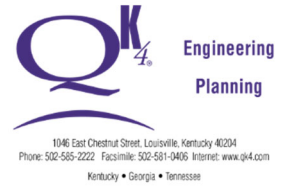


Grayson Mobility Study
Carter County

Traffic Forecast Report



April 2023

TABLE OF CONTENTS

1.0 PROJECT DESCRIPTION 1
2.0 DATA COLLECTION EFFORTS 3
3.0 FUTURE YEAR TRAFFIC 3
 3.1 2045 No-Build Travel Demand Model Results 3
 3.2 Build Bypass Results 5
 3.3 Build Interchange Results 10

TABLES

Table 1: KSDC Carter County Population Forecasts 5

FIGURES

Figure 1: Location Map 1
Figure 2: Study Area 2
Figure 3: Historic KY 1 Counts 4
Figure 4: Range of Cross-I-64 Build Concepts 6
Figure 5: Concept 2 (Orange) 7
Figure 6: Concept 1 (Red) 7
Figure 7: Concept 4 (Green) 8
Figure 8: Concept 3 (Yellow) 8
Figure 9: Concept 5 (Blue) 9
Figure 10: Concept 6 (Purple) 9
Figure 11: Proposed Interchange Assignment 10

APPENDICES

Appendix A: Turning Movement Counts
Appendix B: 2022 Turning Movement Forecast
Appendix C: 2045 No-Build Turning Movement Forecasts
Appendix D: 2045 Cross I-64 Concept Build Turning Movement Forecasts

1.0 PROJECT DESCRIPTION

The Kentucky Transportation Cabinet (KYTC) initiated a corridor study in summer 2022 to look at mobility needs in and around the city of Grayson in Carter County (**Figure 1**). Grayson is located in northeastern Kentucky, along the Little Sandy River, and accessible from Interstate 64 (I-64) at exit 172. With a population of 3,800 in 2020, Grayson is the county seat for Carter County (population 26,600), which is also home to Carter Caves and Grayson Lake state parks.

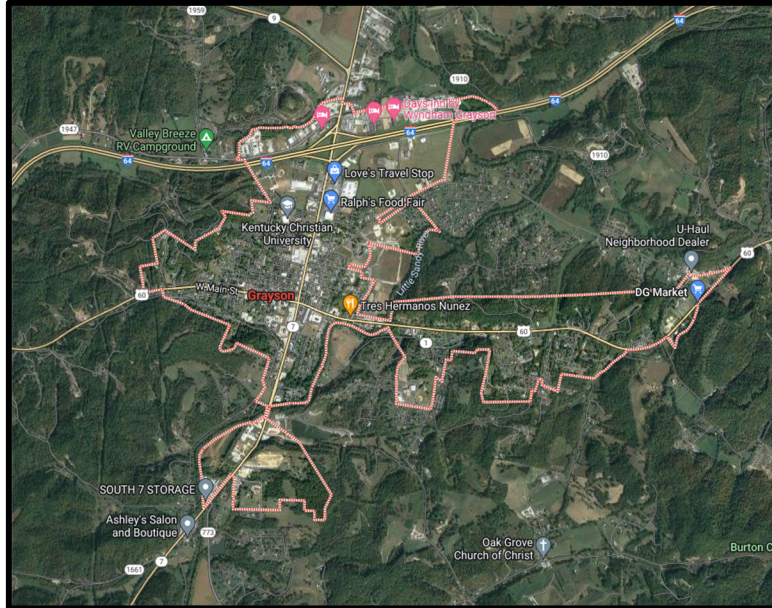


Figure 1: Location Map

KY 1 (Carol Malone Boulevard) provides the primary north-south highway through town, providing connections to KY 9 (AA Highway), I-64, and US 60 (Main Street). Downtown Grayson is located at the crossroads between US 60 and KY 1.

KYTC completed the *Grayson Small Urban Area (SUA) Study* for the city in 2018, identifying numerous transportation improvement projects to address existing traffic and safety issues. A new eastern bypass between KY 9 and US 60 was one of the high priority projects identified in the SUA. Shown in **Figure 2**, its study area follows KY 1 from its intersection with US 60 at milepoint (MP) 10.646 north to its intersection with KY 9 (MP 12.000) and includes areas to the east near the initial bypass concept.

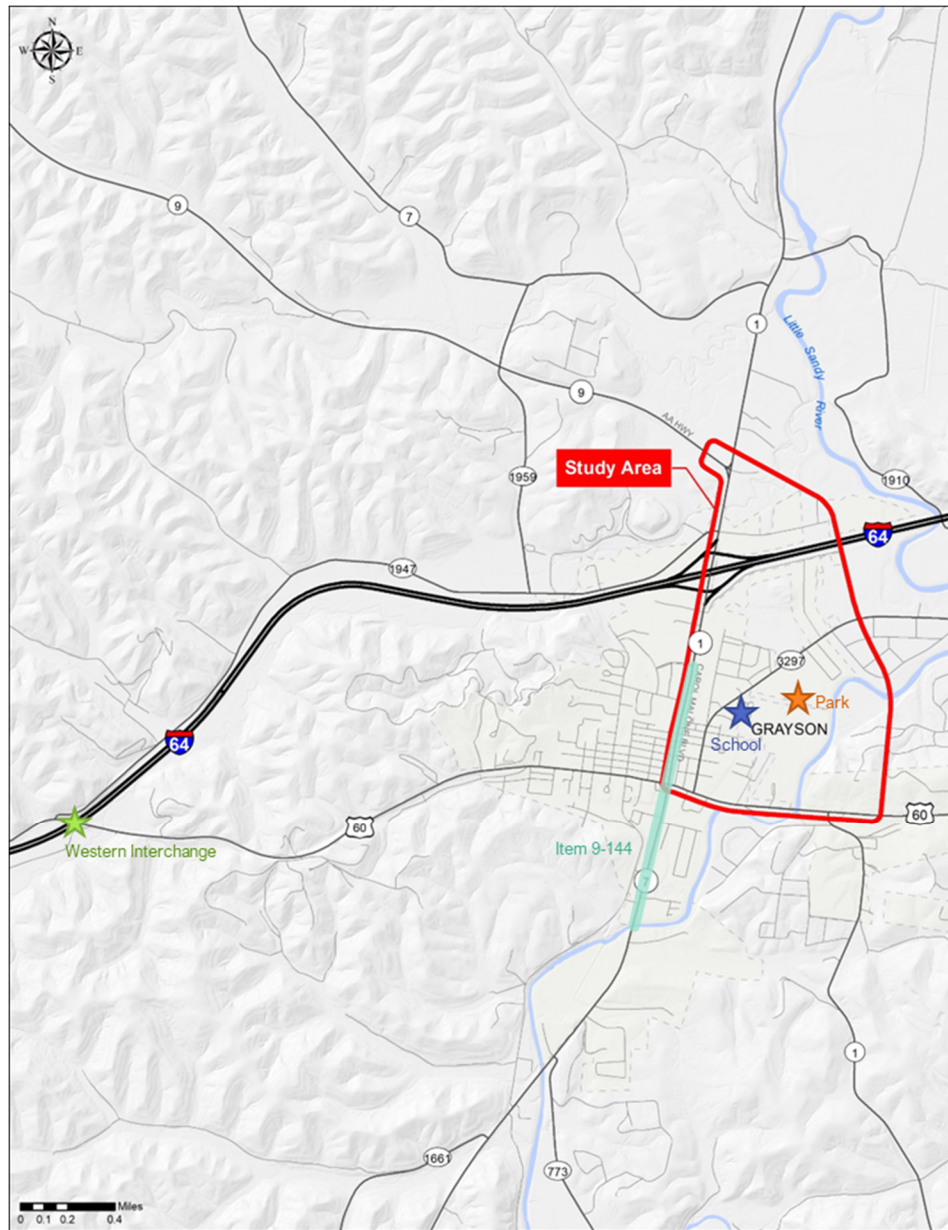


Figure 2: Study Area

Initial study tasks include creating an inventory of existing conditions, defining goals for the study, coordination with local officials and stakeholders, and forecasting existing and future traffic to determine if the previously identified bypass concept merits further consideration in light of the following recent changes:

- Construction of the new Grayson Sports Park—roughly bounded by KY 3297 (Midland Trail), Kibbey Street, the river, and East Carter Middle School
- Ongoing widening efforts along Carol Malone Boulevard (Item No. 9-144)

Phase II of the planning effort takes a closer look at build concepts and traffic analyses. Following the first Local Officials Meeting the study shifted to include:

- A preliminary look at a new interchange with I-64 west of Grayson. This interchange would include a nearby school that would serve as a centralized high school for the county.
- Concentrating on the northern section of the proposed bypass only.
- Opportunities to add a signalized left turn phase along southbound Carol Malone somewhere south of I-64 and north of US 60, creating an improved linkage between KY 1 and KY 3297 to serve as a designated route to the new park.

2.0 DATA COLLECTION EFFORTS

No new counts were made for this project as construction was ongoing on parts of Carol Malone Boulevard; instead, a combination of Streetlight-generated data and peak hour turning movement counts from the 2018 Grayson SUA Study were used.

Unadjusted turning movement counts are presented in **Appendix A**.

The year 2022 served as the “existing” baseline scenario. Turning movements for base year 2022 were found by applying a 0.65% annual growth rate (discussed below) to 2016 turning movement counts collected for the original SUA Study. Year 2022 base year turning movement diagrams are presented in **Appendix B**.

3.0 FUTURE YEAR TRAFFIC

KYTC traffic counts since 2000 were compared for 17 count stations in the vicinity with most (82%) showing flat to negative growth rates. Volumes for the four KY 1 stations closest to the study area are summarized in **Figure 3**.

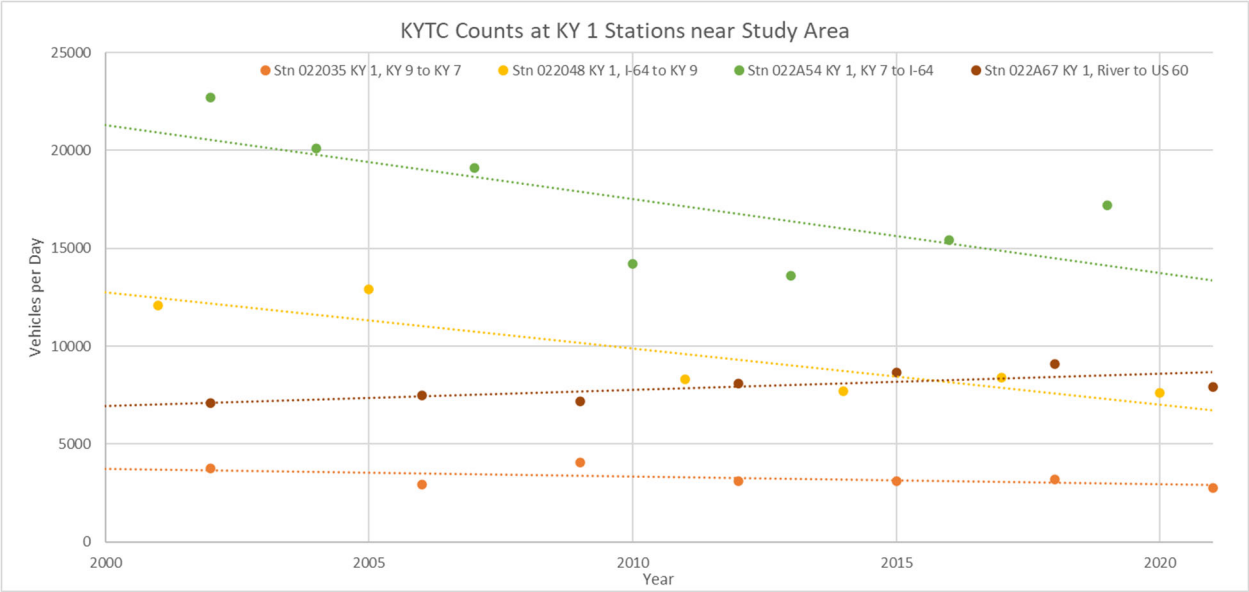


Figure 3: Historic KY 1 Counts

3.1 2045 No-Build Travel Demand Model Results

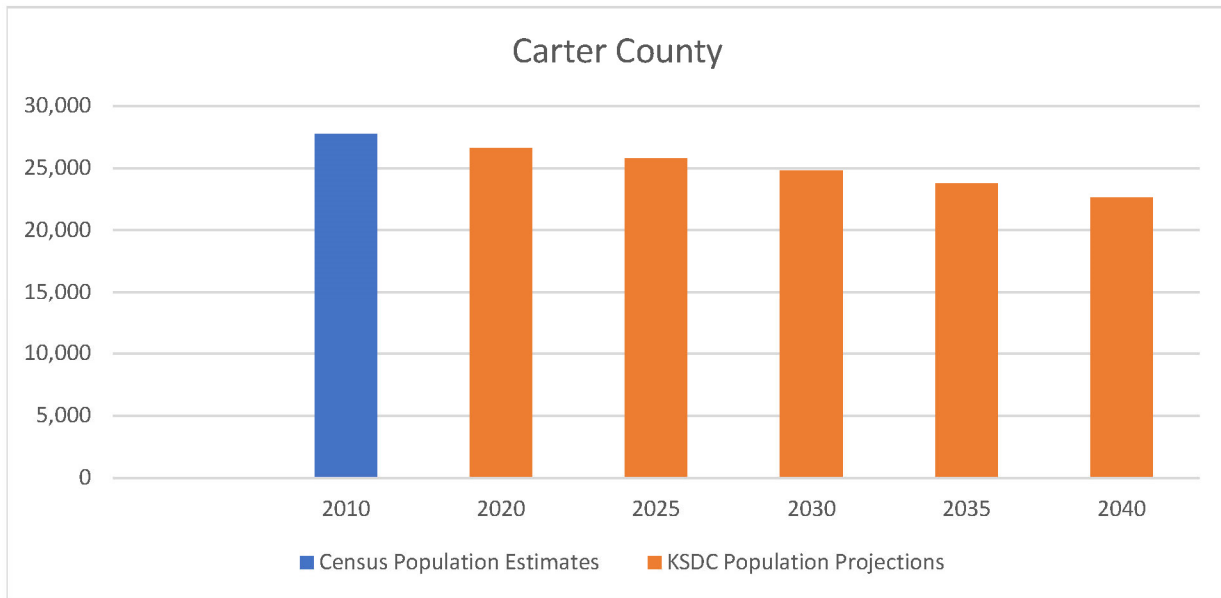
To project future year traffic forecasts and grow counts from the previous SUA Study to the existing year, KYTC’s District 9 Model (version V20161011) was used to gauge growth along the Carol Malone study corridor. Assignment from the base year 2019 model were compared to 2040 model assignment and input from local elected officials/stakeholders to determine the average growth rate of 0.65% annually along Carol Malone Boulevard.

Household growth assumptions were applied as shown in the original model files, but 2040 employment assumptions in one zone were factored up based on local input: D9TAZID 2118 added an extra 125 employees. One adjustment to the “E+C” highway network was also coded: extending the five-lane section on Carol Malone Boulevard, reflective of the ongoing Item 9-144 construction project.

Table 1 shows the county’s overall population increased slightly from 2010 to 2020 but is projected to gradually decrease from 2020 to 2040. Future year estimates are from the Kentucky State Data Center.

Table 1: KSDC Carter County Population Forecasts

Graves County	Census 2010	Projections				
		2020	2025	2030	2035	2040
Total Population	27,720	26,627	25,777	24,816	23,748	22,647
Population in Households	27,094	25,984	25,239	24,274	23,202	22,097
Population in Group Quarters	626	643	538	542	546	550
Total Households	10,760	10,664	10,539	10,262	9,883	9,443
Average Household Size	2.52	2.44	2.39	2.37	2.39	2.34



Future year 2045 No-Build turning movement forecasts were also developed by applying the same 0.65% annual growth rate to the base year turning movements. No-Build turning movements for study area intersections can be found in **Appendix C**.

3.2 Build Bypass Results

Initially, the District 9 Model was used to gauge the usage on the proposed bypass. Several build scenarios for the bypass were modeled, one reflecting the full length (US 60 to AA Highway/Carol Malone Boulevard) recommended in the 2018 SUA study and other combinations of just the northern section(s).

In initial model runs, model assignment for the full bypass length showed 3,250 vehicles per day (vpd) on the new bypass south of KY 3297 and 5,000 vpd to the north. South of the interchange, around 4,300 vpd would be diverted from the congested Carol Malone Boulevard corridor onto the new route.

In light of geographic constraints and feedback from local stakeholders during Fall 2022, the project team focused its concept development efforts on the northern bypass segments. Shown in **Figure 4**, a range of build concepts were developed to illustrate the level of costs and impacts associated with a new cross-I-64 connection. Each alignment assumes two 12-foot travel lanes with 4-foot paved shoulders and the

option to add a 5-foot sidewalk on one side. In each case, KY 3297 (Midland Trail) forms the southern terminus of the bypass.

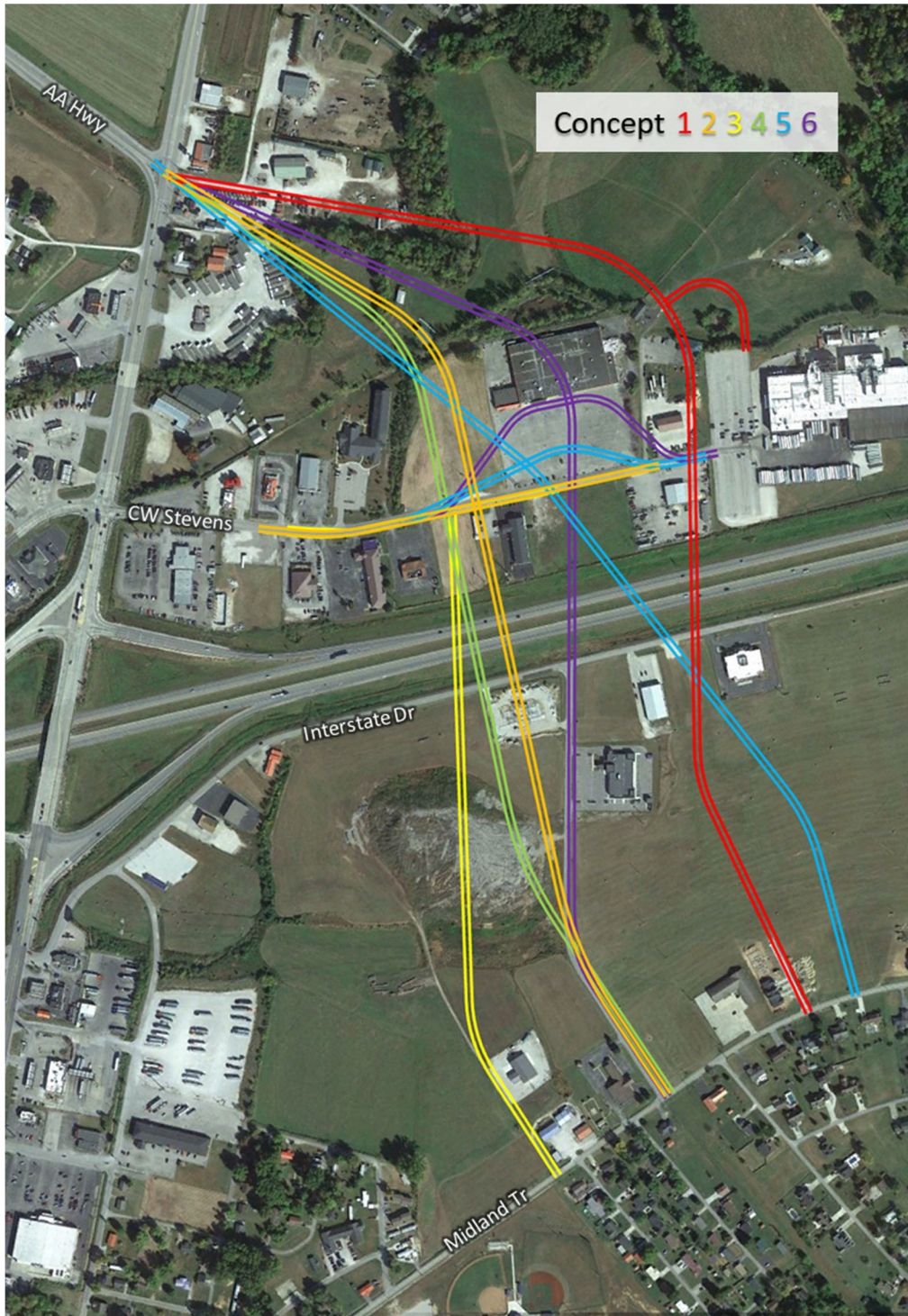


Figure 4: Range of Cross-I-64 Build Concepts

Concept 1 (Red) stretches from KY 9 (AA Highway) to KY 3297 (Midland Trail) and is shown in **Figure 6**. The new connector blocks the eastern end of C.W. Stevens Boulevard, shifting access for the Smithfield Plant onto a new driveway from the new connector. The route does not intersect C.W. Stevens Boulevard or Interstate Drive.

Shown in **Figure 5**, **Concept 2 (Orange)** stretches from KY 9 (AA Highway) to KY 3297. This concept raises a portion of C.W. Stevens Boulevard up to 20 feet to intersect the new connector. This would lead to impacts for adjacent business driveways. South of I-64, the connector does not intersect Interstate Drive.

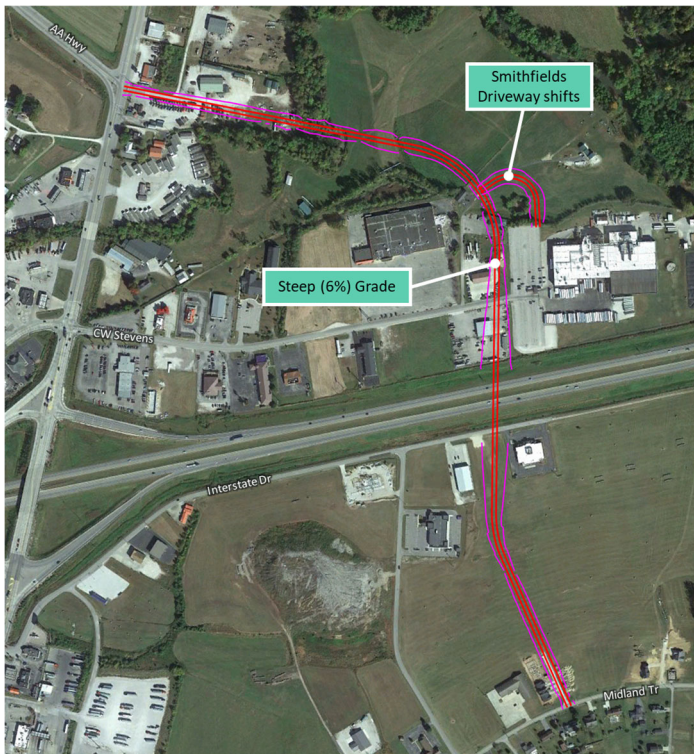


Figure 6: Concept 1 (Red)

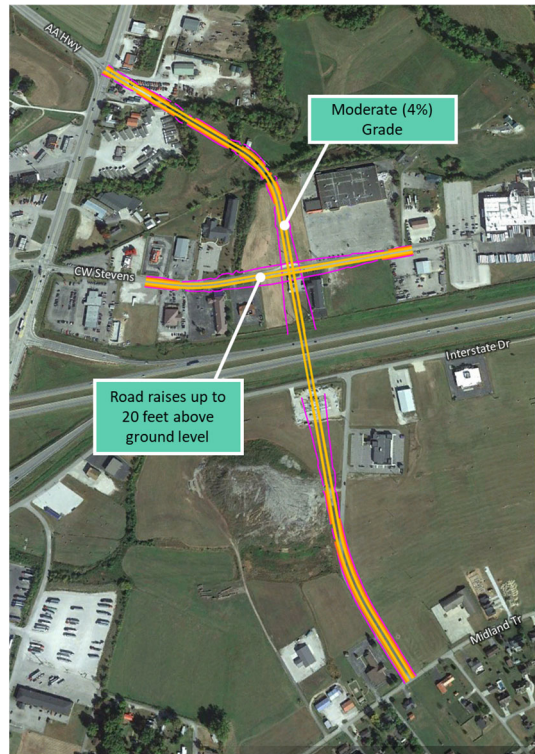


Figure 5: Concept 2 (Orange)

Concept 3 (Yellow) begins at C.W. Stevens Boulevard, stretching south to KY 3297. This alignment would come downhill from the bridge over the interstate then stop at the intersection with C.W. Stevens Boulevard. The connector does not intersect Interstate Drive. The concept is shown in **Figure 8**.

Concept 4 (Green) stretches from KY 9 (AA Highway) to KY 3297 as shown in **Figure 7**. The connector would include a longer bridge that spans above C.W. Stevens Boulevard, I-64, and Interstate Drive.

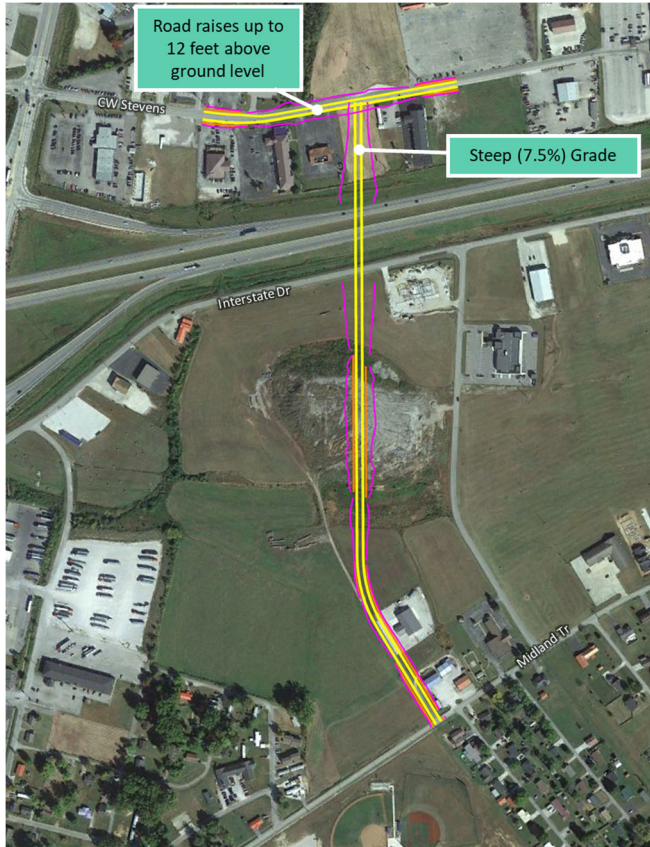


Figure 8: Concept 3 (Yellow)

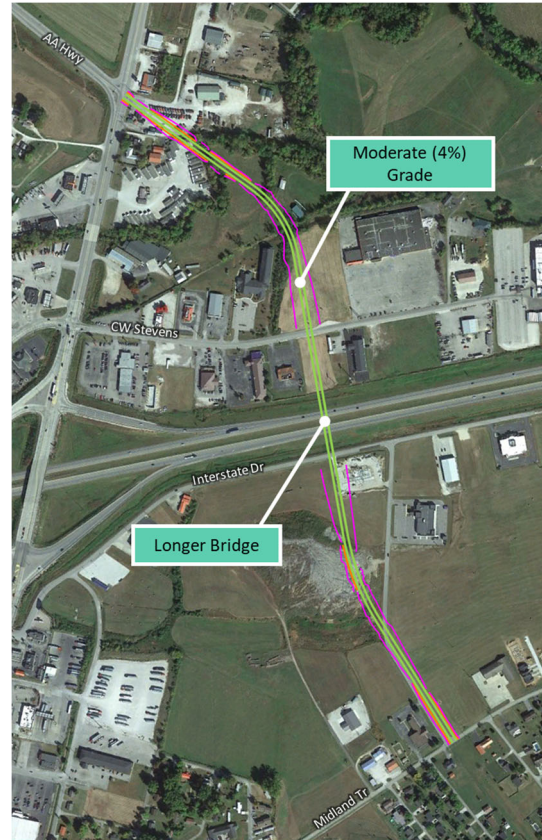


Figure 7: Concept 4 (Green)

Concept 5 (Blue) stretches from KY 9 (AA Highway) to KY 3297. This concept shifts a portion of C.W. Stevens Boulevard in order for it to intersect the new connector. To minimize overall length, the connector crosses I-64 at a skew angle, leading to a longer bridge. South of I-64, the connector does not intersect Interstate Drive. The concept is shown in **Figure 9**.

Concept 6 (Purple) is similar to Concept 5 but eliminates the skewed crossing and shifts C.W. Stevens Boulevard further from its existing location. It stretches from KY 9 (AA Highway) to KY 3297. The connector does not intersect Interstate Drive. Concept 6 is shown in **Figure 10**.

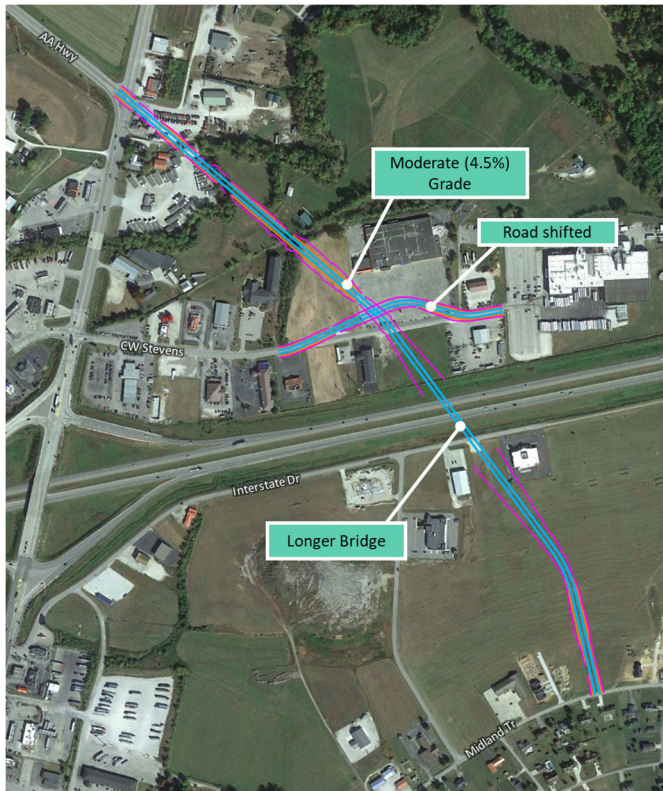


Figure 9: Concept 5 (Blue)

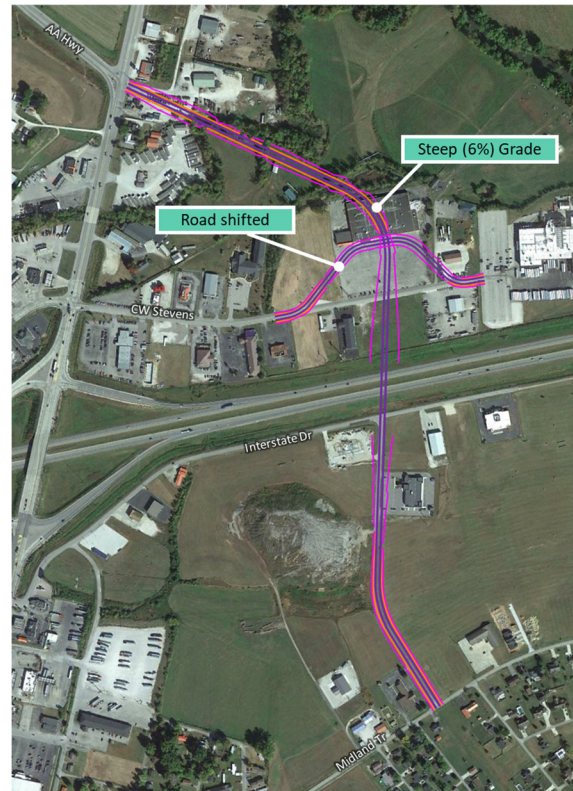


Figure 10: Concept 6 (Purple)

Turning movement forecasts were grouped into four concepts groups of options that would have similar traffic numbers. In any Build Concept 1-6, the new connector is expected to carry 2,700 to 2,900 vpd on the new alignment and to divert around 2,300 vpd fewer trips away from Carol Malone Boulevard, reducing traffic on the congested corridor.

