
U.S. Highway 280 Chelsea Traffic Study

Chelsea, Alabama

Advance Planning, Programming, and Logical
Engineering (APPLE) Program

Prepared for:



City of Chelsea



RPCGB
REGIONAL PLANNING COMMISSION
OF GREATER BIRMINGHAM

Regional Planning
Commission of
Greater Birmingham

Prepared by:



January, 2023

U.S. HIGHWAY 280 CHELSEA TRAFFIC STUDY CHELSEA, ALABAMA

Advance Planning, Programming, and Logical Engineering (APPLE) Program

Prepared for:

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SIGNED: Richard Lyn Cawood
DATE: 1/23/23

January, 2023

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Appendix A	Existing Intersection Turning Movement Traffic Counts
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INTRODUCTION

This report documents the results of a project to perform a traffic study of U.S. Highway 280 in the City of Chelsea. Limits of the project extend from approximately 1,500 west of the intersection of Chesser Drive to the intersection of Old Highway 280. A general vicinity map is shown in Figure 1.

The purposes of this study are to:

- Document existing traffic conditions within the corridor, including the following elements:
 - Existing traffic counts
 - Existing intersection capacity analyses
 - Existing roadway segment capacity analyses
 - Crash history
 - Observations
- Project future year traffic conditions within the corridor, including the following elements:
 - Historical traffic growth trends
 - Transportation demand model output
 - 2045 traffic projections
 - Planned and programmed roadway improvements
 - 2045 intersection capacity analyses
 - 2045 roadway segment capacity analyses
- Test various improvement concepts for U.S. Highway 280, including:
 - The need for widening
 - The need for additional turn lanes
 - Access management techniques
- Document specific project outcomes, including:
 - Conceptual design of proposed improvements
 - Right-of-way requirements
 - Cost estimates
 - Funding sources

BACKGROUND INFORMATION

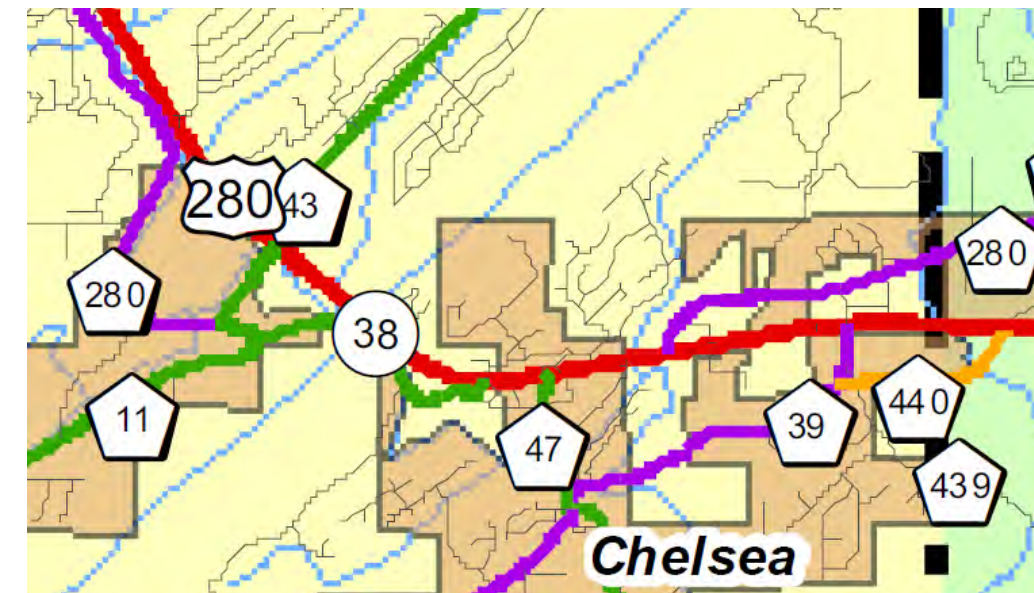
Study Corridor

The study limits for the project are as follows:

