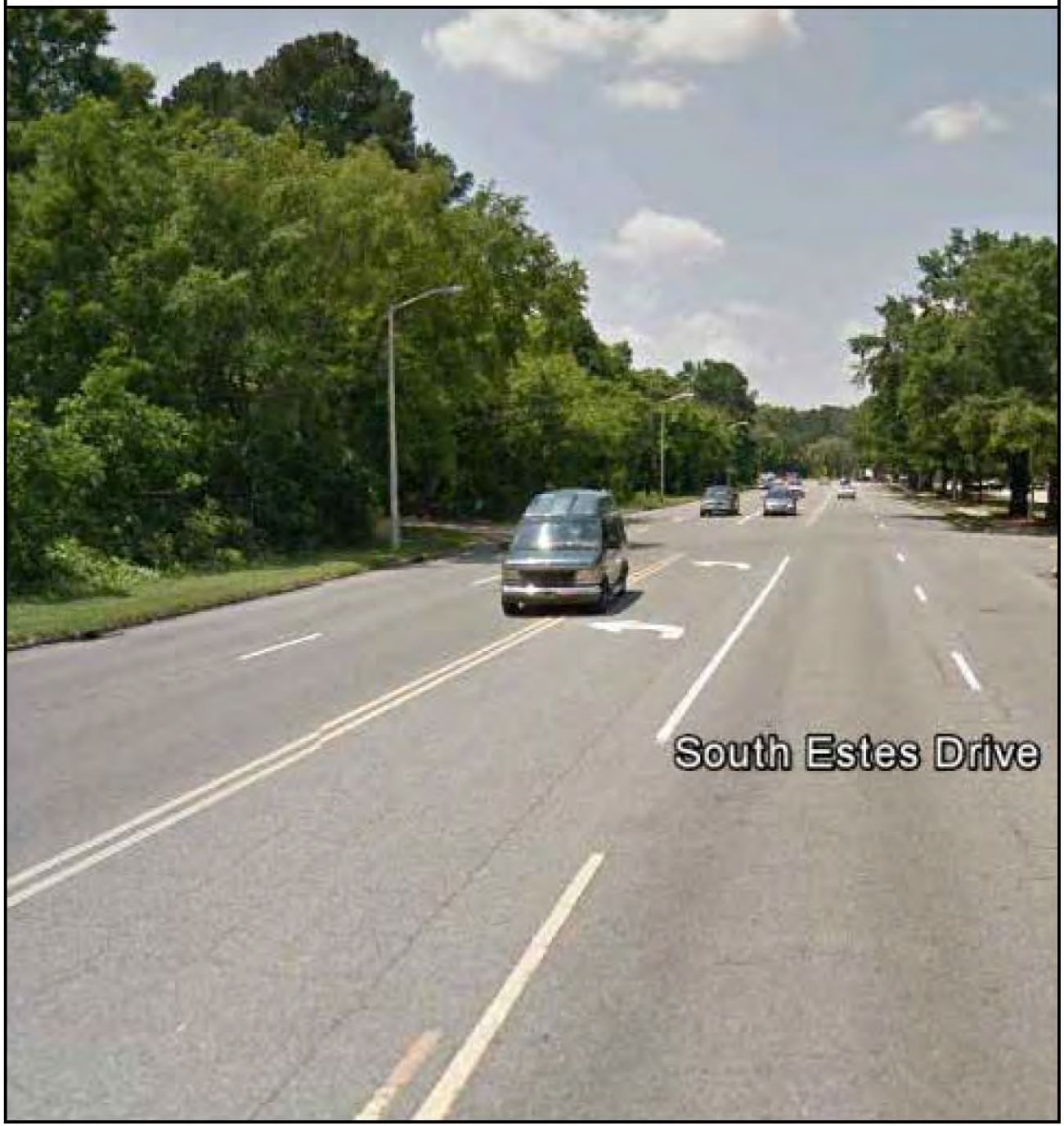
Daily/PM Level of Service(Segments)





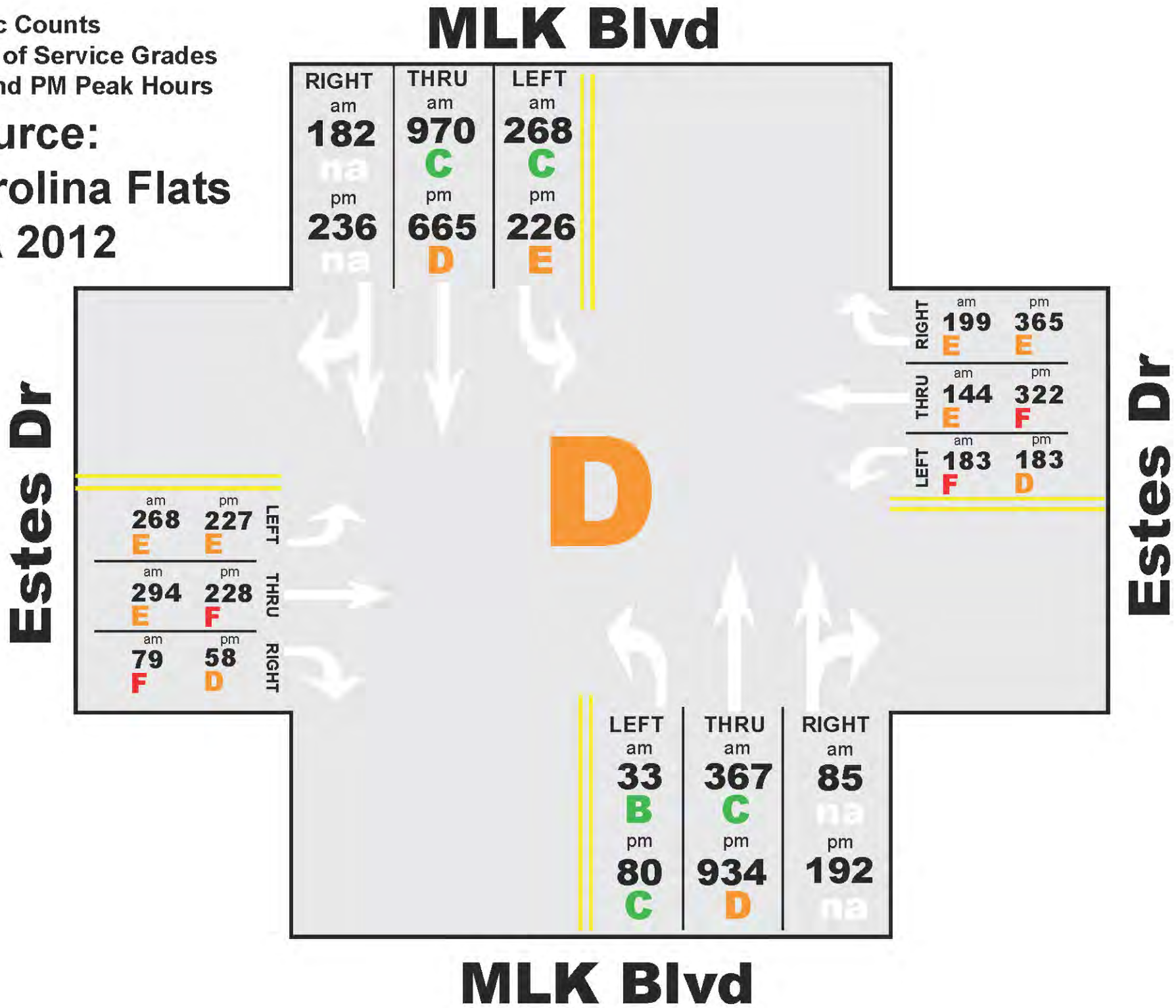
6 Estes Dr near Univ. Mall.

12,000 per day

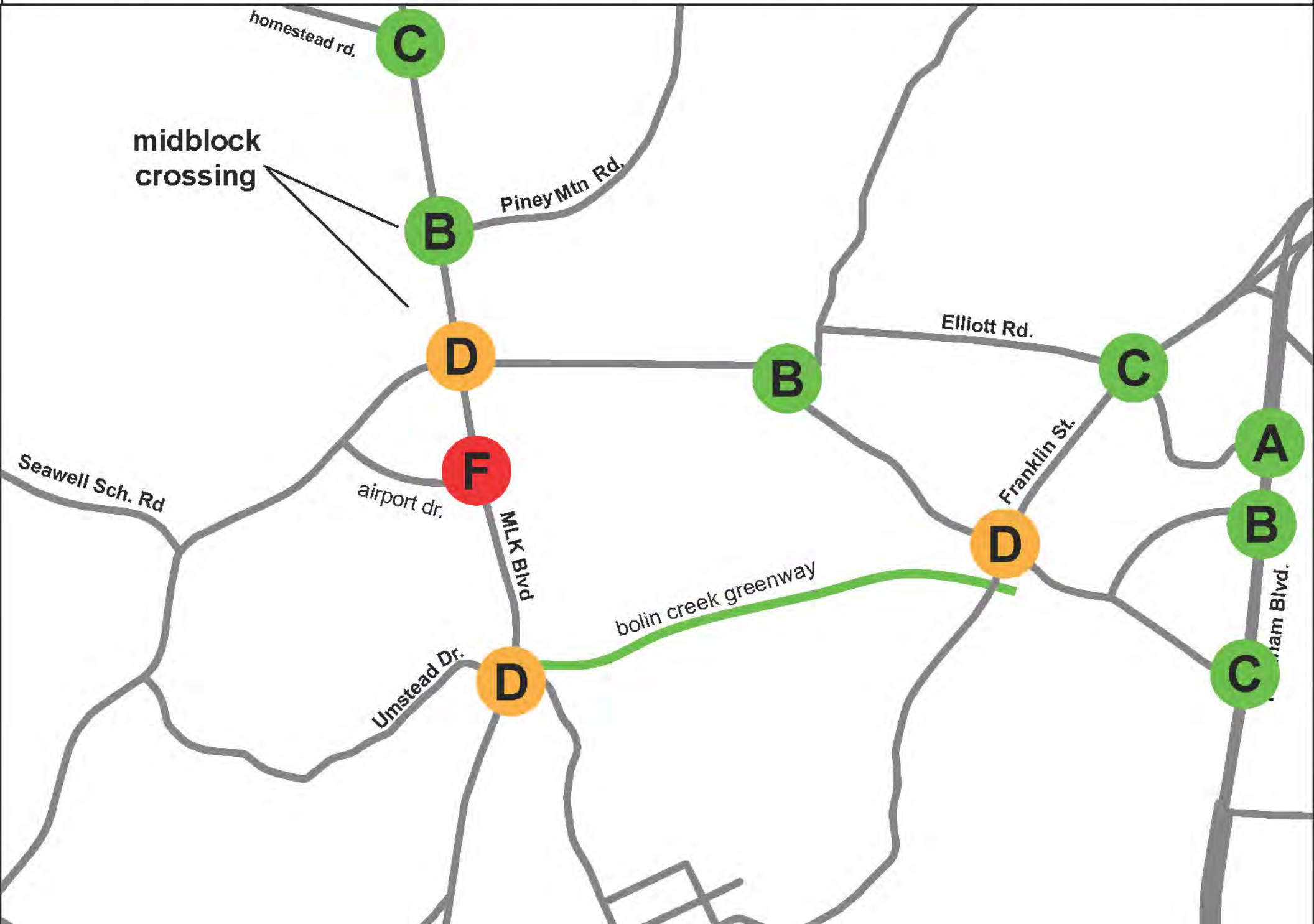


Traffic Counts
Level of Service Grades
AM and PM Peak Hours

Source: Carolina Flats TIA 2012

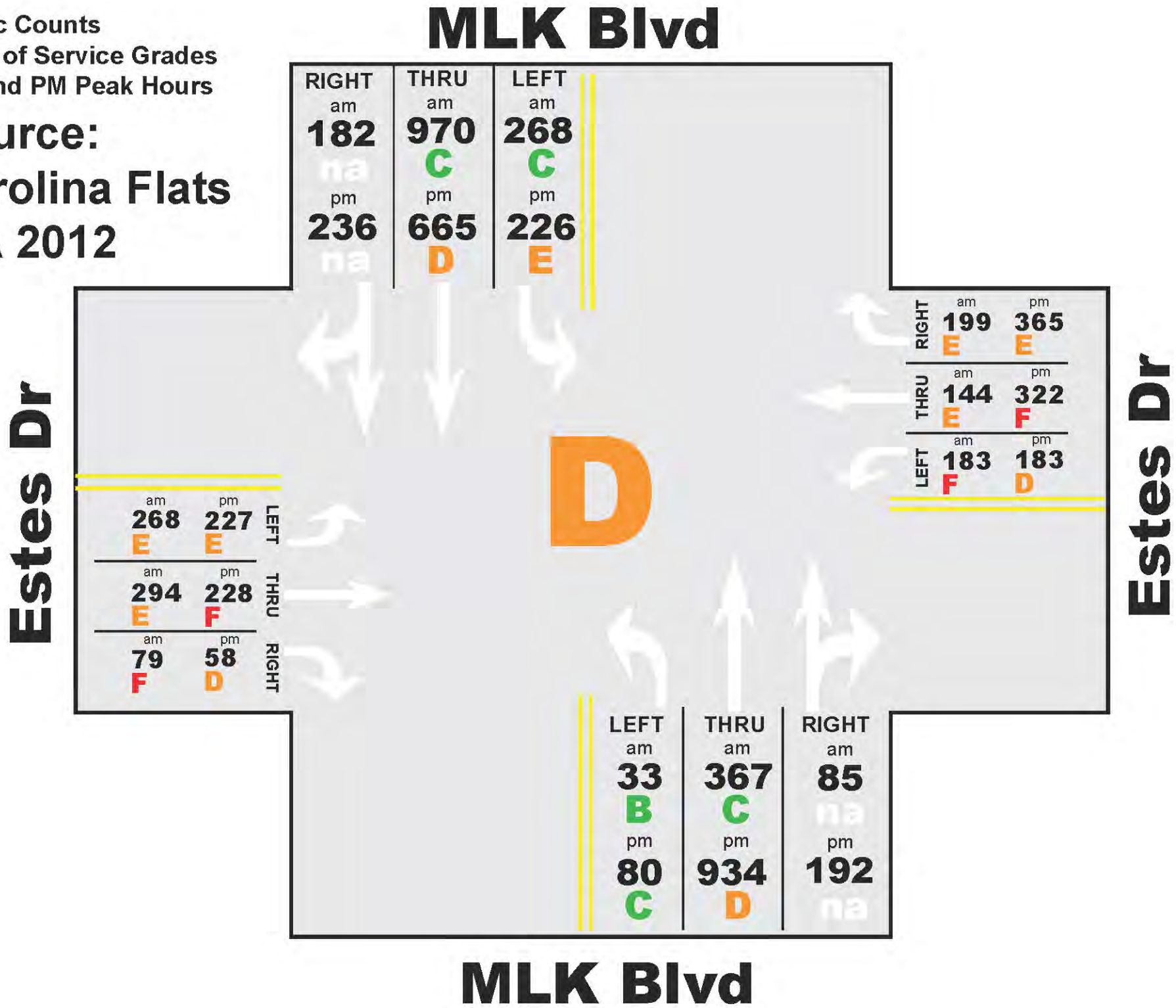


Intersection Level of Service (PM Peak)