- **Concept 1**
- **Concepts 2, 5 & 6**
- **Concept 3**
- **Concept 4**

Build turning movement forecasts for these four concept groups can be found in **Appendix D**. Each concept group includes seven KY 1 (Carol Malone Blvd) intersection forecasts: 1) KY 9 (AA Highway), 2) KY 1947/C.W. Stevens Blvd, 3) Everman Street/Interstate Drive, 4) McClave Street (opposite the Love’s driveway), 5) Academic Parkway, 6) College Street, and 7) US 60 (Main Street). Forecasts for intersections south of the interchange are identical for each concept group.

3.3 Build Interchange Results

For a second, separate build scenario, the District 9 Model was also used to project traffic on a proposed interchange with I-64 west of Grayson. This interchange would be in the vicinity of a proposed centralize Carter County high school which was assumed to have 1,300 students. Socioeconomic data in the model was adjusted to account for this proposed high school—splitting the large ID2037 zone and adding employment reflective of the new school. Employment assumptions in other zones were not adjusted, conservatively assuming the old school facilities would be repurposed with new uses.

As seen on **Figure 11**, the combined 2045 daily model assignment on the proposed ramps is 2,800 vpd.

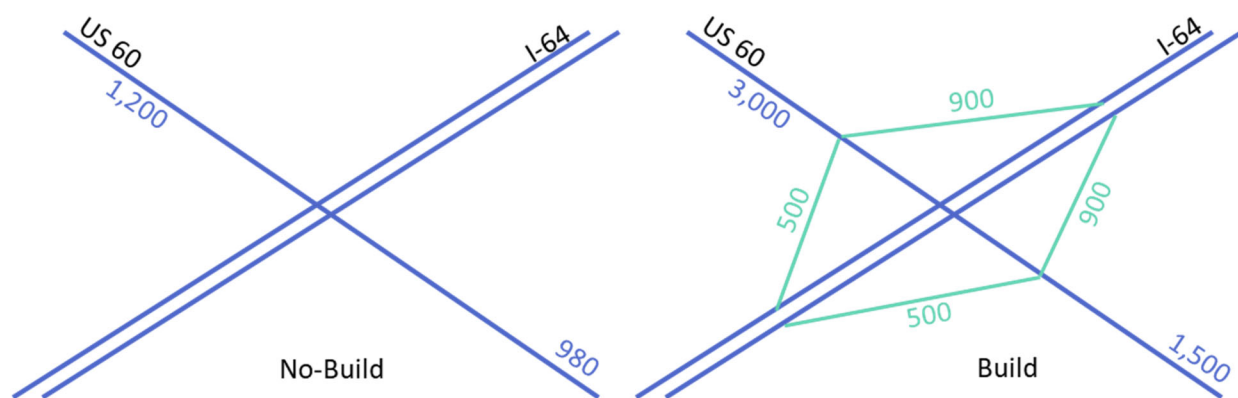


Figure 11: Proposed Interchange Assignment

Appendix A

Raw Traffic Count Data

Study Name AM KY 1 & KY 9

Start Date 03/17/2016

Start Time 7:00 AM

Site Code

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound			
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
7:00 AM	1	30	0	0	0	0	0	0	0	14	18	0	52	0	0	0
7:15 AM	1	51	0	0	0	0	0	0	2	14	23	0	54	0	0	0
7:30 AM	0	50	0	0	0	0	0	0	0	17	14	0	73	1	1	0
7:45 AM	0	39	0	0	0	0	1	0	2	23	25	0	50	0	0	0
8:00 AM	1	39	0	0	1	0	0	0	4	23	24	0	39	0	0	0
8:15 AM	1	23	0	0	0	0	3	0	1	14	21	0	31	0	2	0
8:30 AM	0	31	0	0	0	0	0	0	0	13	26	0	31	0	1	0
8:45 AM	3	24	0	0	0	0	0	0	0	19	26	0	35	0	1	0

Study Name PM KY 1 & KY 9

Start Date 03/16/2016

Start Time 4:00 PM

Site Code

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound				
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
4:00 PM	1	31	0	0	0	0	0	0	0	0	55	48	0	26	0	0	0
4:15 PM	1	63	0	0	0	0	0	0	0	2	50	44	0	39	0	0	0
4:30 PM	2	31	0	0	0	0	1	0	1	1	47	68	0	37	0	0	0
4:45 PM	1	25	1	0	0	0	3	0	1	1	38	47	0	39	0	1	0
5:00 PM	1	36	0	0	0	0	5	0	0	0	50	52	0	42	0	0	0
5:15 PM	0	14	0	0	0	0	1	0	0	0	57	46	0	35	0	3	0
5:30 PM	2	32	0	0	0	0	2	0	0	0	41	60	0	35	0	0	0
5:45 PM	2	35	0	0	0	0	0	0	0	0	50	44	0	31	0	2	0

Study Name AM KY 1 & KY 1947

Start Date 03/17/2016

Start Time 7:00 AM

Site Code

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound			
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
7:00 AM	4	83	2	0	0	1	10	0	6	30	9	0	26	1	3	0
7:15 AM	7	103	4	0	2	0	5	0	14	44	21	0	32	1	0	0
7:30 AM	0	115	3	0	0	0	6	0	11	41	13	0	54	0	3	0
7:45 AM	5	86	1	0	2	0	11	0	17	50	31	0	41	2	1	0
8:00 AM	1	76	2	0	2	3	7	0	21	53	31	0	29	1	2	0
8:15 AM	2	55	4	0	3	2	11	0	17	44	27	0	22	1	3	0
8:30 AM	3	59	3	0	3	1	5	0	20	35	27	0	26	0	2	0
8:45 AM	5	60	3	0	4	1	8	0	30	44	20	0	22	2	5	0

Study Name PM KY 1 & KY 1947

Start Date 03/16/2016

Start Time 4:00 PM

Site Code

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound			
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
4:00 PM	2	71	4	0	28	15	68	0	37	93	49	0	52	5	5	0
4:15 PM	11	106	1	0	27	14	67	0	36	83	51	0	51	6	2	0
4:30 PM	9	70	8	0	21	16	62	0	43	105	43	0	45	2	7	0
4:45 PM	5	63	4	0	11	3	49	0	31	84	39	0	50	2	7	0
5:00 PM	6	85	4	0	8	10	33	0	42	88	50	0	50	6	7	0
5:15 PM	2	59	1	0	9	12	48	0	43	98	49	0	40	6	6	0
5:30 PM	5	70	7	0	7	9	37	0	36	95	46	0	69	4	3	0
5:45 PM	7	59	3	0	6	10	31	0	49	95	55	0	41	6	1	0

Study Name AM KY 1 & Interstate Dr
 Start Date 03/17/2016
 Start Time 7:00 AM
 Site Code

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound			
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
7:00 AM	17	83	7	0	8	2	1	0	5	95	3	0	0	0	1	0
7:15 AM	15	124	8	0	16	0	2	0	5	121	0	0	0	0	1	0
7:30 AM	12	175	16	0	13	0	2	0	16	137	1	0	0	0	0	0
7:45 AM	7	177	11	0	11	0	1	0	13	139	2	0	0	0	3	0
8:00 AM	8	141	12	0	14	0	0	0	12	136	3	0	0	0	2	0
8:15 AM	12	94	4	0	4	0	4	0	13	145	2	0	0	0	0	0
8:30 AM	7	102	12	0	12	0	4	0	9	121	1	0	1	0	2	0
8:45 AM	10	111	9	0	18	0	4	0	10	105	0	0	2	0	1	0

Study Name PM KY 1 & Interstate Dr
 Start Date 03/16/2016
 Start Time 4:00 PM
 Site Code

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound			
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
4:00 PM	16	200	21	0	18	1	5	0	23	200	4	0	2	0	3	0
4:15 PM	14	229	23	0	16	0	5	0	15	181	2	0	4	0	6	0
4:30 PM	13	187	31	0	30	0	4	0	14	174	1	0	2	1	4	0
4:45 PM	12	188	20	0	23	1	6	0	18	154	2	0	2	0	2	0
5:00 PM	20	200	25	0	22	1	1	0	20	200	0	0	0	0	3	0
5:15 PM	14	178	14	0	27	1	3	0	17	198	1	0	7	0	3	0
5:30 PM	11	213	27	0	19	1	2	0	17	160	1	0	1	0	3	0
5:45 PM	20	198	21	0	23	2	3	0	17	164	7	0	1	0	4	0

Study Name AM KY 1 & Loves North Entrance

Start Date 03/16/2016

Start Time 7:00 AM

Site Code

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound			
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
7:00 AM	3	75	4	0	2	0	0	0	0	128	1	0	0	0	3	0
7:15 AM	0	150	4	1	1	0	0	0	1	133	3	0	1	0	1	0
7:30 AM	1	174	2	0	3	0	0	0	0	143	0	0	7	0	6	0
7:45 AM	3	161	3	0	6	0	0	0	0	152	1	0	1	0	4	0
8:00 AM	2	135	2	0	2	0	0	0	1	173	1	0	3	0	6	0
8:15 AM	5	104	4	0	6	0	0	0	1	136	0	0	4	0	0	0
8:30 AM	1	97	2	0	7	0	0	0	0	128	2	0	1	0	0	0
8:45 AM	2	133	5	0	6	0	1	0	1	152	6	0	1	0	4	0

Study Name PM KY 1 & Loves N Entrance

Start Date 03/15/2016

Start Time 4:00 PM

Site Code

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound			
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
4:00 PM	3	192	6	0	4	0	0	0	1	201	6	0	1	0	3	0
4:15 PM	1	229	7	0	2	0	0	0	0	209	1	0	4	0	4	0
4:30 PM	2	219	7	0	9	0	0	0	0	182	2	0	7	0	2	0
4:45 PM	5	207	7	0	4	0	0	0	0	184	5	0	4	0	3	0
5:00 PM	1	209	8	0	5	0	0	0	0	224	1	0	6	0	5	0
5:15 PM	2	198	8	0	5	0	1	0	1	190	3	0	4	0	1	0
5:30 PM	3	199	9	0	8	0	0	0	0	187	3	0	4	0	2	0
5:45 PM	2	219	5	0	11	0	0	0	0	170	3	0	7	0	3	0

Study Name AM KY 1 & Academic Pkwy

Start Date 03/16/2016

Start Time 7:00 AM

Site Code

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound			
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
7:00 AM	3	53	2	0	4	0	1	0	6	109	1	0	7	0	4	0
7:15 AM	2	119	1	0	0	0	7	0	7	119	2	0	1	0	1	0
7:30 AM	4	144	2	0	2	1	4	0	15	140	0	0	0	0	0	0
7:45 AM	9	155	1	0	3	0	5	0	13	148	3	0	1	0	2	0
8:00 AM	11	121	2	0	2	0	6	0	14	172	2	0	0	0	1	0
8:15 AM	11	100	6	0	2	1	7	0	13	147	4	0	2	0	2	0
8:30 AM	3	88	4	0	3	0	14	0	15	126	4	0	2	0	2	0
8:45 AM	9	123	2	0	4	0	4	0	7	150	6	0	2	0	1	0

Study Name PM KY 1 & Academic Pkwy

Start Date 03/15/2016

Start Time 4:00 PM

Site Code

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound			
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
4:00 PM	2	172	9	0	15	2	12	0	35	177	4	0	2	0	2	0
4:15 PM	5	221	5	0	13	1	9	0	35	191	0	0	1	0	7	0
4:30 PM	8	196	7	0	8	0	7	0	41	164	2	0	3	0	5	0
4:45 PM	3	174	8	0	11	1	15	0	31	150	2	0	1	0	8	0
5:00 PM	7	188	6	0	5	0	6	0	32	200	3	0	1	2	8	0
5:15 PM	6	170	10	0	9	1	7	0	30	175	2	0	5	0	4	0
5:30 PM	5	193	6	0	14	1	13	0	33	167	3	0	4	0	7	0
5:45 PM	4	213	6	0	5	0	18	0	27	158	5	0	4	0	3	0

Study Name AM KY 1 & College St

Start Date 03/16/2016

Start Time 7:00 AM

Site Code

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound				
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
7:00 AM	2	56	0	0	0	0	0	0	0	0	105	0	0	1	0	11	0
7:15 AM	5	118	0	0	1	0	1	0	1	1	108	1	0	5	0	16	0
7:30 AM	4	139	0	0	0	0	0	0	0	1	150	1	0	1	0	15	0
7:45 AM	7	151	1	0	0	0	0	0	2	2	169	2	0	5	1	5	0
8:00 AM	4	110	1	0	1	0	0	0	0	0	180	2	0	1	0	14	0
8:15 AM	7	103	2	0	1	0	0	0	0	0	153	1	0	4	0	11	0
8:30 AM	5	99	0	0	0	1	2	0	0	0	140	1	0	3	0	10	0
8:45 AM	10	113	3	0	1	0	2	0	4	4	159	3	0	4	0	14	0

Study Name PM KY 1 & College St

Start Date 03/15/2016

Start Time 4:00 PM

Site Code

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound			
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
4:00 PM	13	173	2	0	1	0	4	0	2	198	1	0	10	1	24	0
4:15 PM	18	210	1	0	2	1	6	0	2	192	2	0	4	0	34	0
4:30 PM	10	192	2	0	2	0	2	0	1	175	2	0	6	0	30	0
4:45 PM	12	173	2	0	2	1	3	0	5	178	0	0	12	1	16	0
5:00 PM	17	178	1	0	12	2	3	0	3	207	6	0	4	0	17	0
5:15 PM	8	168	3	0	4	0	1	0	1	184	2	0	5	1	19	0
5:30 PM	12	201	3	0	2	0	3	0	0	187	2	0	5	0	23	0
5:45 PM	16	218	3	0	5	1	4	0	2	165	2	0	5	1	19	0

Study Name KY 1 / KY 7 & US 60

Start Date 03/14/2016

Start Time 4:00 PM

Site Code

Start Time	Southbound Approach Southbound				Westbound Approach Westbound				Northbound Approach Northbound				Eastbound Approach Eastbound			
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
4:00 PM	20	96	69	0	46	39	28	0	22	102	18	0	15	31	29	0
4:15 PM	24	113	56	0	43	28	24	0	16	84	18	0	23	27	37	0
4:30 PM	30	97	71	0	53	32	37	0	26	62	10	0	19	21	25	0
4:45 PM	17	120	48	0	46	34	38	0	22	81	19	0	11	29	29	0
5:00 PM	23	102	50	0	43	34	33	0	27	84	9	0	17	30	33	0
5:15 PM	25	74	70	0	28	33	38	0	21	73	13	0	14	30	25	0
5:30 PM	28	103	58	0	39	26	25	0	30	61	11	0	10	16	18	0
5:45 PM	26	85	47	0	28	17	33	0	28	55	12	0	13	24	15	0
7:00 AM	9	39	25	0	23	9	6	0	7	50	5	0	2	11	9	0
7:15 AM	14	37	43	0	22	11	6	0	18	73	2	0	5	20	19	0
7:30 AM	9	61	65	0	40	22	17	0	39	103	4	0	7	42	21	0
7:45 AM	12	71	58	0	62	29	26	0	27	99	16	0	6	22	14	0
8:00 AM	14	67	39	0	79	27	34	0	9	105	17	0	7	20	22	0
8:15 AM	11	53	32	0	24	15	27	0	16	96	11	0	4	9	18	0
8:30 AM	18	39	28	0	37	13	22	0	16	76	14	0	12	5	12	0
8:45 AM	17	52	29	0	32	28	16	0	30	67	14	0	16	13	16	0

Appendix B

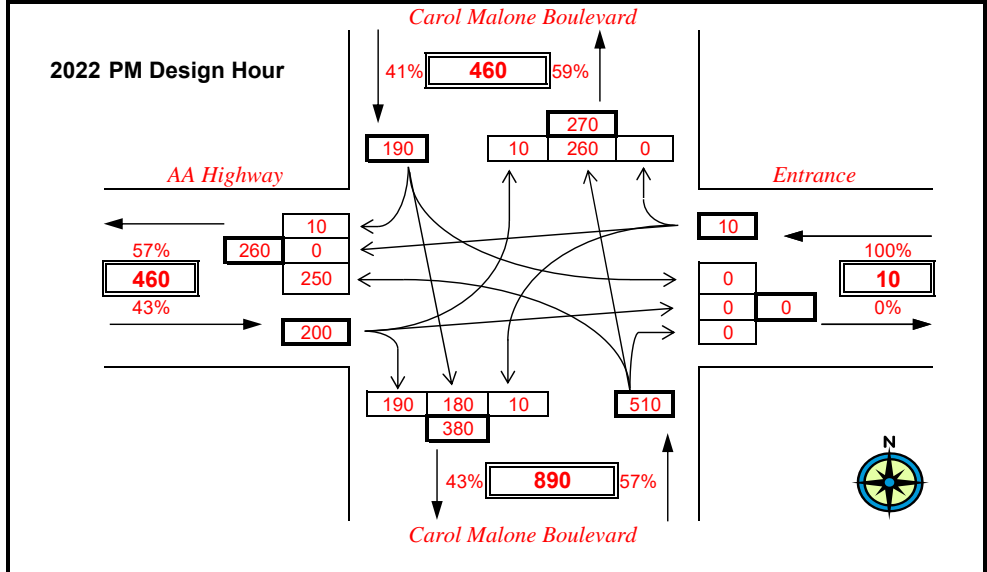
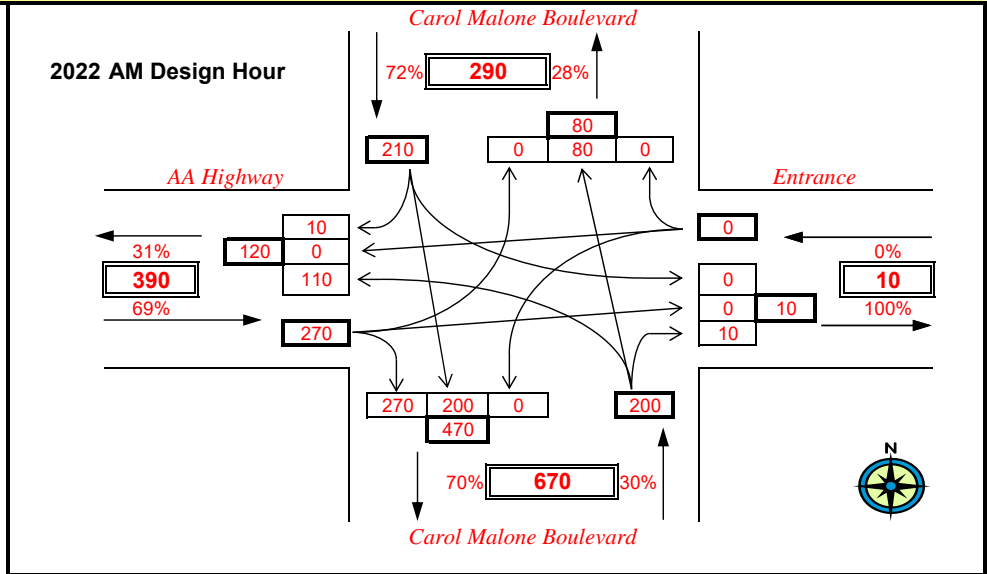
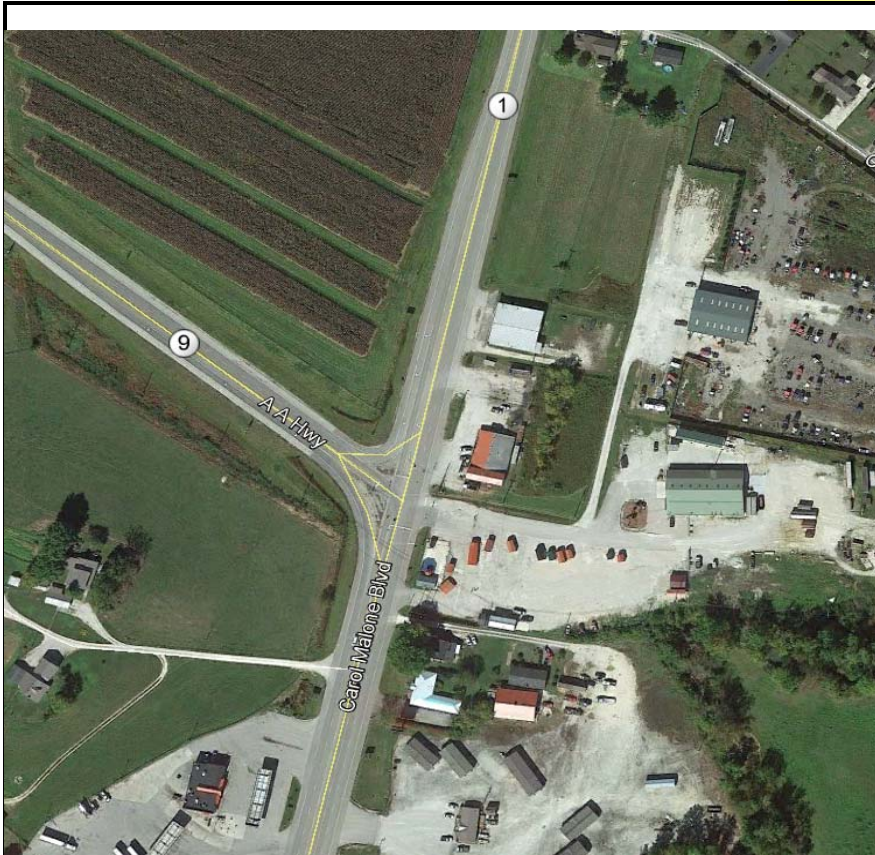
Base Year 2022 Turning Movement Diagrams

PROJECT: Grayson Mobility Study
 ITEM NUMBER: 6-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2022** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and AA Highway (KY 9)

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2022 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #1 (2022)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

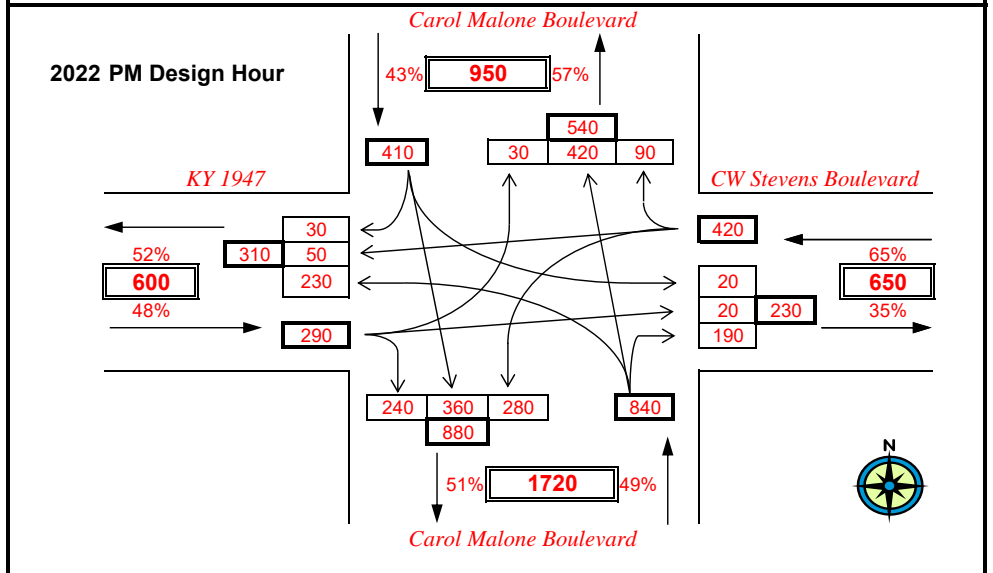
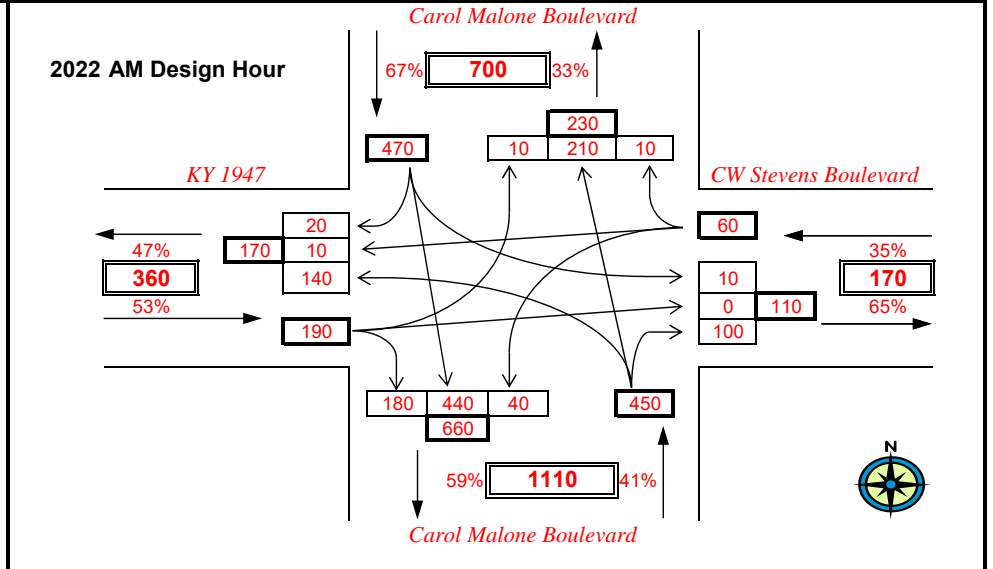
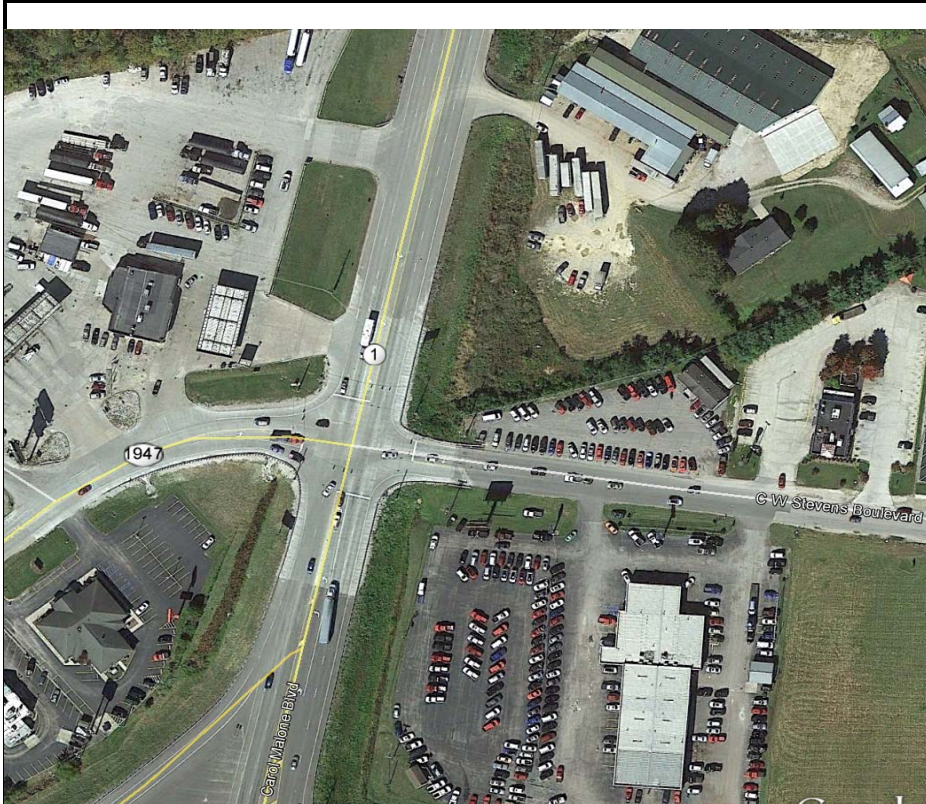


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 6-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: 2022 Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and KY 1947/ CW Stevens Boulevard

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2022 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #2 (2022)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

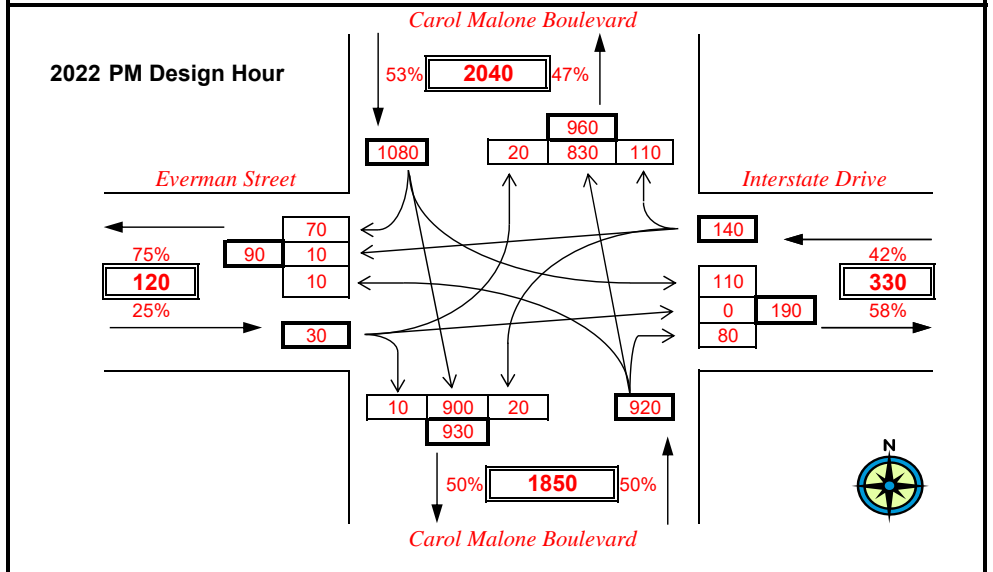
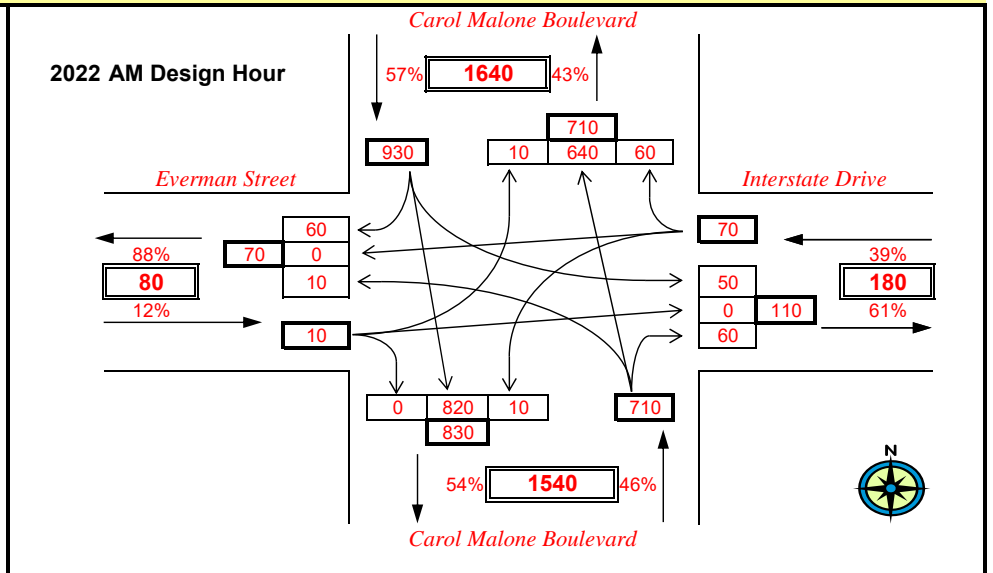


