Transportation Information

Central West Focus Area

Prepared for July 22, 2013 Steering Committee Meeting

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Intersection Spacing Distances

Question: What are the general spacing distances for intersections that are signalized, unsignalized, have roundabouts, or are restricted (for example, are right in/right out)?

Answer: On undivided roads, in general, spacing between signalized intersections should be a minimum of 1000 feet. Spacing for lower volume public streets and driveways should be 500-600 feet. Roundabouts would most likely have the same spacing, dependent upon the volumes of vehicles.

Right in/right out spacing distances are addressed on a case-by-case basis. Required spacing may be variable, depending on the circumstance.

Requirements for divided roads are more stringent. The following are links to NCDOT's current policies regarding divided roads:

- Median Crossover
  Guidelines: https://connect.ncdot.gov/resources/safety/Congestion%20Mngmt%20and%20Signing/Congestion%20Management/North%20Carolina%20Median%20Crossover%20Guidelines%20Current%20Edition%202004-01-01.pdf
- Facility Type and Control of Access
  Definitions: https://connect.ncdot.gov/projects/planning/TPB%20%20Strategic%20Highway%20Corridors/NCDOT%20Facility%20Types%20-%20Control%20of%20Access%20Definitions.pdf

Note: All these issues should be evaluated on an individual basis.

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
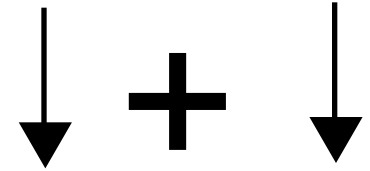
Trip Attraction

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

What is the % of the following trip modes?

% auto
bike
bus
walk

Assumption 2: Internal Trip Capture

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

internal capture trip

coffee shop

Condo Bldg.

Apt. Bldg.

Development Area a (Mixed Use)

Development Area b (Multi-Family Only)
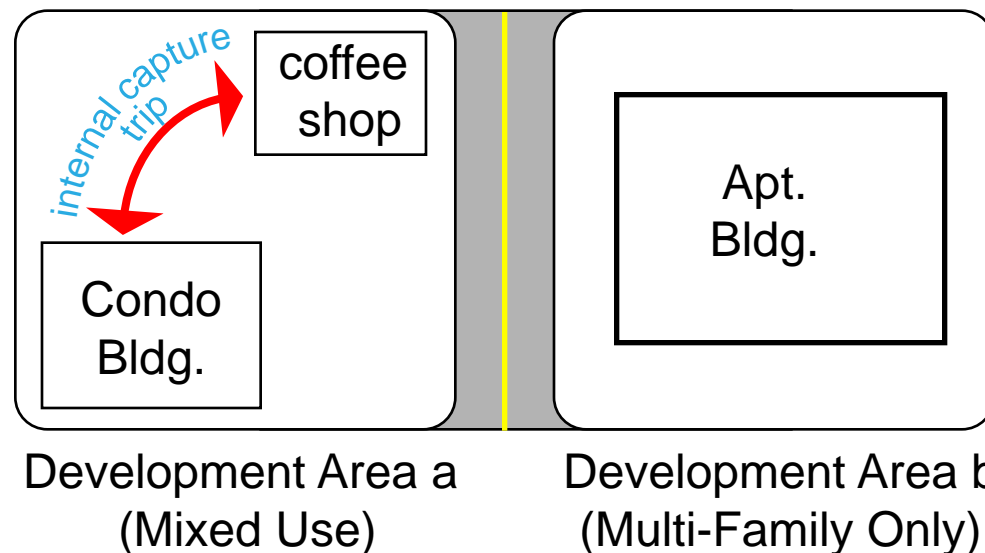
Trip Generation/Traffic Modeling Method
Step 3 "Assign" all of those trips to the road network.