Traffic Counts
Level of Service Grades
AM and PM Peak Hours

Source: Carolina Flats TIA 2012

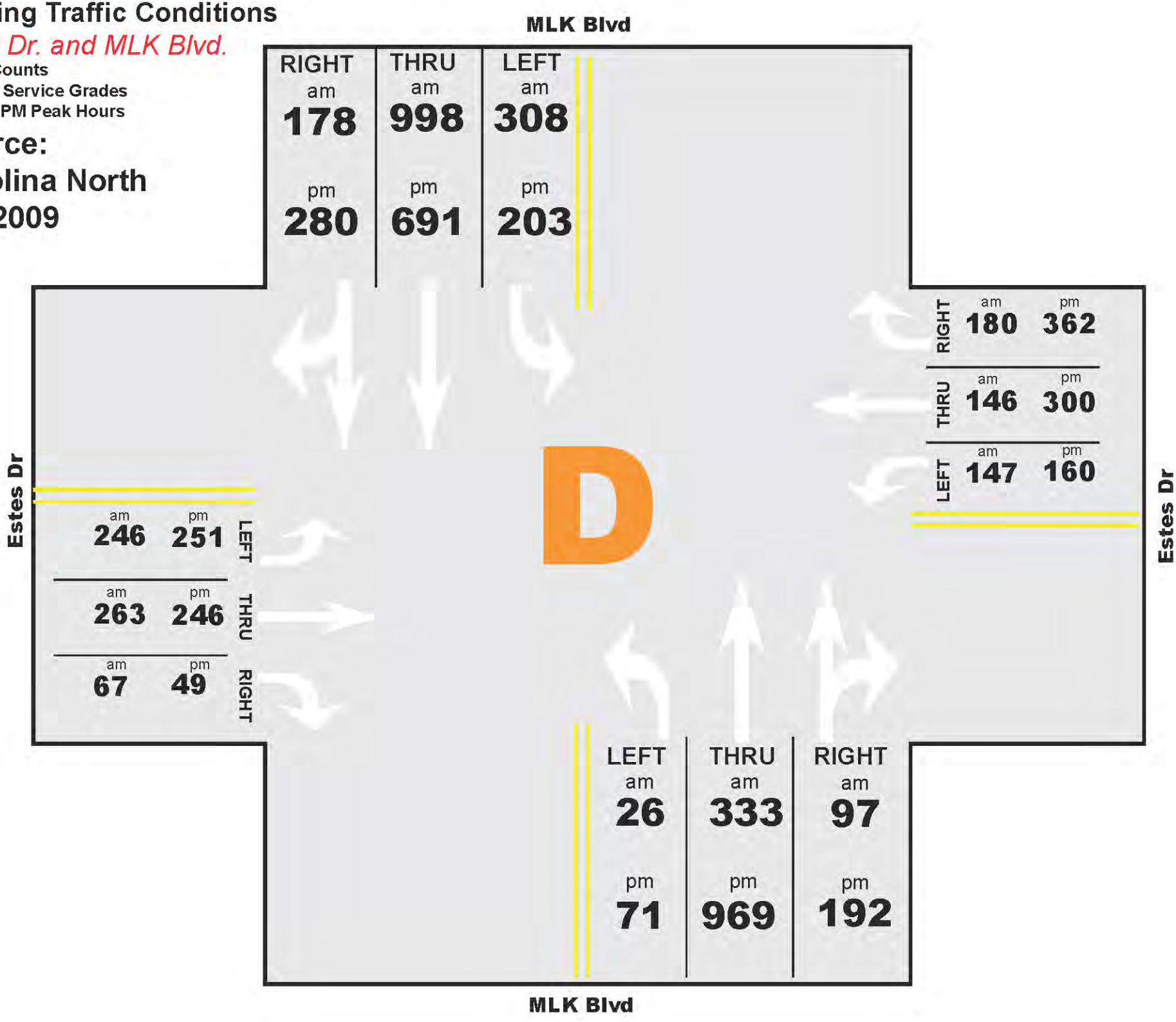


Existing Traffic Conditions

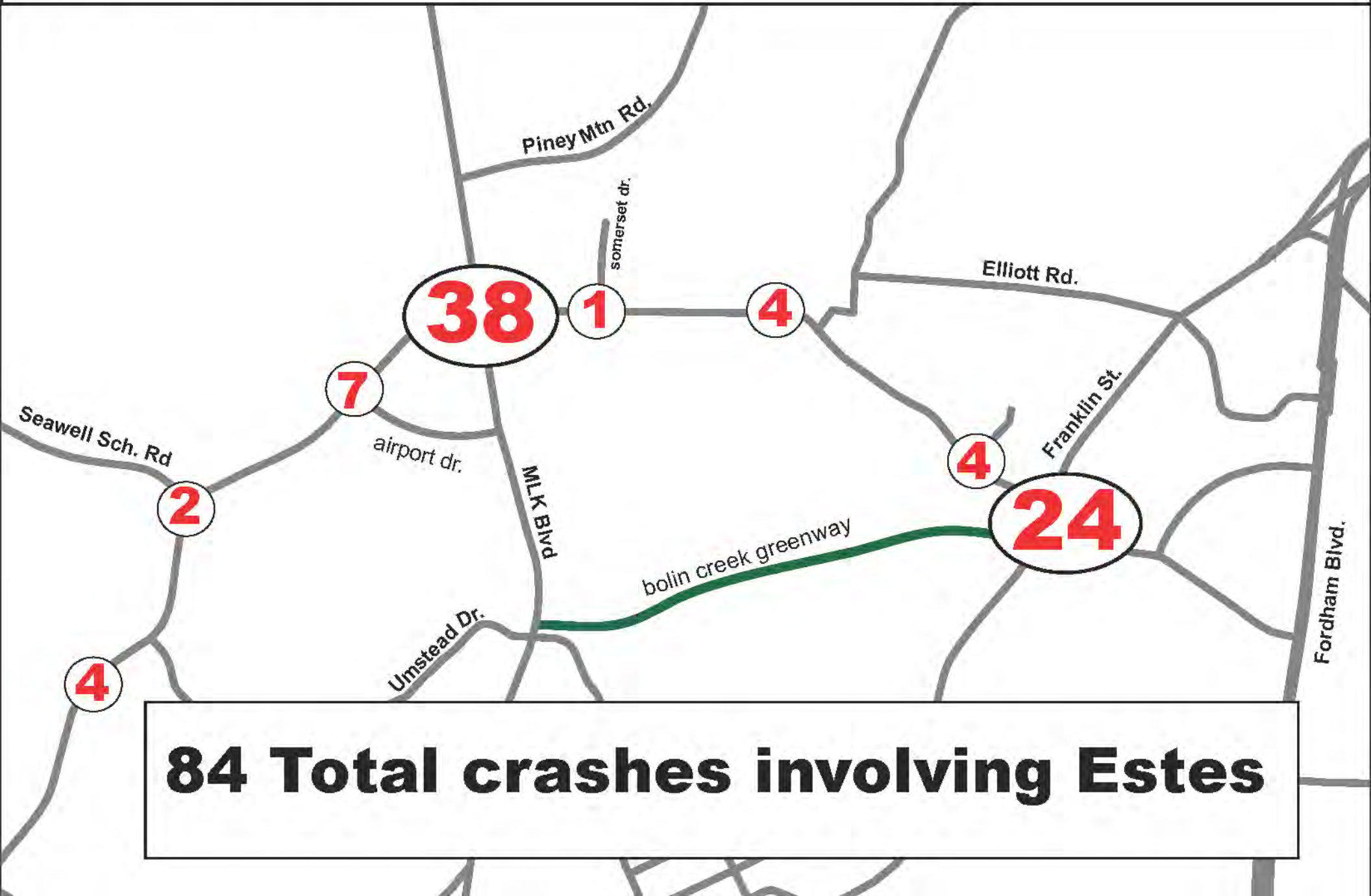
Estes Dr. and MLK Blvd.

Traffic Counts
Level of Service Grades
AM and PM Peak Hours

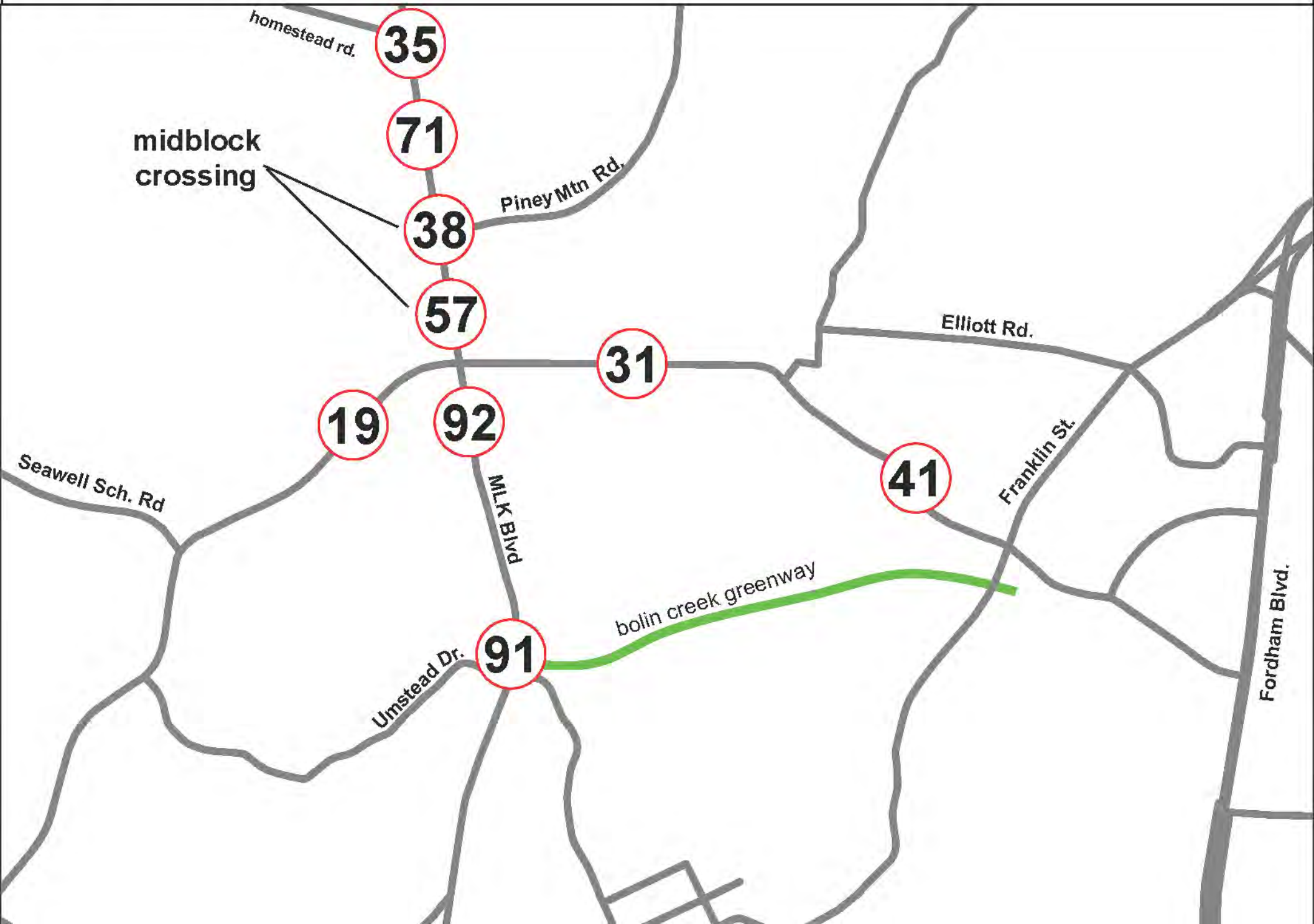
Source:
Carolina North
TIA 2009



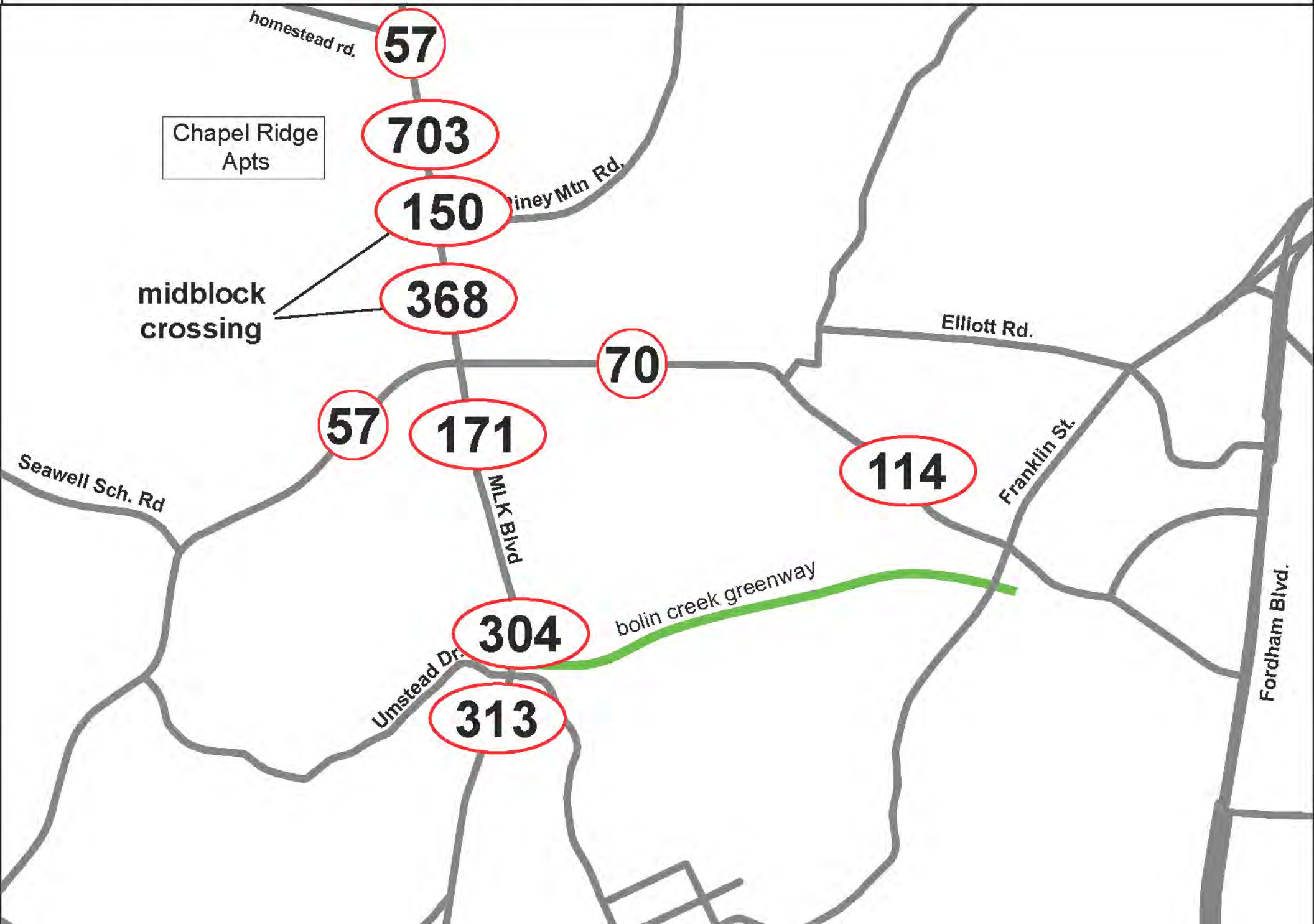
Traffic Accident "Call for Service"
2010 - 2011