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: 2022 Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and Everman Street/Interstate Drive

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2022 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #3 (2022)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

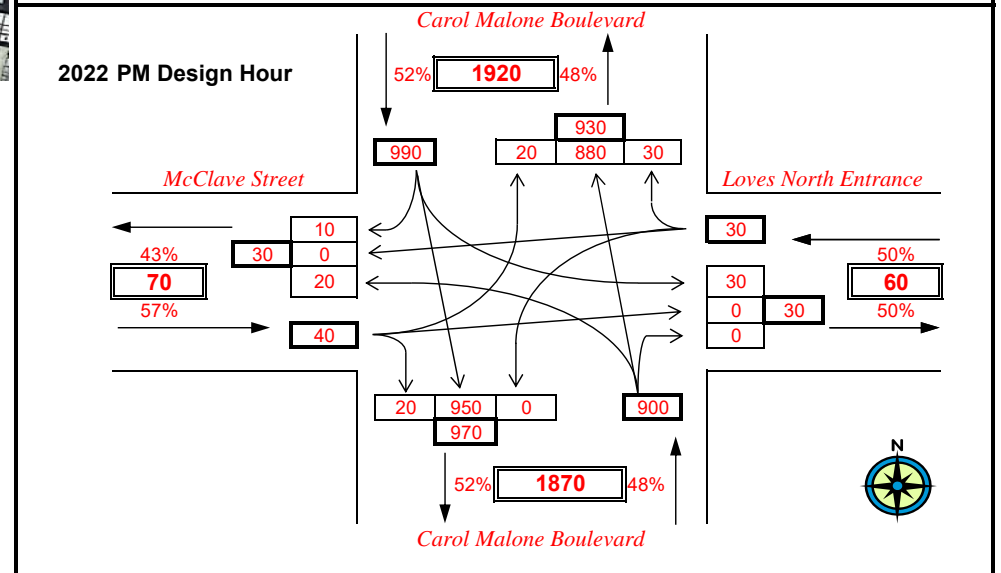
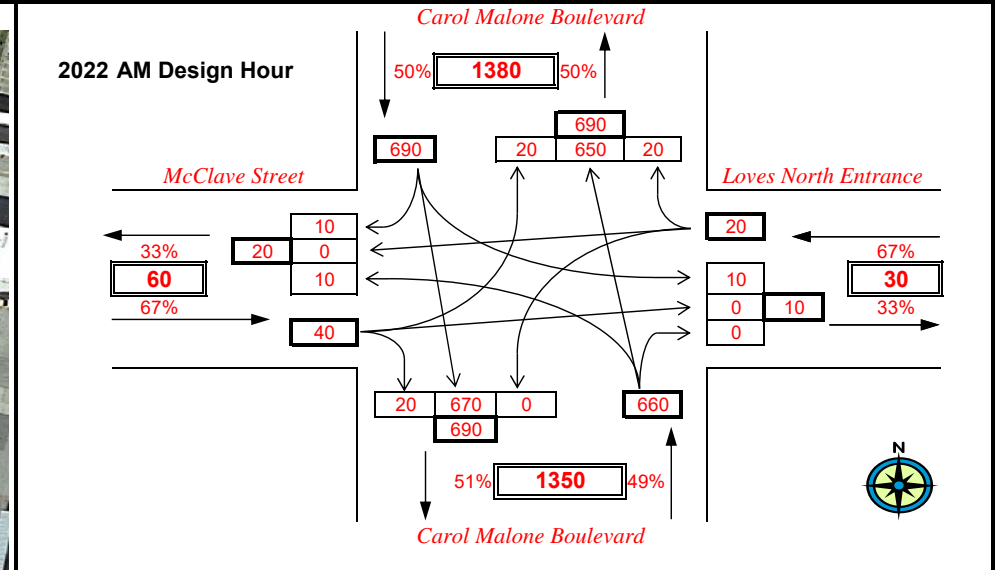


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: 2022 Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and McClave Street/Loves North Entrance

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2022 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #4 (2022)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

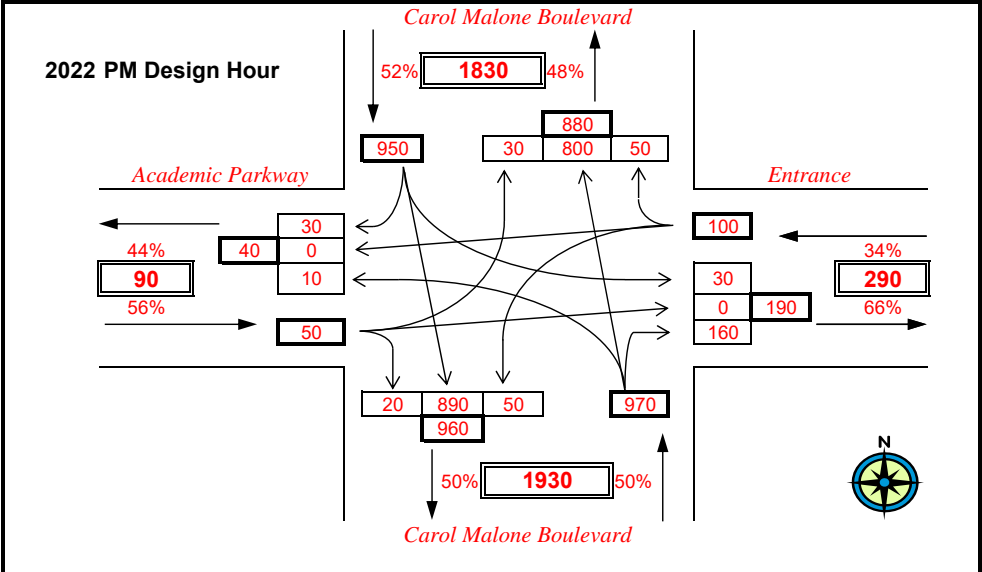
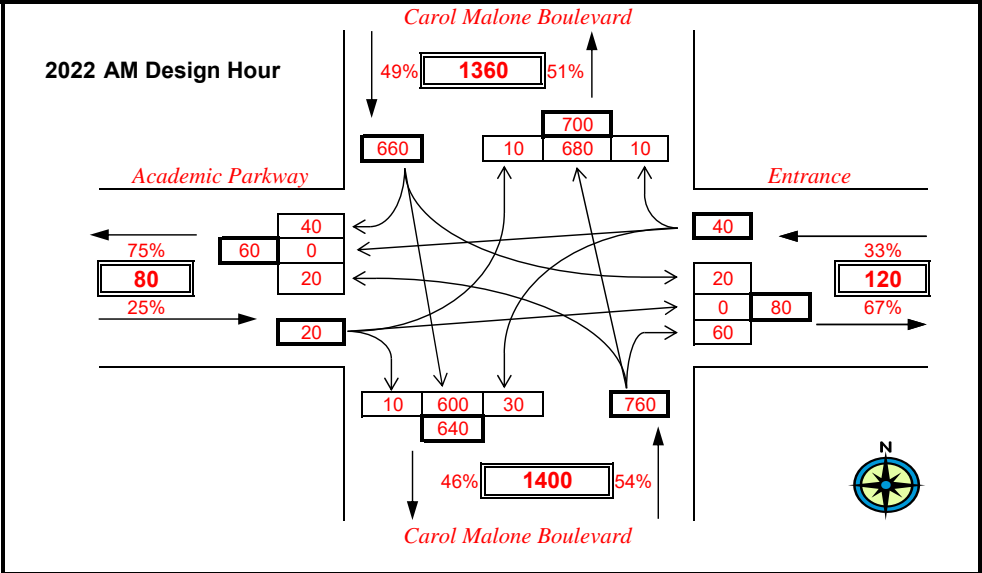


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2022** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and Academic Parkway

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2022 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #5 (2022)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

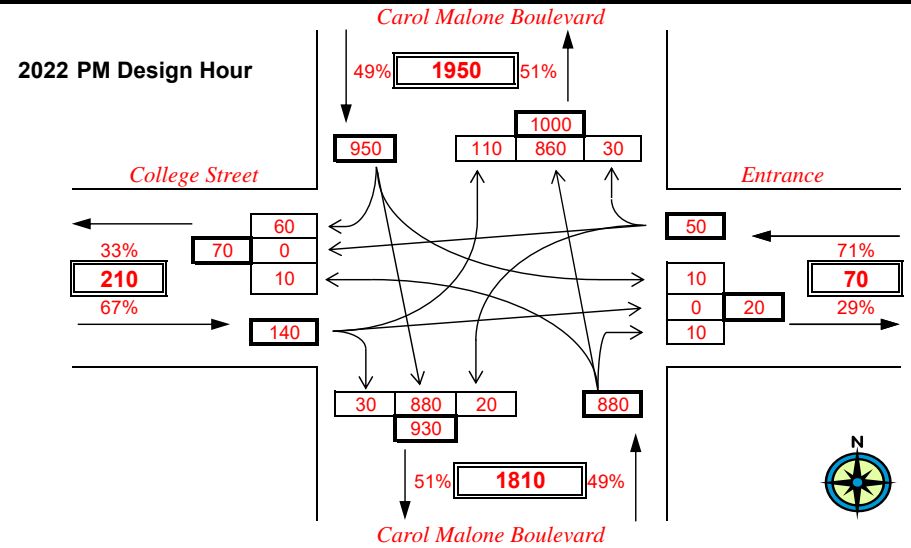
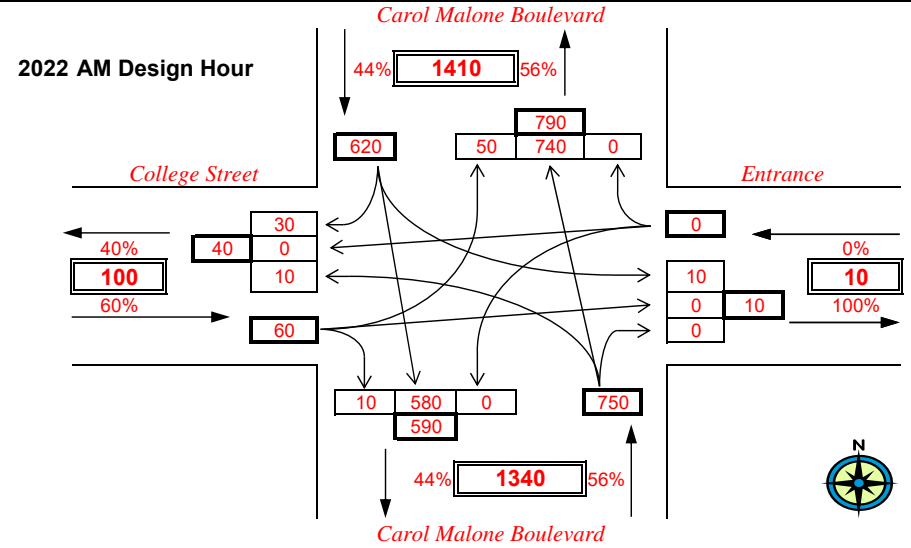


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2022** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and College Street

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2022 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #6 (2022)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

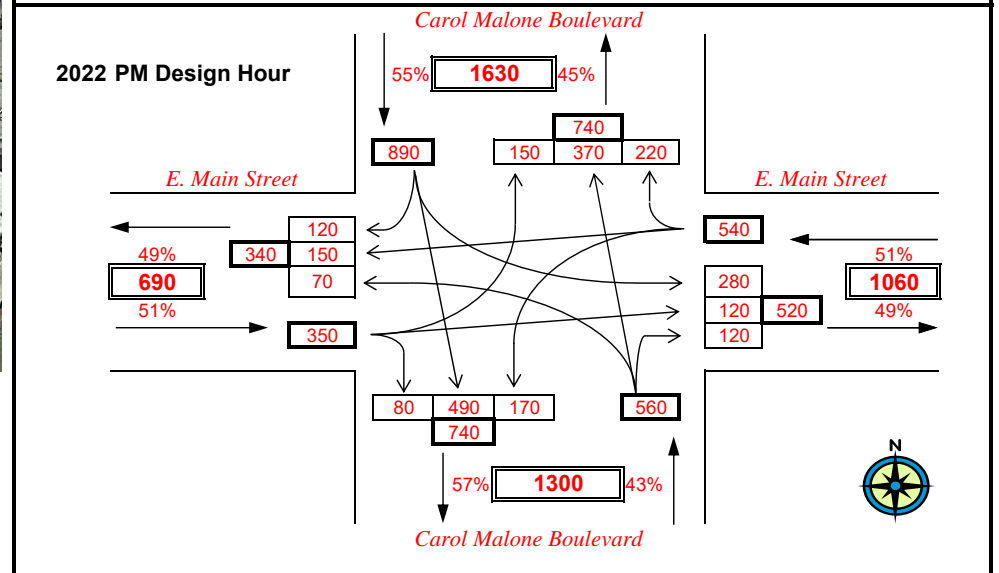
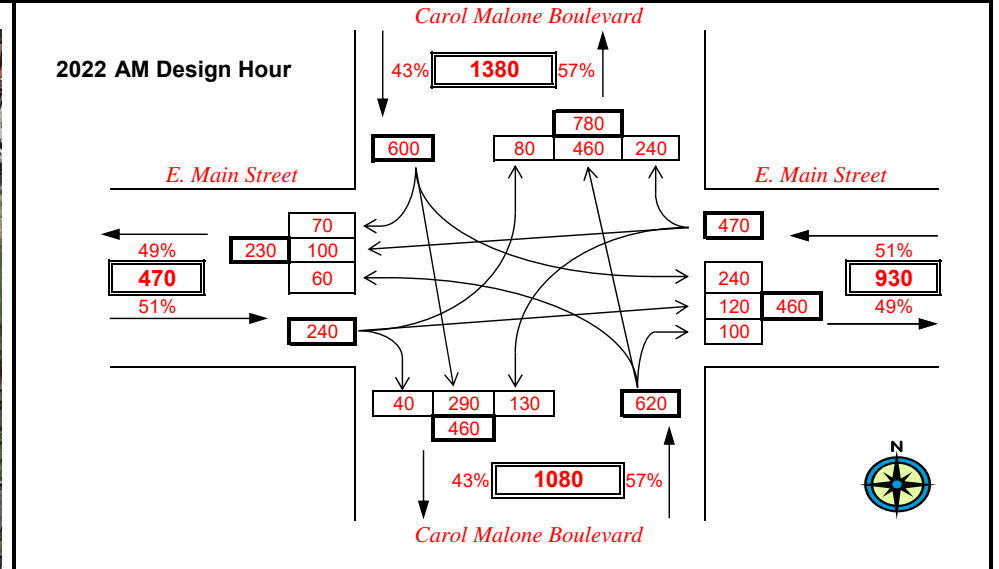
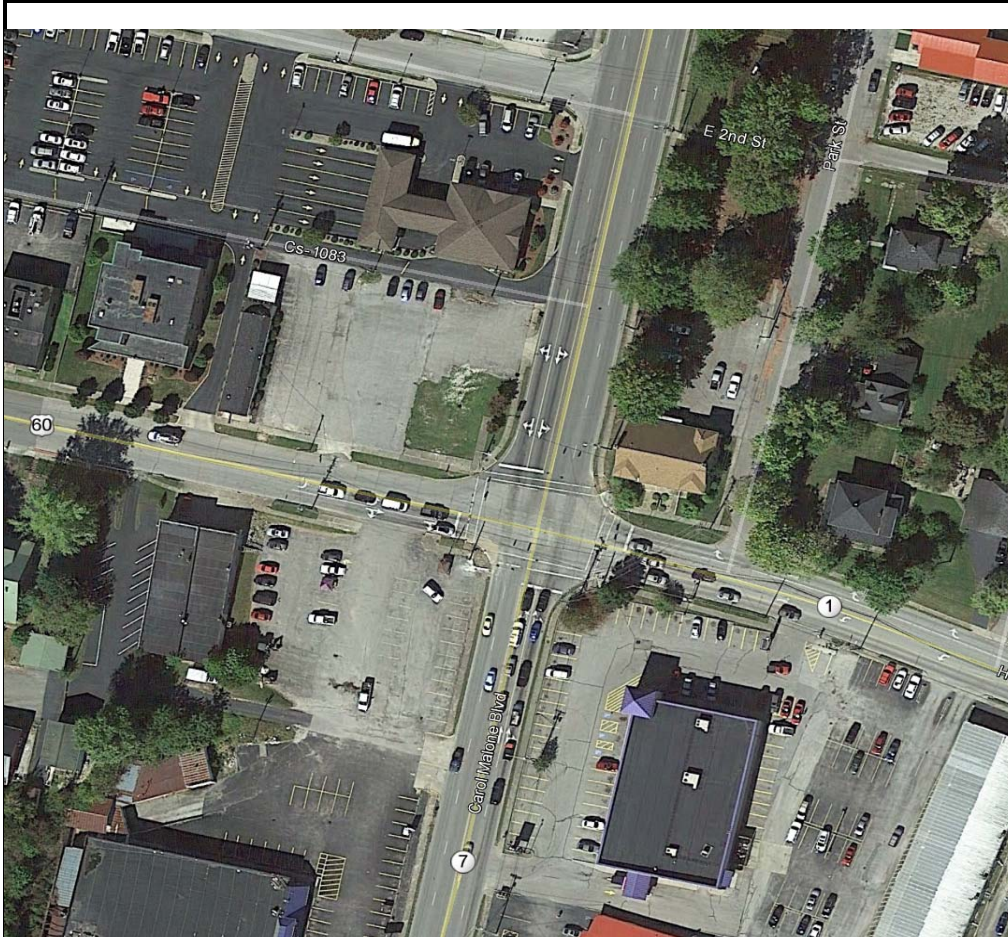


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: 2022 Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1/KY7) and E. Main Street (US 60)

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2022 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #7 (2022)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**



Appendix C

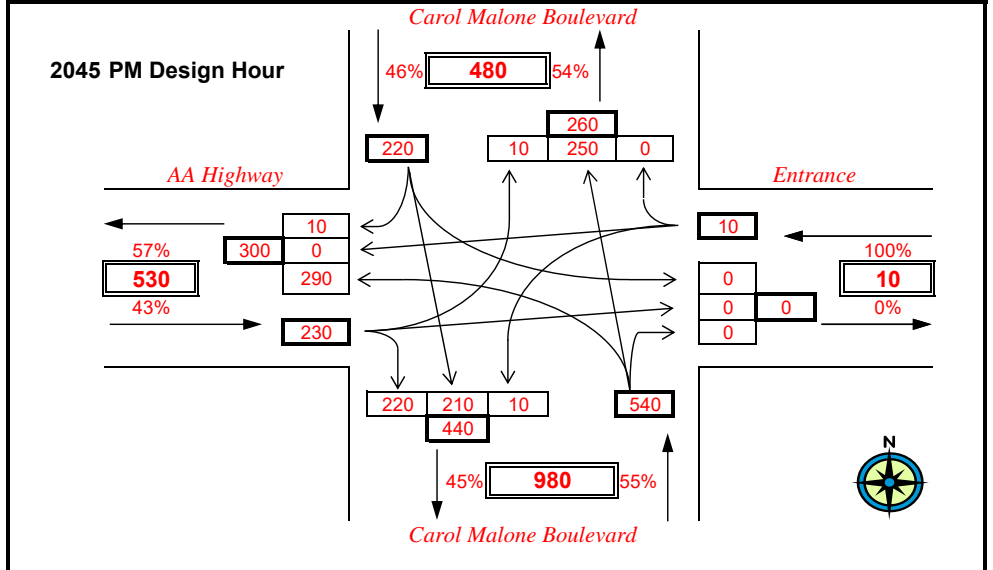
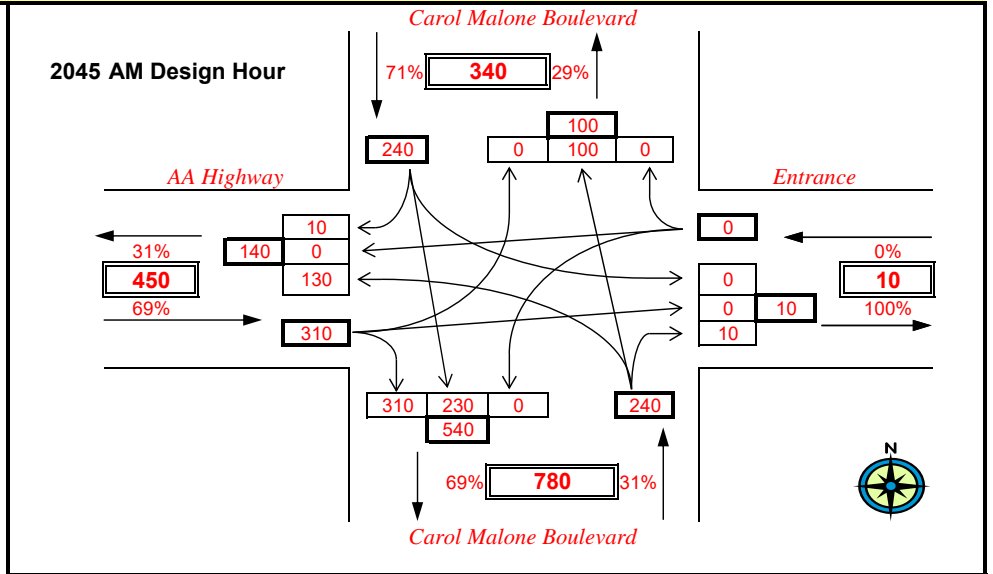
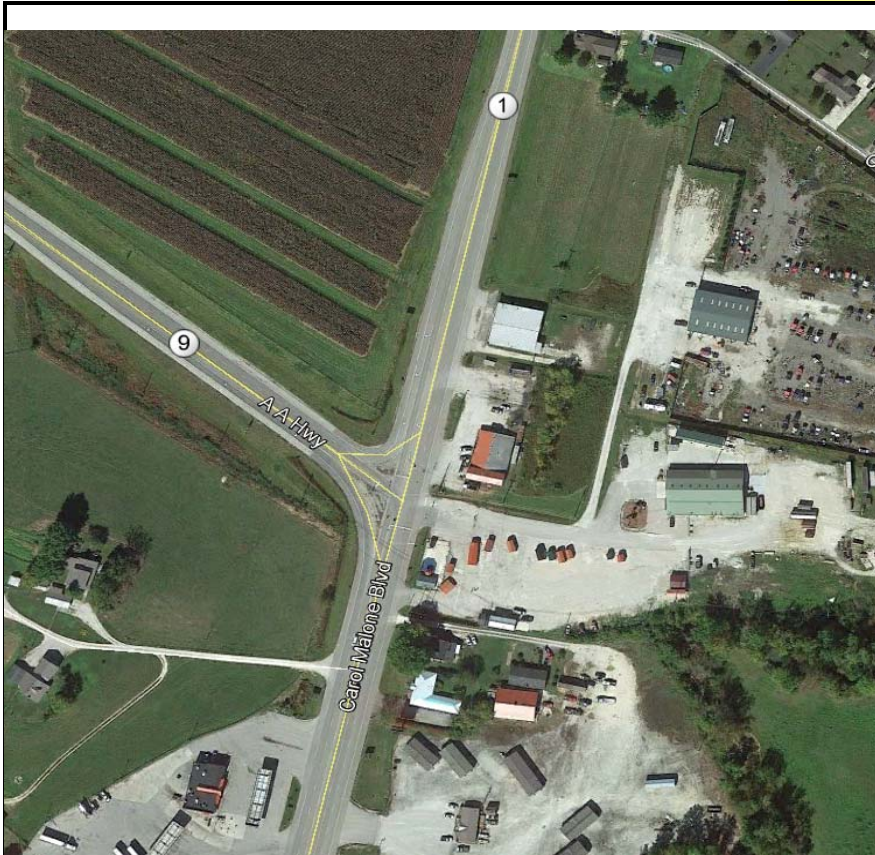
No-Build 2045 Turning Movement Diagrams

PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and AA Highway (KY 9)

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #1 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

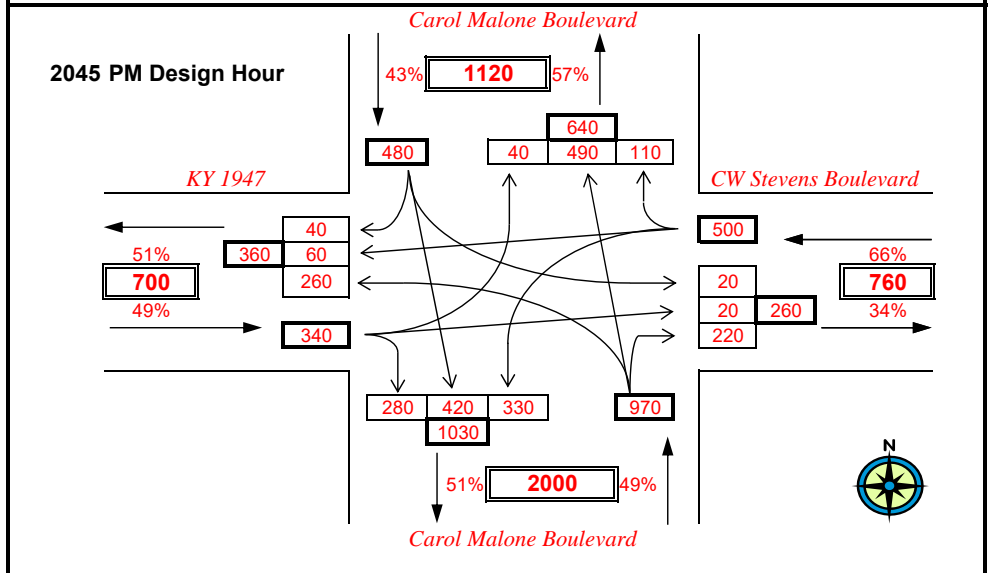
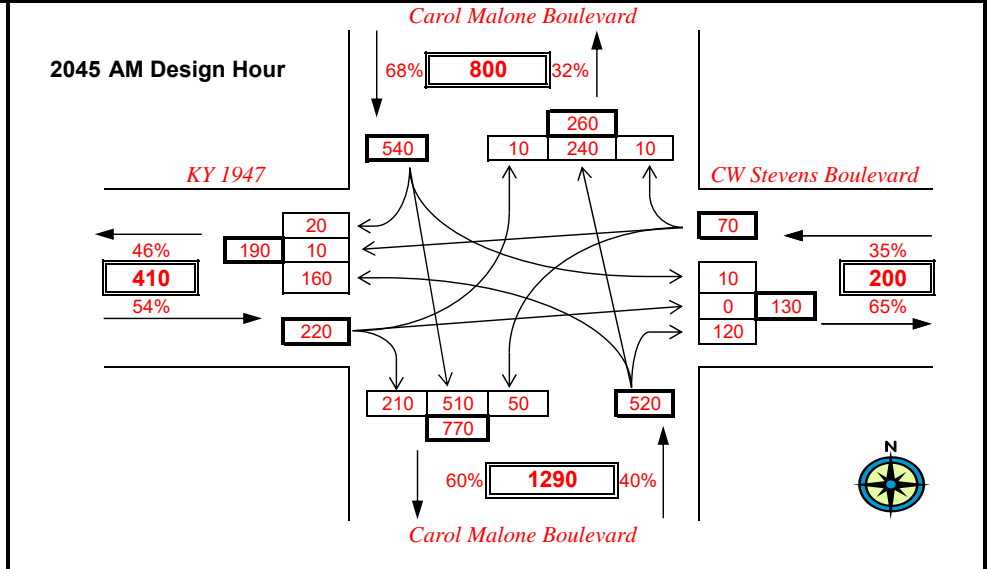
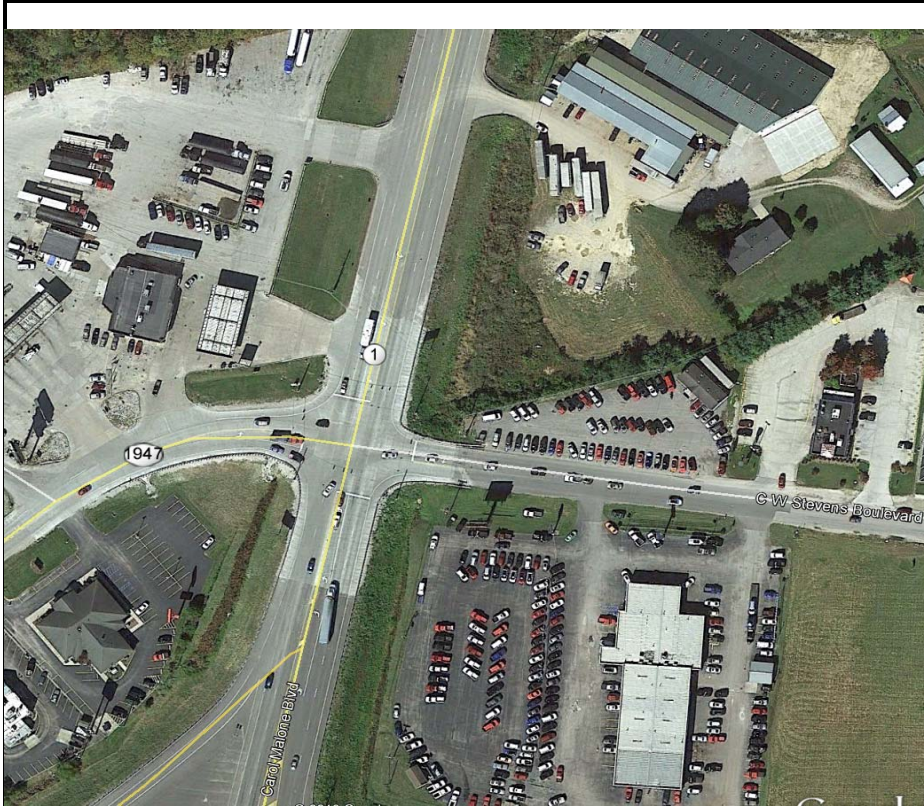


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and KY 1947/ CW Stevens Boulevard

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #2 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