| Development Area A | Development Area B | Development Area C |

*33% ← total auto-bus-bike-walk # → *33%

*33% ↓

Development Area A
total auto-bus-bike-walk #

Development Area B
total auto-bus-bike-walk #

Development Area C
total auto-bus-bike-walk #

Development Area D
total auto-bus-bike-walk #

Development Area E
total auto-bus-bike-walk #

Development Area F
total auto-bus-bike-walk #
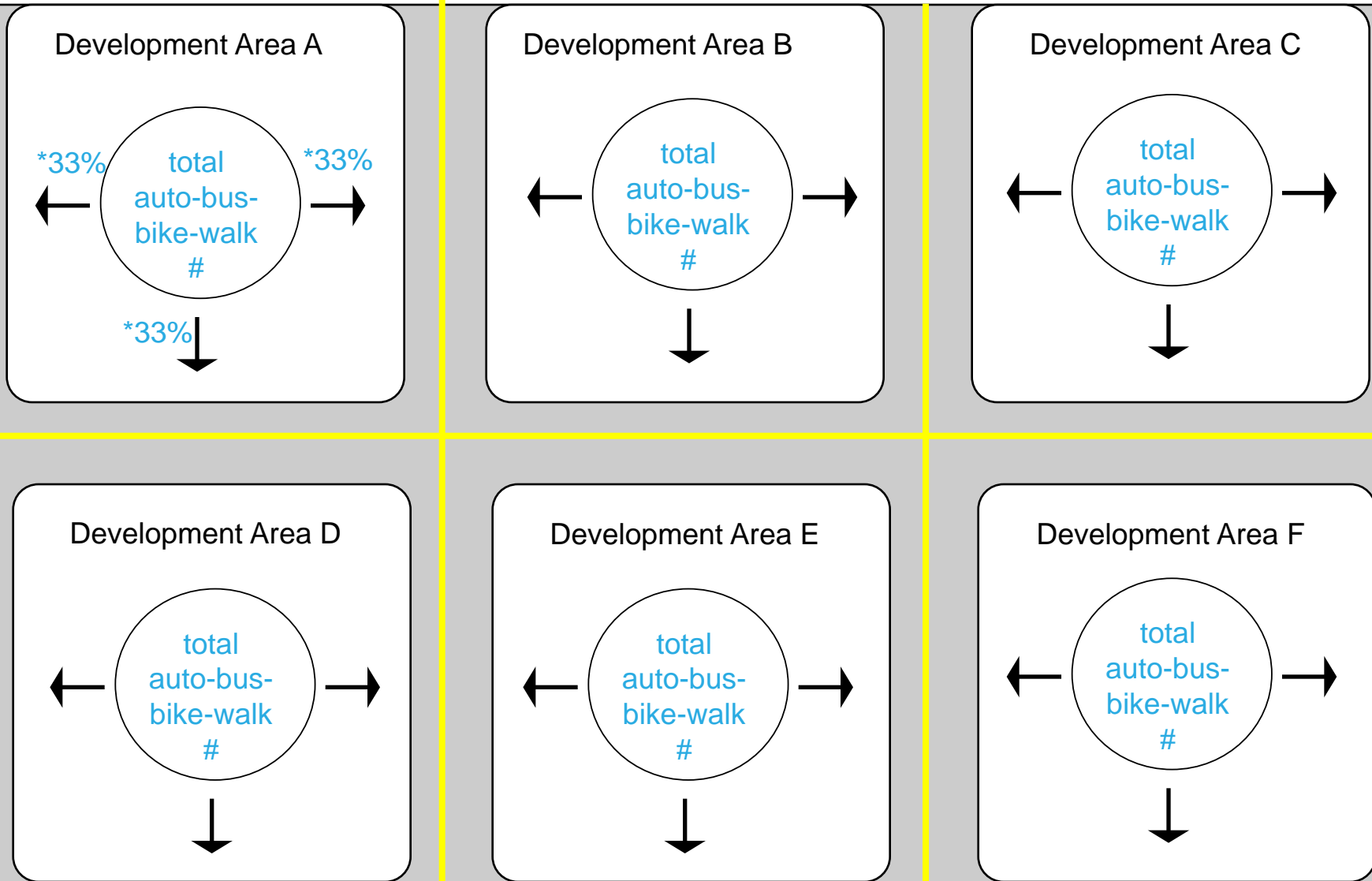
* the percentages used to assign trips in this example are for illustration purposes only. The percentages may vary but for a development area they must add up to 100%.