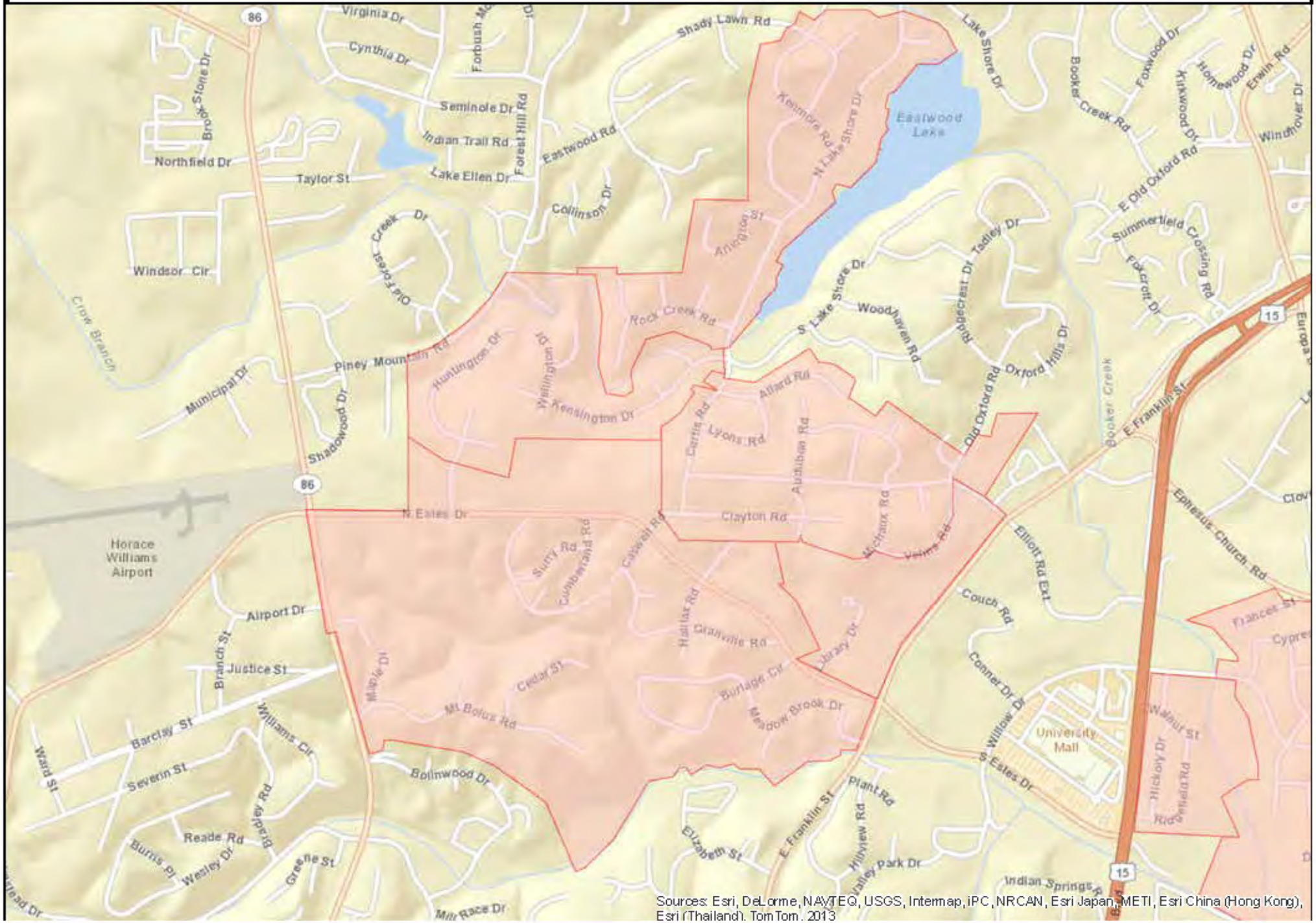
Bike Counts

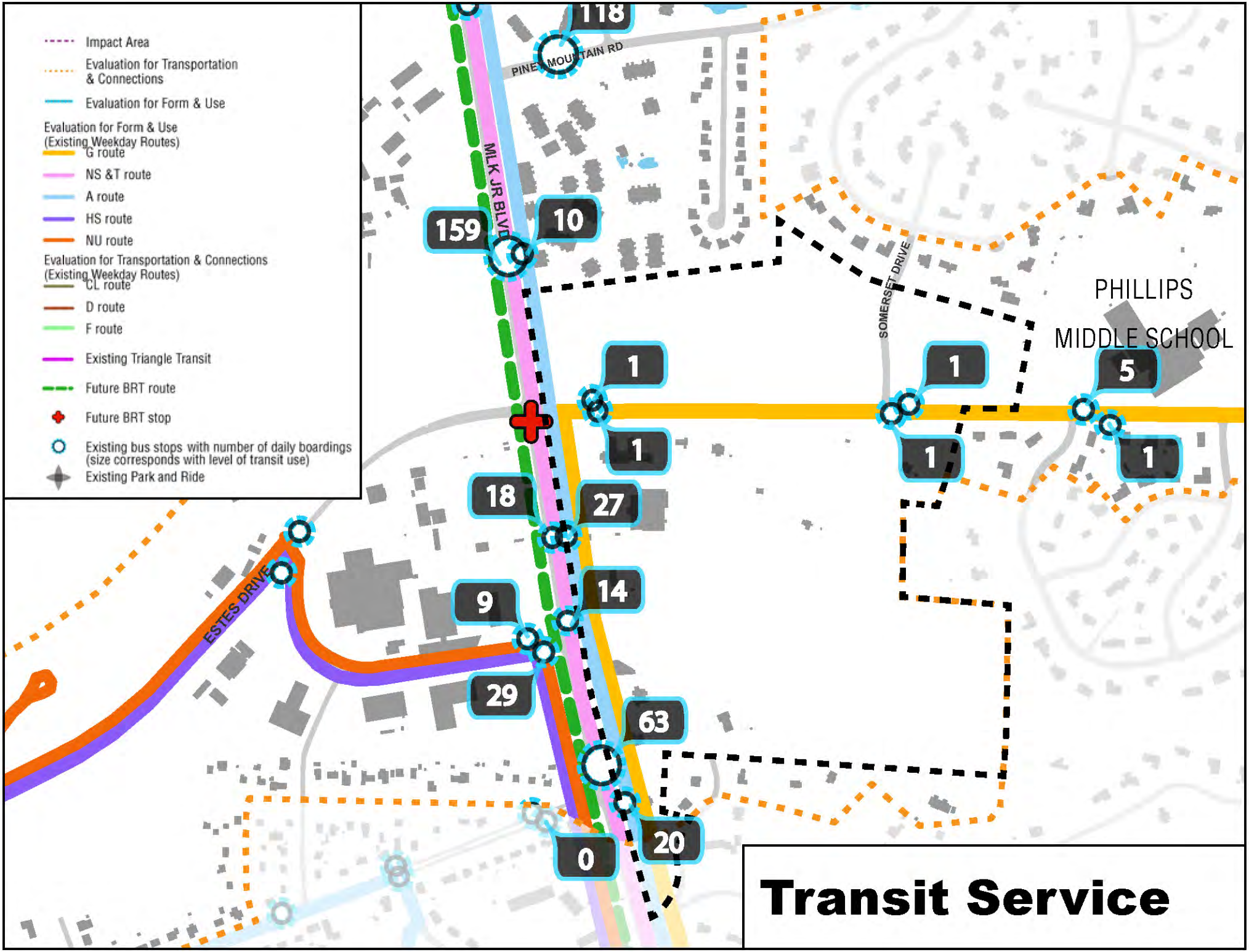

homestead rd.
35
71
midblock
crossing
Piney Mtn Rd.
38
57
31
Elliott Rd.
19
92
41
Franklin St.
Seawell Sch. Rd
MLK Blvd
bolin creek greenway
Umstead Dr.
91
Fordham Blvd.