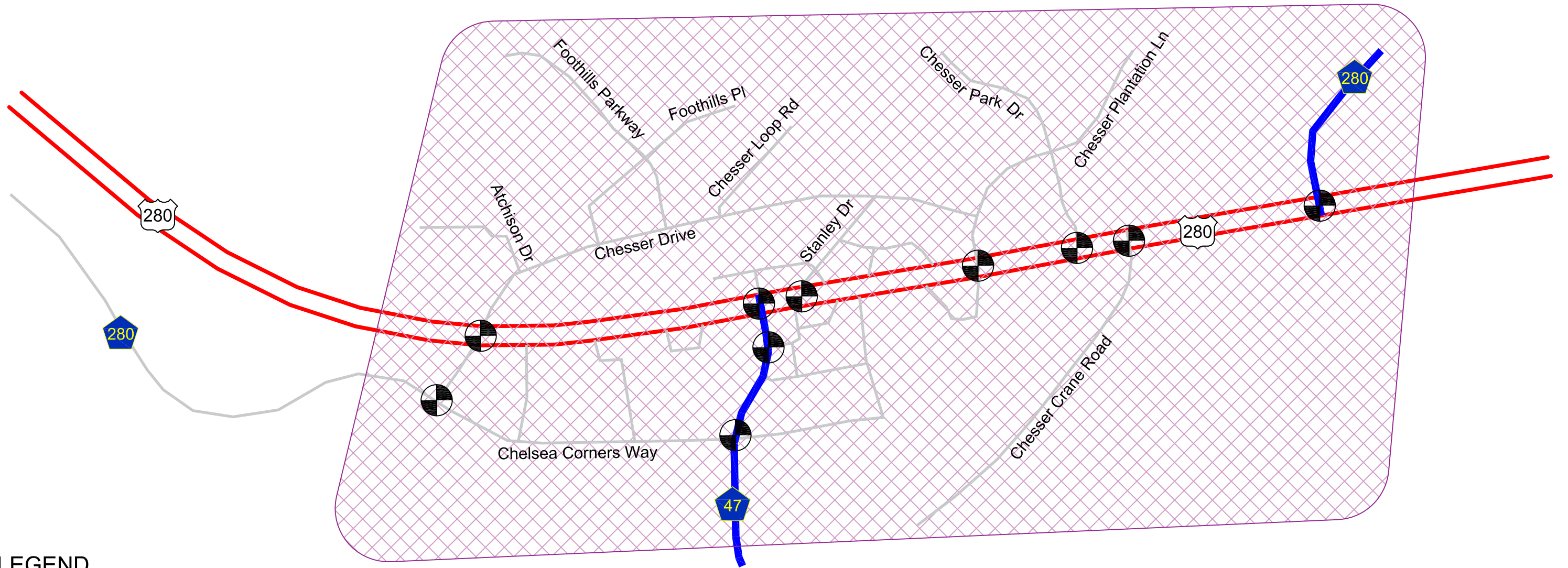
- U.S. Highway 280, from approximately 1,500 feet west of Chesser Drive to the intersection of Old Highway 280, a distance of approximately 6,000 feet
- Parallel roadways, including Chesser Drive and Chelsea Corners Way

The study limits are illustrated in Figure 1.



U.S. Highway 280 is a four lane median divided urban principle arterial roadway with a posted speed limit of 50 miles per hour. The functional classification map for the roadways in the vicinity of the study area is provided below.



Functional Classification Map (Source: Alabama Department of Transportation)



LEGEND

-  Study Area
-  Study Intersection



North
Scale: n.t.s



Figure 1 - Study Area

U.S. Highway 280 APPLE - Chelsea, Alabama

December 2021

Study Intersections

The intersections included for detailed study are as follows:

- U.S. Highway 280 at Chesser Drive
- U.S. Highway 280 at County Road 47
- U.S. Highway 280 at Stanley Drive
- U.S. Highway 280 at Chesser Plantation Lane
- U.S. Highway 280 at Chesser Park Drive
- U.S. Highway 280 at Chesser Crane Road
- U.S. Highway 280 at Old Highway 280
- Chelsea Corners Way at Chesser Drive
- County Road 47 at Chelsea Corners Way
- County Road 47 at Winn Dixie

Locations of study intersections are illustrated in Figure 1.

EXISTING CONDITIONS ANALYSIS**Intersection Turning Movement Traffic Counts**

Intersection turning movement traffic counts were performed at the study intersections during the period Wednesday to Thursday, May 12 to 13, 2021 and Monday, August 30, 2021 during the hours of 7:00 to 9:00 a.m., 11:00 a.m. to 1:00 p.m., and 4:00 to 6:00 p.m. by Traffic Data, LLC on behalf of Skipper Consulting, Inc. The traffic count data is included in Appendix A. Peak hour turning movement traffic counts are shown in Figure 2.