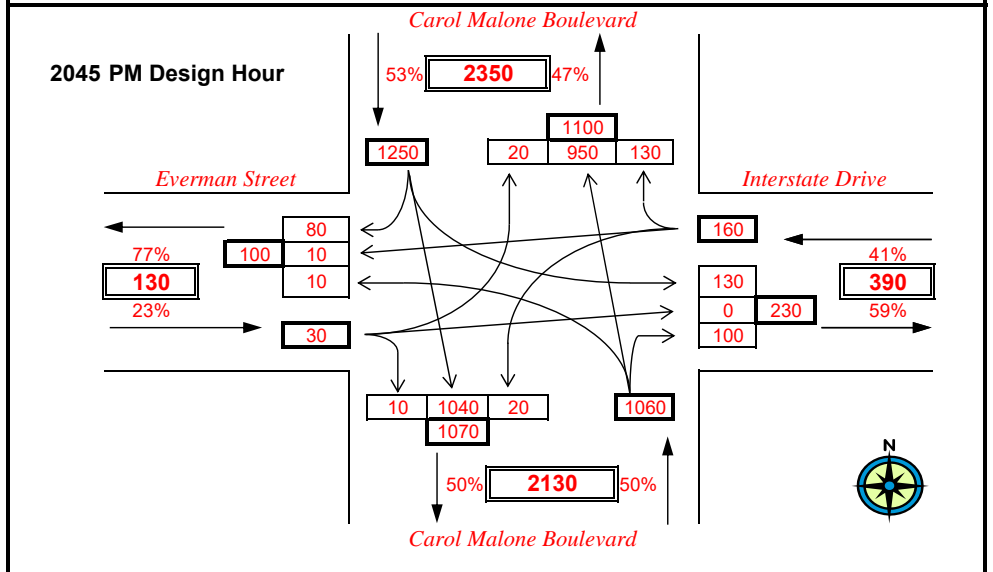
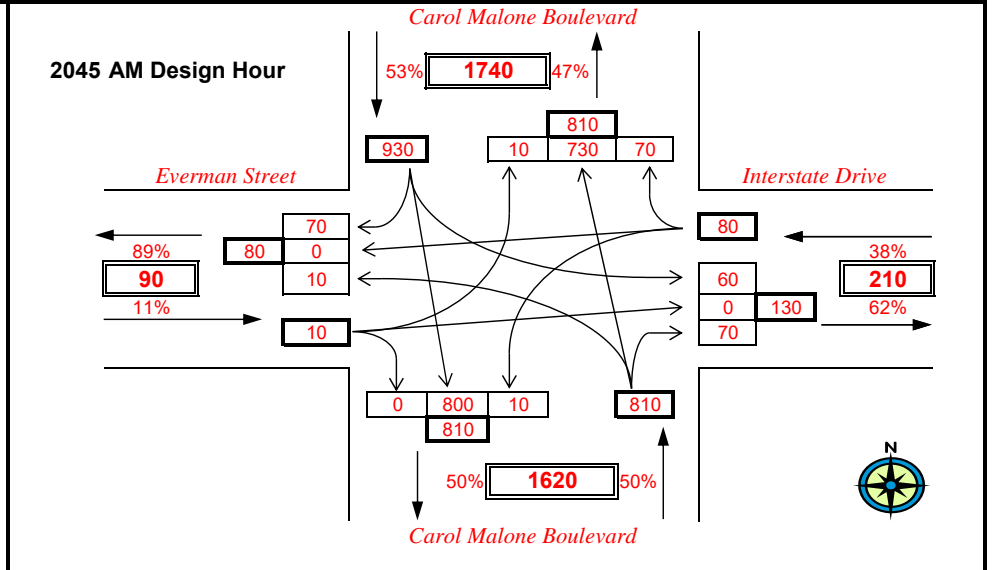
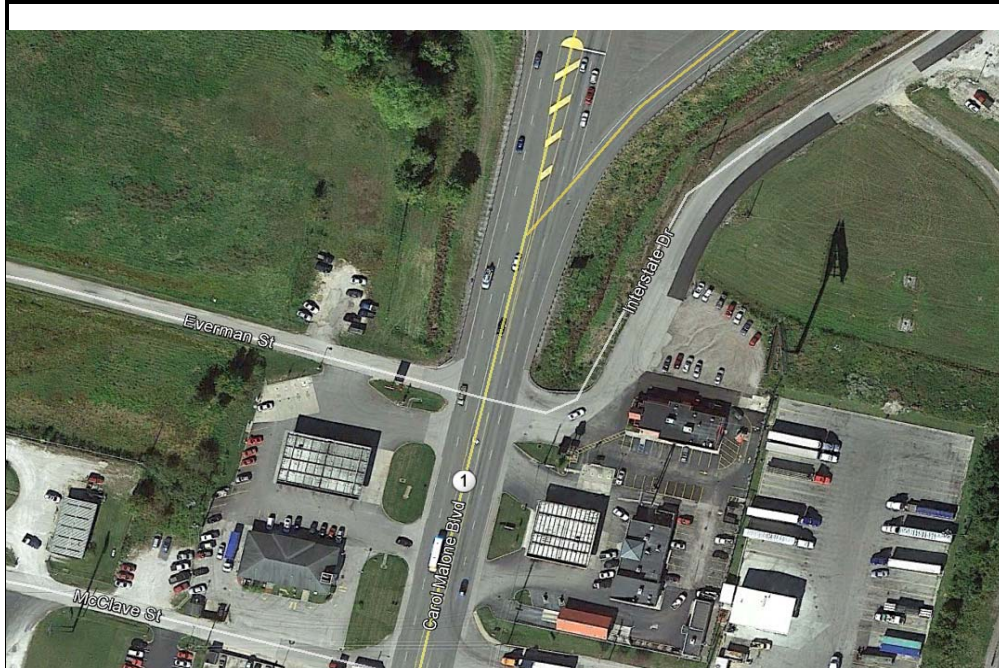


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and Everman Street/Interstate Drive

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #3 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

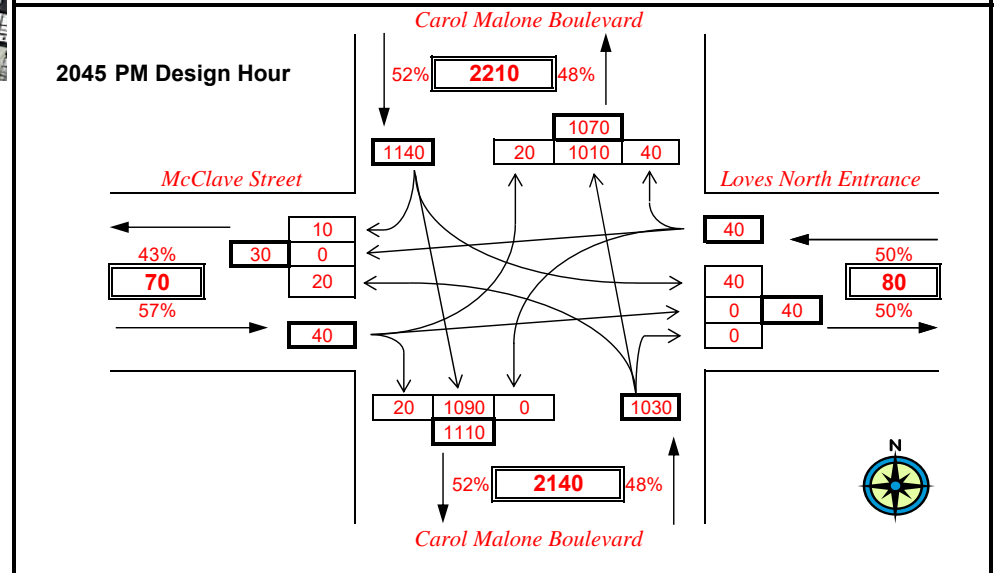
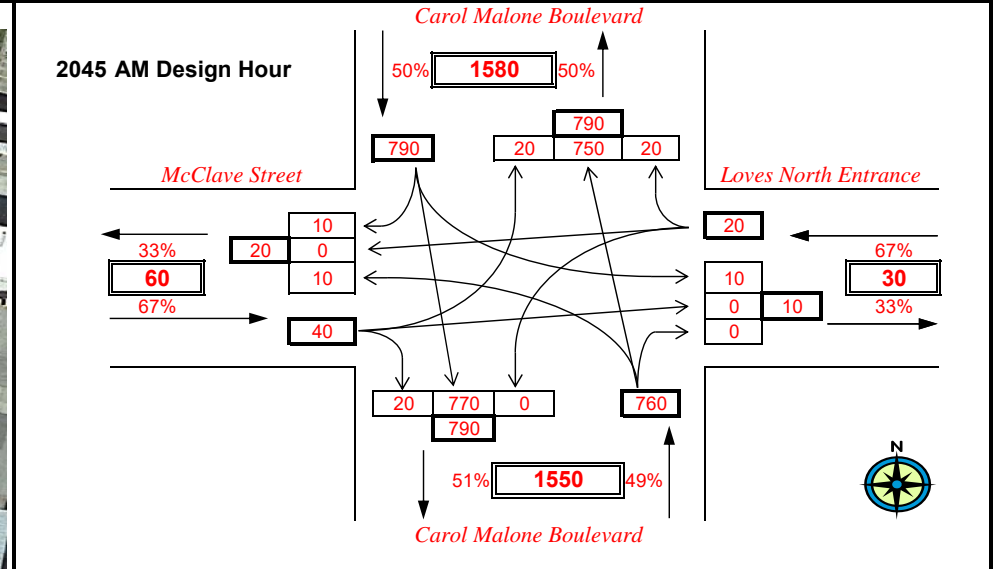


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 6-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: 2045 Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and McClave Street/Loves North Entrance

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #4 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

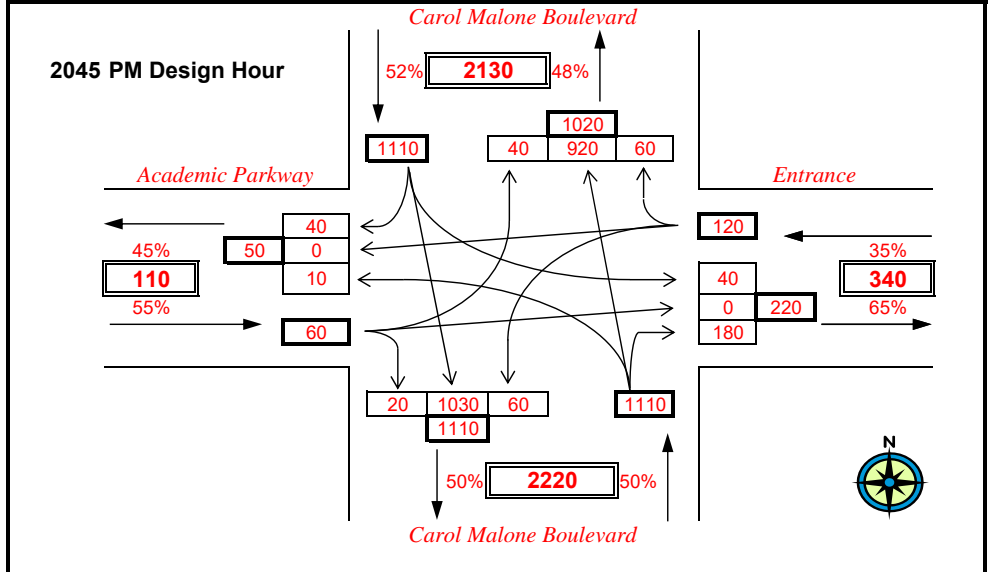
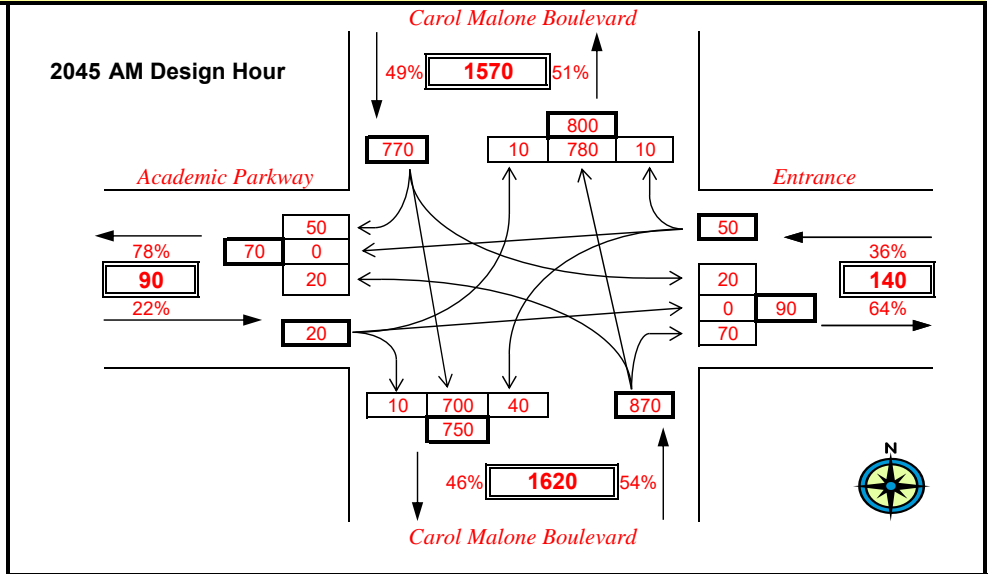


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and Academic Parkway

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #5 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

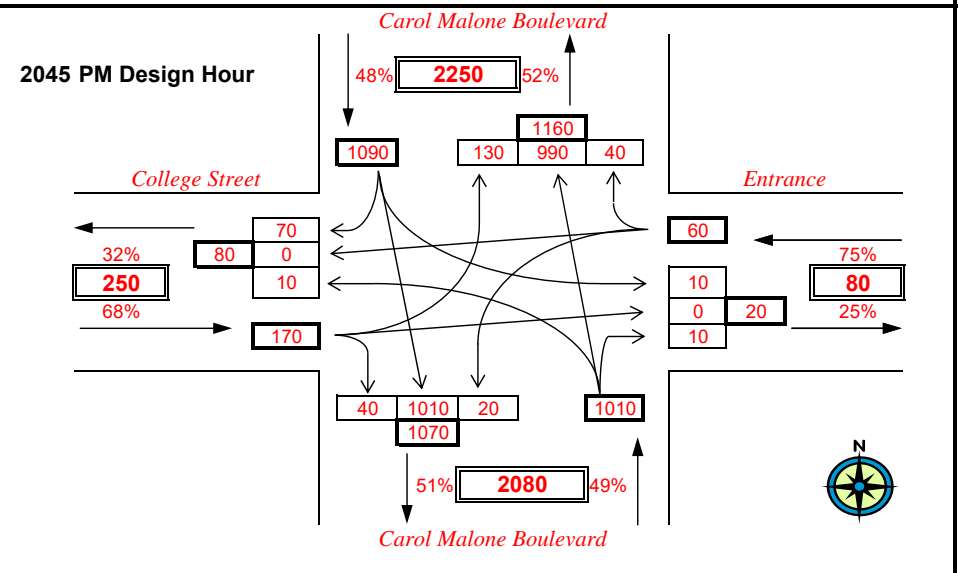
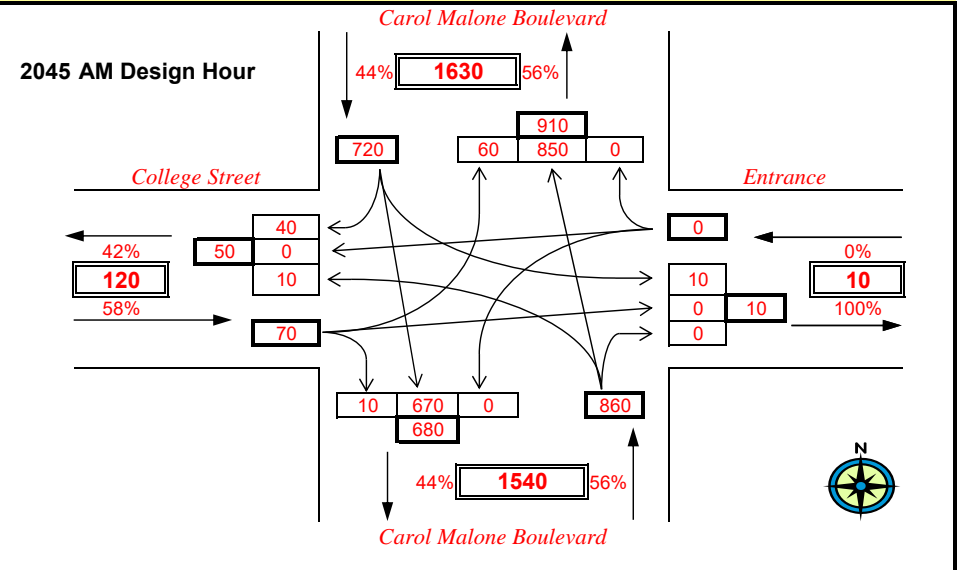


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and College Street

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #6 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

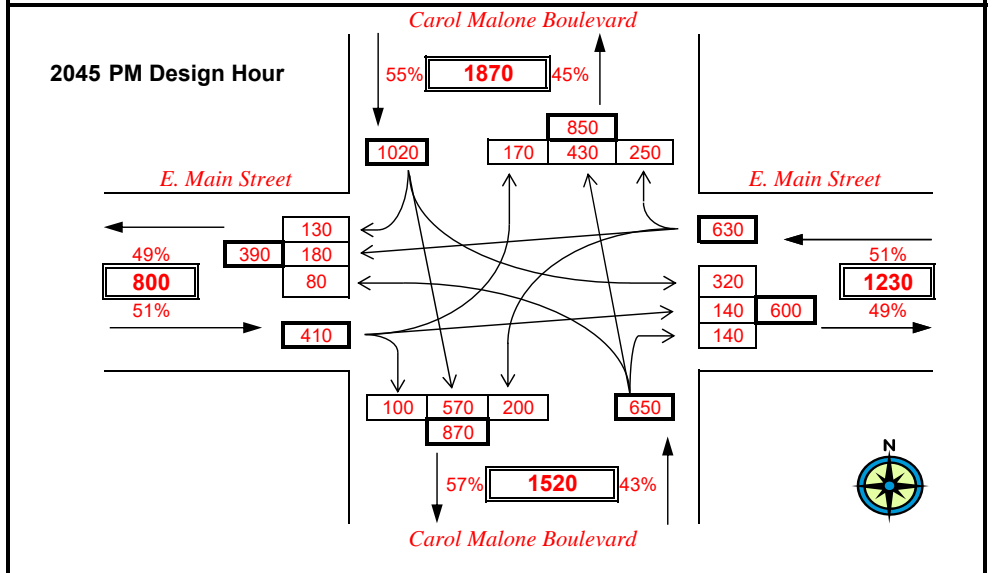
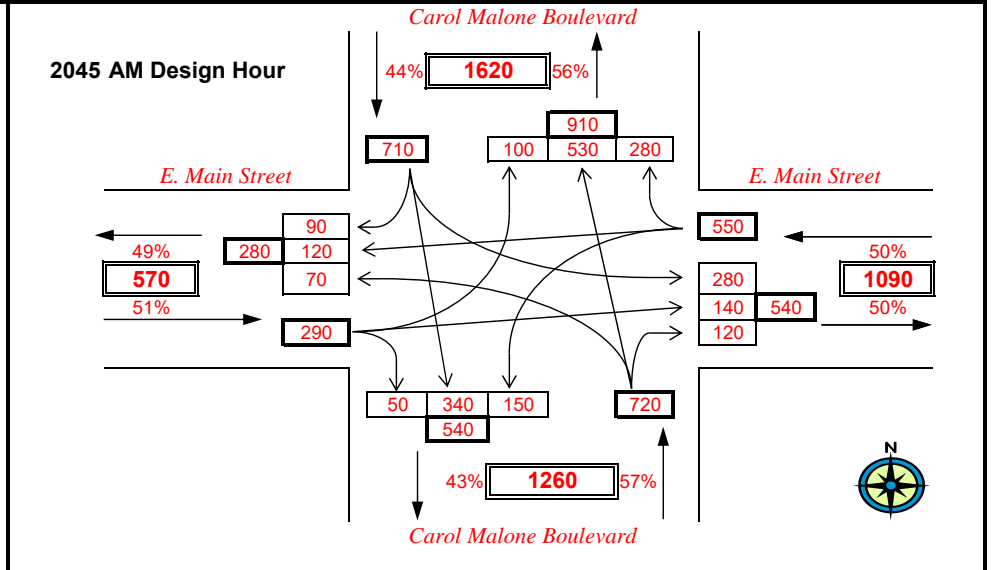
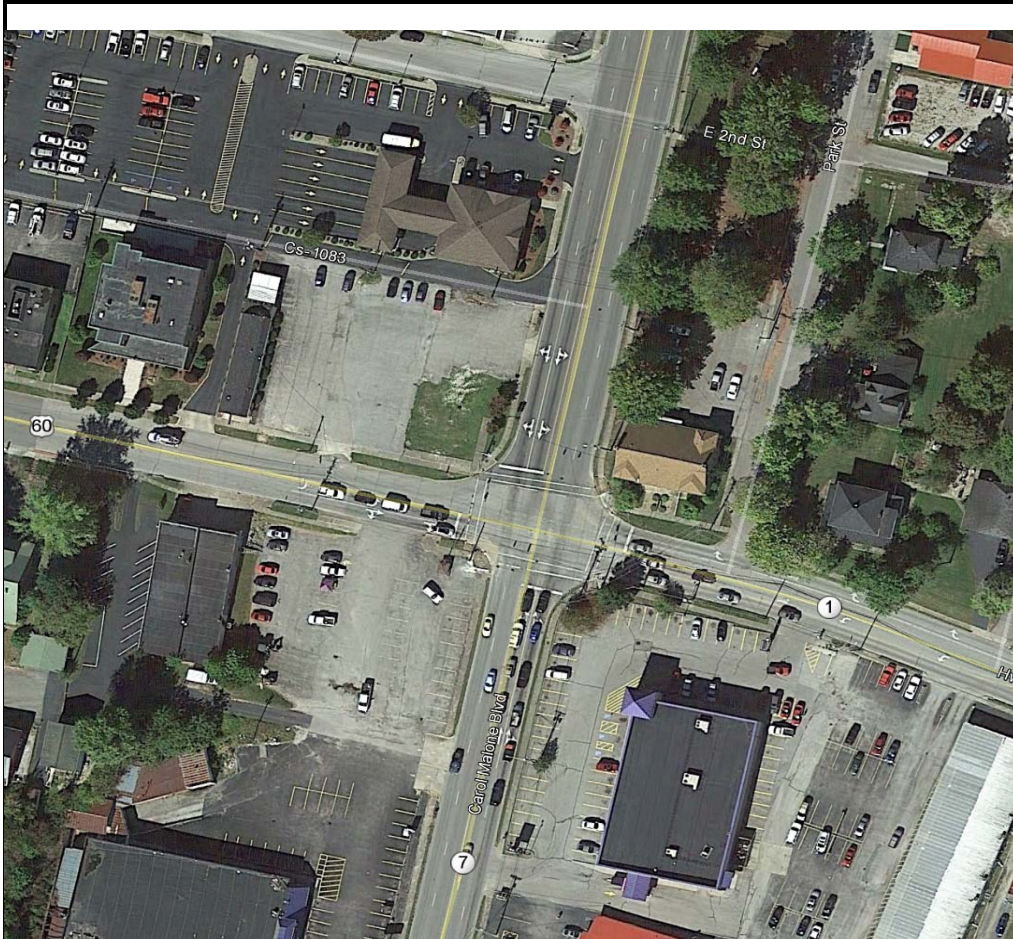


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1/KY7) and E. Main Street (US 60)

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #7 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**



Appendix D

Build 2045 Turning Movement Diagrams

Appendix D

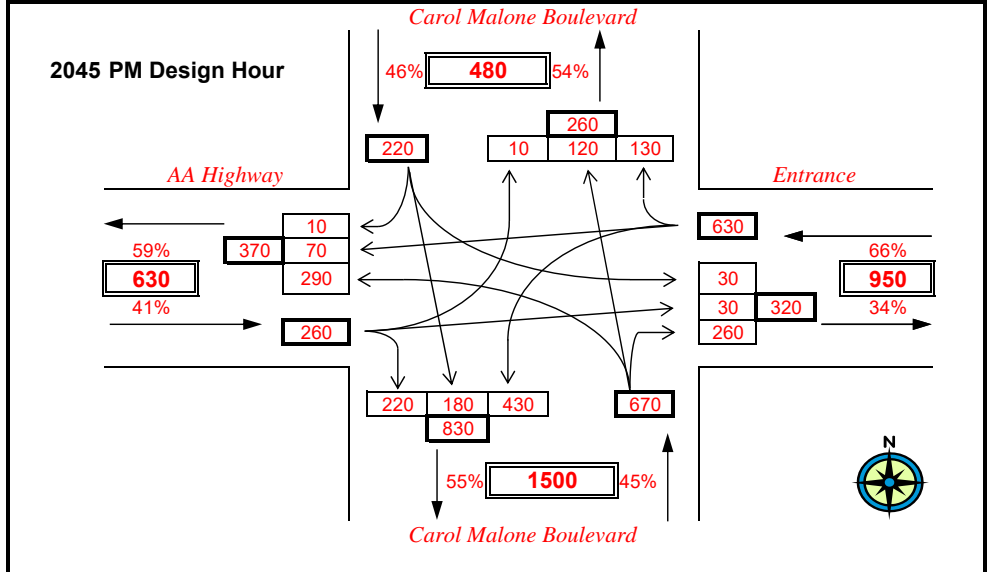
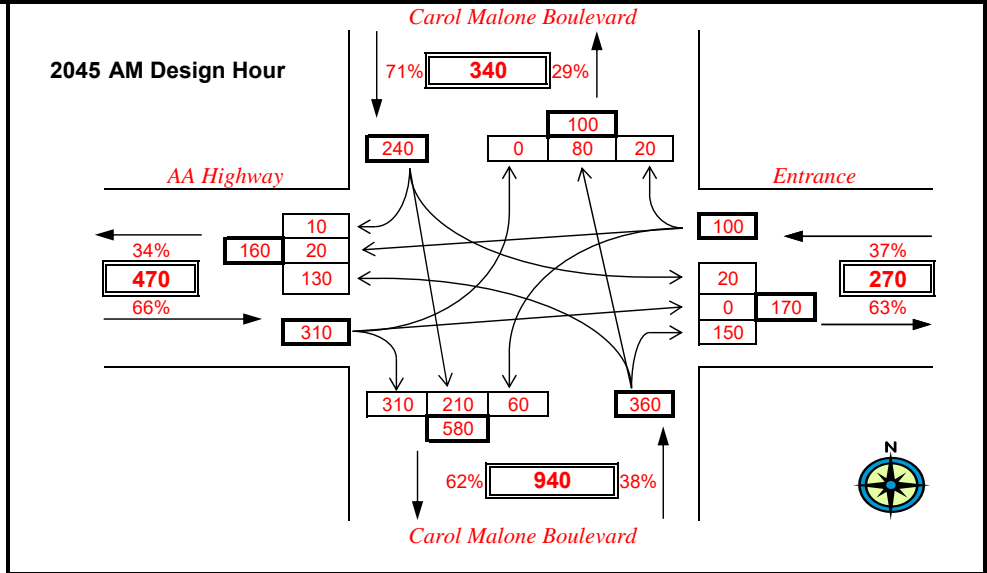
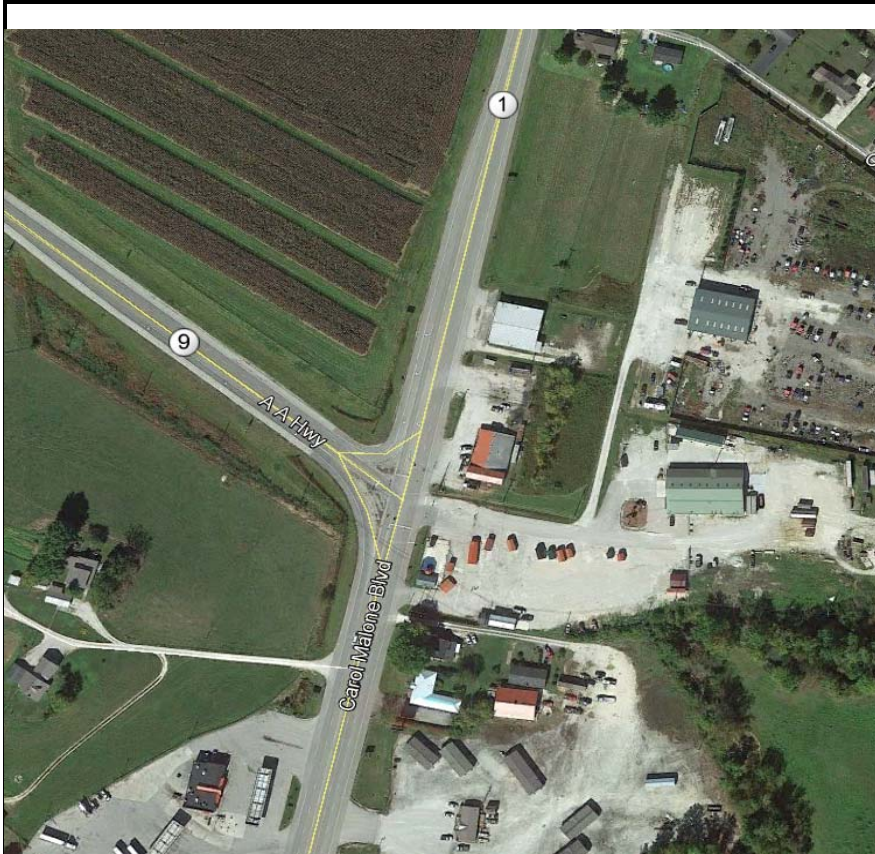
Build 2045 Turning Movement Diagrams – Concept 1

PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and AA Highway (KY 9)

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #1 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

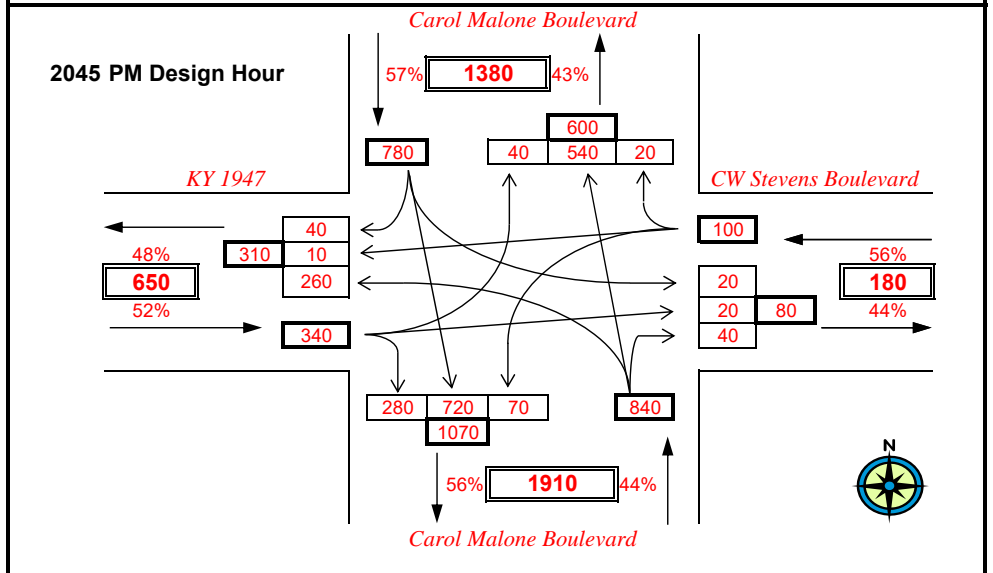
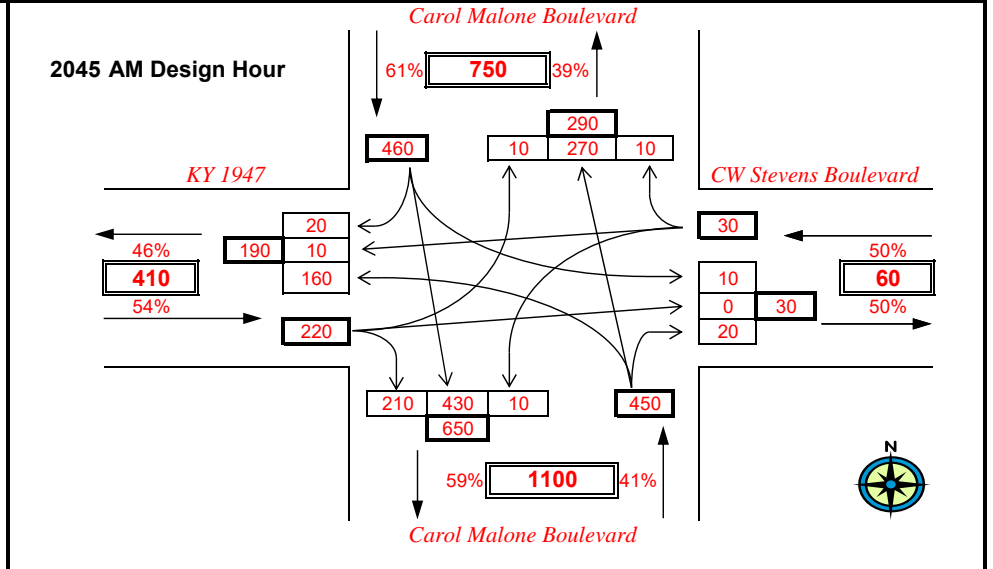
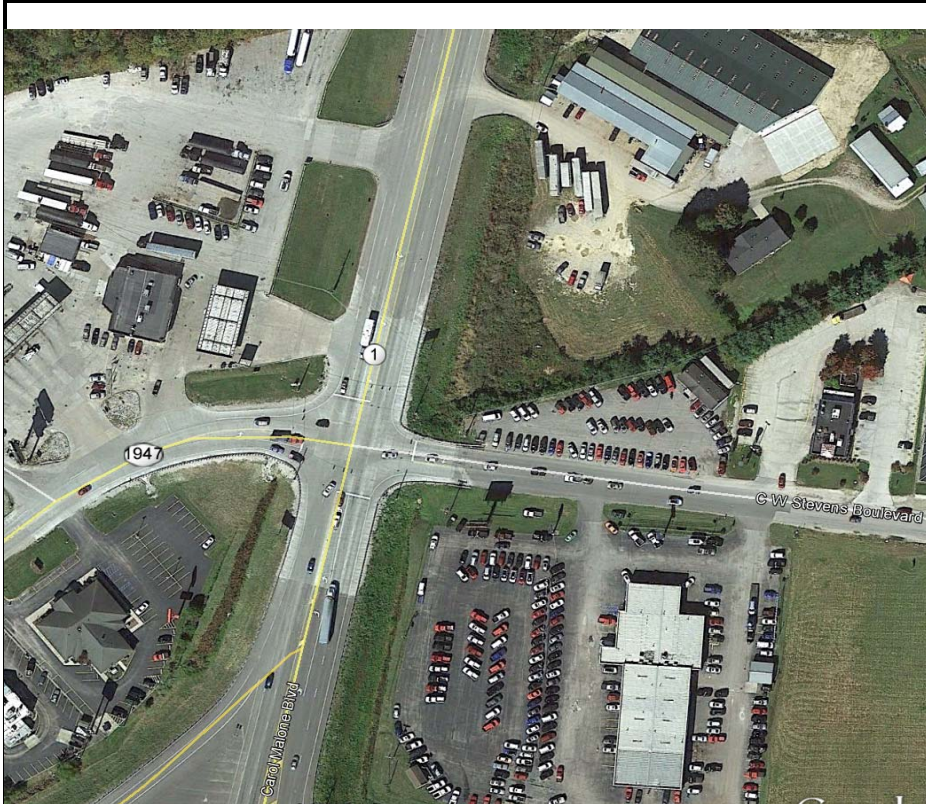