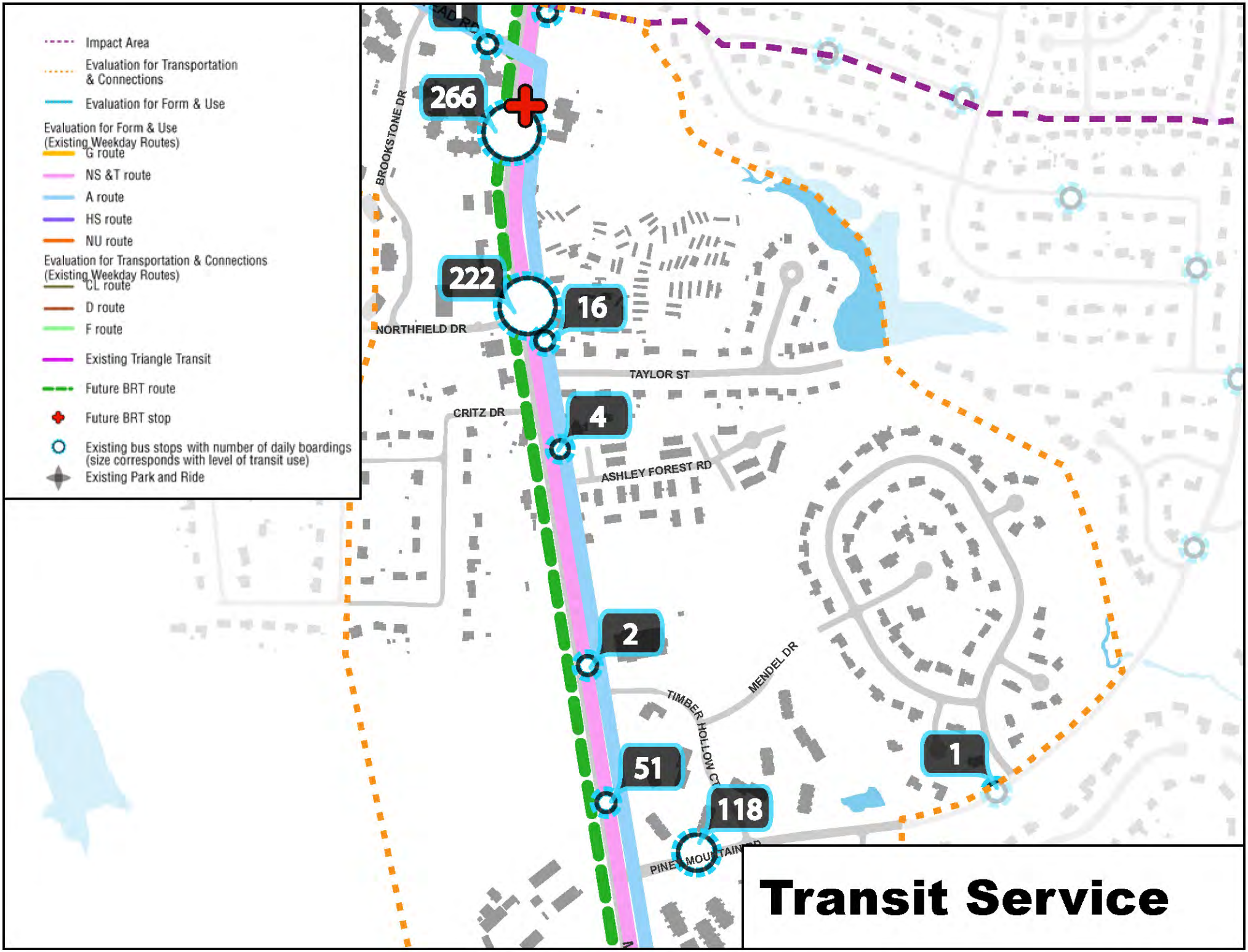
Pedestrian Counts

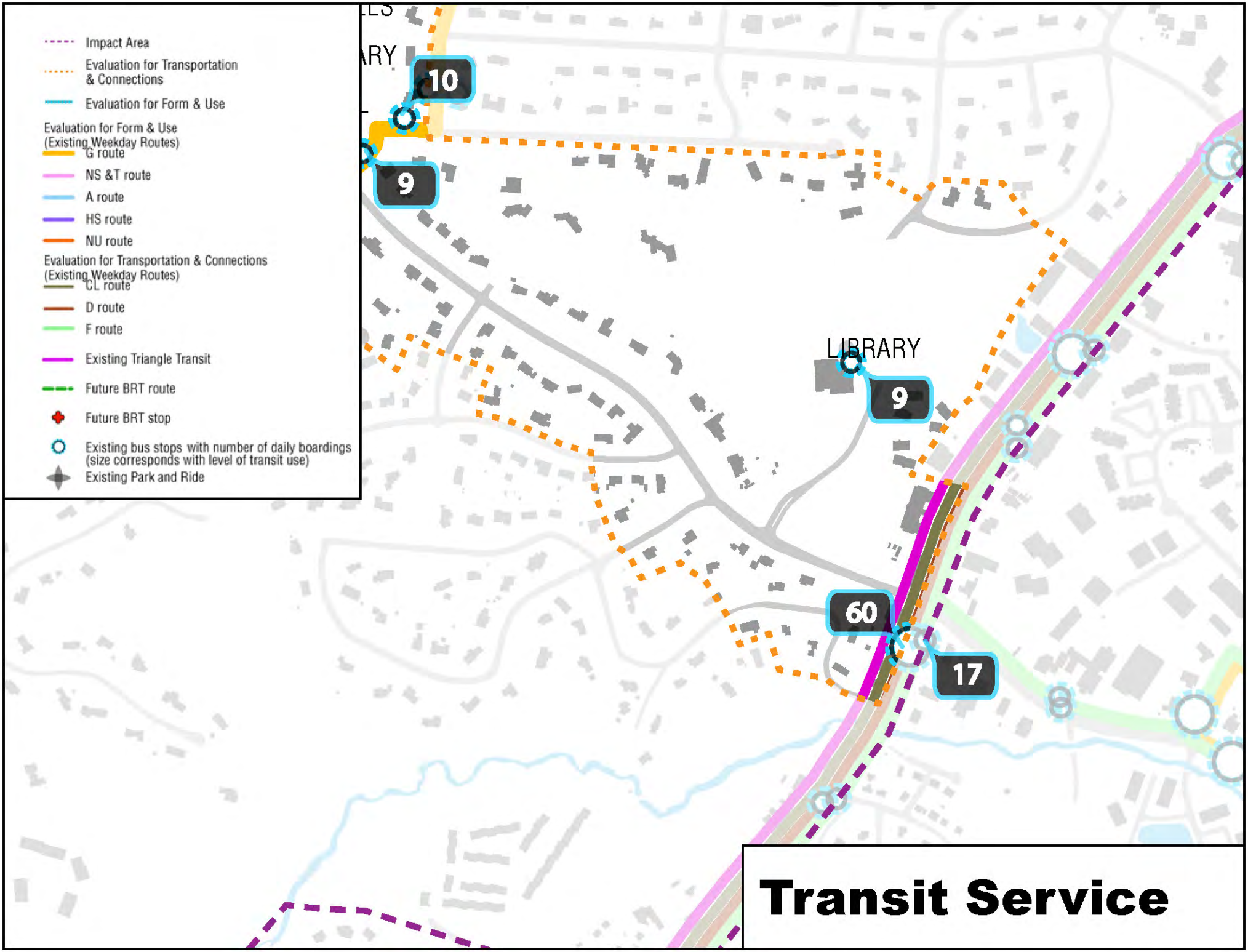


Estes Hills Elementary Walk Zone

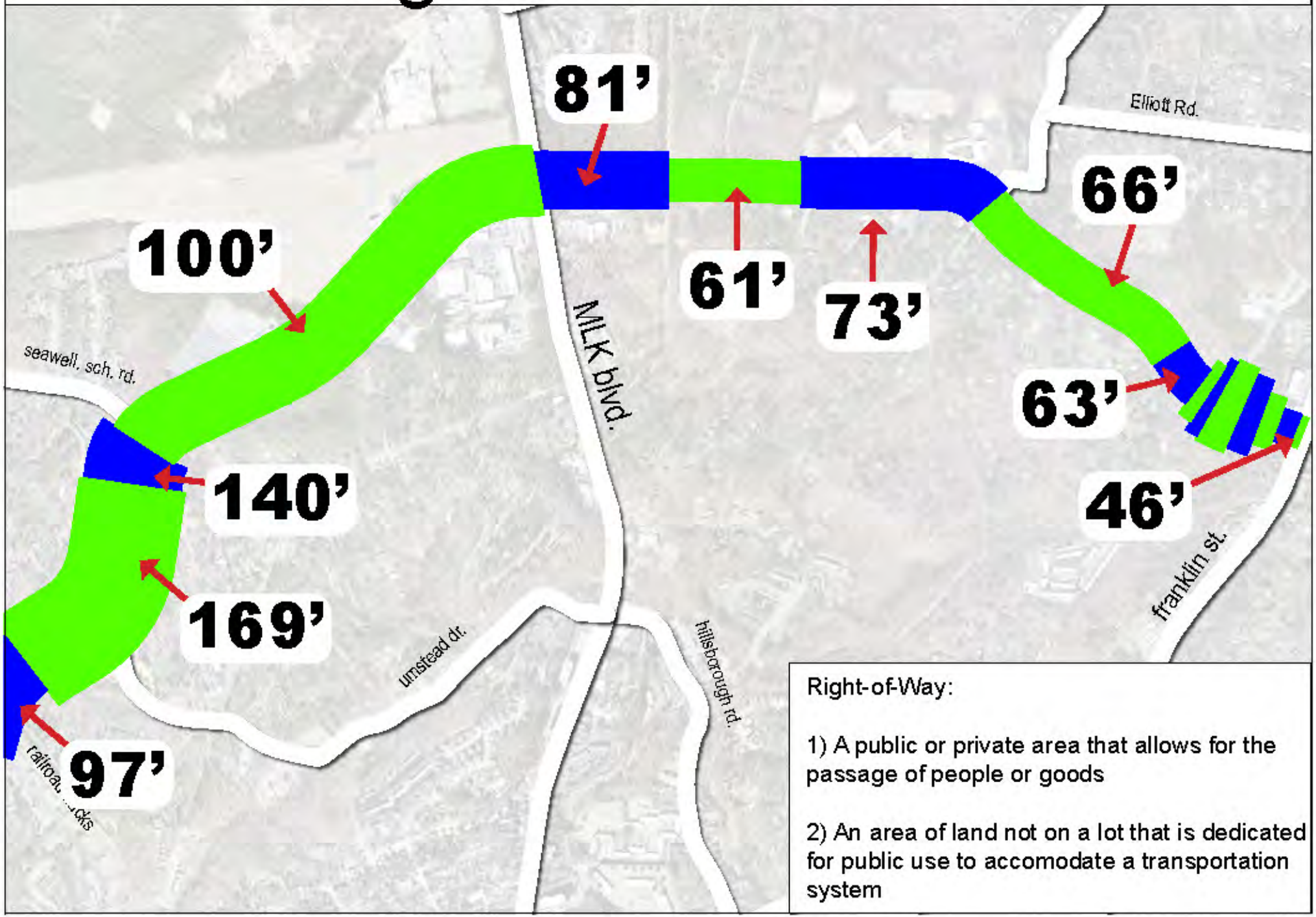



Impact Area
Evaluation for Transportation & Connections
Evaluation for Form & Use
Evaluation for Form & Use (Existing Weekday Routes)
G route
NS &T route
A route
HS route
NU route
Evaluation for Transportation & Connections (Existing Weekday Routes)
CL route
D route
F route
Existing Triangle Transit
Future BRT route
Future BRT stop
Existing bus stops with number of daily boardings (size corresponds with level of transit use)
Existing Park and Ride
118
PINEY MOUNTAIN RD
MLK JR BLVD
159
10
SOMERSET DRIVE
PHILLIPS
MIDDLE SCHOOL
1
1
1
1
5
1
18
27
14
9
29
63
20
0
ESTES DRIVE
Transit Service


Impact Area
Evaluation for Transportation & Connections
Evaluation for Form & Use
Evaluation for Form & Use (Existing Weekday Routes)
G route
NS &T route
A route
HS route
NU route
Evaluation for Transportation & Connections (Existing Weekday Routes)
CL route
D route
F route
Existing Triangle Transit
Future BRT route
Future BRT stop
Existing bus stops with number of daily boardings (size corresponds with level of transit use)
Existing Park and Ride
266
222
16
4
2
51
118
1
BROOKSTONE DR
NORTHFIELD DR
TAYLOR ST
CRITZ DR
ASHLEY FOREST RD
MENDEL DR
TIMBER HOLLOW CT
Transit Service


Impact Area
Evaluation for Transportation & Connections
Evaluation for Form & Use
Evaluation for Form & Use (Existing Weekday Routes)
G route
NS &T route
A route
HS route
NU route
Evaluation for Transportation & Connections (Existing Weekday Routes)
CL route
D route
F route
Existing Triangle Transit
Future BRT route
Future BRT stop
Existing bus stops with number of daily boardings (size corresponds with level of transit use)
Existing Park and Ride
10
9
LIBRARY
9
60
17
Transit Service

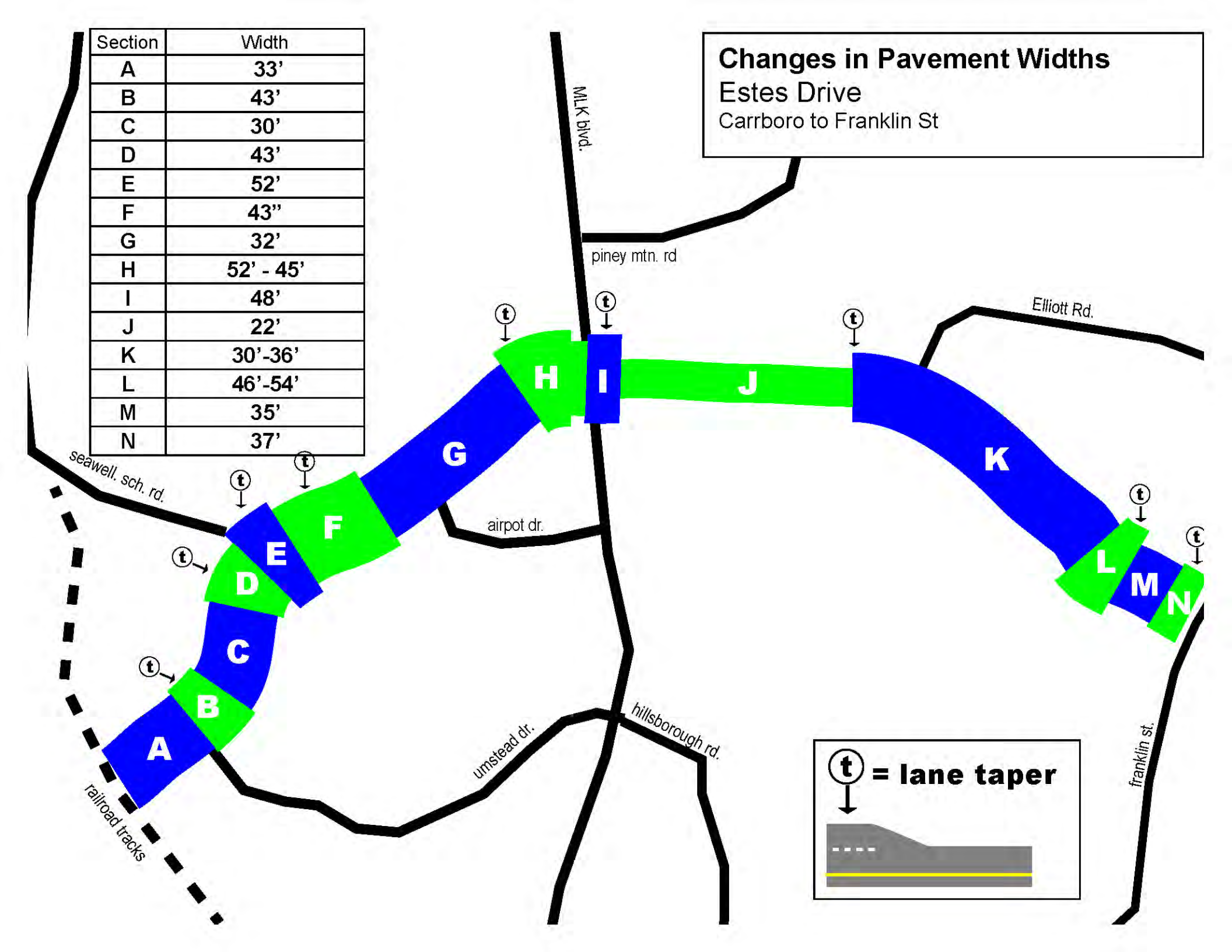
Changes in ROW Widths



Right-of-Way:

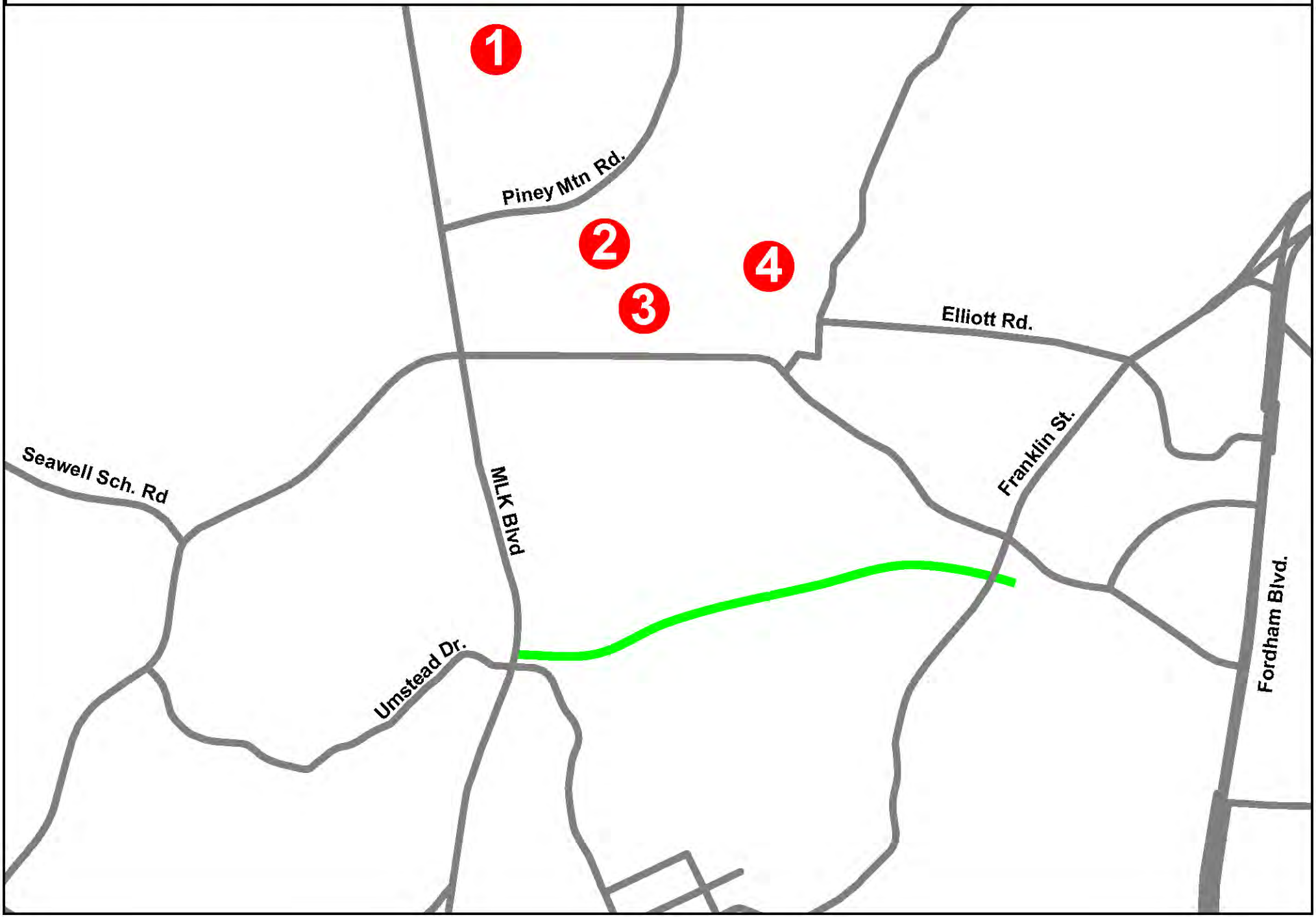
1) A public or private area that allows for the passage of people or goods