Machine Traffic Counts

Existing machine traffic counts were performed at the following locations for twenty-four (24) continuous hours during the period Thursday to Friday, May 13 to 13, 2021, by Traffic Data, LLC on behalf of Skipper Consulting, Inc.:

- U.S. Highway 280 between Chesser Drive and County Road 47
- U.S. Highway 280 west of County Road 280.

In addition, ALDOT count data was available from the year 2018 at six (6) additional locations in the study area:

- U.S. Highway 280 east of County Road 43
- U.S. Highway 280 between Chesser Plantation Lane and Chesser Park Drive
- U.S. Highway 280 east of County Road 280
- Chesser Drive east of Chesser Loop Road
- County Road 280 west of Chesser Drive
- County Road 47 south of Chelsea Corners Way

The machine traffic count data is included in Appendix B. The locations of the machine traffic counts and 24-hour count data are shown in Figure 3.

Existing Peak Hour Intersection Capacity Analyses

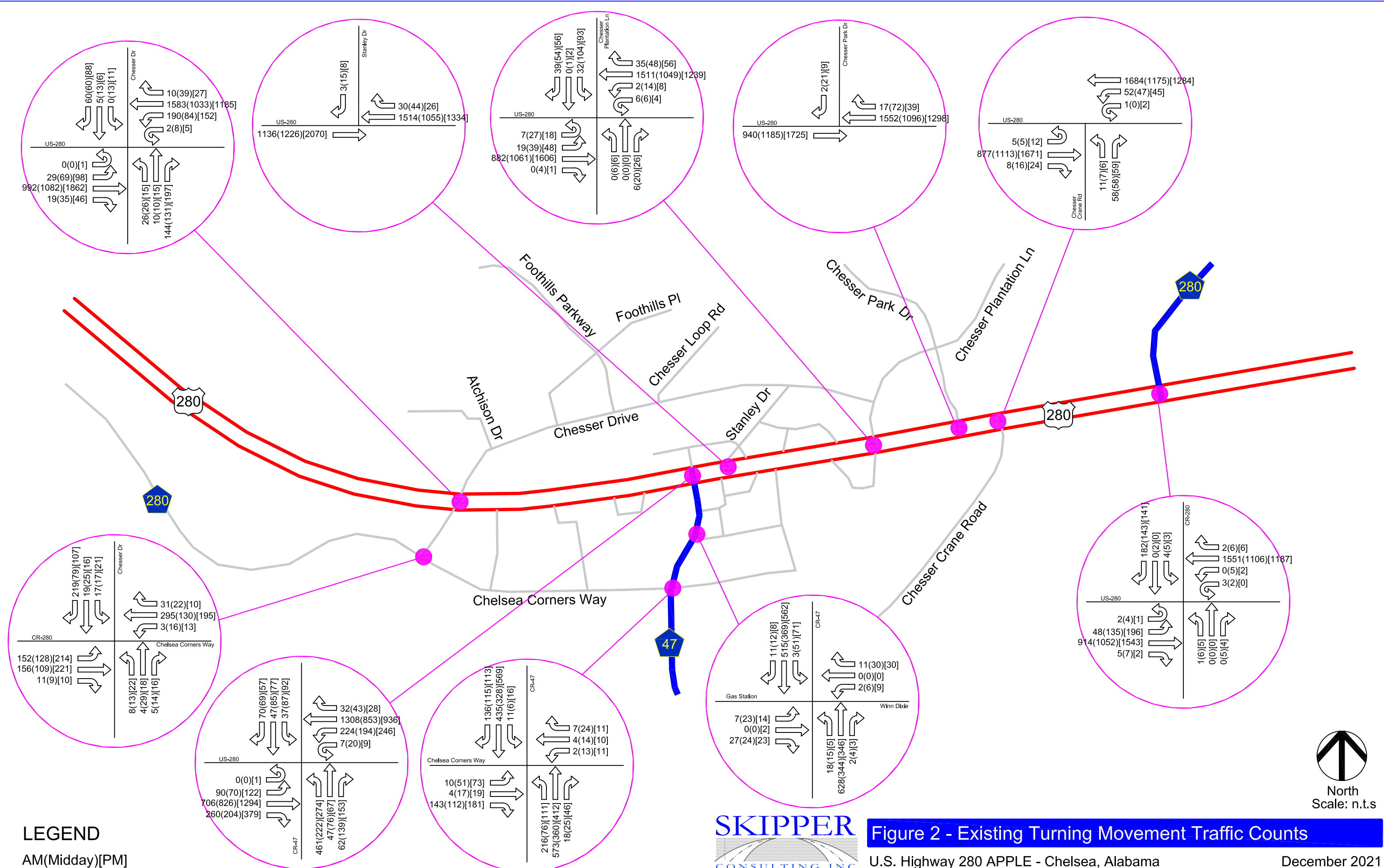
Existing peak hour intersection capacity analyses were performed for the study intersections using the method of analysis included in the 2000 *Highway Capacity Manual*, published by the Transportation Research Board. Capacities are expressed as levels of service, and range from a level of service “A” (highest quality of service) to a level of service “F” (jammed conditions). As a general rule, operation at a level of service “D” or better is considered acceptable. Operation at a level of service “E” is considered operating at capacity. Operation at a level of service “F” is considered failing. The results of the peak hour intersection capacity analyses are included in Appendix C and are summarized in Table 1.