Trip Generation/Traffic Modeling Method

Step 4 - After Trips are assigned, use Engineering software to model the impacts on the network and intersections.
(aka Traffic Impact Analysis)
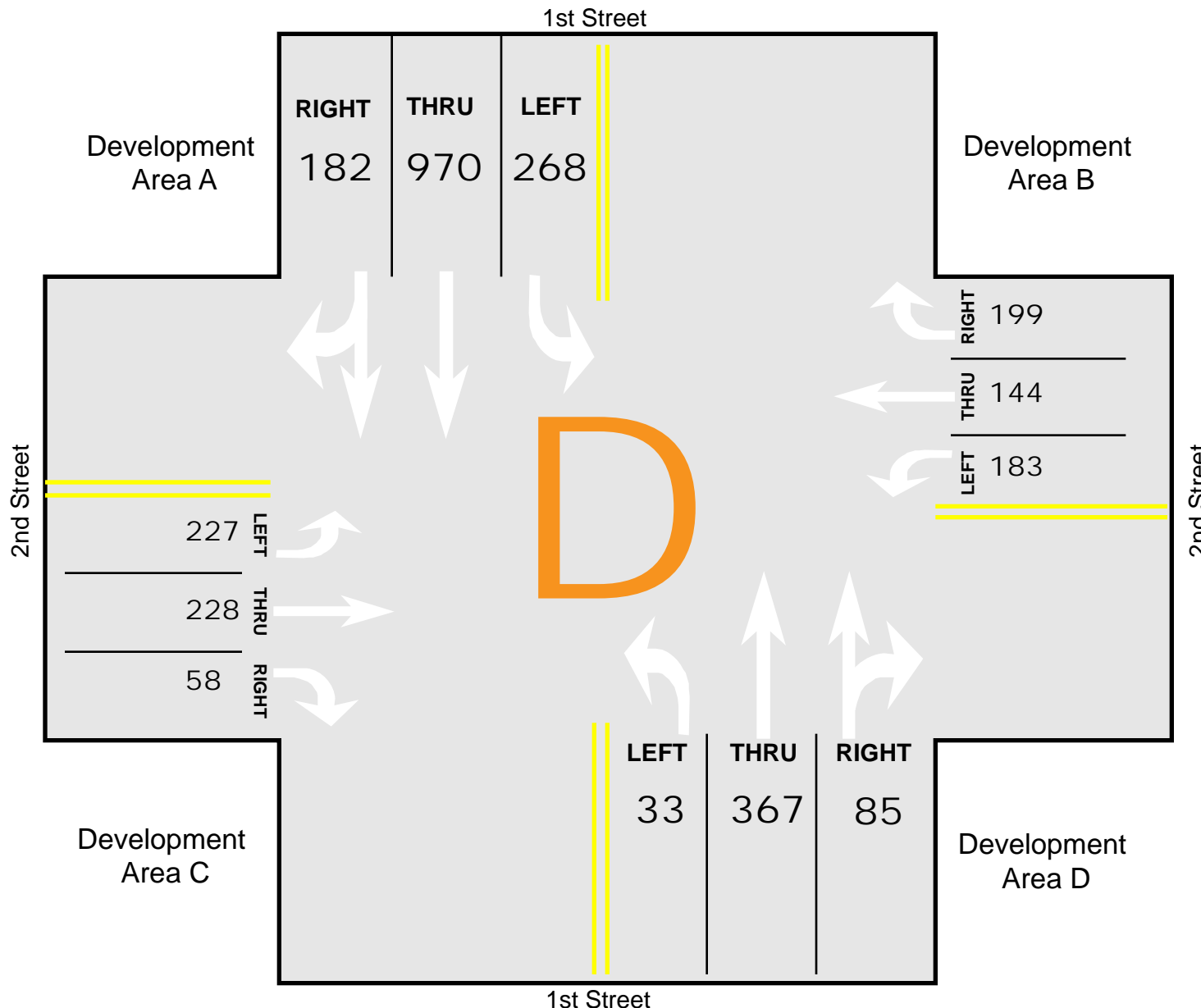
For this example, 2nd Street in the west bound direction during rush hour(aka. peak) had 199 cars turning right, 144 cars going straight, and 183 cars turning left.

The intersection's overall level of service was scored as a D. Level of Service or LOS is a traffic impact metric that uses expected delay and the total volume of trips on a particular roadway.

Existing Traffic Conditions
Estes Dr. and MLK Blvd.