2) An area of land not on a lot that is dedicated for public use to accomodate a transportation system

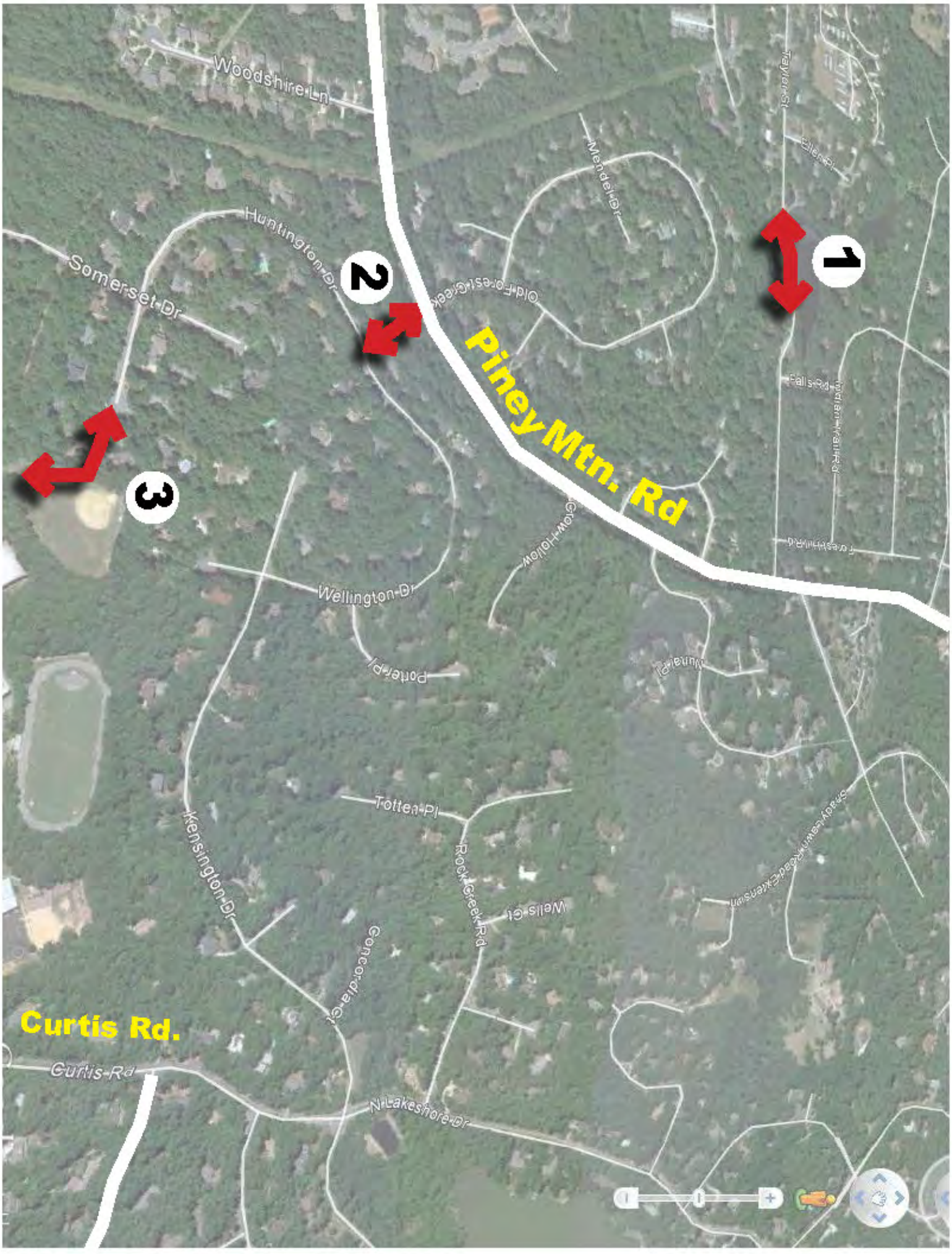

Changes in Pavement Widths
Estes Drive
Carrboro to Franklin St
Section | Width
A | 33’
B | 43’
C | 30’
D | 43’
E | 52’
F | 43”
G | 32’
H | 52’ - 45’
I | 48’
J | 22’
K | 30’-36’
L | 46’-54’
M | 35’
N | 37’
MLK blvd.
piney mtn. rd
Elliott Rd.
seawell. sch. rd.
airpot dr.
umstead dr.
hillsborough rd.
railroad tracks
franklin st.
= lane taper


Estes Dr. looking east
at Somerset Dr.
AHEAD
State Road 1750
22 Feet of Pavement

WikiMap Connections

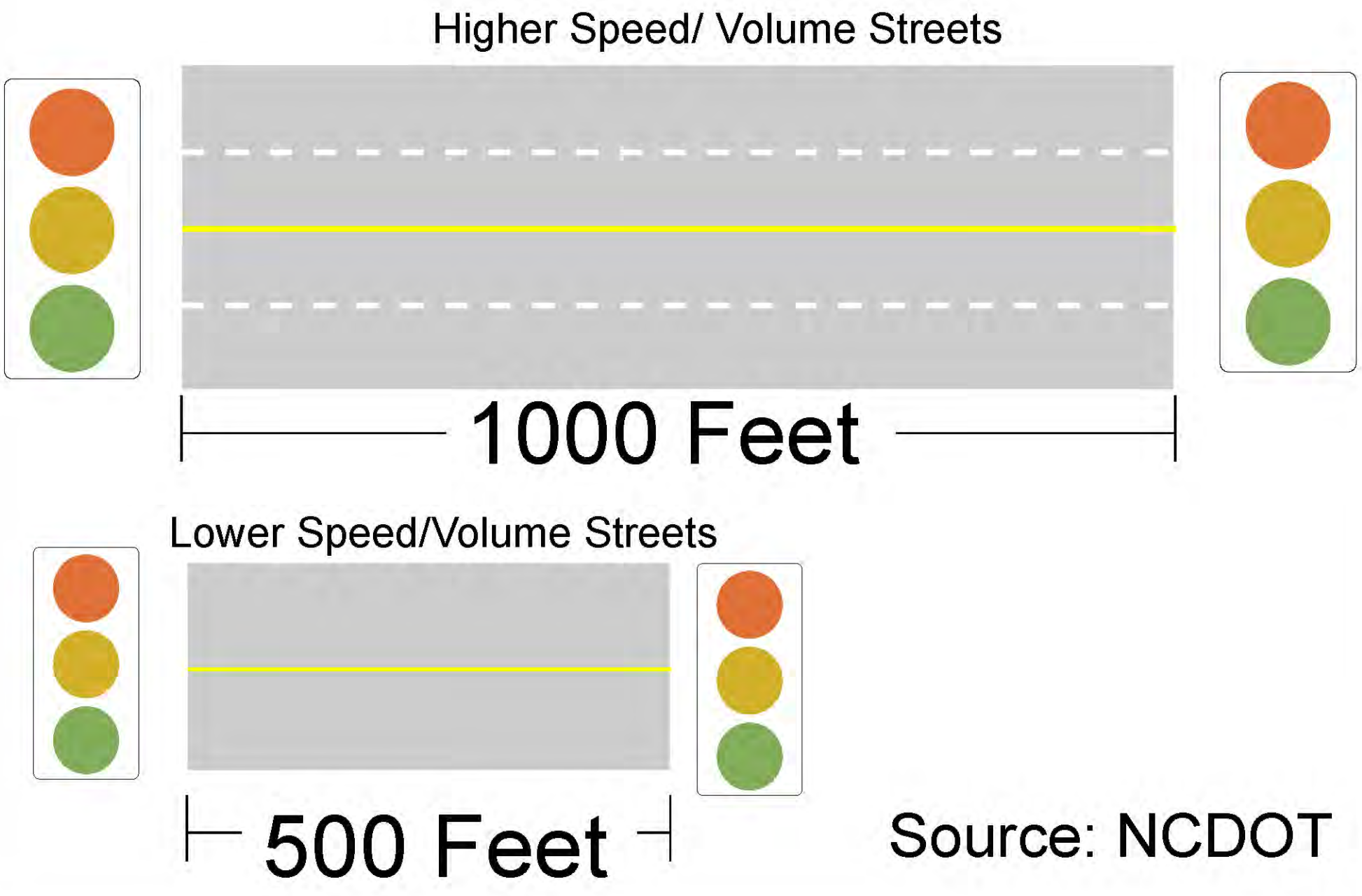



Estes Dr. looking east
at Halifax Rd
36 Feet of Pavement

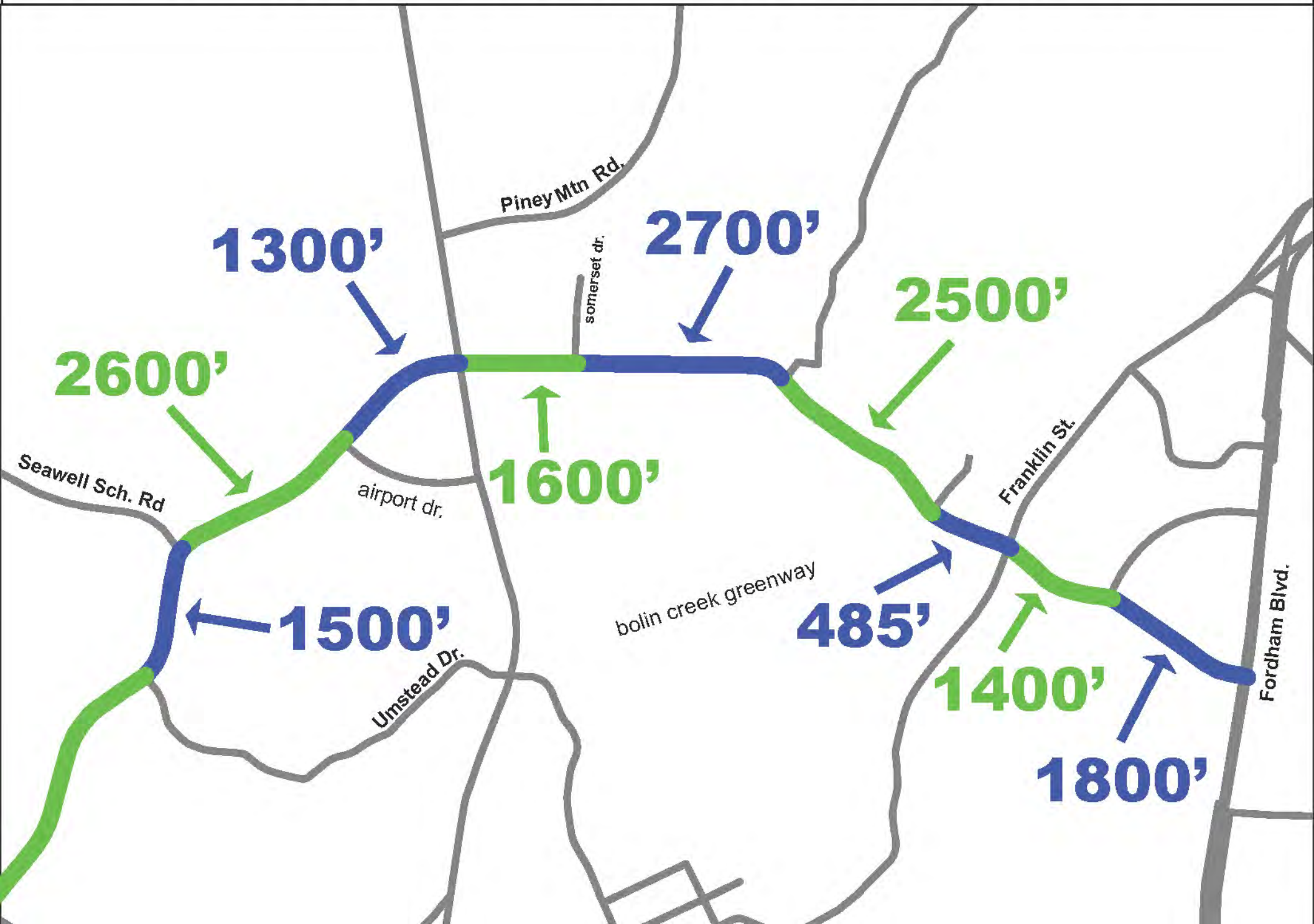

Woodshire Ln
Mendel Dr
Taylor St
Ellen Dr
Huntington Dr
Somerset Dr
Old Forest Creek
Piney Mtn. Rd
Falls Rd
Wellington Dr
Crow Hollow
Porter Pl
Hunter Pl
Totten Pl
Kensington Dr
Rock Creek Rd
Wells Ct
George Ann Ct
Curtis Rd.
Curtis Rd
N Lakeshore Dr
1
2
3


4
ESTES DR
ELLIOTT RD
Lyons Rd
Caswell Rd

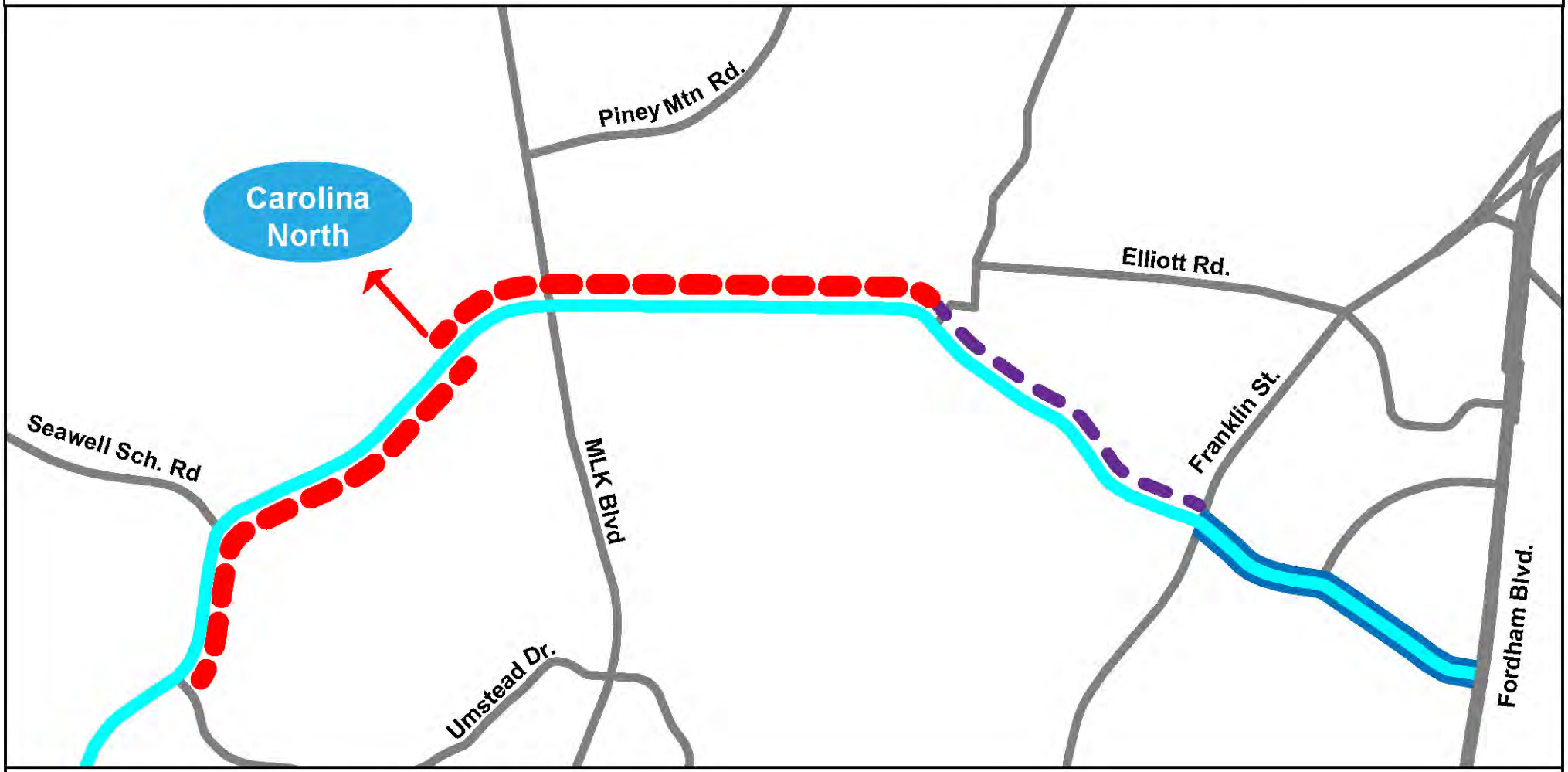
Guidance for Signalized Intersection Spacing