Existing Peak Hour Roadway Segment Capacity Analysis

Existing peak hour roadway segment capacity analyses were performed for segments of U.S. Highway 280 within the study area using the method of analysis included in the 2010 *Highway Capacity Manual*. The results of the peak hour roadway segment capacity analyses are included in Appendix D and are summarized in Table 2.

Existing Daily Roadway Segment Capacity Analysis

Roadway segment capacity analyses for daily traffic conditions on the study corridors were performed using the daily capacity and level of service chart developed from information obtained from the Alabama Department of Transportation and the Highway Capacity Manual. This chart is included in Table 3. Levels of service for the daily roadway segment capacity analyses conducted for the study area roadways are summarized in Figure 3 and Table 4.



LEGEND
AM(Midday)[PM]



Figure 2 - Existing Turning Movement Traffic Counts
U.S. Highway 280 APPLE - Chelsea, Alabama
December 2021

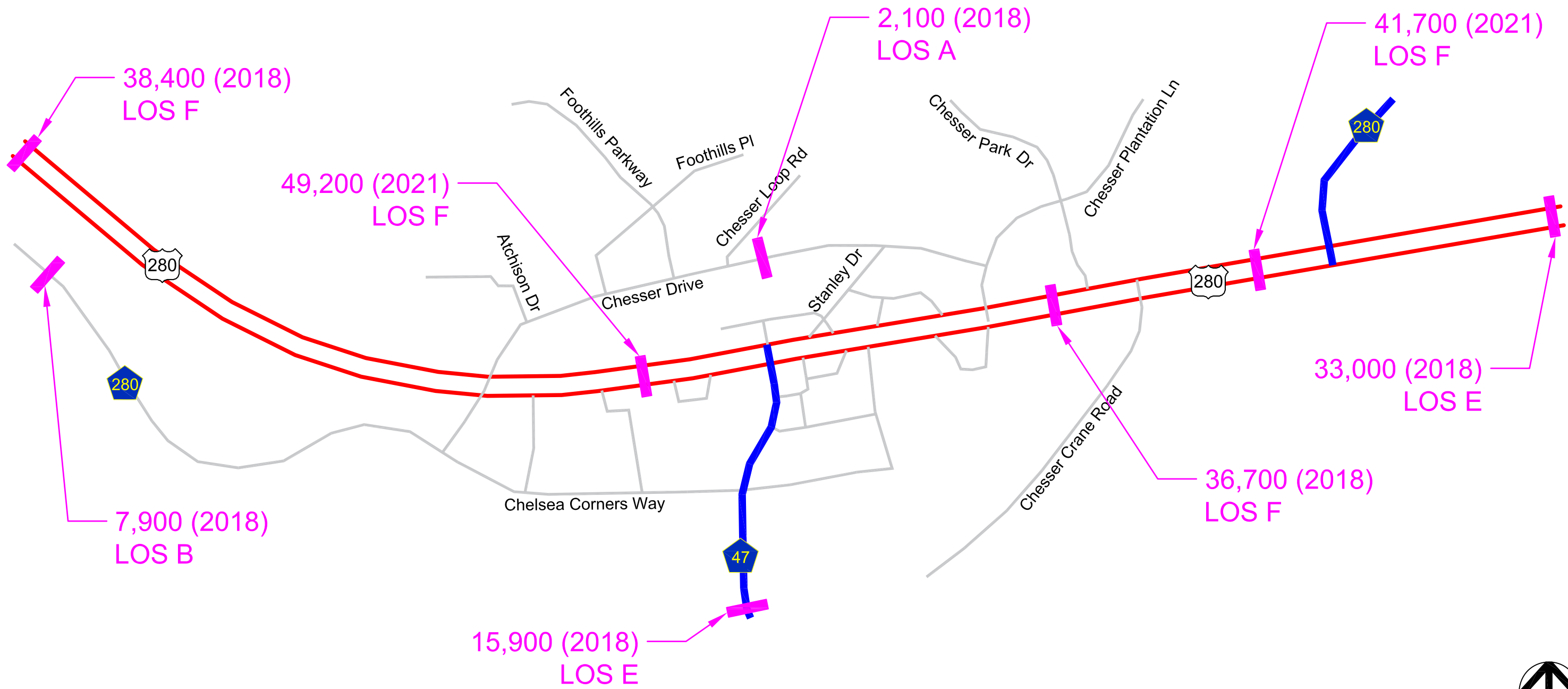


Figure 3 - Existing Machine Traffic Counts

U.S. Highway 280 APPLE - Chelsea, Alabama

December 2021

Table 1
Existing Intersection Capacity Analysis

Intersection	Approach	Movement	Level of Service		
			AM Peak	Midday	PM Peak
U.S. Highway 280 at Chesser Drive	US-280 Eastbound	Left	C	B	C
	US-280 Westbound	Left	B	B	E
	Chesser Dr. Northbound	Left	F	F	F
		Through-Right	F	F	F
		Overall approach	F	F	F
Chesser Dr. Southbound	Left-Through-Right	F	F	F	
U.S. Highway 280 at County Road 47 (Signalized)	US-280 Eastbound	Left	E	E	F
		Through	C	D	D
		Right	C	C	C
		Overall approach	C	D	F
	US-280 Westbound	Left	E	E	F
		Through	D	C	C
		Right	B	B	B