Traffic Counts
Level of Service Grades
AM and PM Peak Hours
Source: Carolina Flats TIA 2012

MLK Blvd (top)

	RIGHT	THRU	LEFT
am	182	970	268
	na	C	C
pm	236	665	226
	na	D	E

Estes Dr (right)

	am	pm
RIGHT	199	365
	E	E
THRU	144	322
	E	F
LEFT	183	183
	F	D

D

Estes Dr (left)

	am	pm
LEFT	268	227
	E	E
THRU	294	228
	E	F
RIGHT	79	58
	F	D

MLK Blvd (bottom)

	LEFT	THRU	RIGHT
am	33	367	85
	B	C	na
pm	80	934	192
	C	D	na
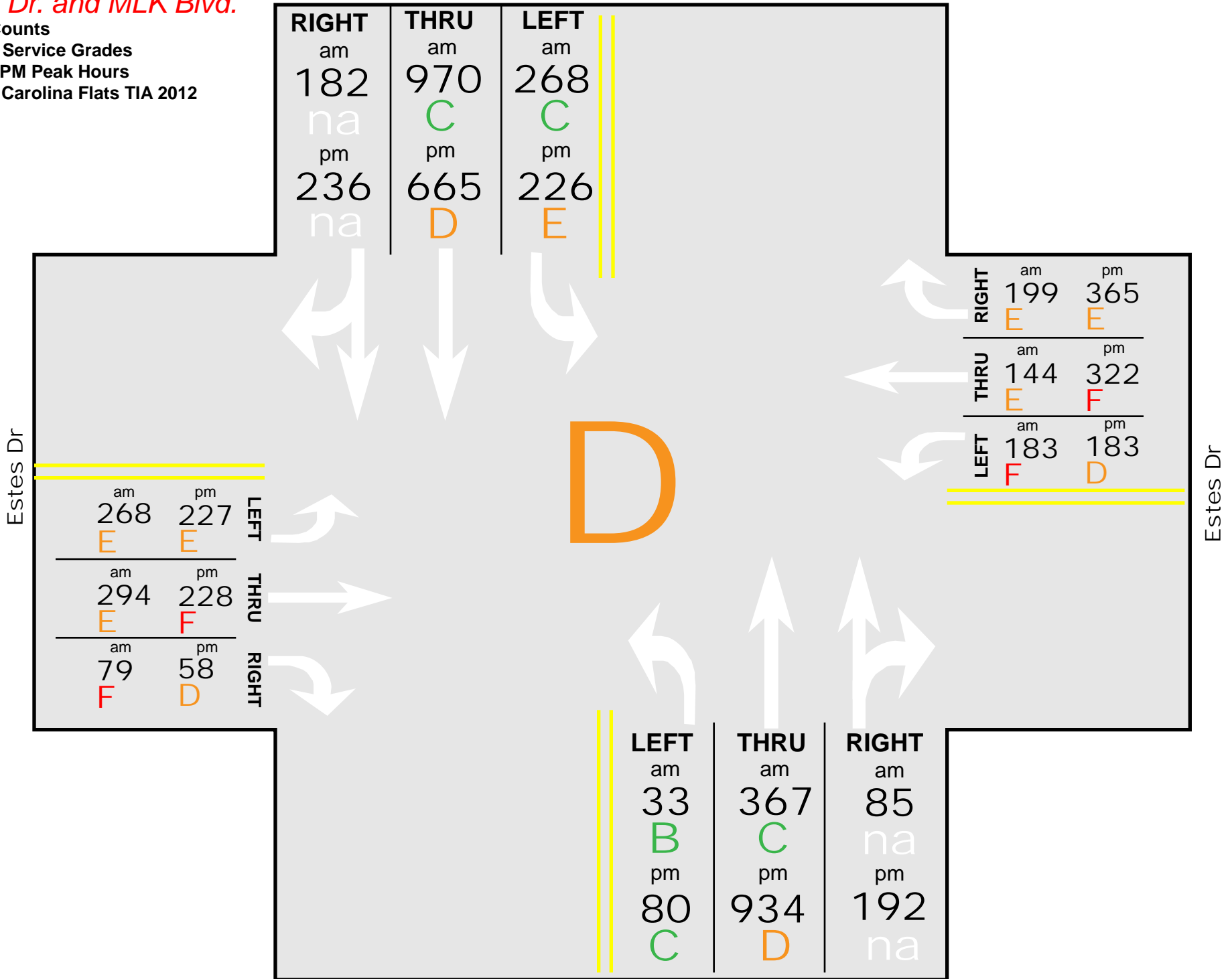
Existing Traffic Conditions
Estes Dr. and Franklin St.
Traffic Counts
Level of Service Grades
AM and PM Peak Hours
Source: Carolina North TIA 2009