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and KY 1947/ CW Stevens Boulevard

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #2 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

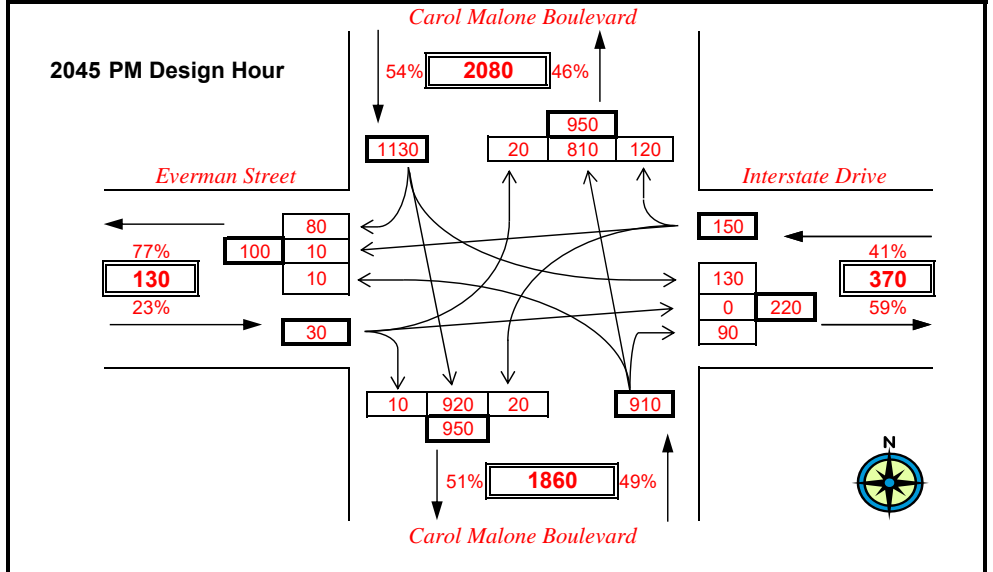
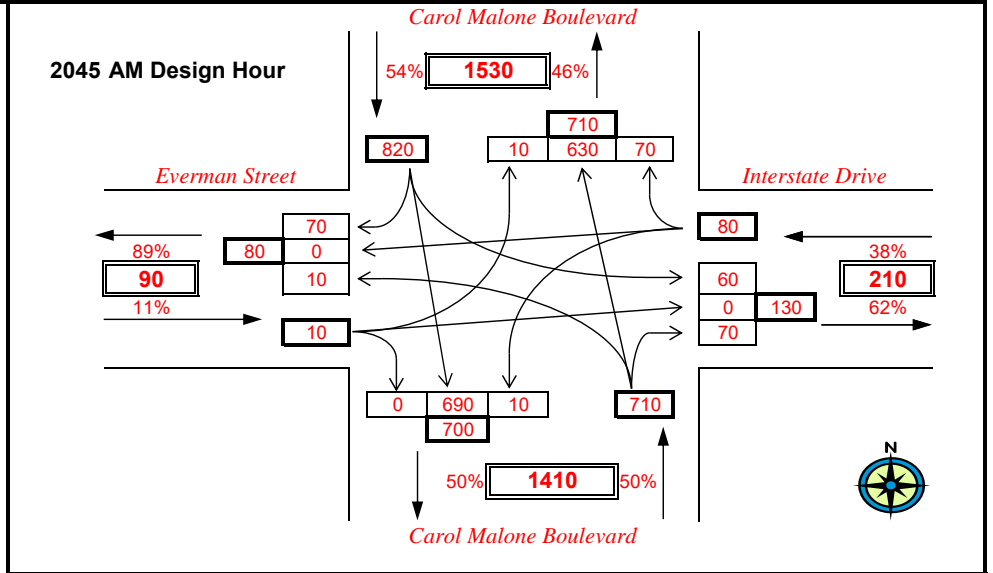
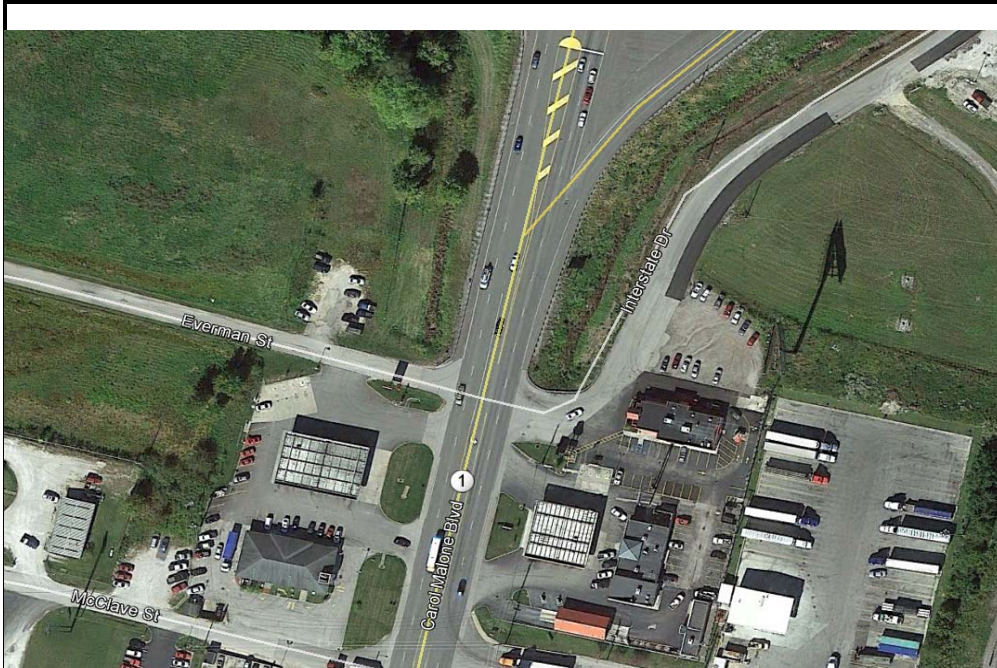


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and Everman Street/Interstate Drive

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #3 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

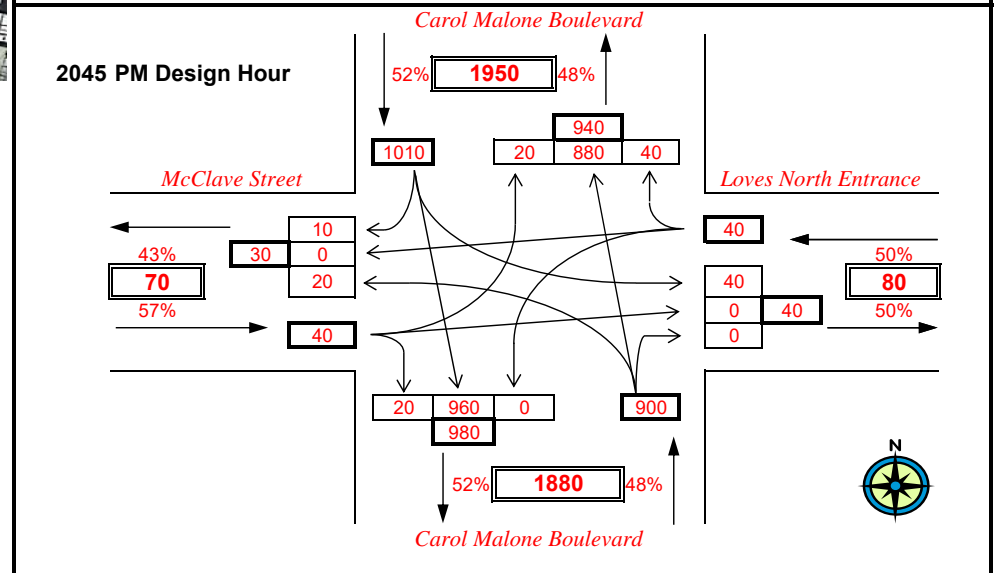
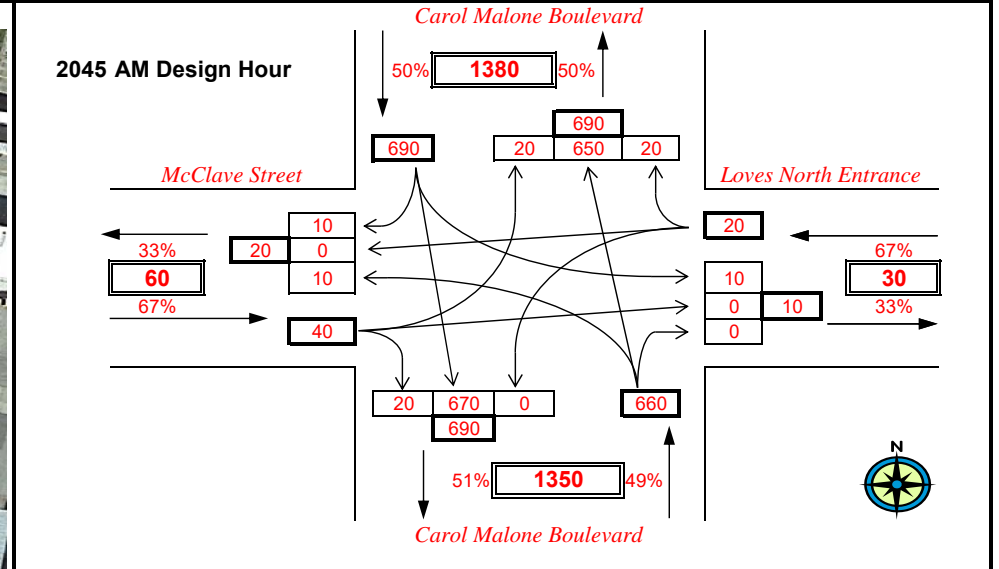


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: 2045 Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and McClave Street/Loves North Entrance

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #4 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

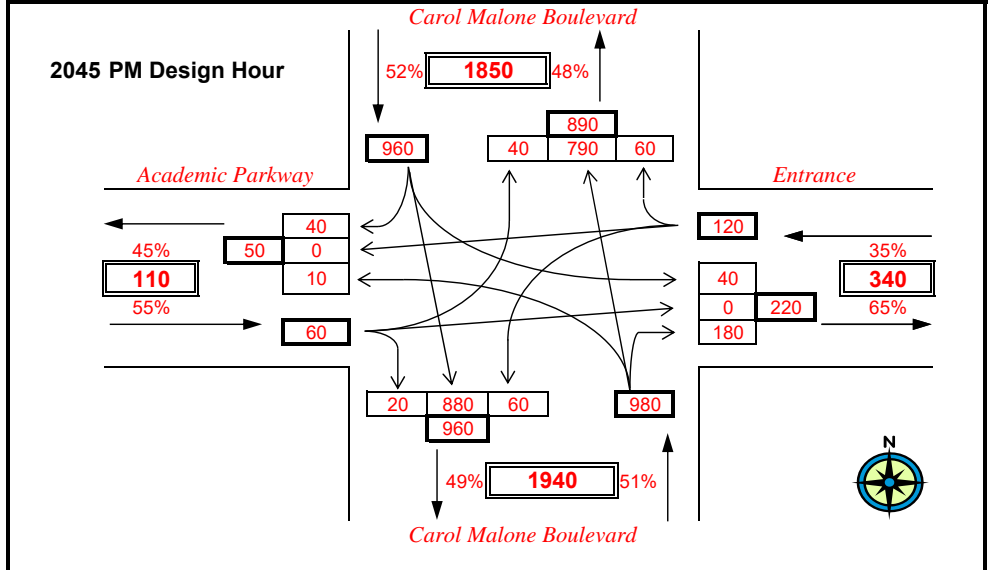
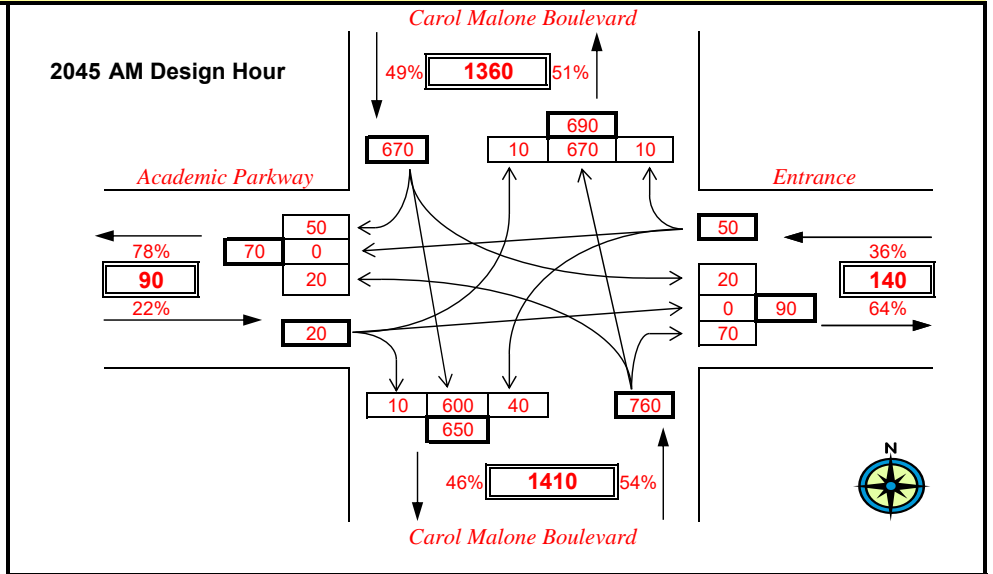


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and Academic Parkway

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #5 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

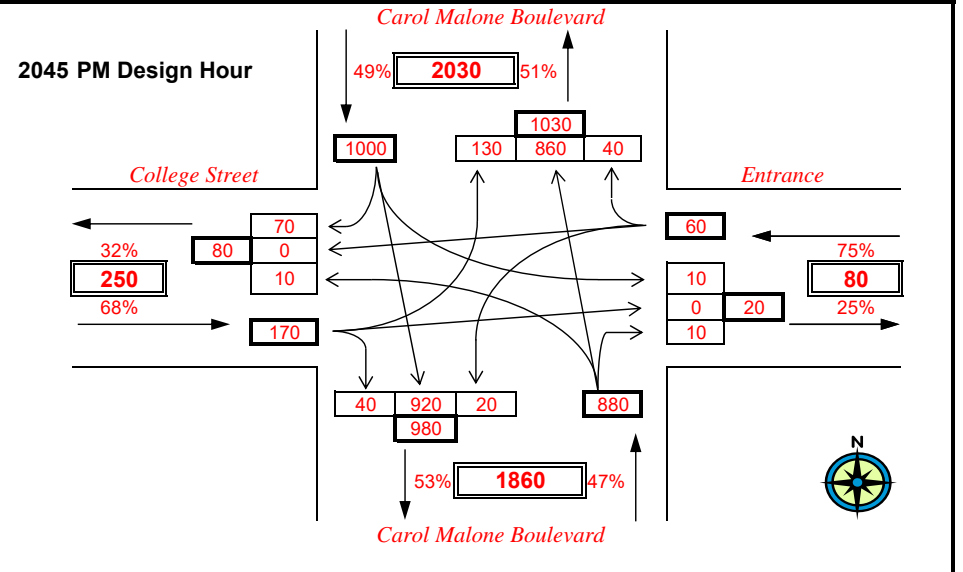
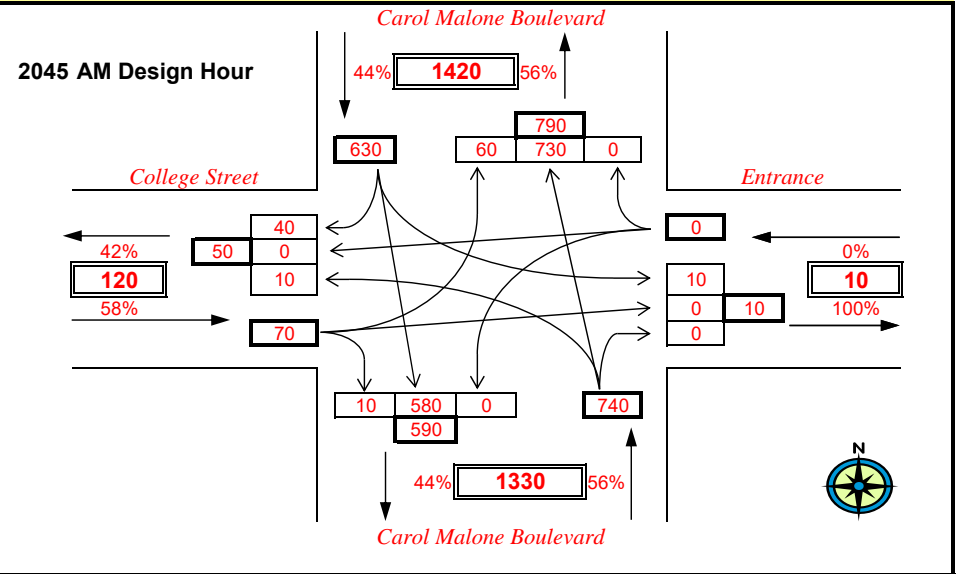
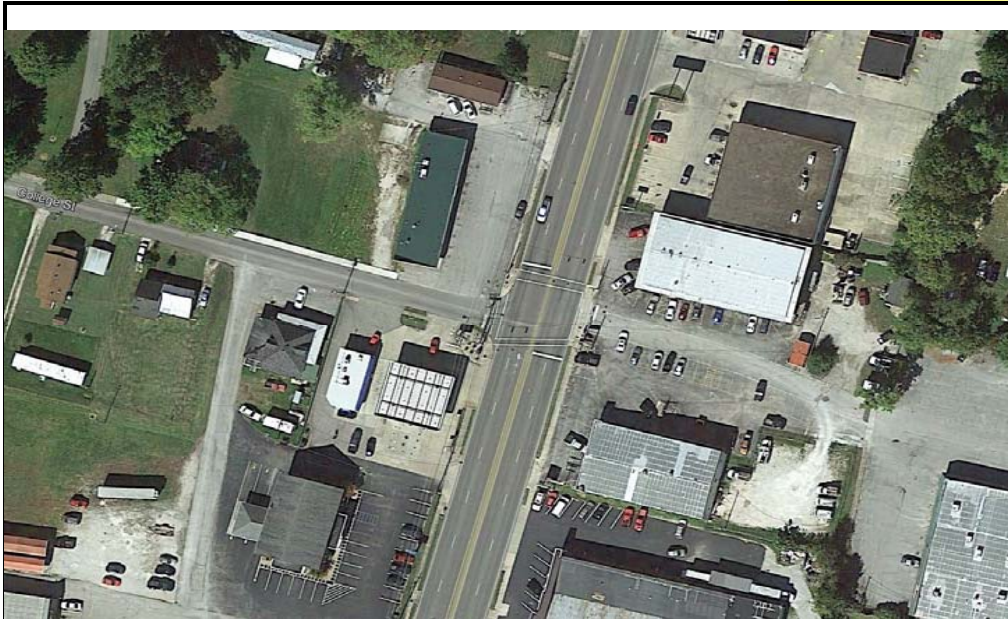


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and College Street

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #6 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

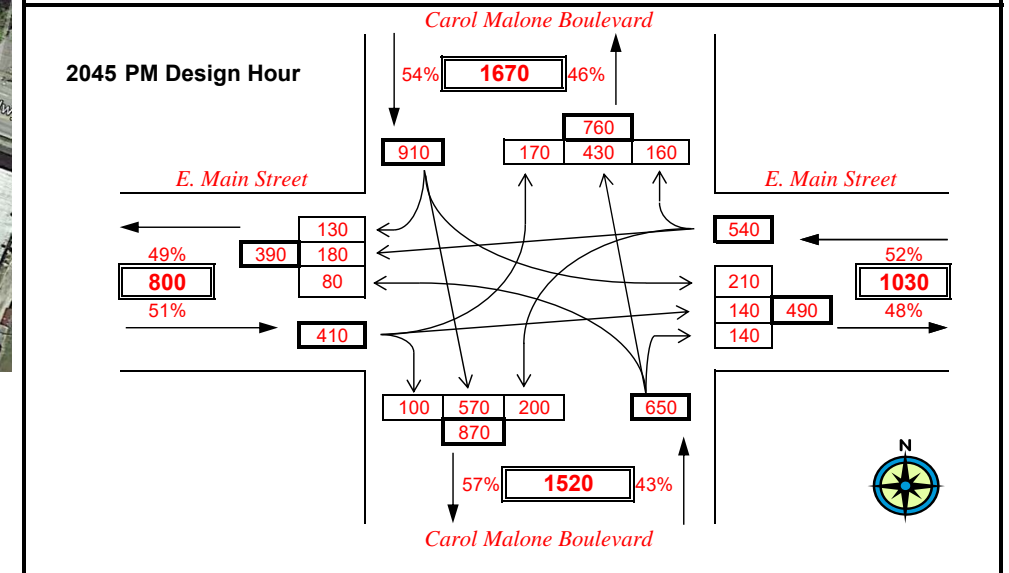
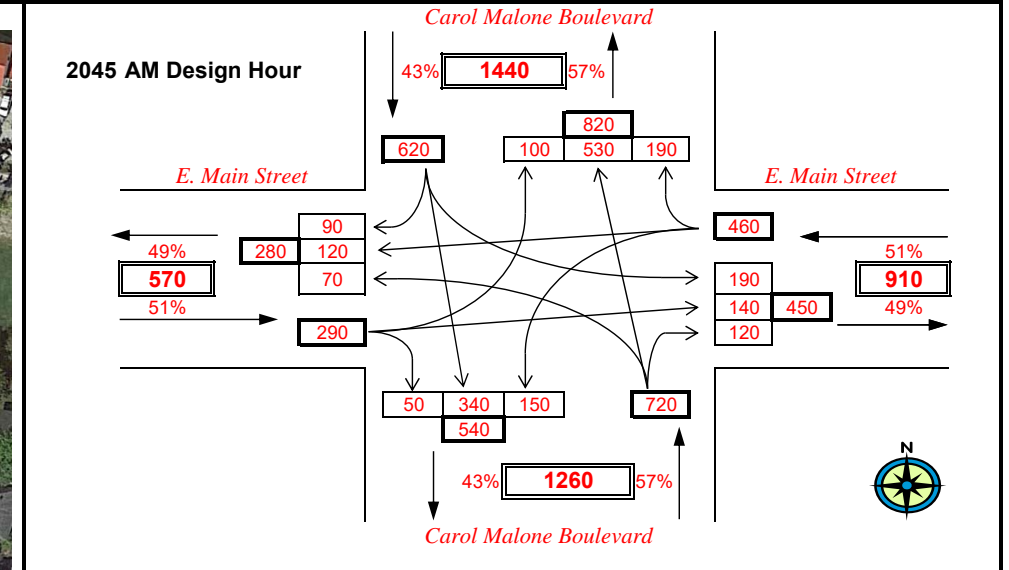
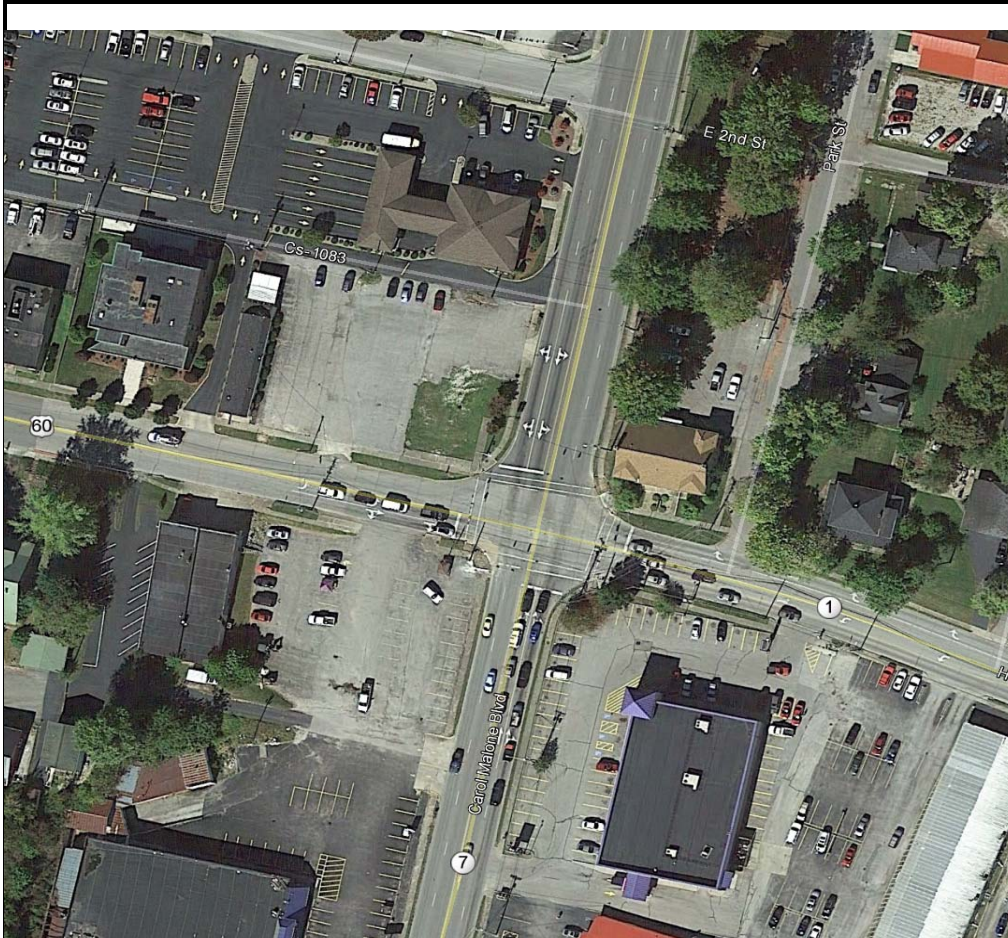


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1/KY7) and E. Main Street (US 60)

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #7 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**



Appendix D

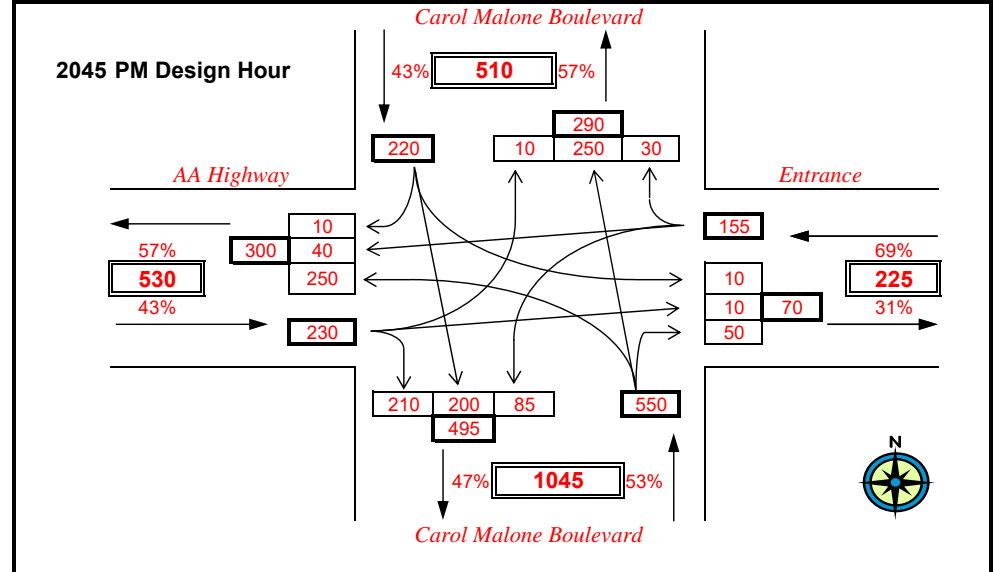
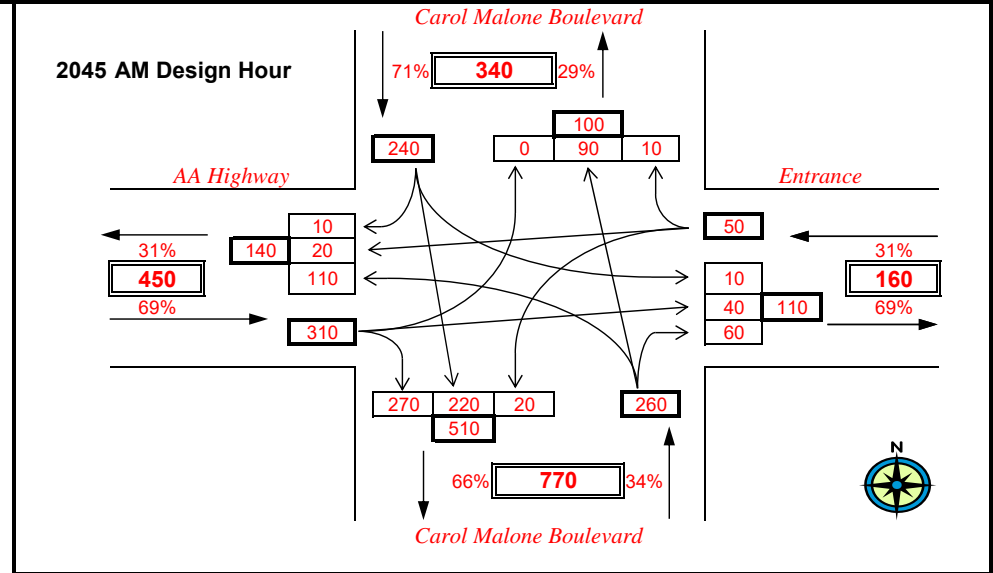
Build 2045 Turning Movement Diagrams – Concepts 2,5&6

PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and AA Highway (KY 9)