		Overall approach	D	C	E
	County Road 47 Northbound	Left	F	E	F
		Through	D	E	E
		Right	D	D	E
		Overall approach	F	E	F
	Service Road Southbound	Left	E	E	F
		Through	E	E	F
		Right	E	E	E
		Overall approach	E	E	F
Overall intersection			E	D	F
U.S. Highway 280 at Stanley Drive	Stanley Dr. Southbound	Right	B	B	B
U.S. Highway 280 at Chesser Plantation Way	US-280 Eastbound	Left	C	B	B
	US-280 Westbound	Left	A	B	B
	Gas Station Northbound	Left-Through-Right	A	D	F
	Chesser Plantation Way	Left	F	F	F
		Through-Right	C	C	F
Overall approach	F	F	F		
U.S. Highway 280 at Chesser Park Drive	Chesser Park Dr. Southbound	Right	C	B	B
U.S. Highway 280 at Chesser Crane Road	US-280 Westbound	Left	B	B	C
	Chesser Crane Rd. Northbound	Left-Right	C	D	F

Table 1 (Continued)
Existing Intersection Capacity Analysis

Intersection	Approach	Movement	Level of Service		
			AM Peak	Midday	PM Peak
U.S. Highway 280 at County Road 280	US-280 Eastbound	Left	C	B	C
	US-280 Westbound	Left	A	A	A
	Driveway Northbound	Left-Through-Right	F	F	F
	County Road 280 Southbound	Left-Through	E	C	D
		Right	E	C	D
Chesser Drive/ County Road 280/ Chelsea Corners Way (Four-Way Stop)	Driveway Northbound	Left-Through-Right	B	A	B
	Chesser Drive Southbound	Left	B	A	A
		Through-Right			
		Overall approach			
	County Road 280 Eastbound	Left	B	A	B
		Through-Right			
		Overall approach			
	Chelsea Corners Way Westbound	Left-Through-Right	D	B	B
Overall intersection			C	A	B
County Road 47 at Chelsea Corners Way	Chelsea Corners Way Eastbound	Left	F	D	F
		Through-Right	C	B	D
		Overall approach	D	C	F
	Driveway Westbound	Left	F	D	F
		Through-Right	F	C	D
		Overall approach	F	C	F
	County Road 47 Northbound	Left	B	A	A
County Road 47 Southbound	Left	A	A	A	