Current Intersection Spacing Along Estes



Facility Options for Estes Drive



Legend

- Bike Lanes
- Off Road Paths (C2C)
- "Climbing Lane" in Short Term
- Lane "Diet"

Bike Lane

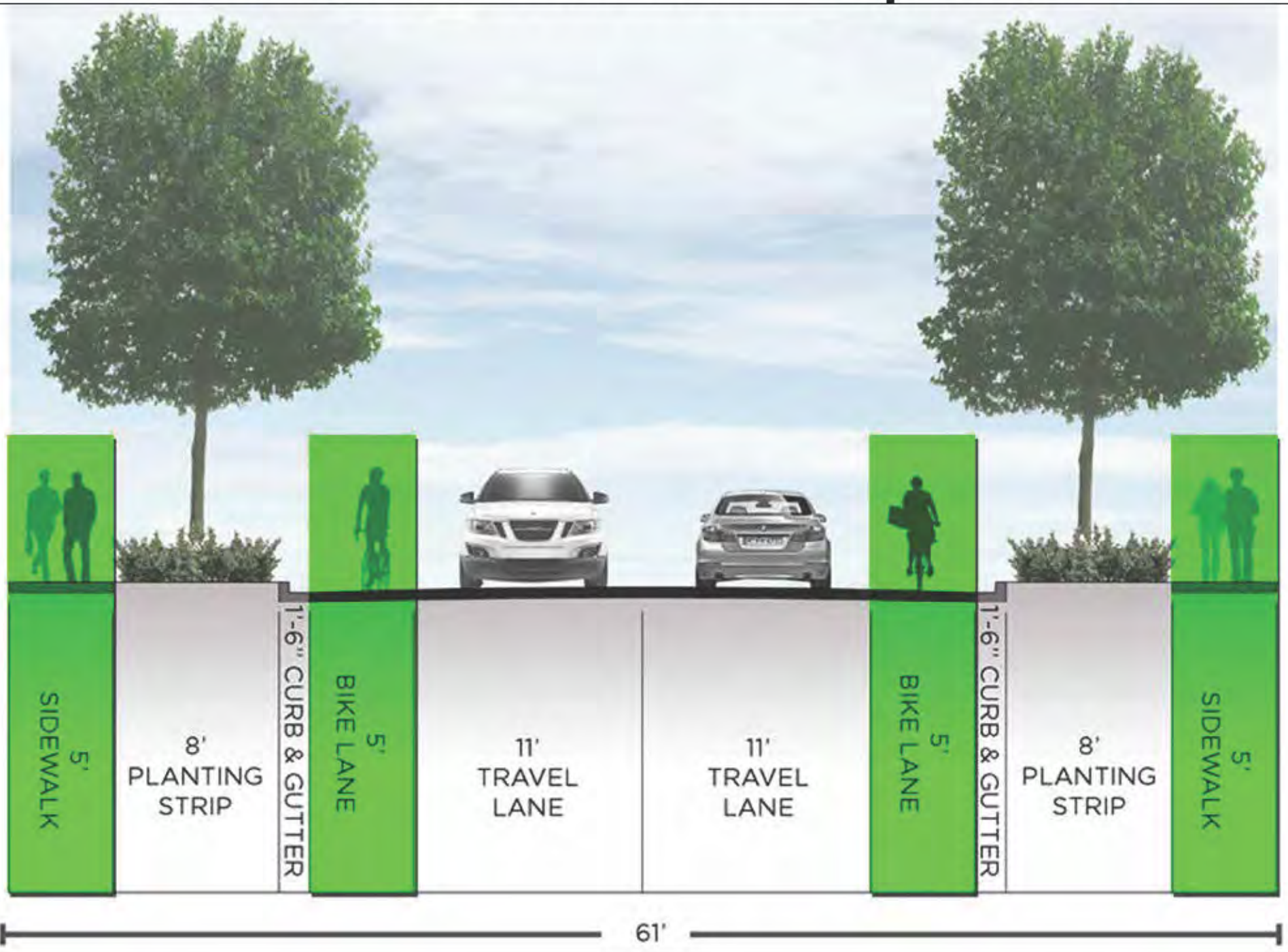
Off-Road Path

Climbing Lane

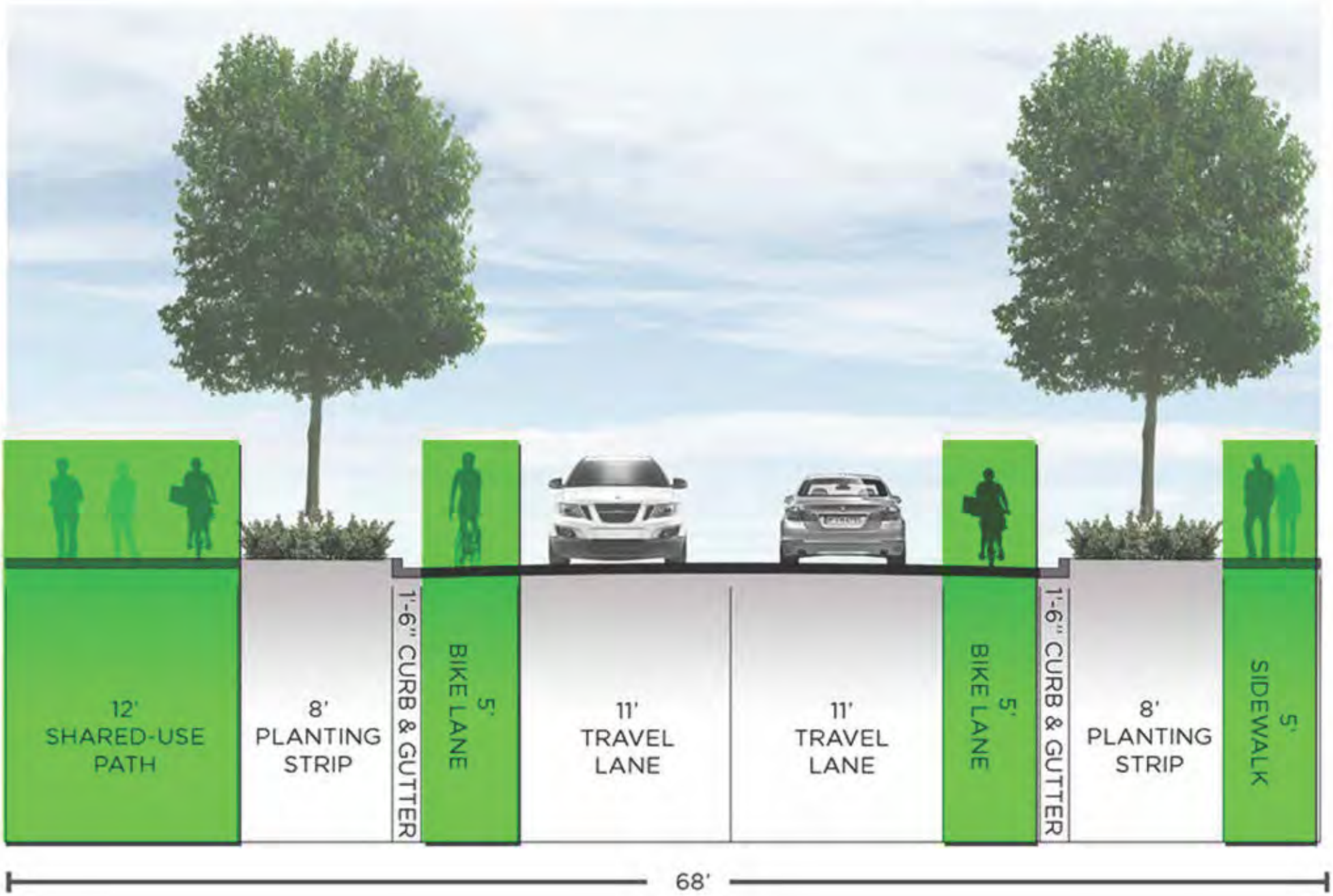
Before Lane Diet

After Lane Diet

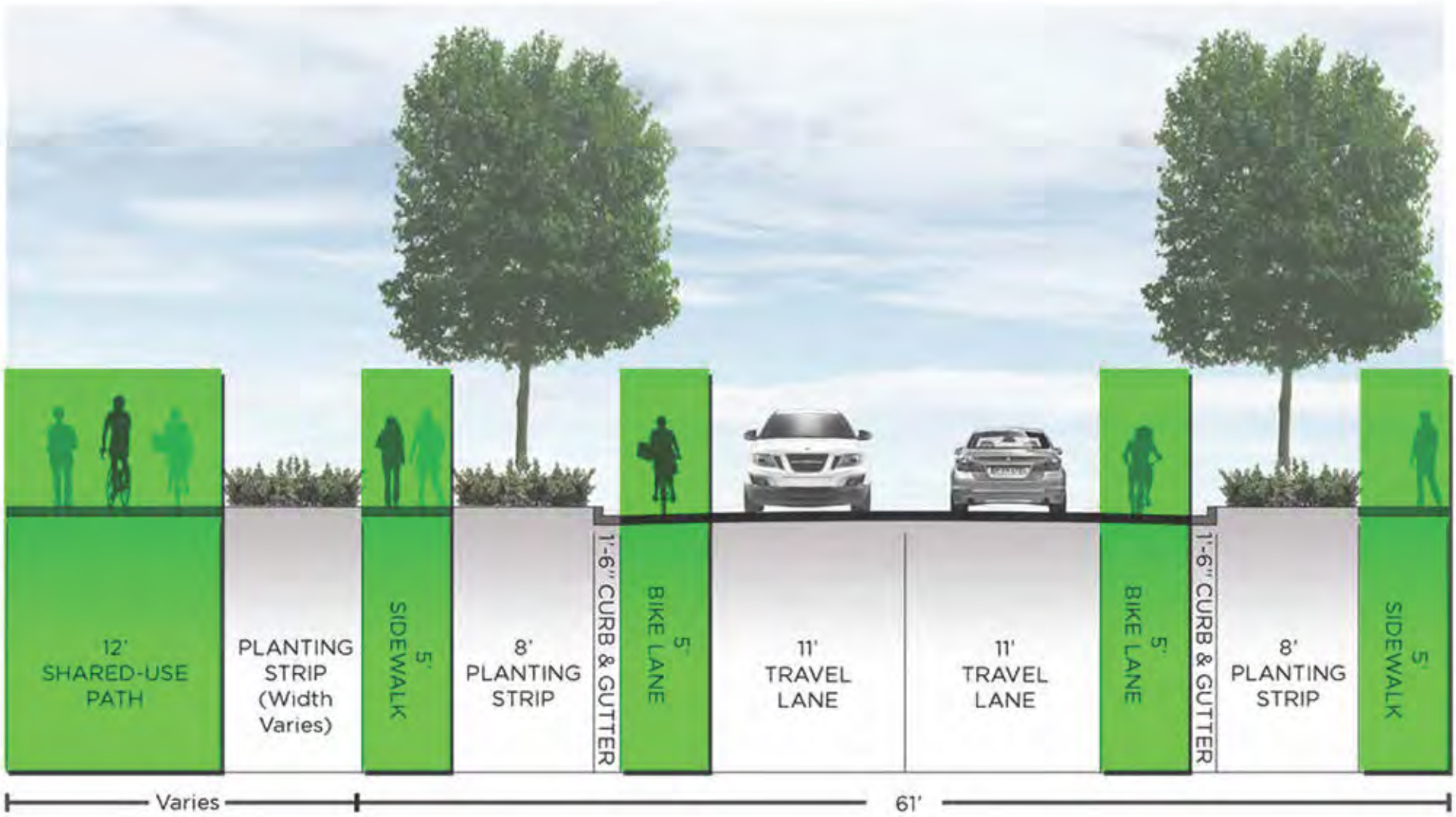
Cross Sections - Option 1



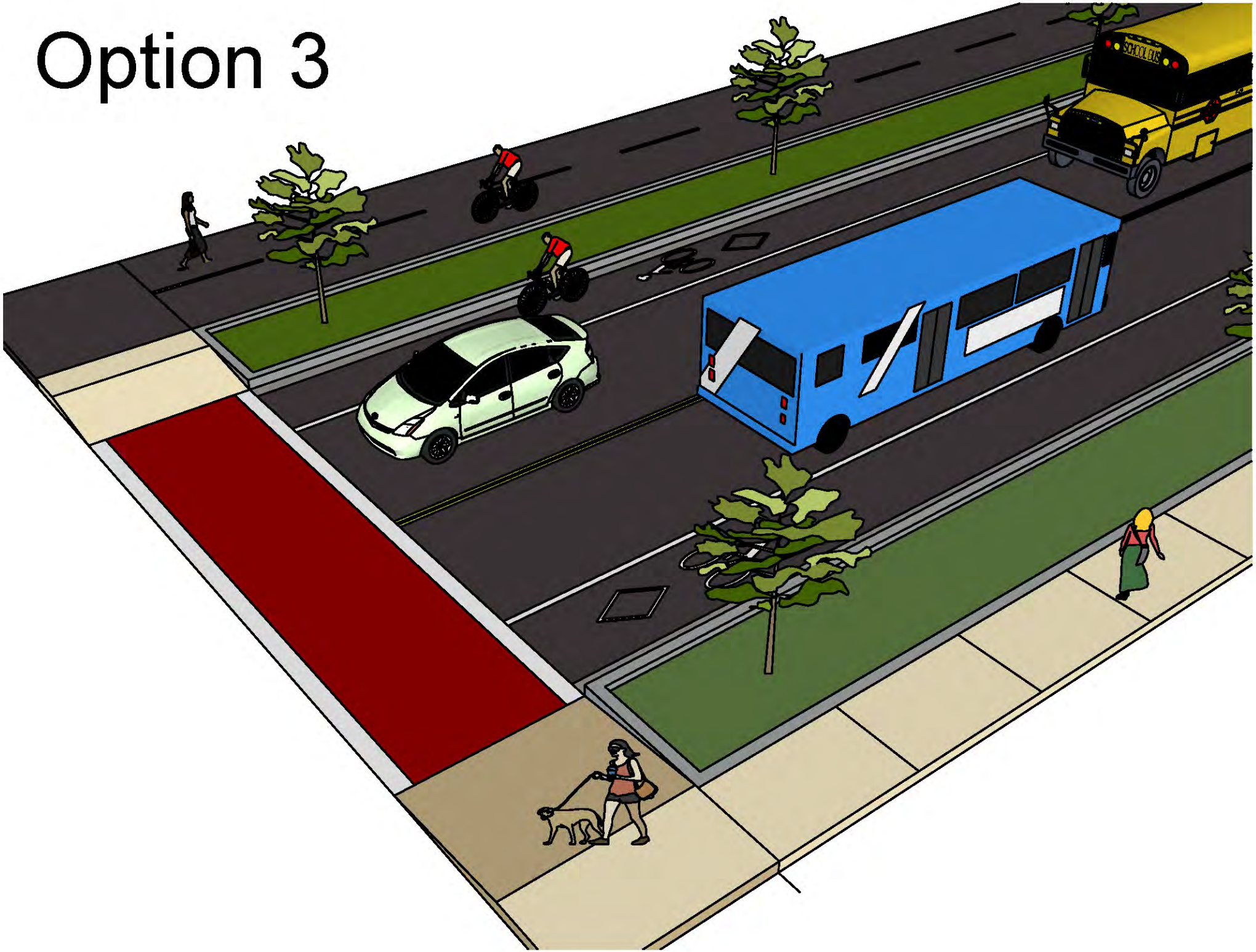
Cross Sections - Option 3



Cross Sections - Option 2

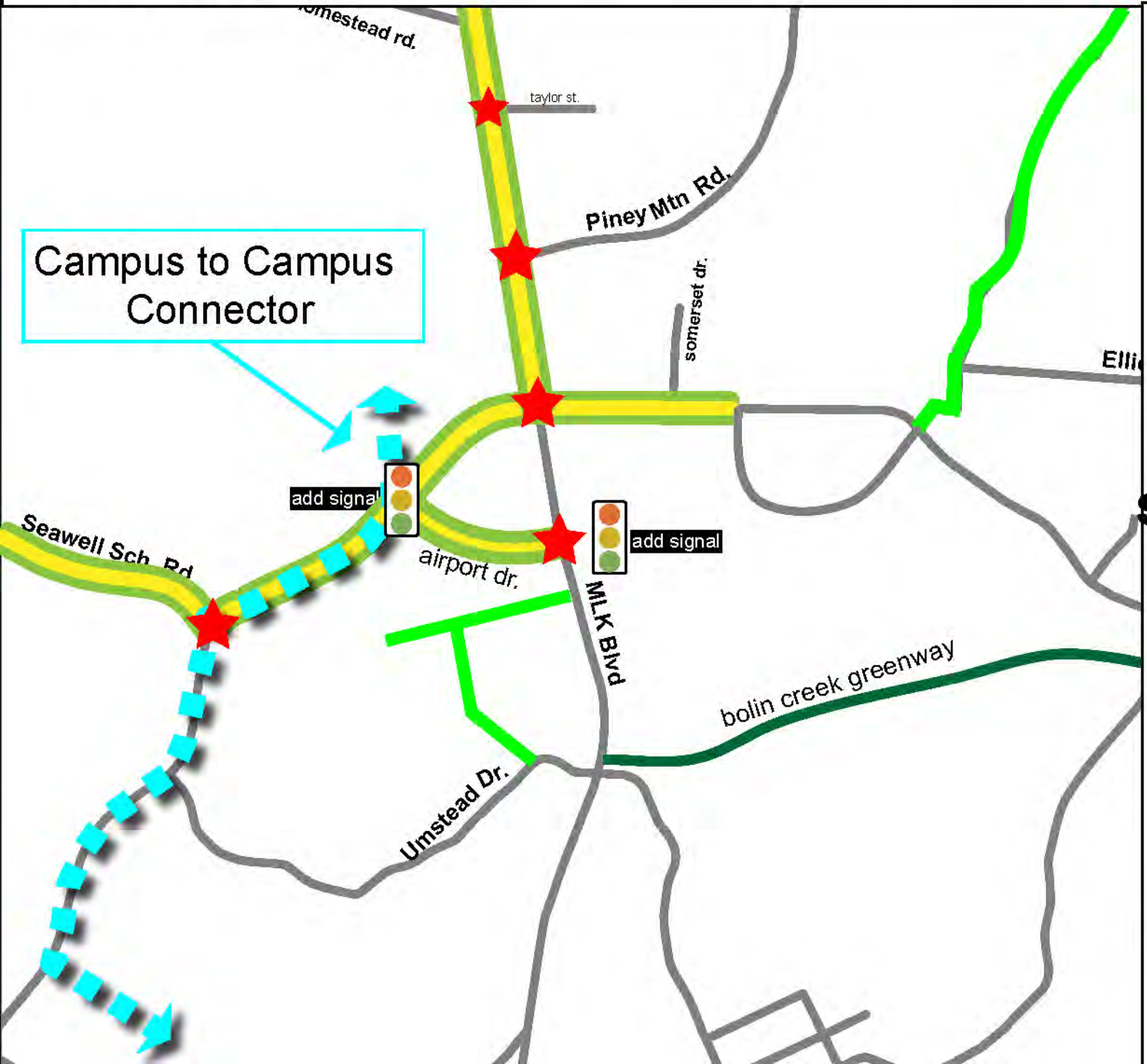


Option 3



Carolina North Required Improvements

Phase 1 and 2



Add Signal

Complete Sidewalk Network Add Bike Lanes

Traffic Calming Streets

New Crosswalk

Carolina North Required Improvements

Phase 2 Estes Corridor Improvements

Facility Type	Cost Per Mile
Multi Use Path	$500,000
Wide Paved Shoulder	$400,000
Striped Bike Lanes	$40,000
Wide Outside Lanes	$15,000
Striped Bike Lanes(Add Pavement)	$440,000

Facility Type	Cost
Raised Crosswalks	$2,000-$15,000
Refuge Island	$10,000 - $40,000
Pavement Illumination	$25,000 - $40,000 per crossing
Ped Signal	$40,000- $75,000
“Hawk” Signal	$40,000

Trip Generation/Traffic Modeling Method

Step 1 Generate Total Trips for Study Area

Trip Production

# of Units in area
Single Family
Multi Family
Senior Housing