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #1 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

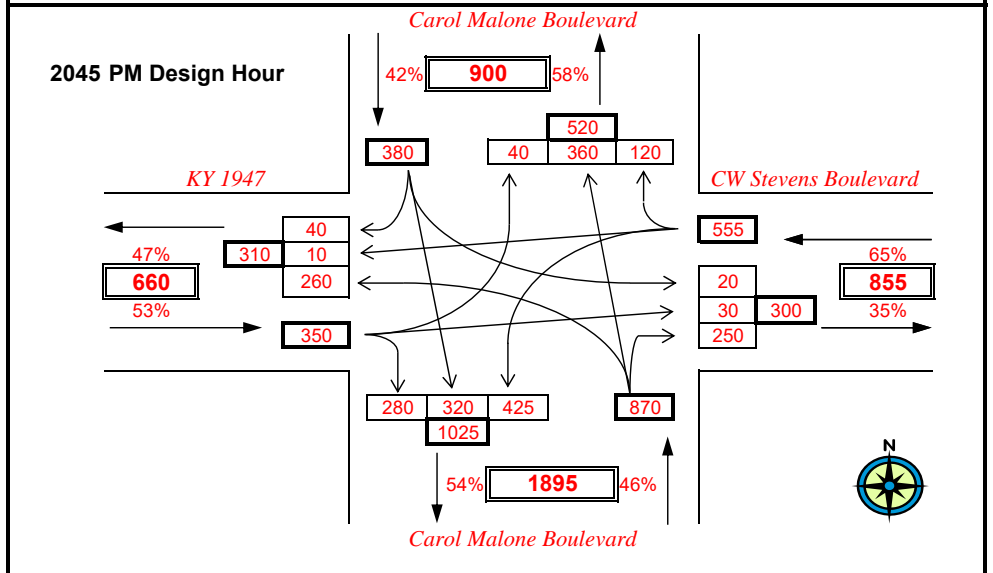
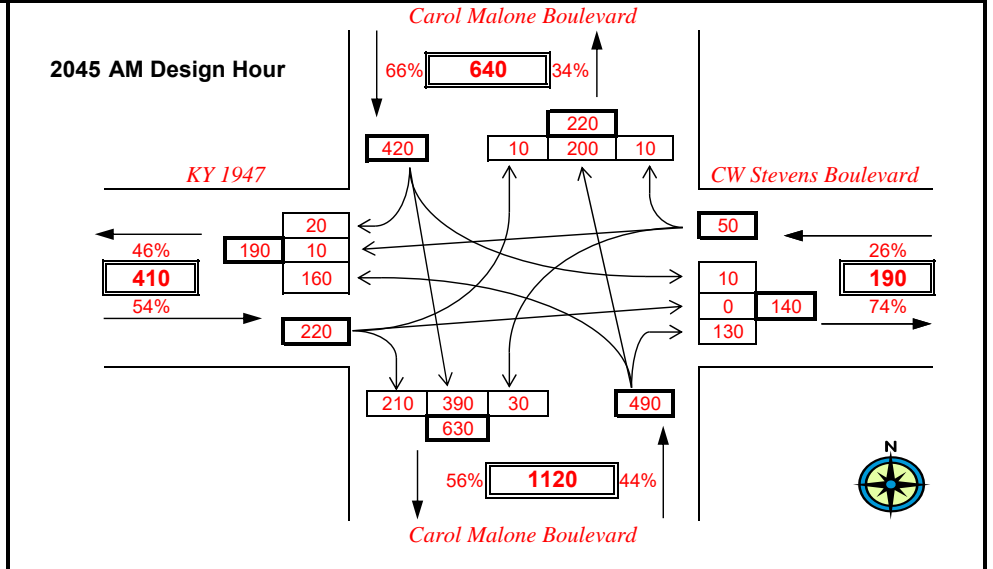
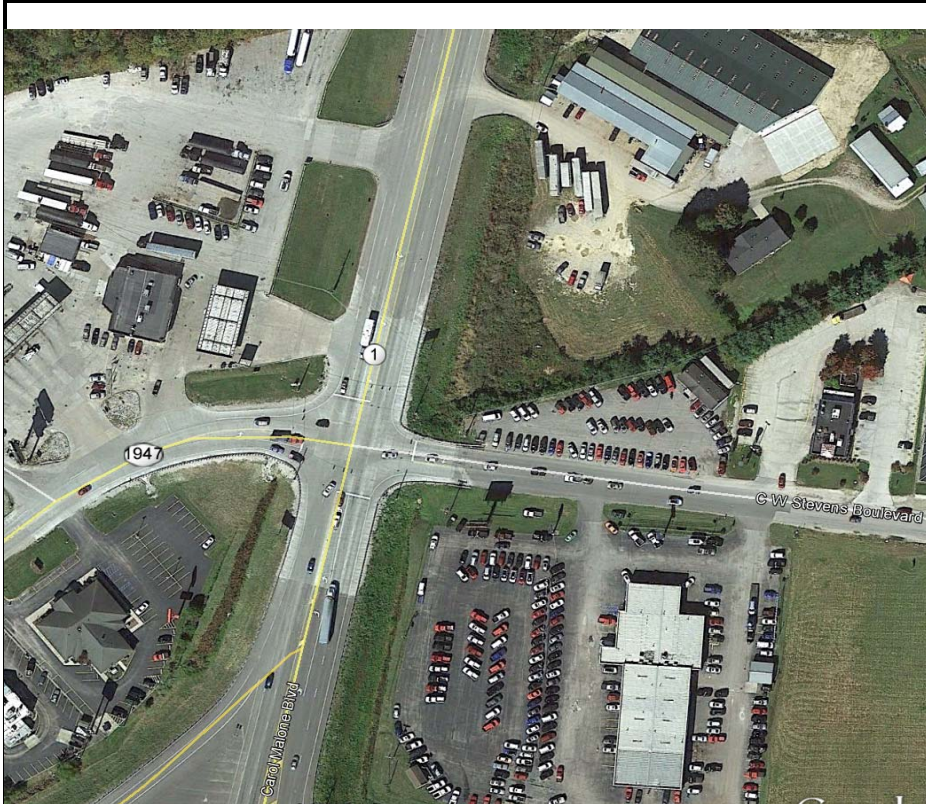


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: 2045 Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and KY 1947/ CW Stevens Boulevard

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #2 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

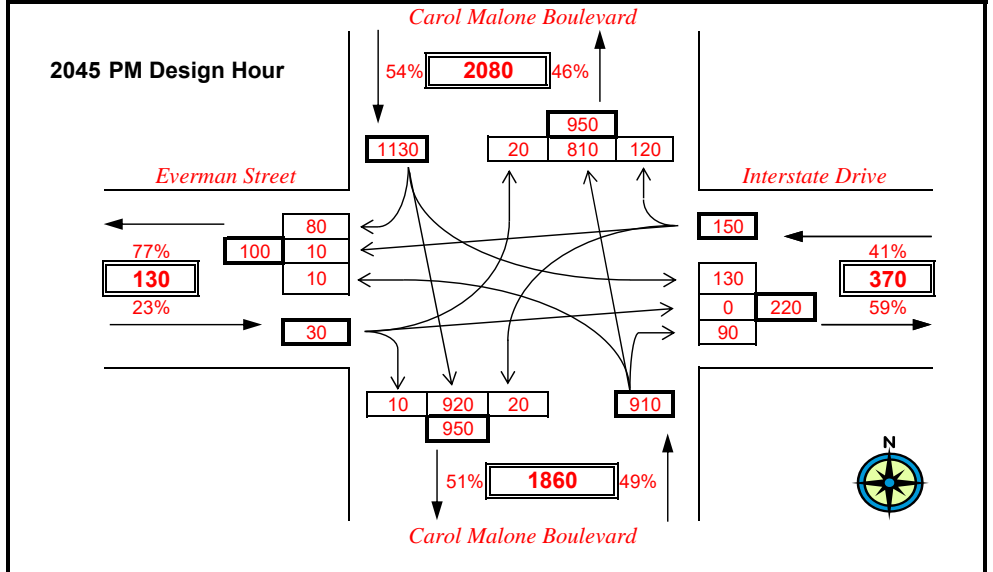
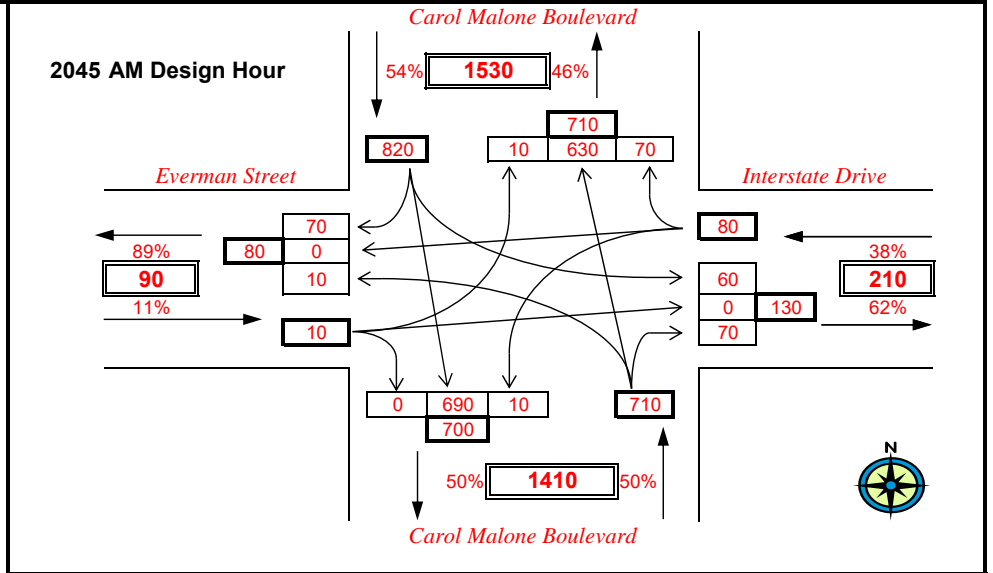
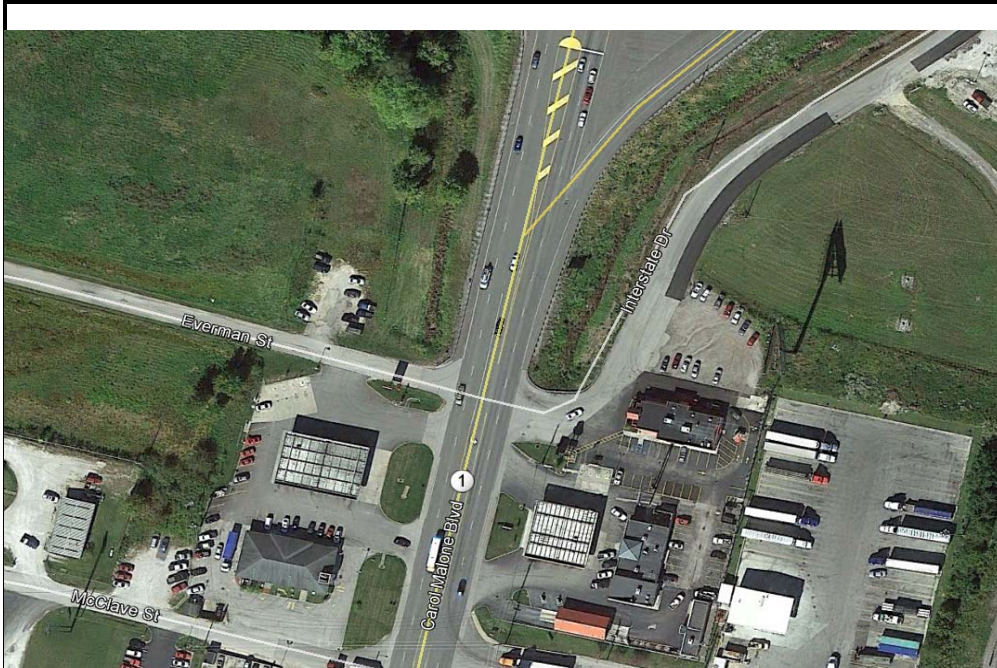


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and Everman Street/Interstate Drive

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #3 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

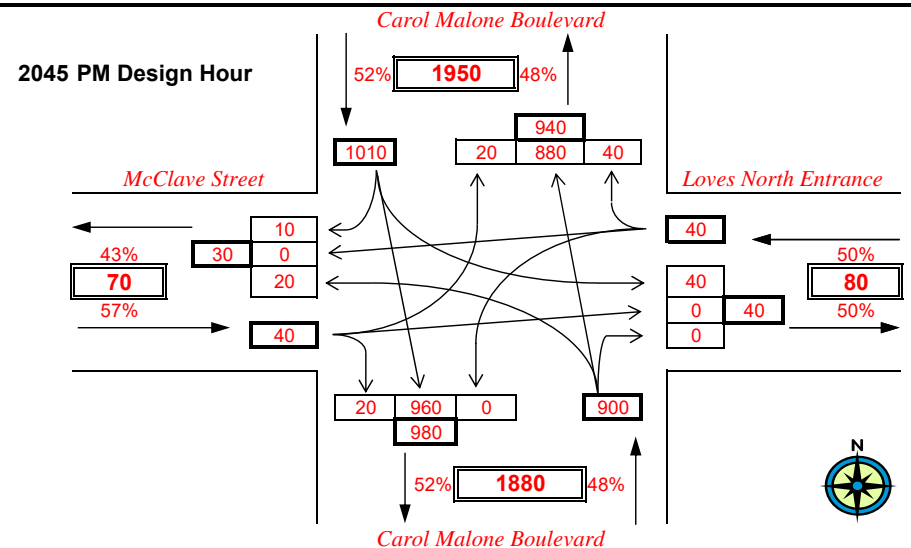
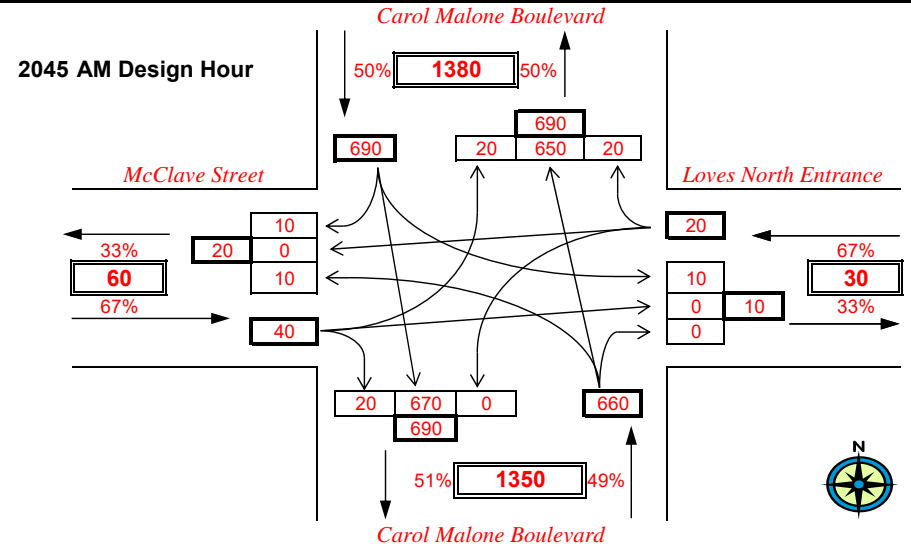


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: 2045 Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and McClave Street/Loves North Entrance

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #4 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

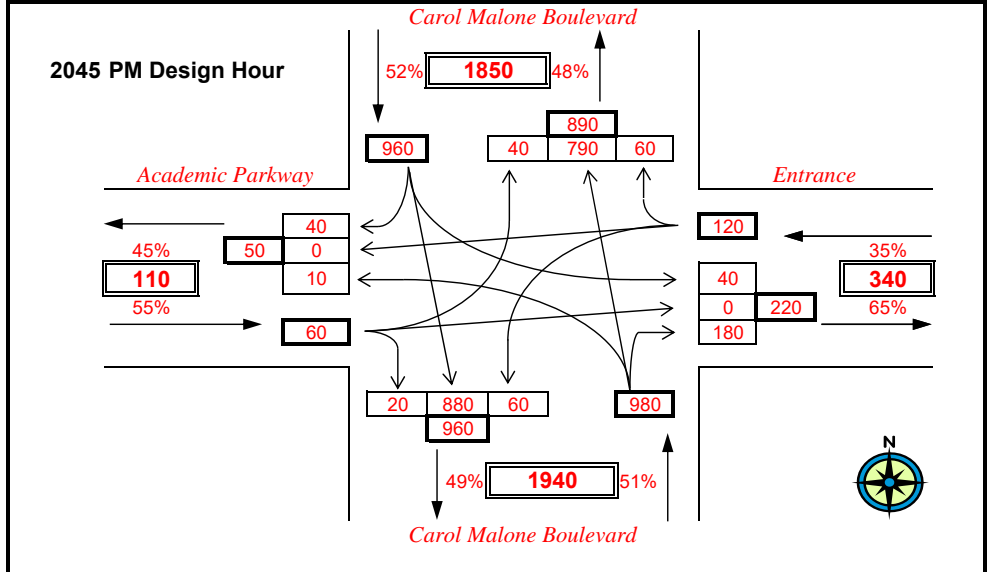
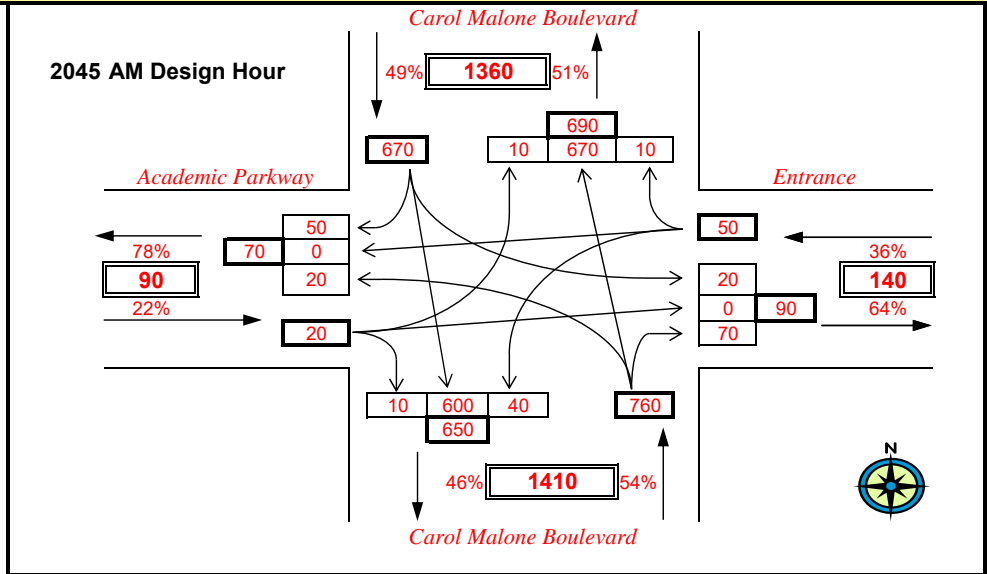


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and Academic Parkway

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #5 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

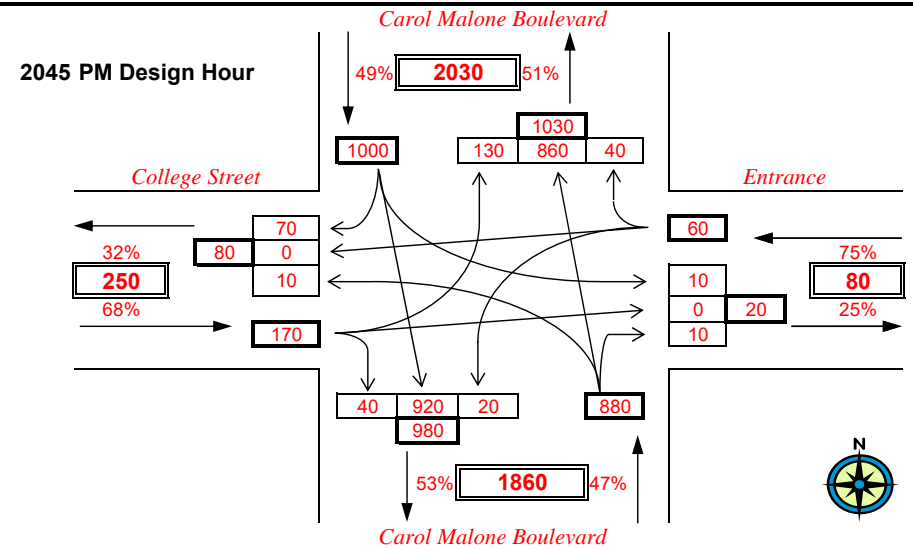
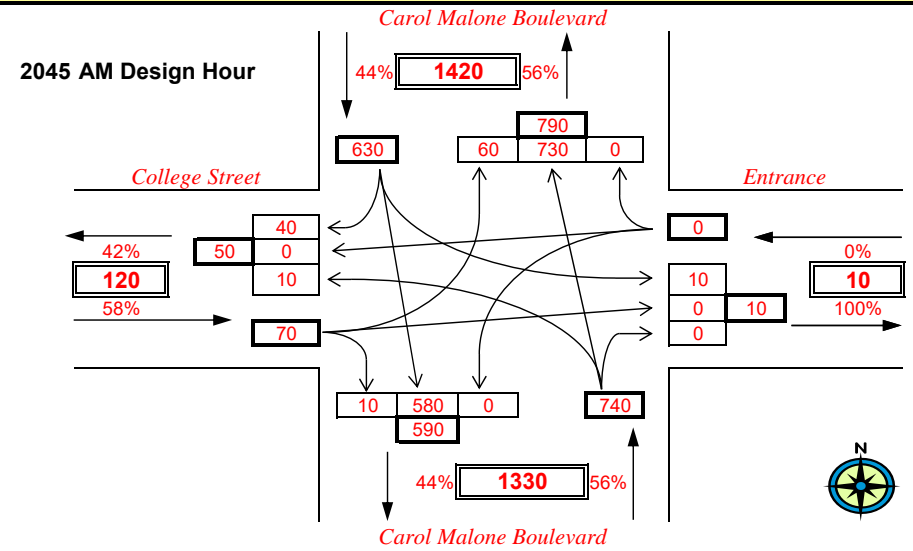
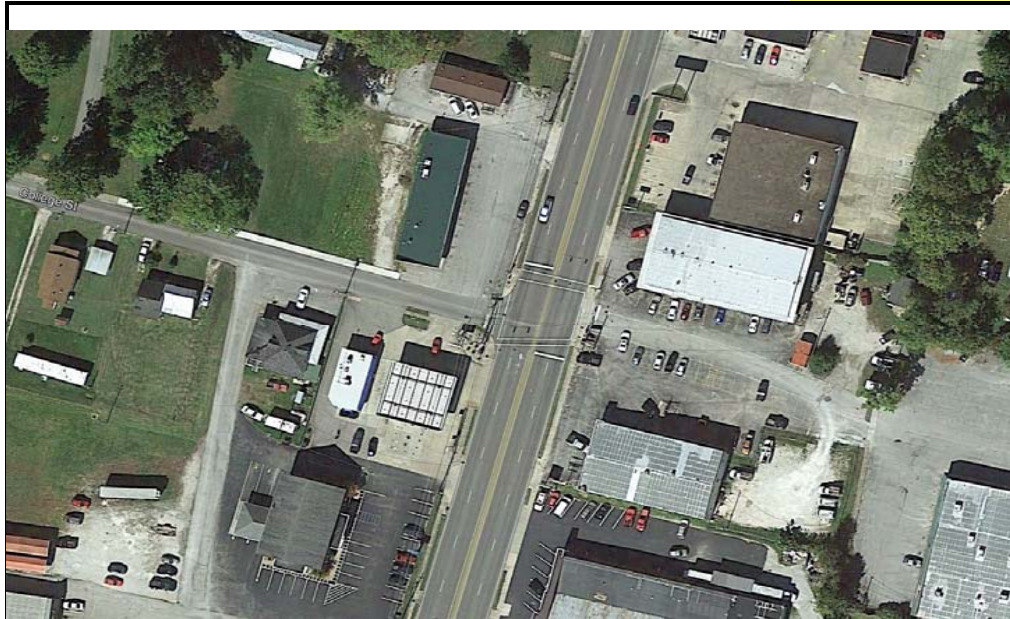


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and College Street

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #6 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

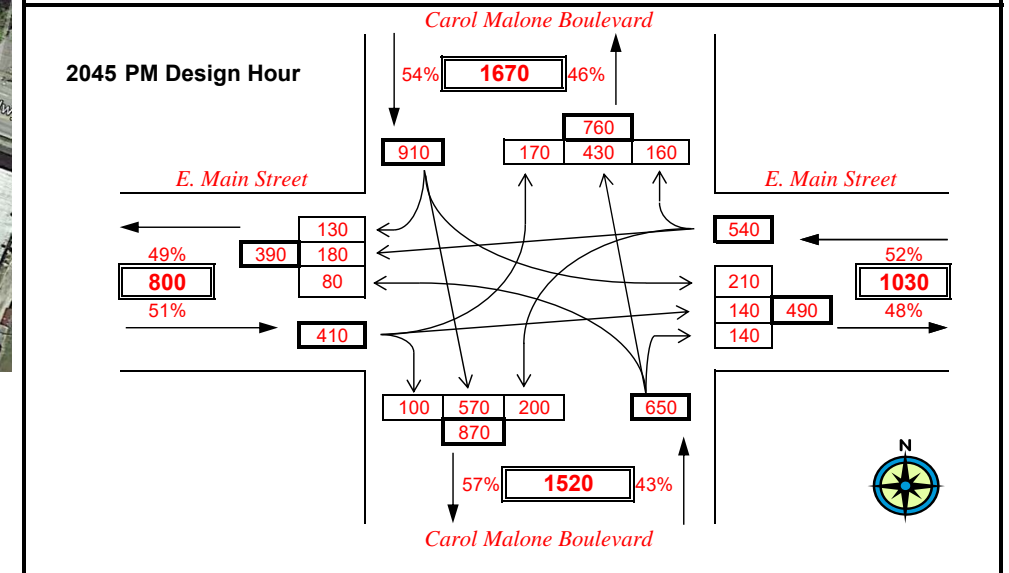
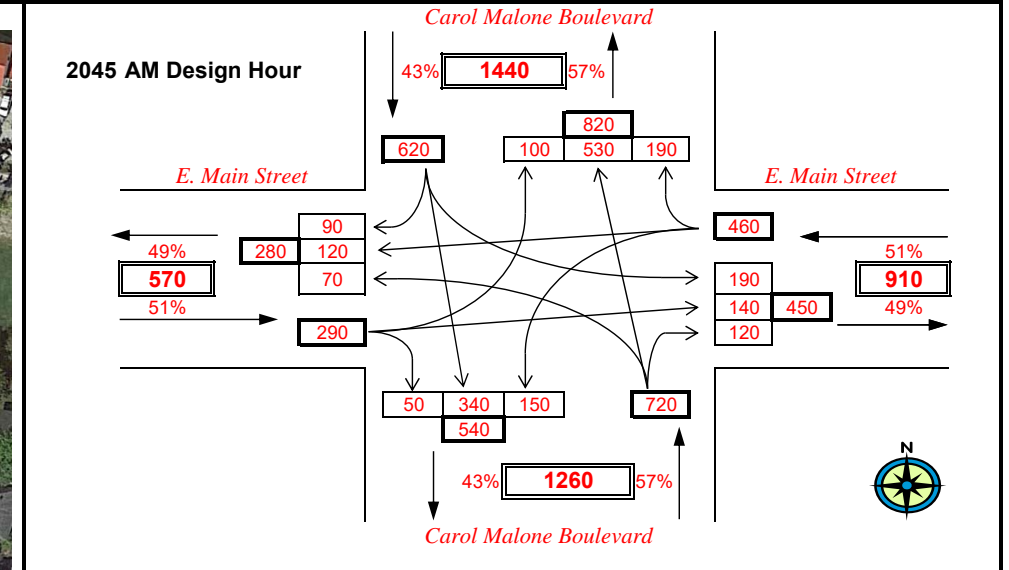
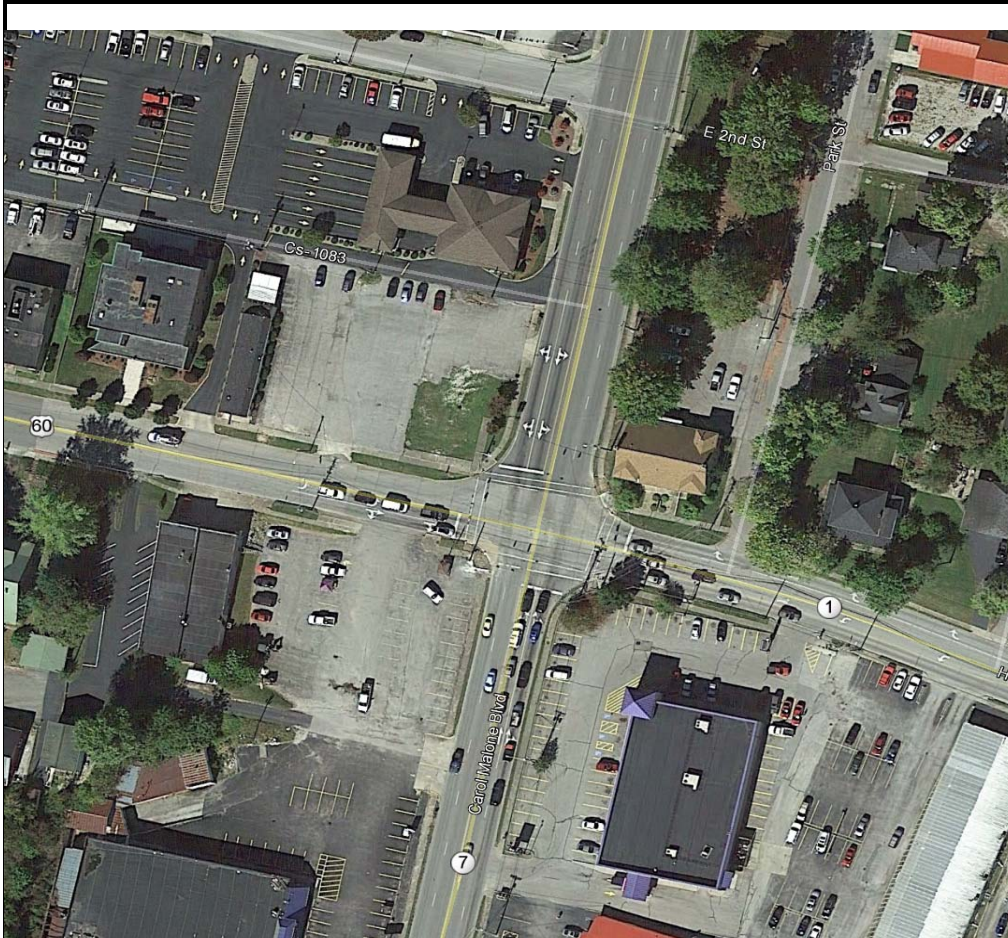


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1/KY7) and E. Main Street (US 60)

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #7 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**