Table 2
Existing Peak Hour Roadway Segment Capacity Analysis

Roadway	Segment	AM Peak		Midday Peak		PM Peak	
		Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound
US-280	East of CR-41	B	C	B	B	C	C
US-280	West of CR-47	C	D	C	B	C	C
US-280	East of Chesser Plantation Lane	B	C	B	B	C	B
US-280	West of CR-280	B	C	B	B	C	C
US-280	East of CR-280	A	B	B	C	C	B

Table 4
Existing Daily Roadway Segment Levels of Service

Roadway	Location	Cross Section	Classification	Daily Volume	Daily Capacity	v/c Ratio	Segment LOS
US-280	East of County Road 43	4 Lane Divided	Urban Principal Arterial	38,480	33,900	1.13	F
US-280	West of County Road 47	4 Lane Divided	Urban Principal Arterial	49,200	33,900	1.45	F
US-280	East of Chesser Plantation Lane	4 Lane Divided	Urban Principal Arterial	36,700	33,900	1.08	F
US-280	West of CR-280	4 Lane Divided	Urban Principal Arterial	41,700	33,900	1.23	F
US-280	East of CR-280	4 Lane Divided	Urban Principal Arterial	33,000	33,900	0.97	E
CR-280	East of CR-11	2 Lane Undivided	Urban Minor Arterial	7,900	17,800	0.44	B
CR-47	South of Chelsea Corners Way	2 Lane Undivided	Urban Minor Arterial	15,900	17,800	0.89	E
Chesser Drive	East of Chesser Loop Road	2 Lane Undivided	Local Road	2,100	16,600	0.13	A

Table 3
Daily Capacity and Level of Service Chart

Functional Classification	Number of Lanes	Maximum Daily Flow Rate Related to Level of Service					
		A	B	C	D	E	F
Freeway	4	23,800	34,000	42,160	51,000	68,000	>68,000
	6	35,700	51,000	63,240	76,500	102,000	>102,000
	8	47,600	68,000	84,320	102,000	136,000	>136,000
	10	59,500	85,000	105,400	127,500	170,000	>170,000
Expressway	4	17,500	25,000	31,000	37,500	50,000	>50,000
	6	26,250	37,500	46,500	56,250	75,000	>75,000
	8	35,000	50,000	62,000	75,000	100,000	>100,000
Arterial (Divided)	2	7,700	11,000	13,640	16,500	22,000	>22,000
	4	11,865	16,950	21,018	25,425	33,900	>33,900
	6	17,500	25,000	31,000	37,500	50,000	>50,000
	8	25,760	36,800	45,632	55,200	73,600	>73,600
Arterial (Undivided)	2	6,230	8,900	11,036	13,350	17,800	>17,800
	4	10,850	15,500	19,220	23,250	31,000	>31,000
	6	16,030	22,900	28,396	34,350	45,800	>45,800
	8	22,085	31,550	39,122	47,325	63,100	>63,100
Collector (Divided)	2	7,280	10,400	12,896	15,600	20,800	>20,800
	4	9,975	14,250	17,670	21,375	28,500	>28,500
	6	14,700	21,000	26,040	31,500	42,000	>42,000
Collector (Undivided)	2	5,810	8,300	10,292	12,450	16,600	>16,600
	4	9,170	13,100	16,244	19,650	26,200	>26,200
	6	13,545	19,350	23,994	29,025	38,700	>38,700

Crash History

Crash information within the study area was obtained from the CARE crash reporting system via the RPCGB for the years 2018, 2019, and 2020. A total of 126 crashes were reported during the three-year period. Table 5 provides a series of crash statistics for the recorded crashes. A heat map of the crash locations is shown in Figure 4.