X Trip Rates = Production Trips

Trip Attraction

sq. feet in area
retail
office
medical office

X Trip Rates = Attraction Trips

Production Trips + Attraction Trips → **Total Trips**

Trip Generation/Traffic Modeling Method

Step 2 Make Assumptions about Trips

Assumption: Mode Splits (applies to production and attraction trips)

What is the % of the following trip modes?

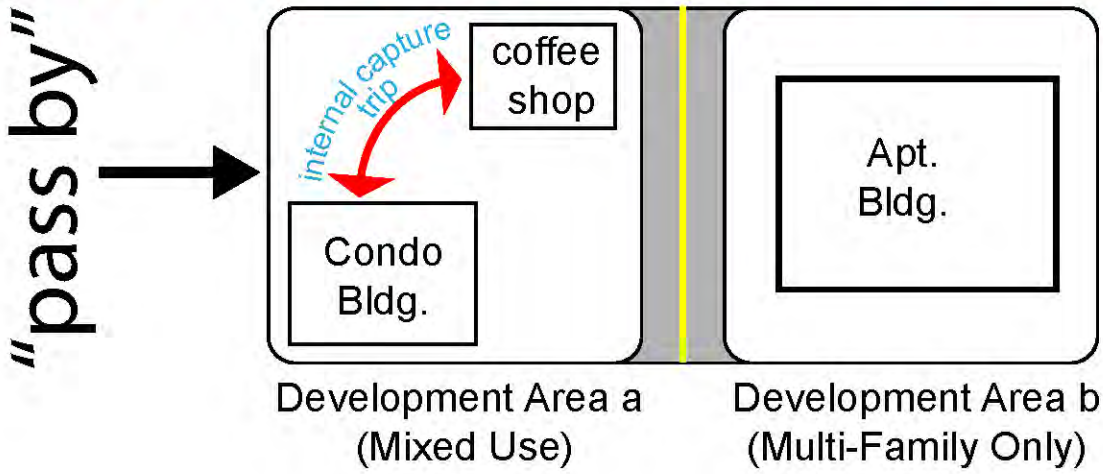
% auto
bike
bus
walk

Assumption: Internal Trip Capture

What percentage of trips are likely to stay within a development area?

Assumption: Pass By Trips

What percentage of existing traffic volume would be attracted to area?



CONCEPT 1

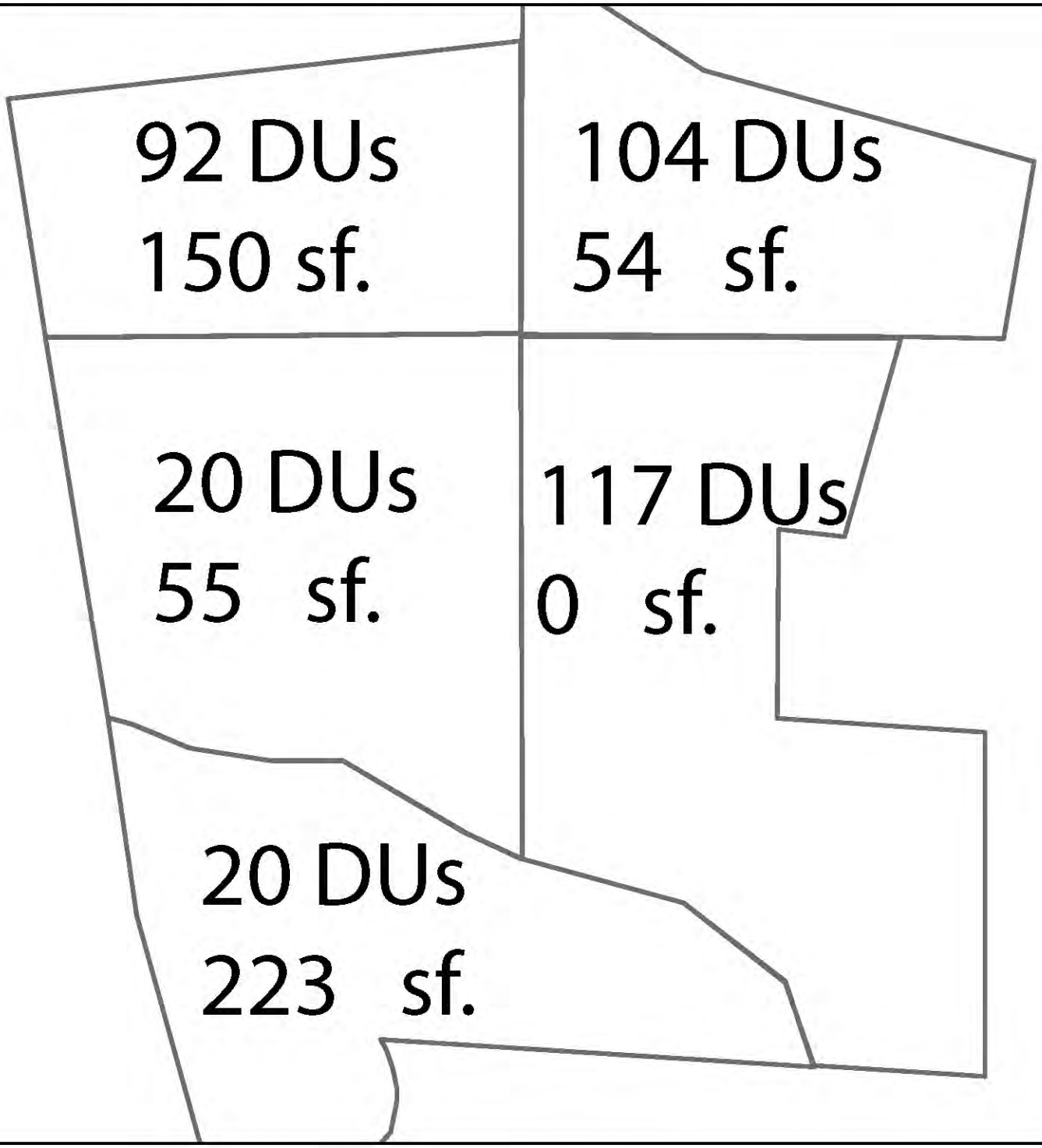
- Mixed Use
- Multi-Family (Condos/Apartments)
- Single Story Retail
- Senior Housing
- Single Family
- Office
- Building Footprint
- RCD/Jordan Lake Buffer
- Signalized Intersection
- Open Space/Vegetative Buffer
- Right-In, Right-Out
- New Street
- Evaluation for Form and Use Boundary
- P Parking

CONCEPT 3

- Mixed Use
- Multi-Family (Condos/Apartments)
- Single Story Retail
- Senior Housing
- Single Family
- Office
- Building Footprint
- RCD/Jordan Lake Buffer
- Signalized Intersection
- Open Space/Vegetative Buffer
- Right-In, Right-Out
- New Street
- Evaluation for Form and Use Boundary
- P Parking