Appendix D

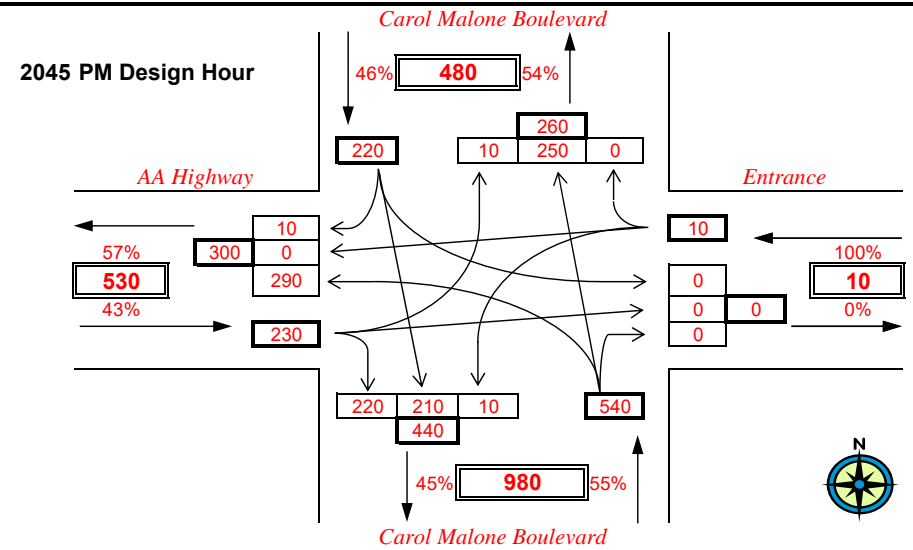
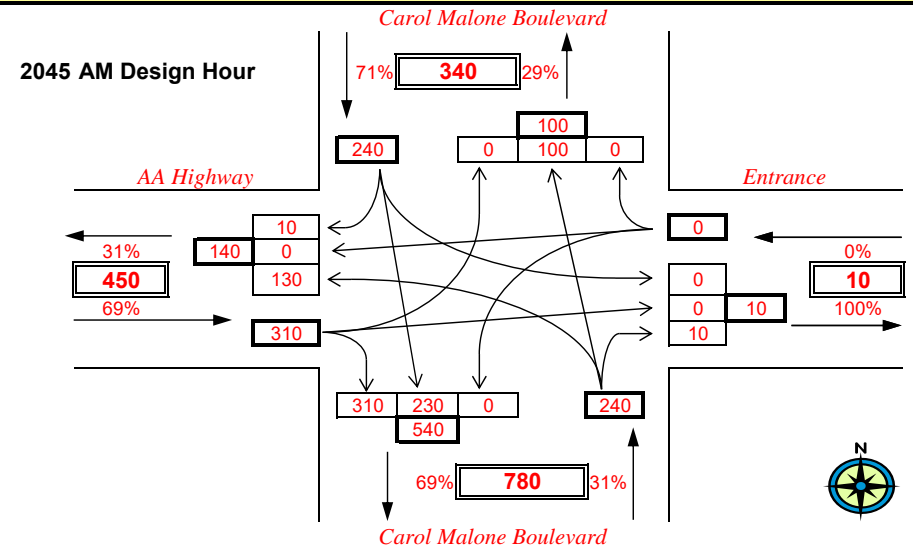
Build 2045 Turning Movement Diagrams – Concept 3

PROJECT: Grayson Mobility Study
 ITEM NUMBER: 6-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and AA Highway (KY 9)

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #1 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

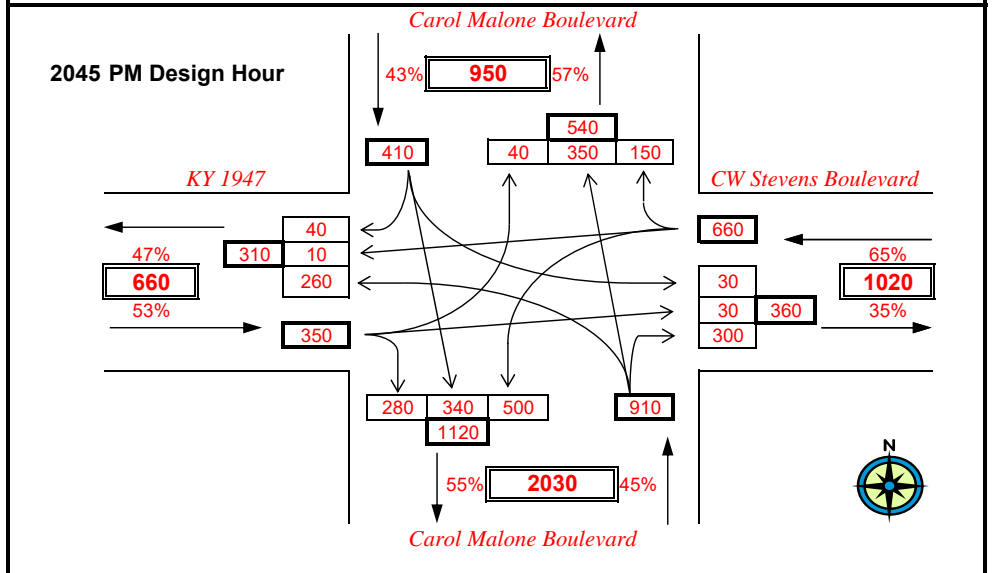
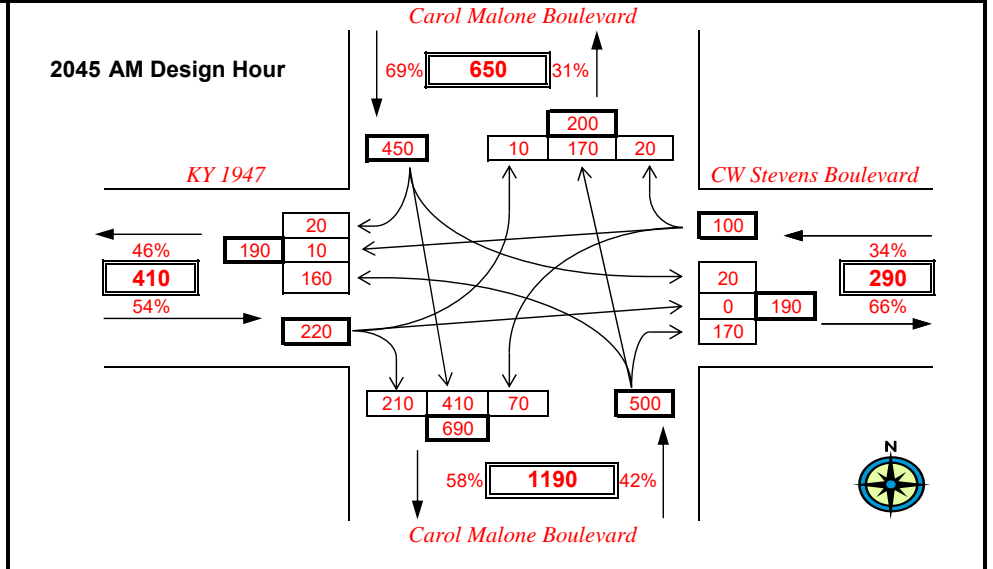
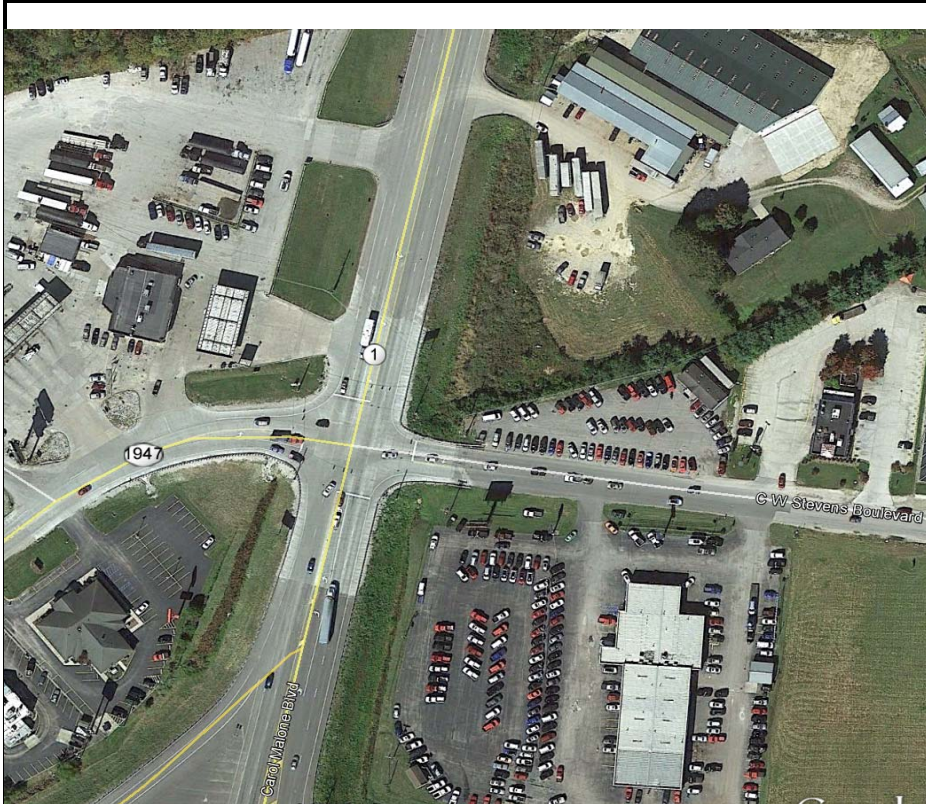


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: 2045 Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and KY 1947/ CW Stevens Boulevard

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #2 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

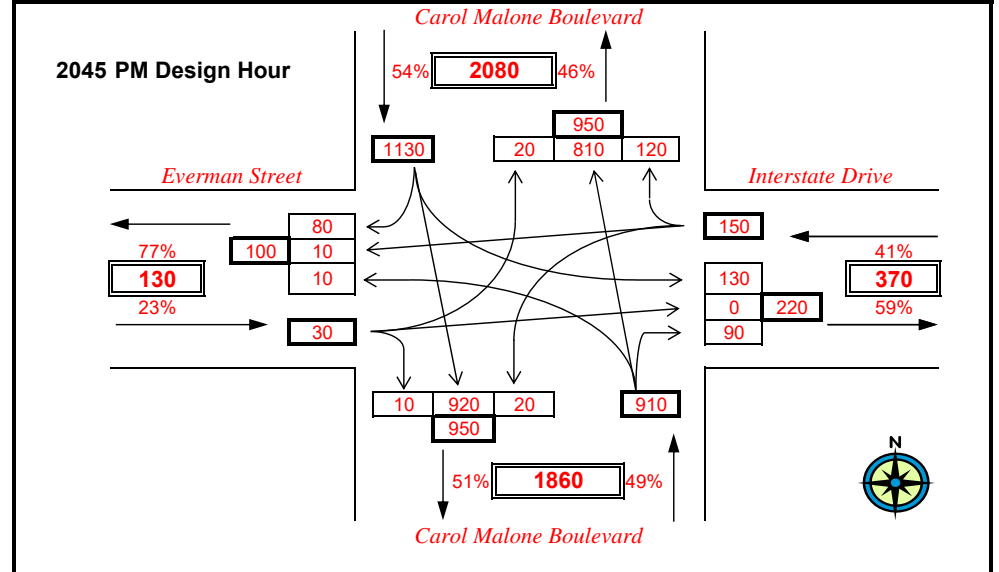
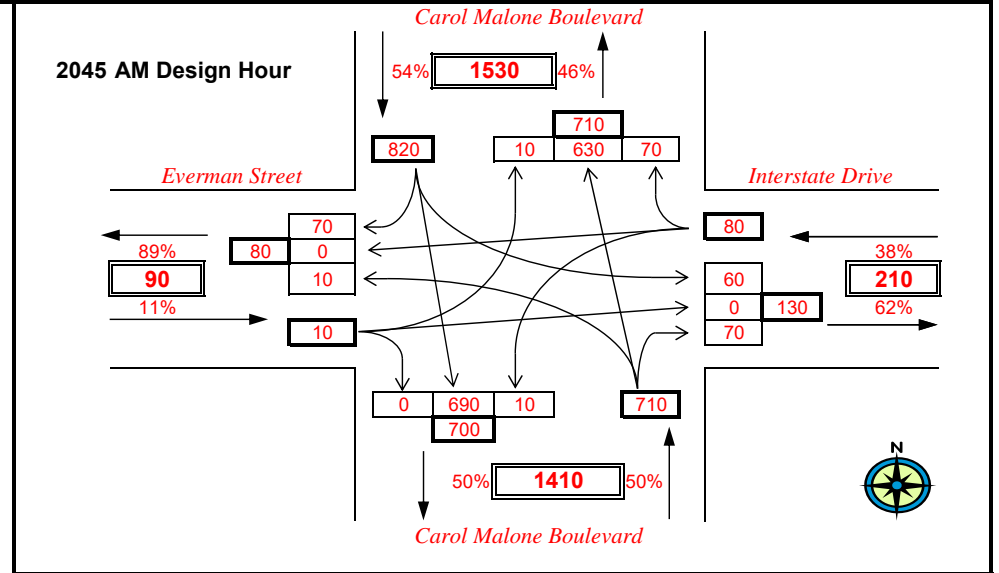
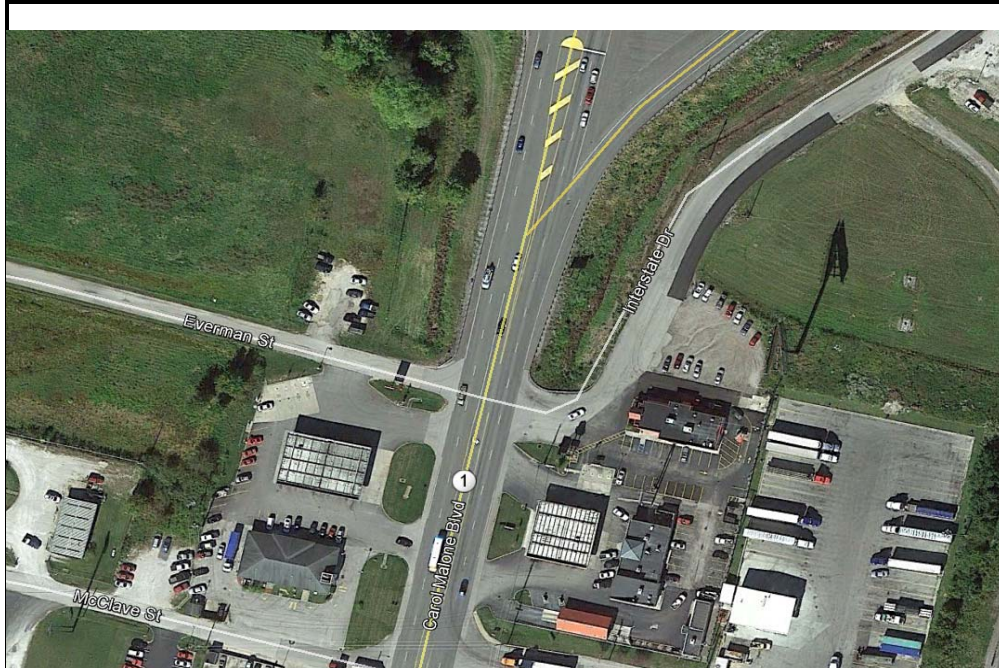


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and Everman Street/Interstate Drive

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #3 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

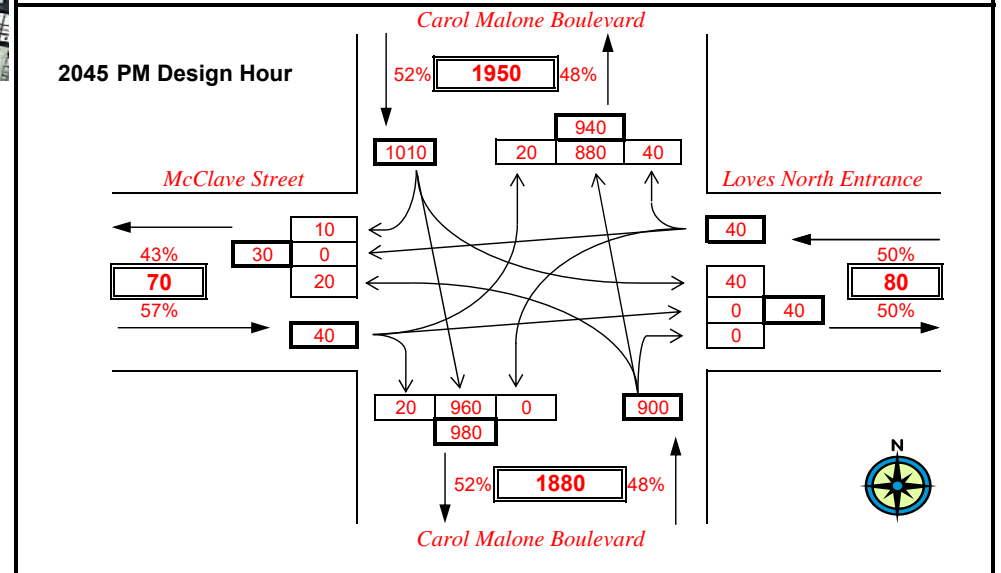
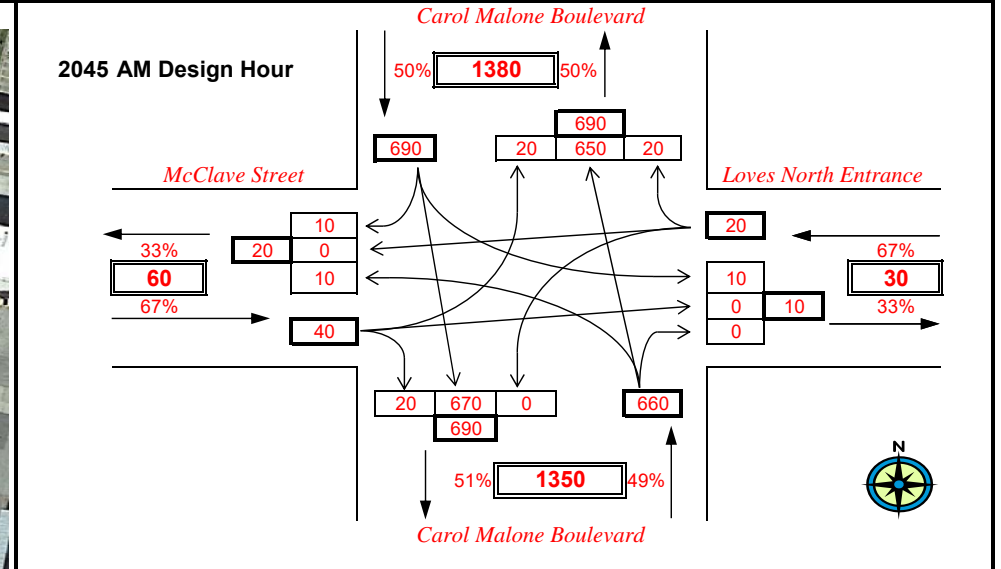


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: 2045 Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and McClave Street/Loves North Entrance

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #4 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

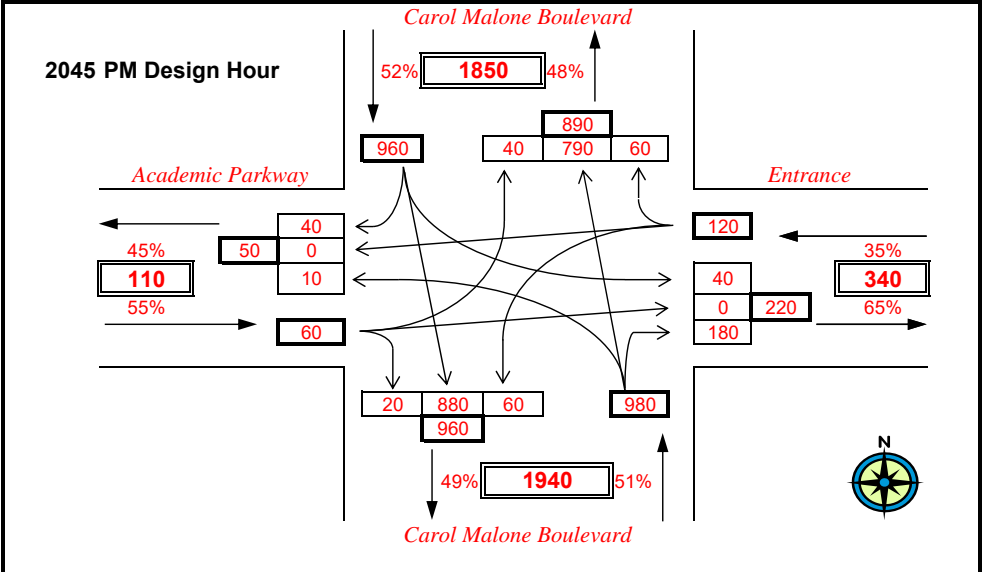
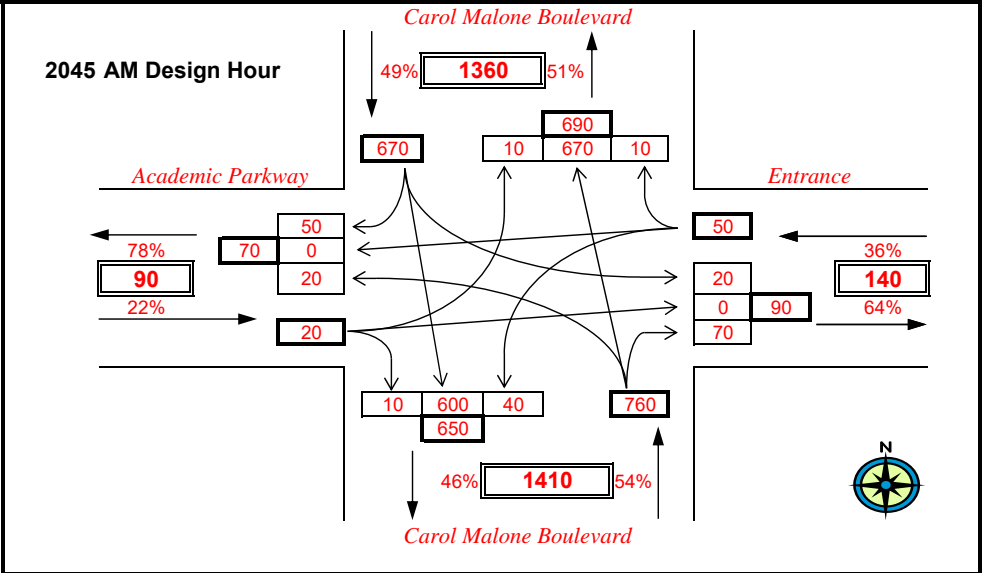


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and Academic Parkway

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #5 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

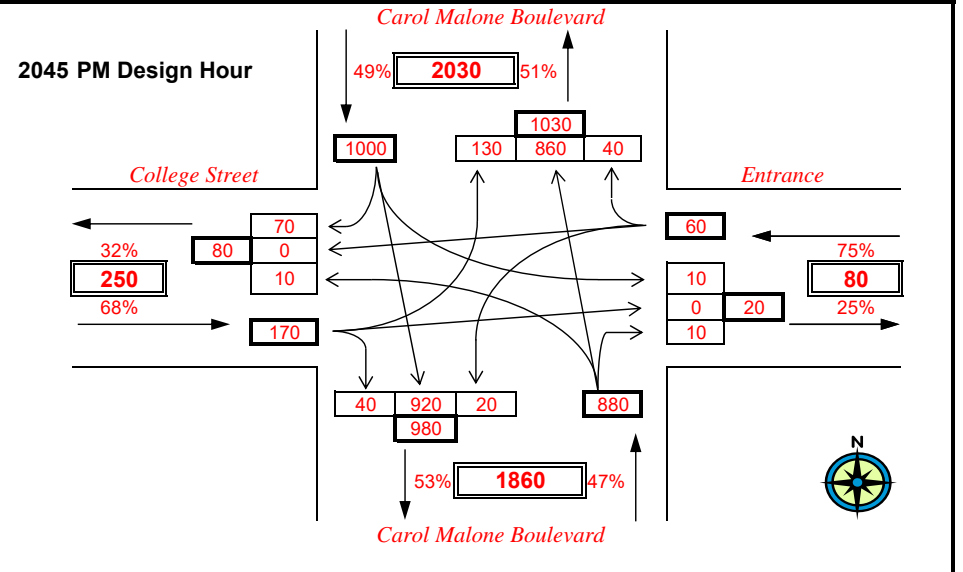
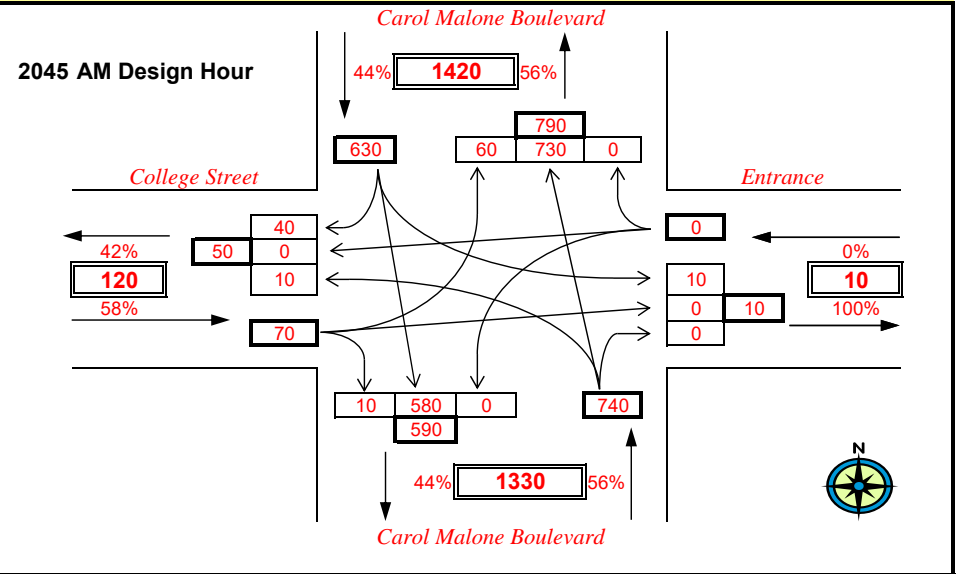
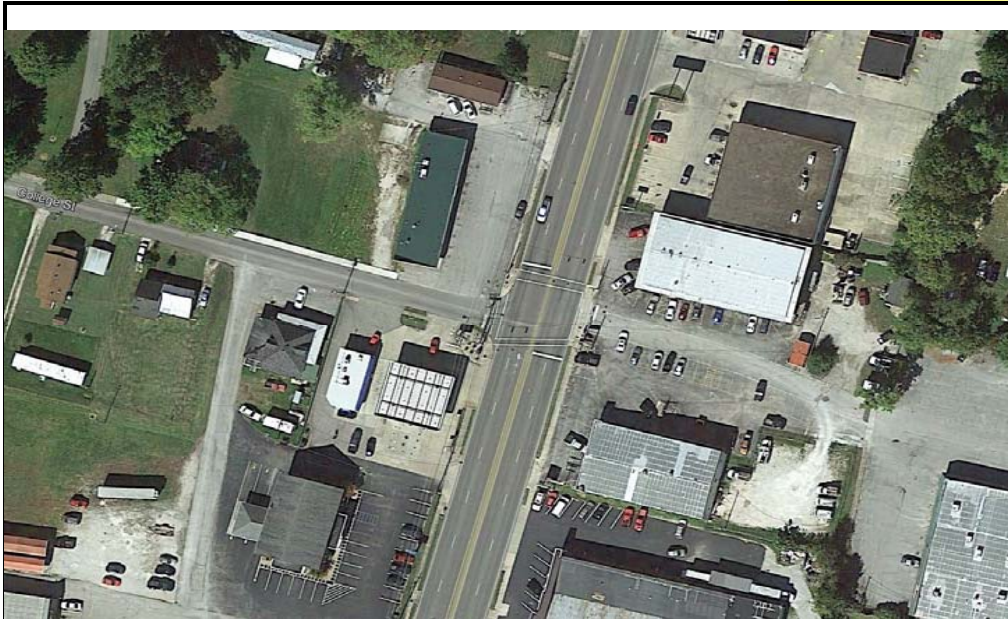


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and College Street

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #6 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

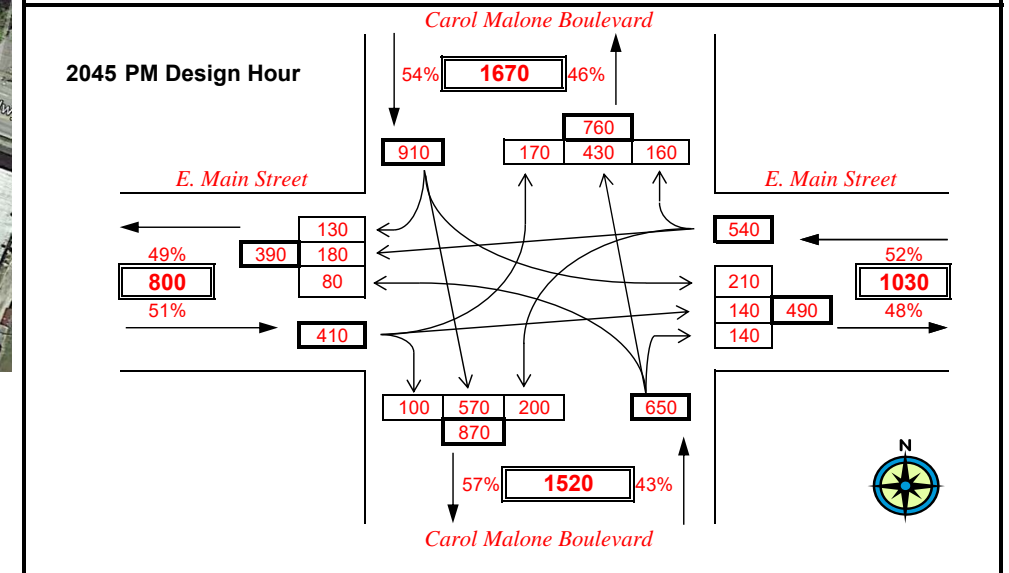
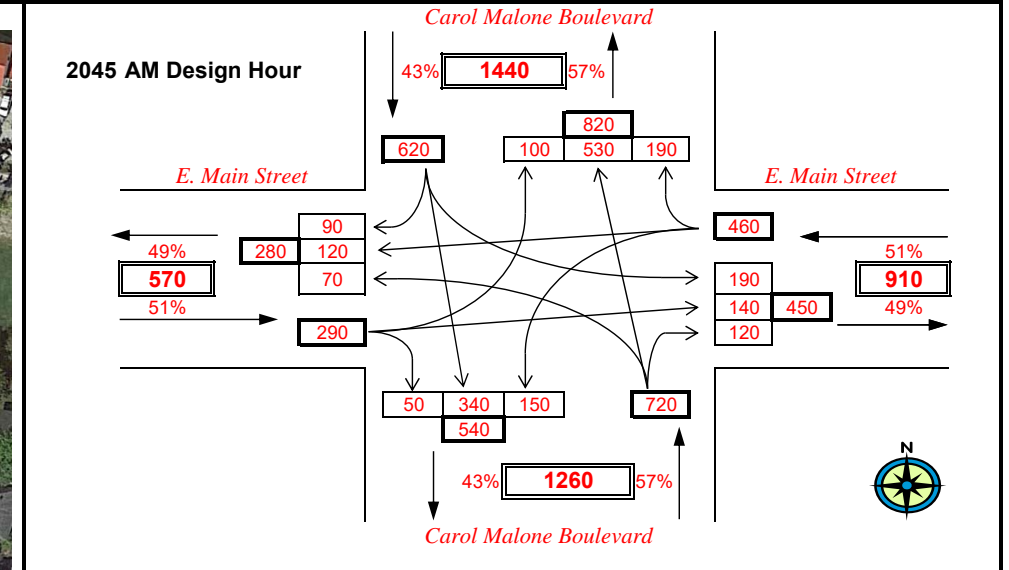
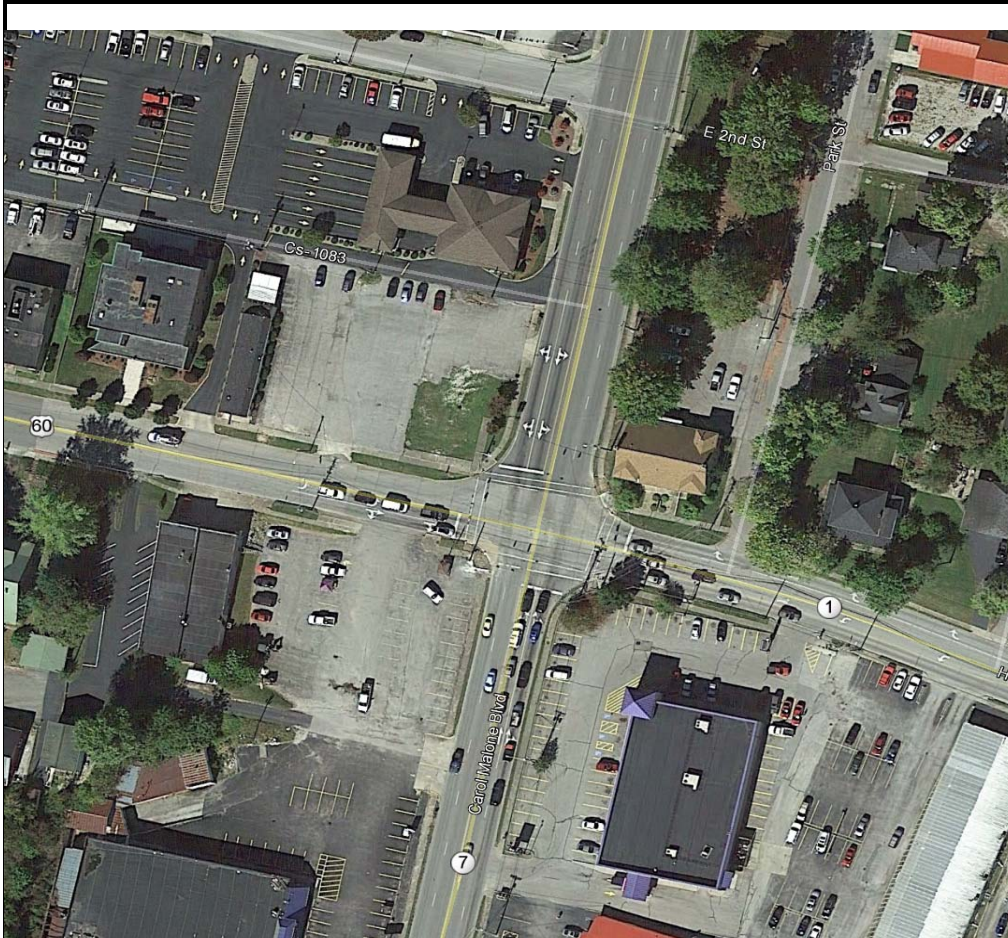