**Table 5
Crash Statistics**

Year		Crash Severity		Contributing Circumstances	
2018	49 (36%)	PDO	109 (86%)	Following too close	31 (23%)
2019	41 (32%)	Injury	17 (14%)	Failure to yield	25 (20%)
2020	41 (32%)	Fatality	0 (0%)	Distracted	22 (17%)
				Misjudged stopping distance	9 (7%)
Month of Year		Crash Type			
January	8 (6%)	Rear End	79 (62%)	DUI	4 (3%)
February	9 (7%)	Angle	37 (29%)	Improper Turn	2 (2%)
March	10 (8%)	Sideswipe	8 (6%)	Improper Lane Change	2 (2%)
April	11 (9%)	Single Vehicle	3 (2%)	Ran traffic signal	2 (2%)
May	7 (6%)	Other	1 (1%)	Ran stop sign	1 (1%)
June	16 (13%)	Pedestrian	0 (0%)	Swerved	1 (1%)
July	8 (6%)	Bicycle	0 (0%)	No turn signal	1 (1%)
August	9 (7%)			Crossed centerline	1 (1%)
September	5 (4%)	Intersection Related		Other/Unknown	25 (20%)
October	18 (14%)	No	89 (71%)		
November	8 (6%)	Yes	42 (29%)	Road Condition	
December	17 (14%)			Dry	111 (88%)
		Traffic Control		Wet	15 (12%)
Day of Week		Traffic Signal	42 (33%)	Weather	
Sunday	14 (11%)	Stop Sign	39 (31%)	Clear	89 (70%)
Monday	11 (9%)	None	30 (24%)	Cloudy	25 (20%)
Tuesday	18 (14%)	Yield Sign	10 (8%)	Rain	7 (6%)
Wednesday	22 (17%)	Other	5 (4%)	Mist	5 (4%)
Thursday	24 (19%)			Most Harmful Event	
Friday	27 (22%)	Lighting		Collision	120 (94%)
Saturday	10 (8%)	Daylight	98 (77%)	Fixed Object	2 (2%)
		Dark	20 (16%)	Ran Off Road	1 (1%)
Time of Day		Dusk	7 (6%)	Overturn	1 (1%)
12-6 AM	4 (3%)	Dawn	1 (1%)	Other	2 (2%)
6 AM-12 Noon	37 (29%)				
12 Noon-6 PM	60 (48%)				
6 PM – Midnight	25 (20%)				

Observations

Observations of traffic flow within the study area were conducted on Tuesday to Wednesday, July 6 to 7, 2021 during the morning, midday, and afternoon peak periods of traffic flow by Skipper Consulting, Inc. The observations confirm that the deficiencies in both capacity and safety as indicated in the capacity analyses and crash history do, in fact, existing in the field. Specific observations are given in the following sections of this report.

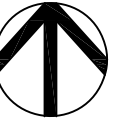
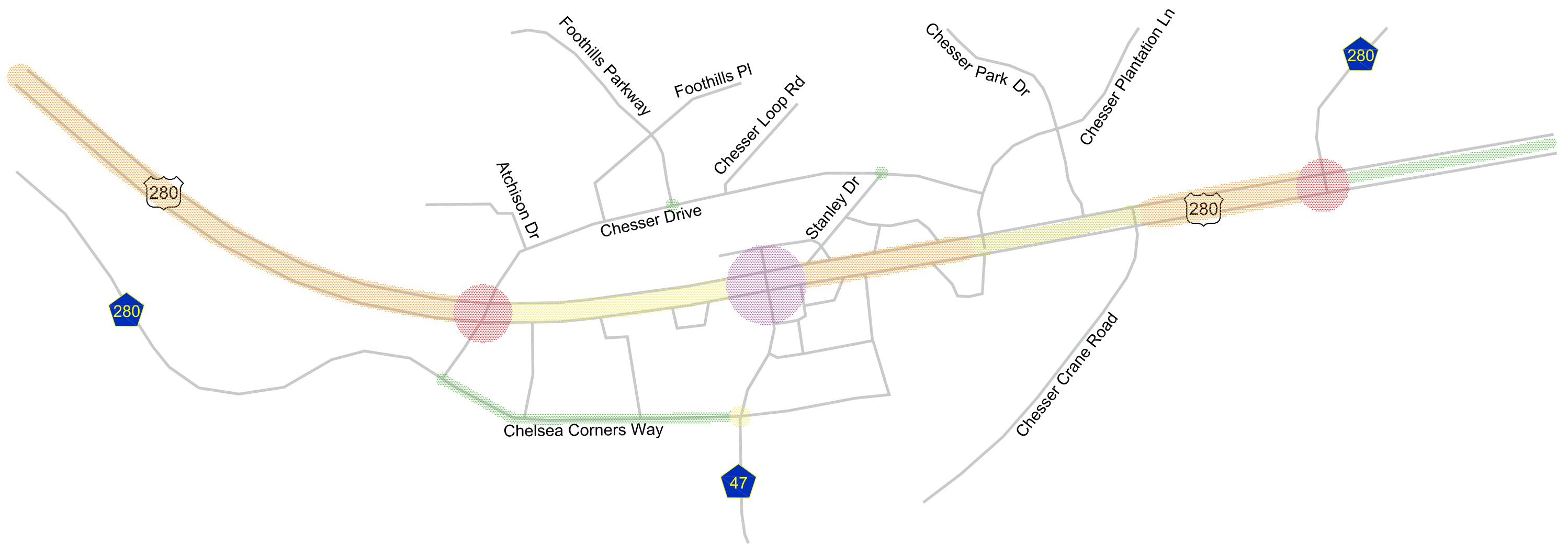
AM Peak Period