Central West Sub-Areas

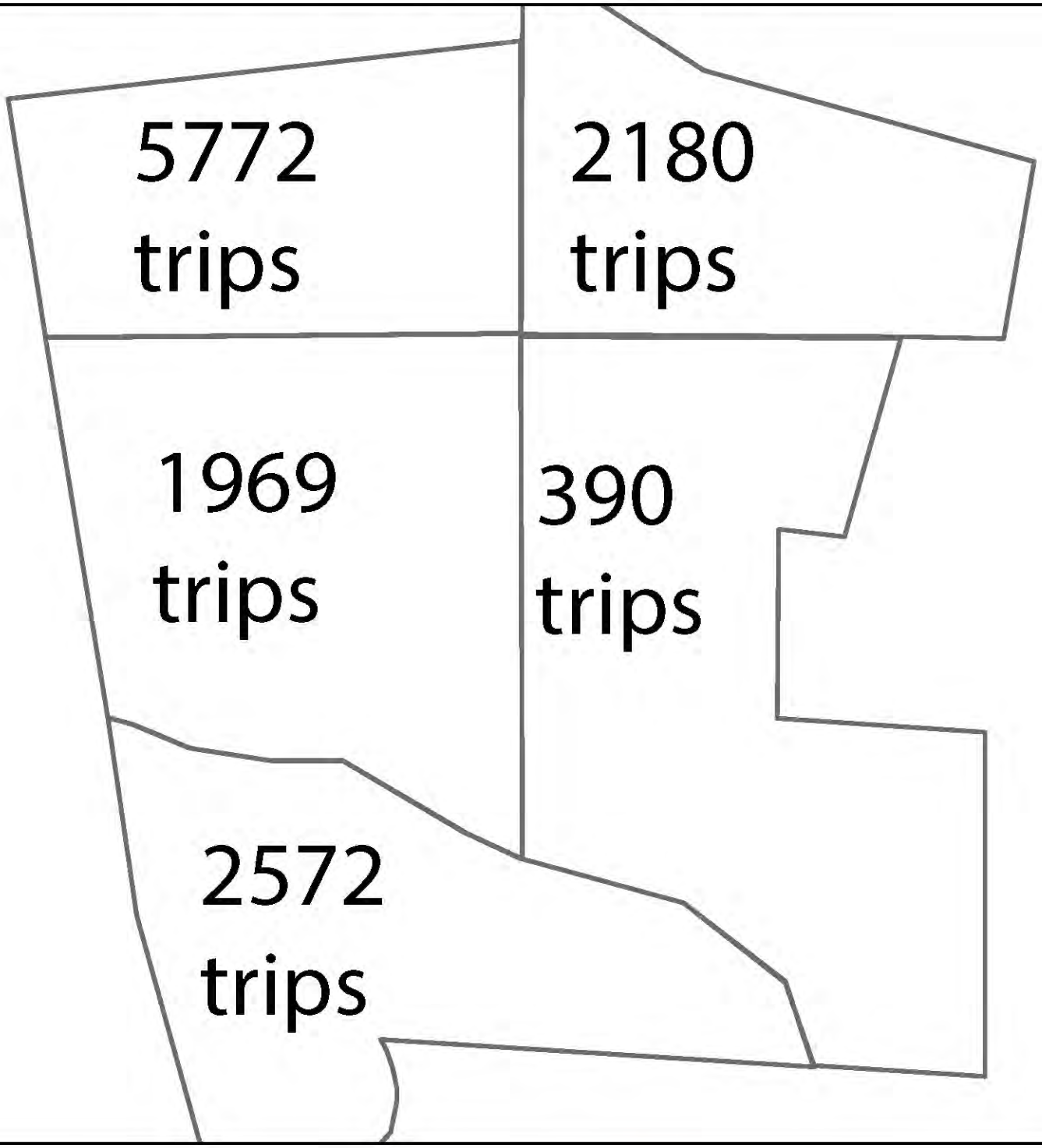
Low Density Scenario



352 New Units

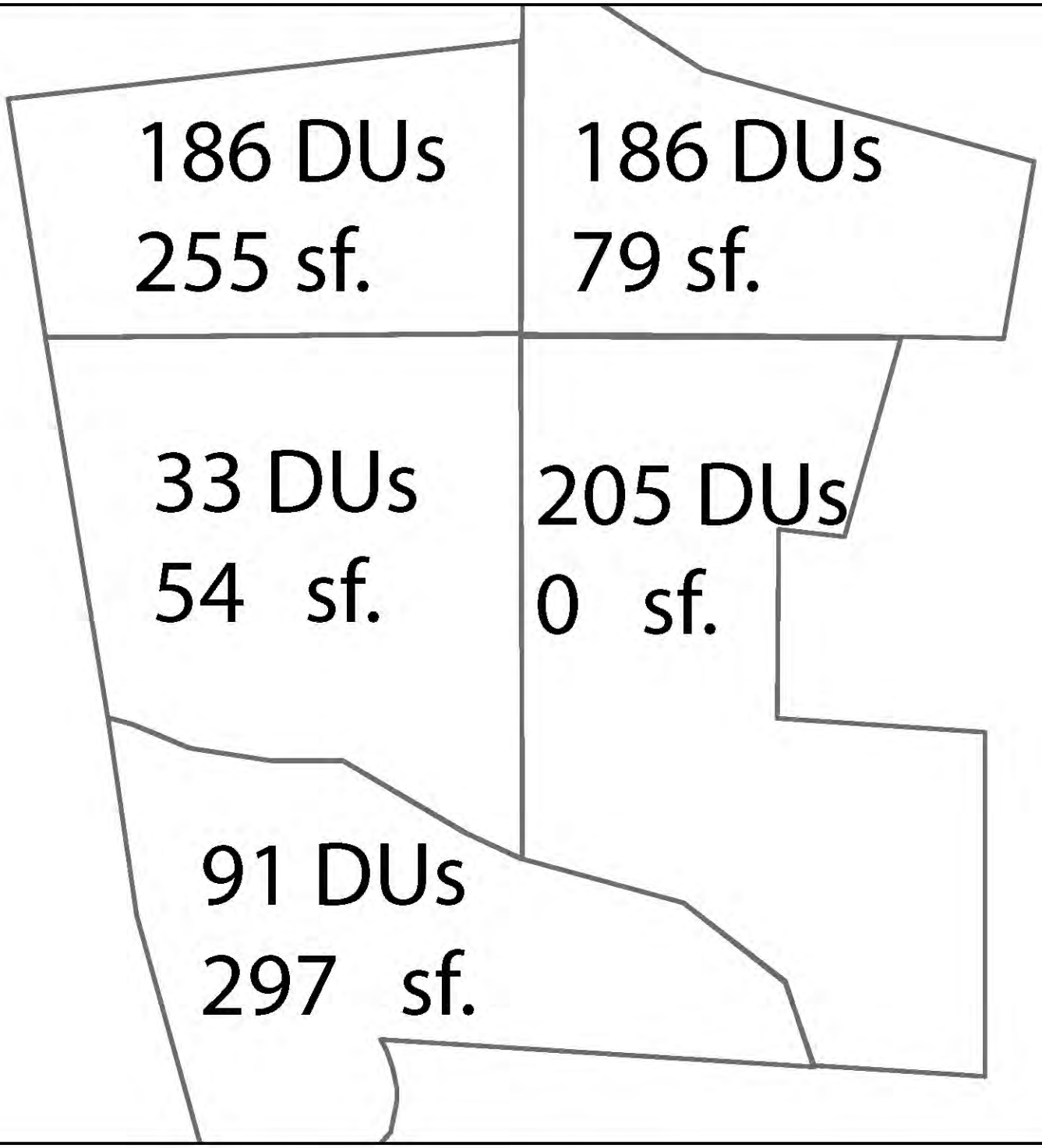
482,000 Square Feet

Low Density Scenario



12,740 Total Trips in Area

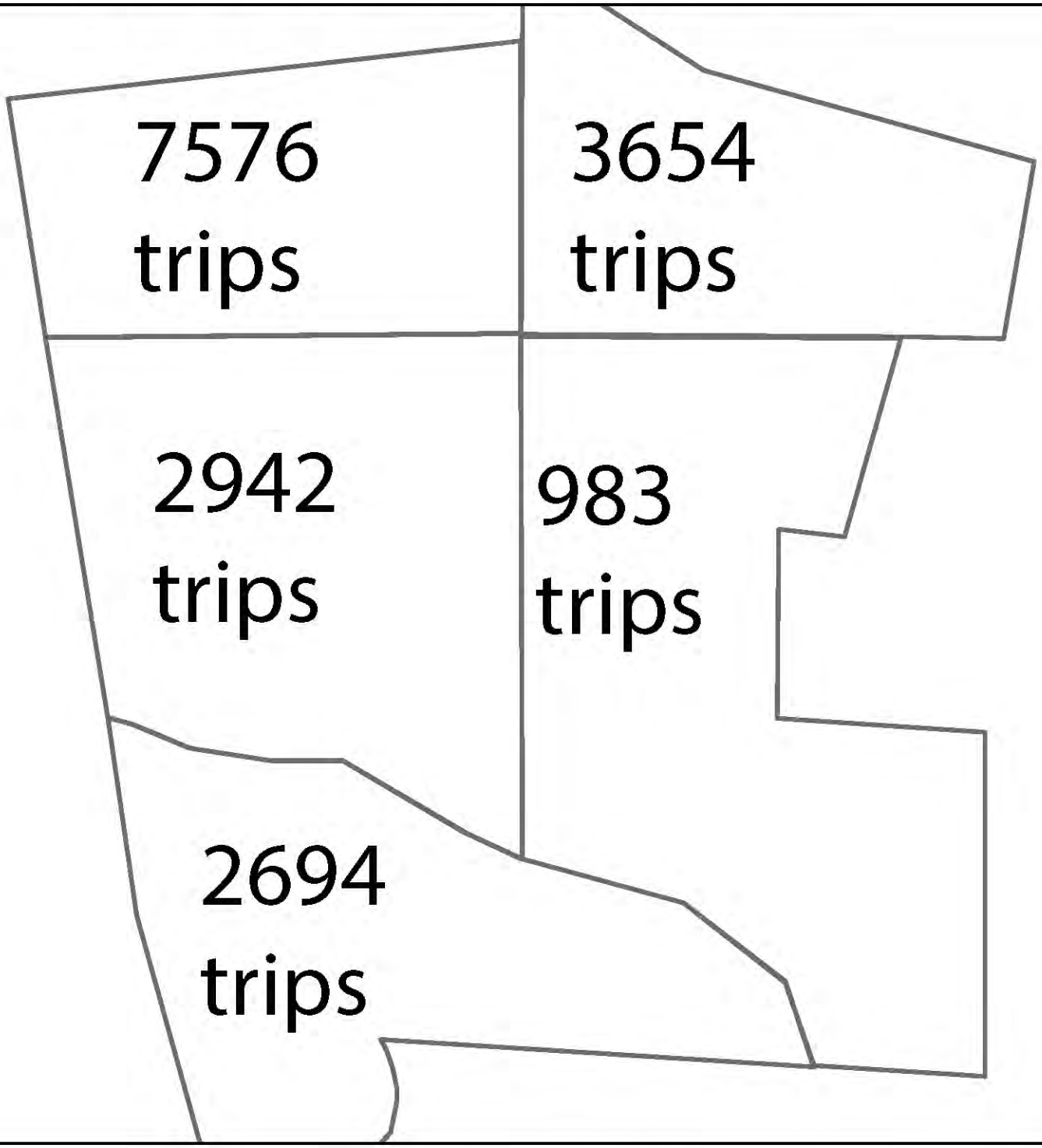
Higher Density Scenario



701 New Units

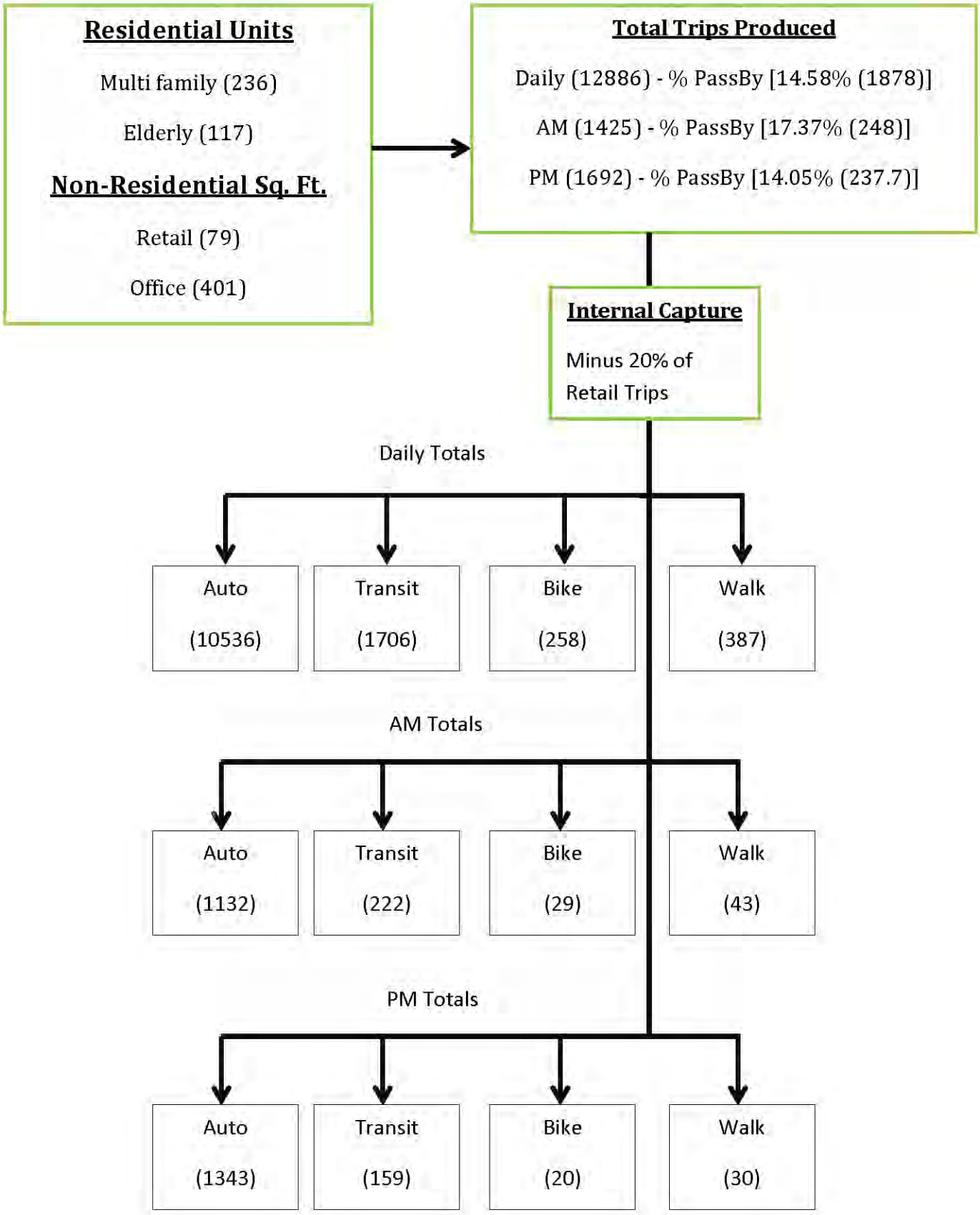
685,000 Square Feet

Higher Density Scenario



17,851 Total Trips in Area

Low Density Residential



High Density Mixed Use