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1/KY7) and E. Main Street (US 60)

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #7 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**



Appendix D

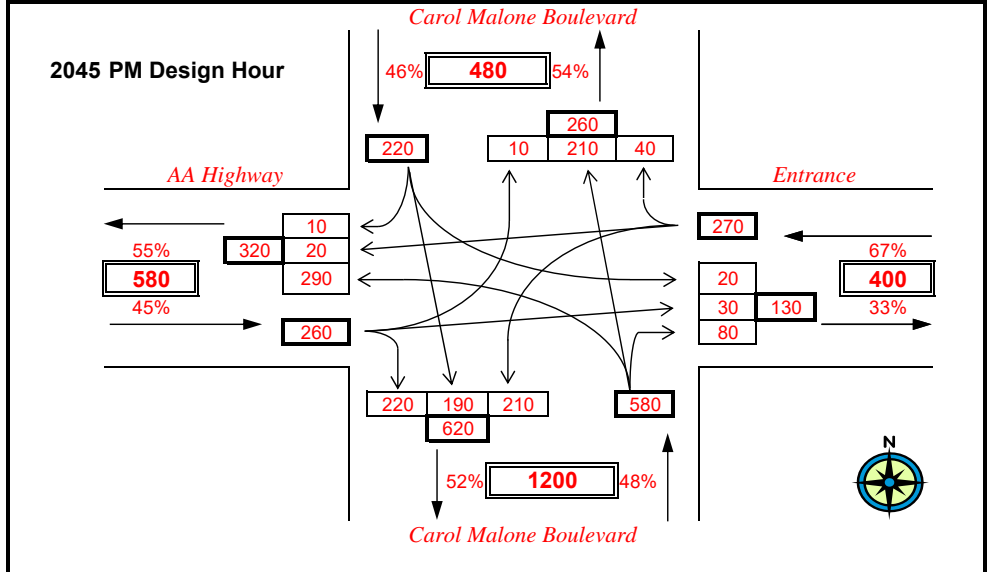
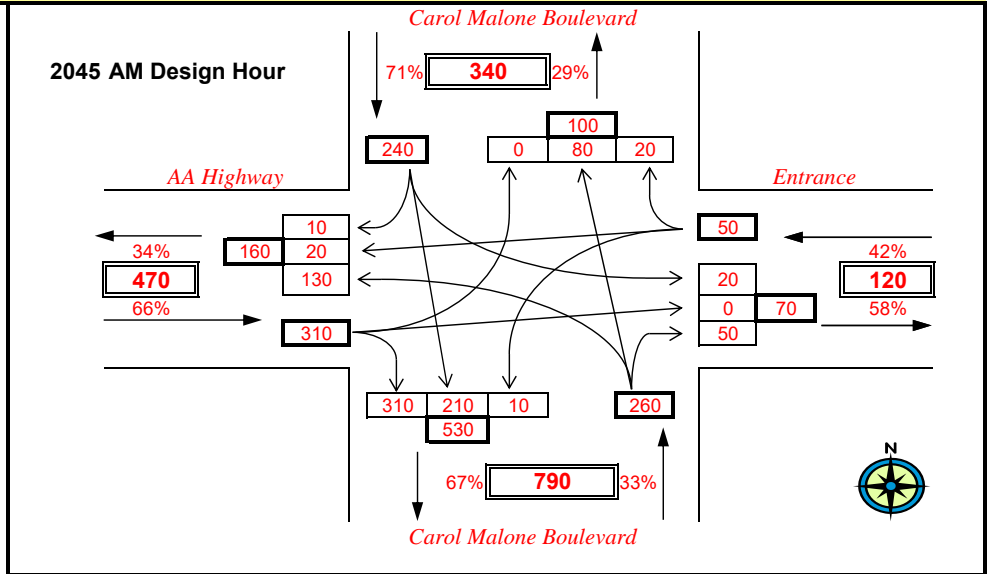
Build 2045 Turning Movement Diagrams – Concept 4

PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and AA Highway (KY 9)

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #1 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

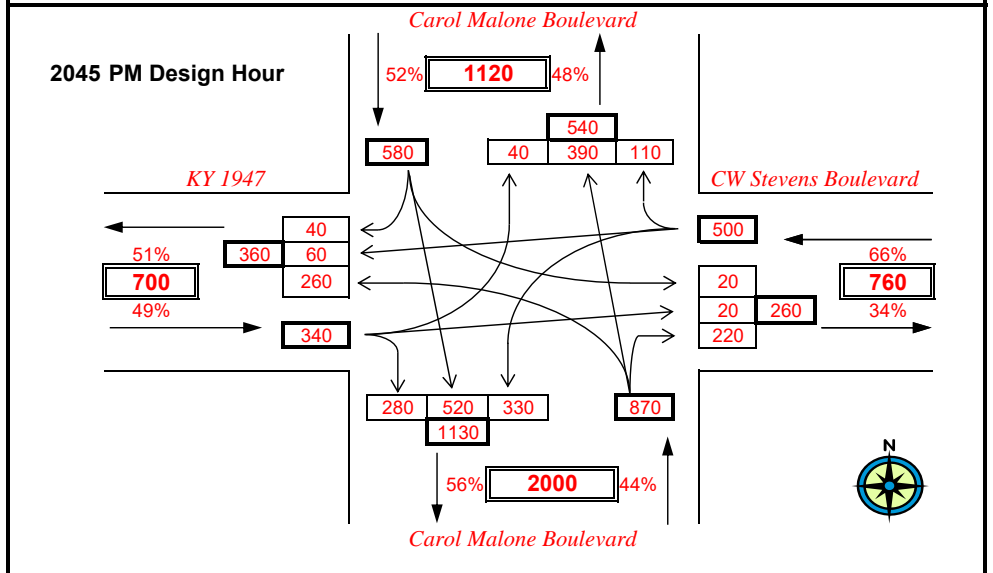
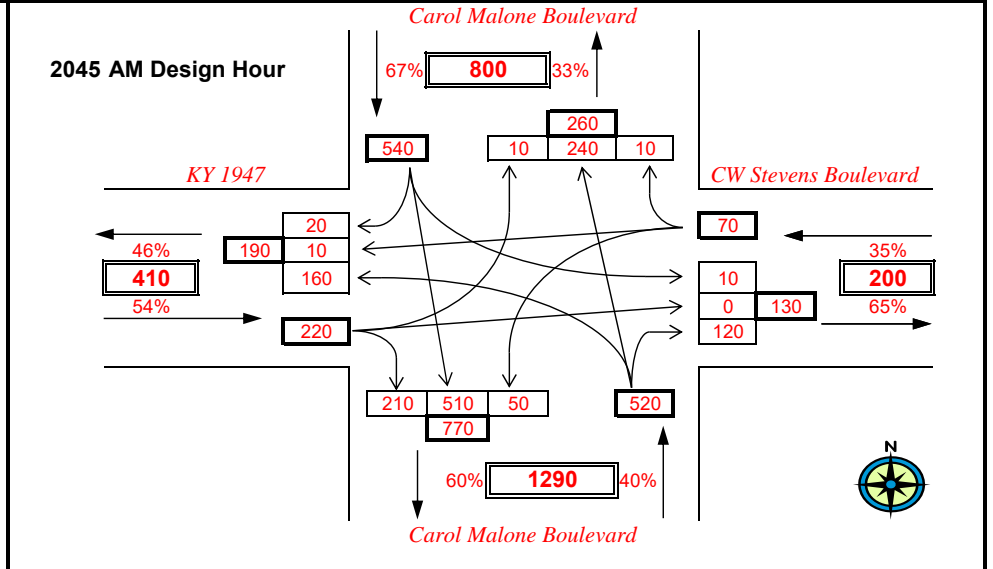
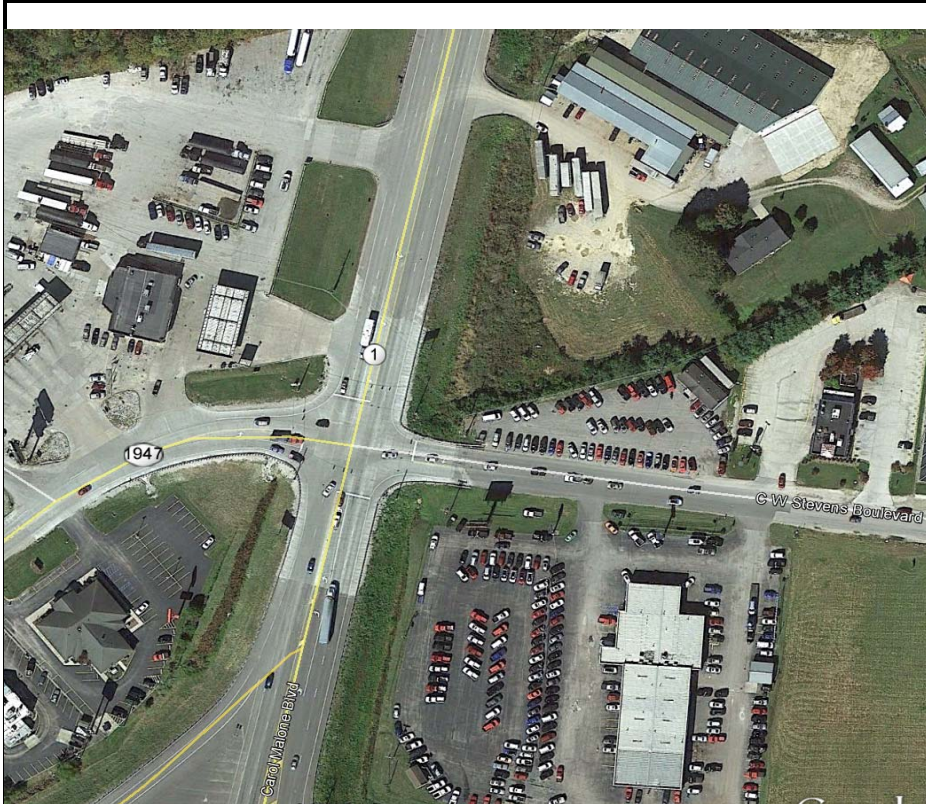


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and KY 1947/ CW Stevens Boulevard

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #2 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

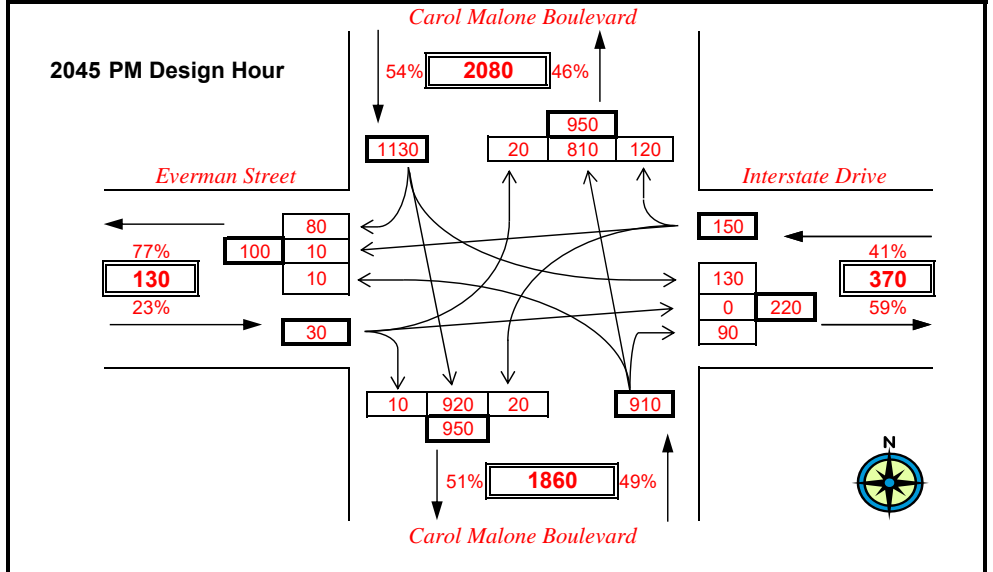
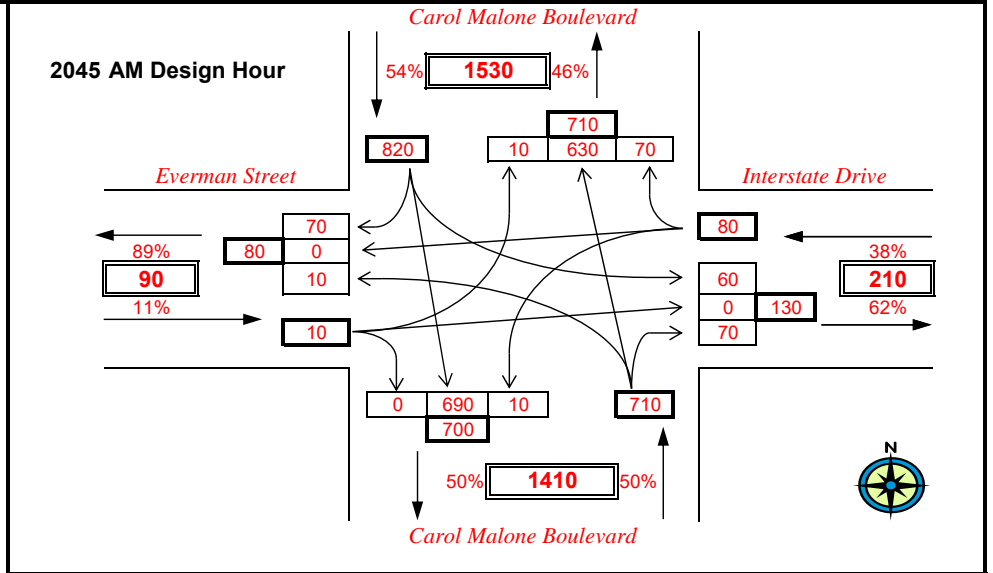
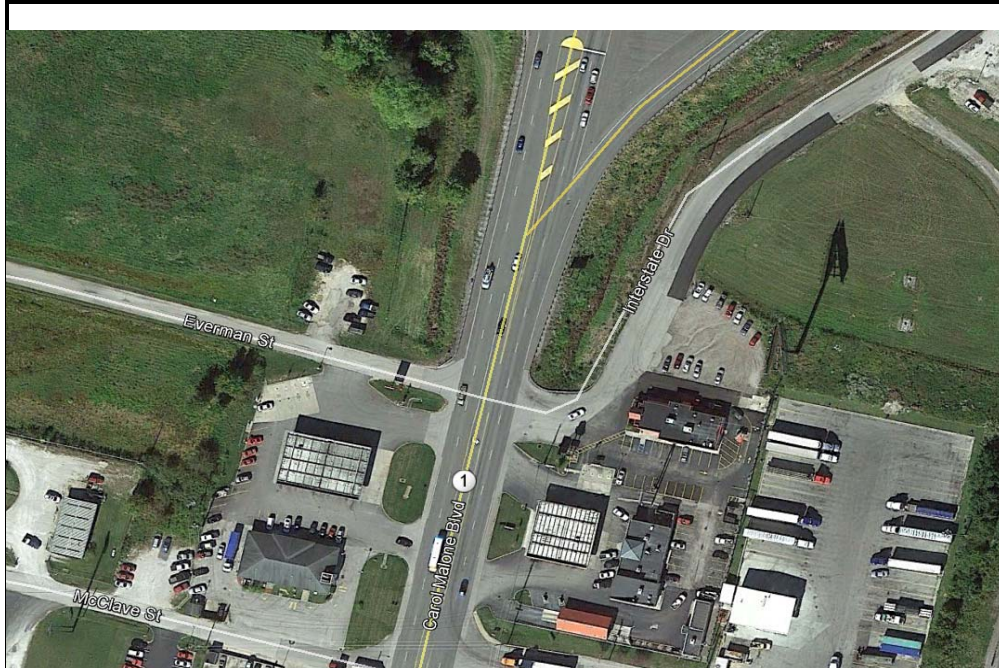


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and Everman Street/Interstate Drive

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #3 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

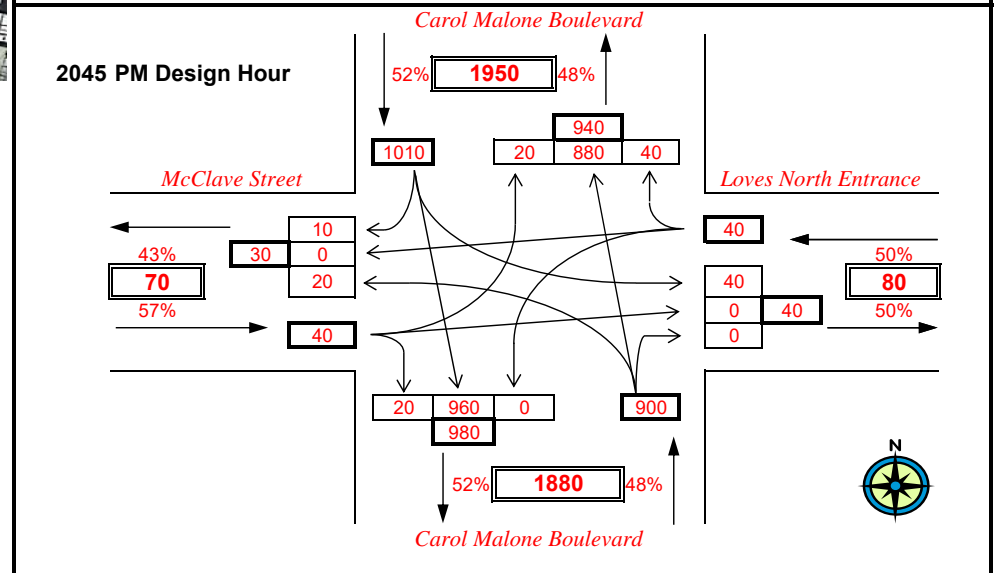
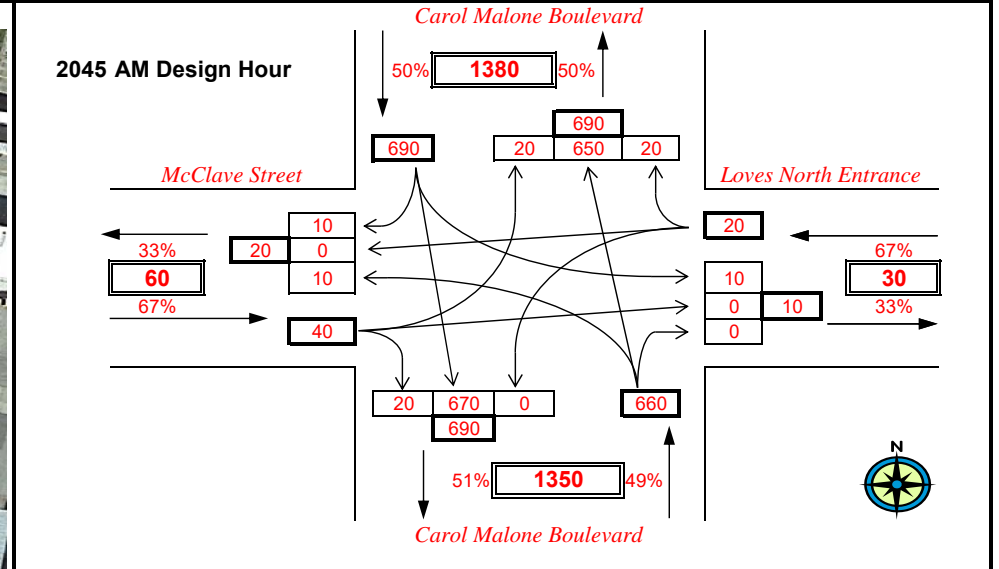


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: 2045 Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and McClave Street/Loves North Entrance

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #4 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

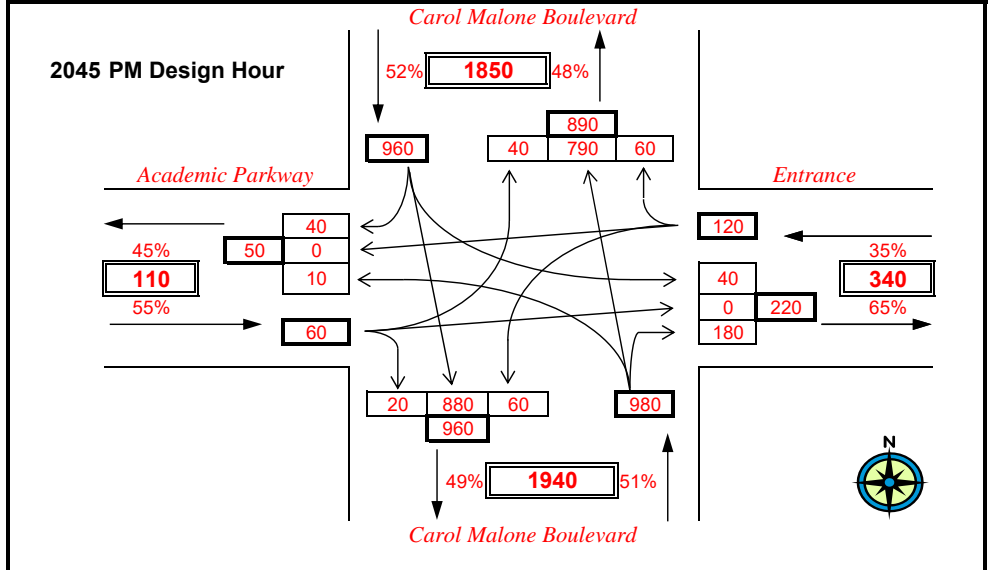
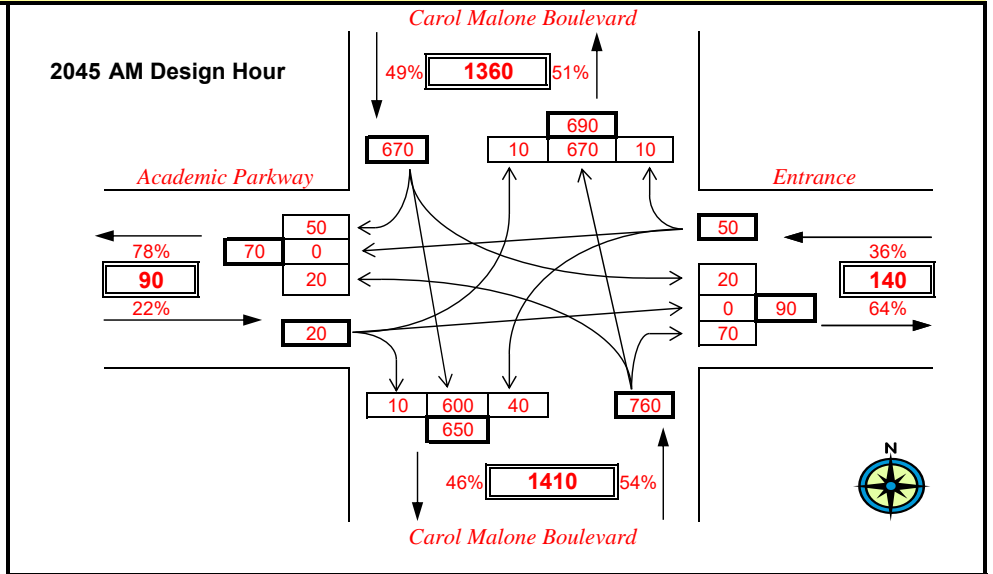


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and Academic Parkway

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #5 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****

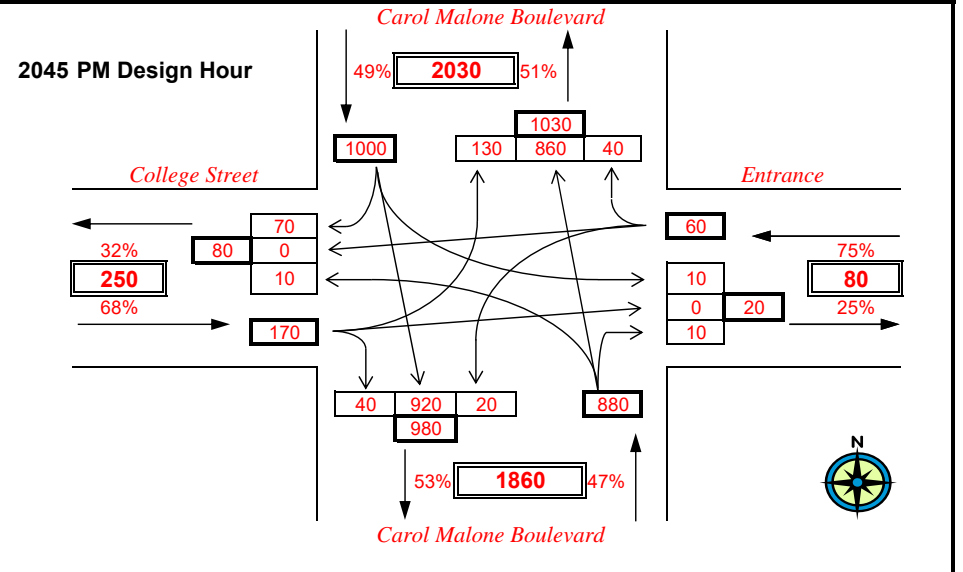
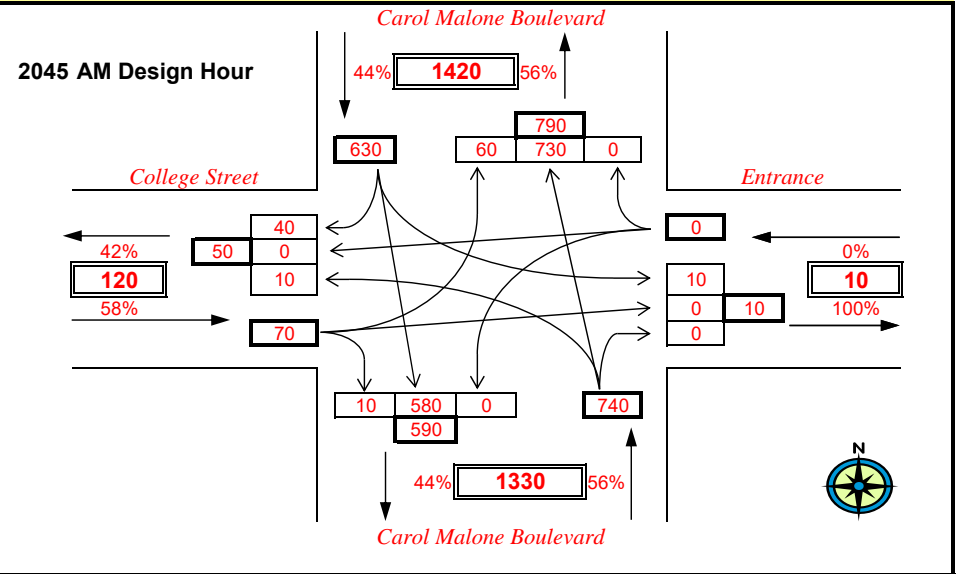
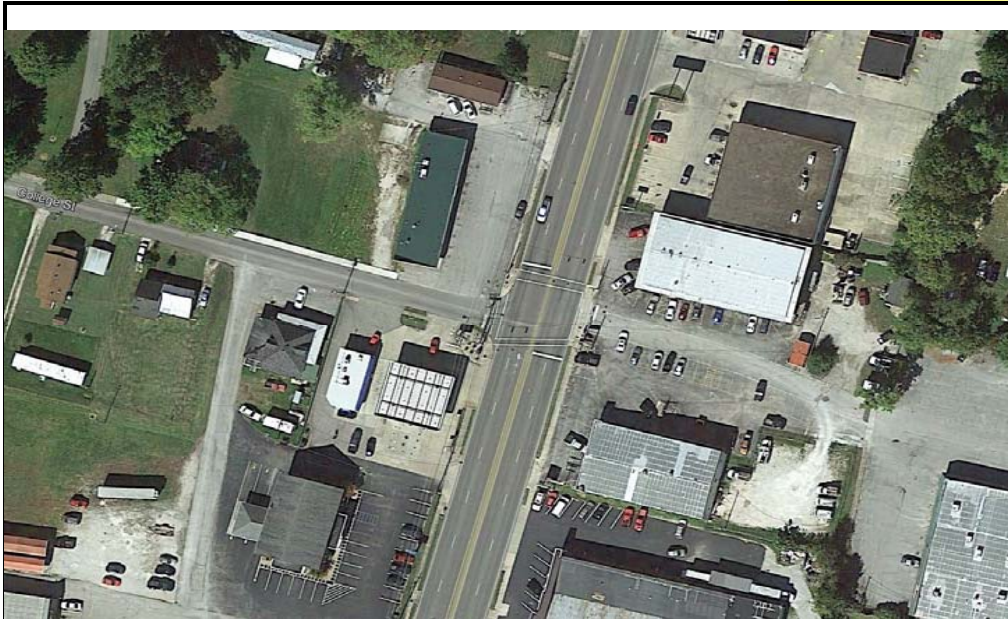


PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1) and College Street

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #6 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS****



PROJECT: Grayson Mobility Study
 ITEM NUMBER: 9-80202
 MARS NUMBER: 0
 REQUEST DATE: 0
 ANALYST: Jeremy Lukat
 YEAR: **2045** Design Hour Volumes
 INTERSECTION: Carol Malone Boulevard (KY 1/KY7) and E. Main Street (US 60)

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2045 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

TURN MOVEMENT #7 (2045)

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