Franklin St
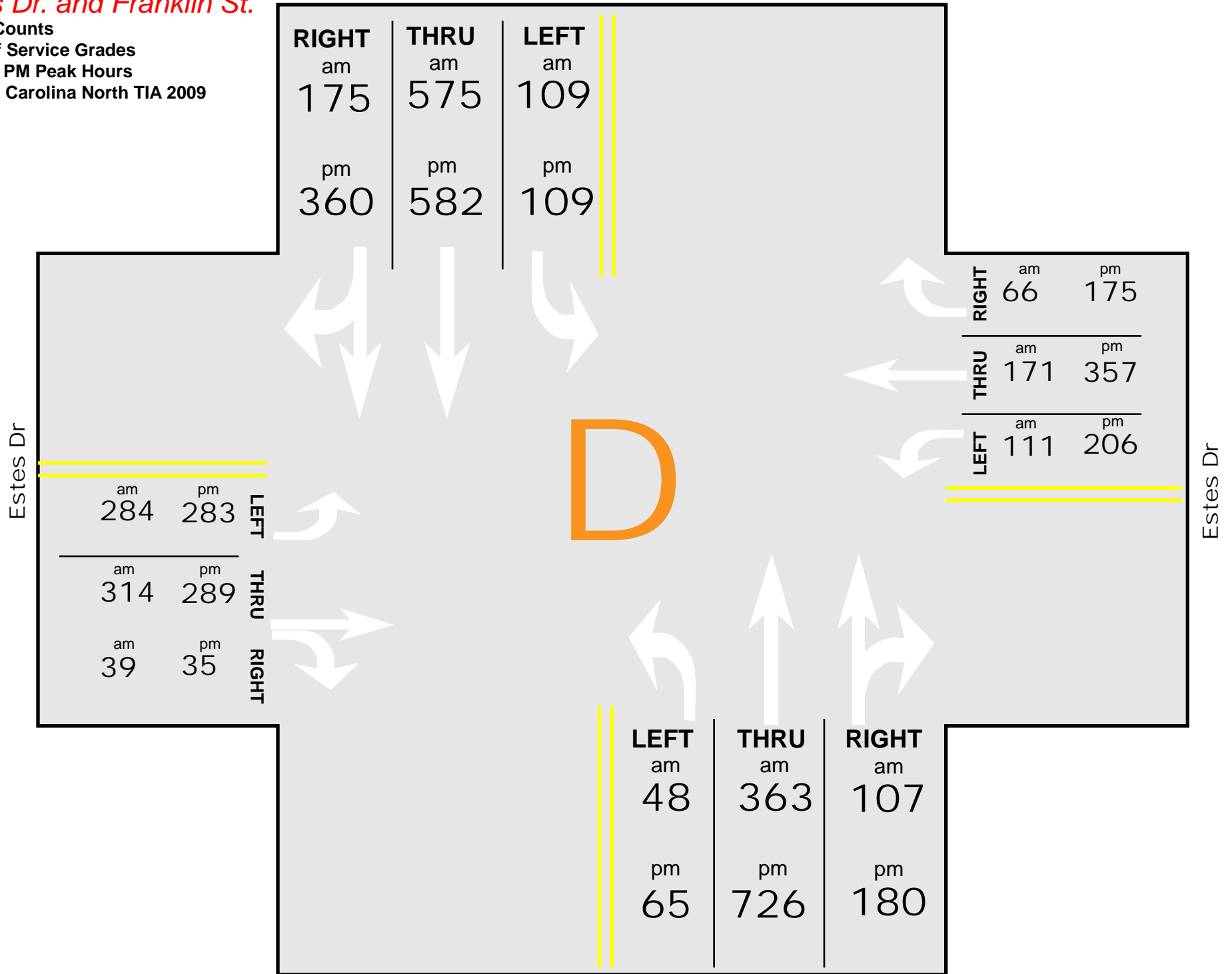
	RIGHT	THRU	LEFT
am	175	575	109
pm	360	582	109

Estes Dr

	am	pm
RIGHT	66	175
THRU	171	357
LEFT	111	206

Estes Dr

	am	pm
LEFT	284	283
THRU	314	289
RIGHT	39	35

D

	LEFT	THRU	RIGHT
am	48	363	107
pm	65	726	180

Franklin St

Piney Mountain Dr

R - 6 [5] (6)
T - 1,253 [686] (1,003)
L - 19 [30] (37)

R - 42 [37] (38)
T - 0 [0] (4)
L - 157 [70] (121)

L - 2 [4] (6)
T - 1 [0] (8)
R - 10 [13] (3)

B

L - 29 [18] (13)
T - 722 [683] (1,361)
R - 83 [65] (126)

T - 1,420 [769] (1,127)

R - 12 [1] (13)   **Shadowood Dr**

B

86

T - 822 [765] (1,487)
R - 12 [17] (39)

NTS

Somerset Dr

Clayton Rd

Carolina Flats Development

R - 182 [167] (236)
T - 970 [408] (665)
L - 268 [194] (226)

R - 199 [222] (365)
T - 144 [215] (322)
L - 183 [161] (183)

R - 12 [4] (6)
L - 10 [3] (5)

R - 144 [90] (141)
T - 2 [2] (2)
L - 26 [12] (28)

R - 23 [26] (37)
T - 449 [501] (741)
L - 3 [4] (8)

Estes Dr

R - 11 [6] (11)
T - 513 [600] (868)

L - 268 [143] (227)
T - 294 [187] (228)
R - 79 [18] (58)

D

L - 6 [8] (11)
T - 653 [509] (643)

C

L - 134 [70] (114)
T - 620 [448] (562)
R - 5 [1] (5)

A

L - 33 [35] (80)
T - 367 [417] (934)
R - 85 [128] (192)

Martin Luther King Jr. Blvd

L - 8 [4] (8)
T - 6 [1] (4)
R - 9 [5] (2)

Caswell Rd
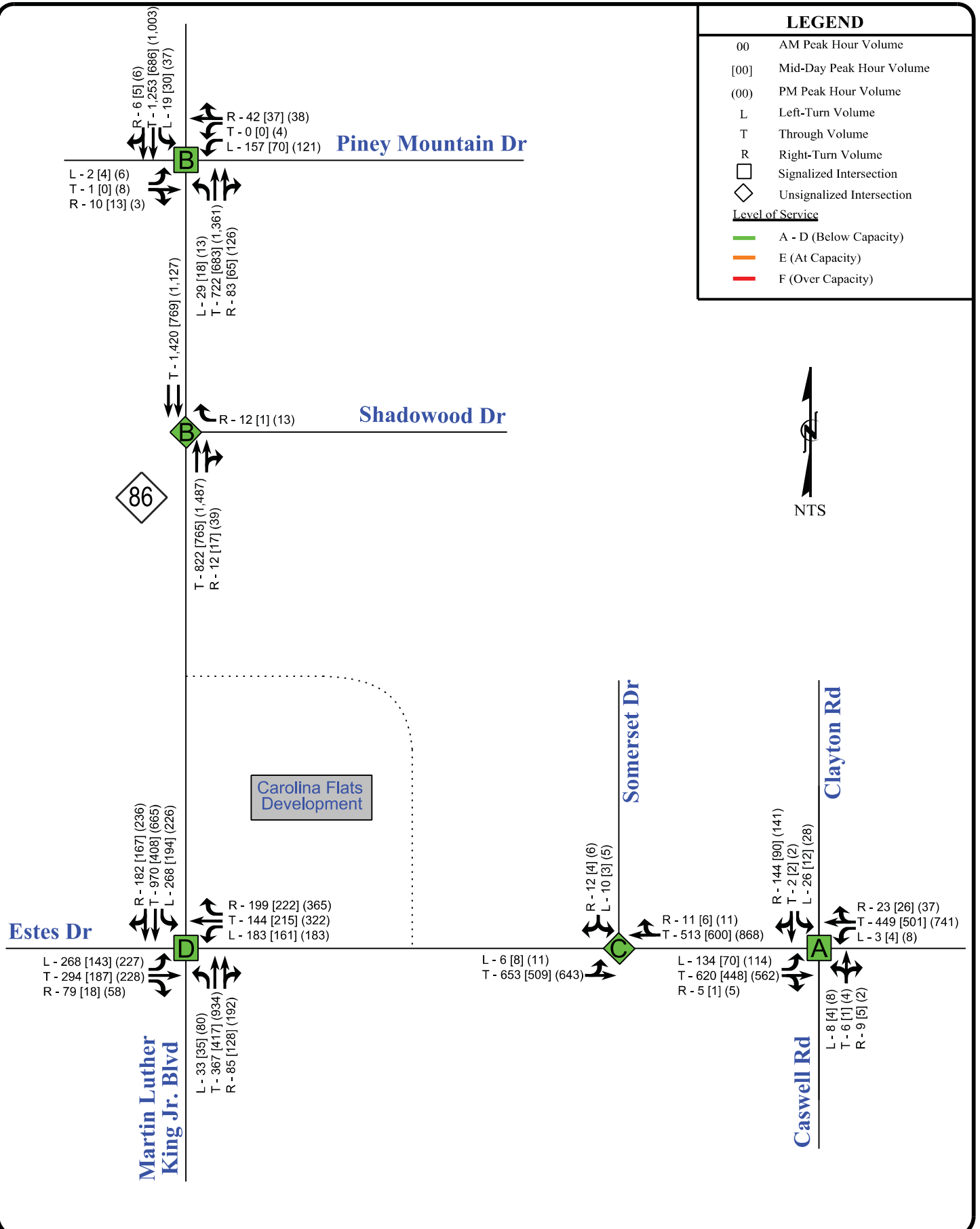
Carolina Flats at Estes Traffic Impact Analysis

2012 EXISTING CONDITIONS

Figure 3

Table 2: Intersection Capacity Analysis - 2012 Existing Traffic Conditions

Intersection	Traffic Movement		Level of Service			Volume-to-Capacity Ratio		
			AM Peak	Mid-day Peak	PM Peak	AM Peak	Mid-day Peak	PM Peak
Martin Luther King, Jr. Boulevard at Piney Mountain Road	Overall Intersection		B	B	B	**N/A**	**N/A**	**N/A**
	Eastbound	L	**F**	**F**	**F**	.05	.08	.13
		TR	**F**	**F**	**F**	.25	.28	.23
	Westbound	L	**F**	**F**	**F**	.68	.42	.62
		TR	**F**	**F**	**F**	.40	.49	.47
	Northbound	L	A	A	A	.12	.03	.04
		TR	A	A	A	.32	.29	.58
	Southbound	L	A	A	A	.04	.06	.21
		TR	A	A	A	.46	.25	.37
Martin Luther King, Jr. Blvd at Shadowood Dr	Westbound	R	B	A	A	.02	.01	.02
Martin Luther King, Jr. Boulevard at Estes Drive	Overall Intersection		D	D	D	**N/A**	**N/A**	**N/A**
	Eastbound	L	**E**	**E**	**F**	.82	.79	.91
		T	**F**	**F**	**E**	.88	.79	.60
		R	D	D	D	.23	.06	.15
	Westbound	L	**F**	**E**	D	.96	.77	.62
		T	**E**	**F**	**F**	.58	.85	.98
		R	**E**	**E**	**E**	.57	.72	.86
	Northbound	L	B	B	C	.17	.07	.31
		TR	C	C	D	.27	.29	.76
	Southbound	L	C	B	E	.51	.39	.91
		TR	D	B	C	.65	.30	.57
Estes Drive at Somerset Drive	Eastbound	TL	A	A	A	.01	.01	.02
	Southbound	LR	C	C	D	.09	.03	.08
Estes Drive at Caswell Road/Clayton Road	Overall Intersection		A	A	A	**N/A**	**N/A**	**N/A**
	Eastbound	L	A	A	A	.42	.12	.31
		TR	A	A	A	.32	.34	.43
	Westbound	L	A	A	A	.29	.01	.02
		TR	A	A	A	.29	.40	.59
	Northbound	LTR	C	C	C	.14	.07	.10
	Southbound	L	C	C	C	.20	.09	.22
		TR	B	B	B	.53	.41	.41

Table 2: N/A - Not Applicable