- Traffic on U.S. Highway 280 westbound at the County Road 47 intersection forms a significant queue during the time that the side streets and left turns are receiving green signal indications



- Traffic entering U.S. Highway 280 at uncontrolled median opens poses hazards to safe traffic by obscuring sight lines





North
Scale: n.t.s



Figure 4 - Crash Heat Map

U.S. Highway 280 APPLE - Chelsea, Alabama

December 2021

Midday Peak Period

- Multiple vehicles with a median opening making conflicting maneuvers poses hazards to safe traffic



Afternoon Peak Period

- The westbound left turn from U.S. Highway 280 to County Road 47 experiences significant queues and delays



- The eastbound through movement on U.S. Highway 280 at the County Road 47 intersection experiences long queues due to the time given to green indications for the side streets and left turns



- Multiple vehicles with a median opening making conflicting maneuvers poses hazards to safe traffic



FUTURE 2045 CONDITIONS ANALYSIS

Planned and Programmed Roadway Improvements

The current Transportation Improvement Program (TIP) FY 2020-2023, the 2045 Regional Transportation Plan (fiscally-constrained) and local roadway plans were reviewed for projects within the study area. Table 6 lists all planned and programmed projects within the study area through 2045.

**Table 6
Planned and Programmed Roadway Improvements**

FY2020-2023 Transportation Improvement Program							
Roadway	Limits		Scope	Phase	FY	Funds	Comments
U.S. Highway 280	Narrows Parkway	Chesser Crane Road	Resurfacing	CN	2021	\$2.3 million	
2045 Regional Transportation Plan							
No Projects							
Local Projects							
No Projects							

Historic Traffic Growth

An analysis was performed to determine the historical rate of traffic growth on roadways with the study area. Traffic count information from the Alabama Department of Transportation was obtained for the years 2014 through 2019 for U.S. Highway 280 in the vicinity of the study area. This information was analyzed to determine the rate of traffic growth in the area. The traffic count information and analysis is shown in Table 7.

**Table 7
Historical Traffic Growth**

U.S. Highway 280						
	East of CR-43		East of CR-47		West of CR-39	
	ADT	Per Year Growth	ADT	Per Year Growth	ADT	Per Year Growth
2014	35490		35490		26340	
2015	36200	2.0%	36200	10.9%	26870	2.0%
2016	37090	2.5%	37090	2.5%	27530	2.5%
2017	37030	-0.2%	37030	-0.2%	27490	-0.1%
2018	36003	-2.8%	36003	-15.7%	29773	8.3%
2019	36259	0.7%	36259	1.5%	30168	1.3%
<i>overall</i>		0.4%		-0.6%		2.9%

Regional Transportation Demand Model

The regional transportation demand model for the Birmingham area (maintained by the Regional Planning Commission of Greater Birmingham) was used to estimate future growth in traffic in the study area. Base year 2015 calibrated traffic volumes were compared to future year 2045 traffic forecasts for U.S. Highway 280 and other functionally-classified roadways within the study area. The output traffic volumes from the transportation demand model are shown in Figure 5. An analysis of the projected traffic growth in the study area based on the transportation demand model is included in Table 8.

**Table 8
Transportation Demand Model Growth**

Roadway	Location	2015 Calibrated Volume	2045 Forecasted Volume	Percent Growth Per Year
U.S. Highway 280	East of CR-43	32,500	38,600	+0.6%
	West of CR-47	38,300	48,800	+0.9%
	East of CR-47	29,700	38,800	+1.0%
	East of CR-280	27,900	33,500	+0.7%
CR-280 (west)	East of CR-11	6,000	11,900	+3.3%
CR-47	South of US-280	10,100	13,000	+1.0%
CR-280 (east)	North of US-280	3,200	7,300	+4.3%

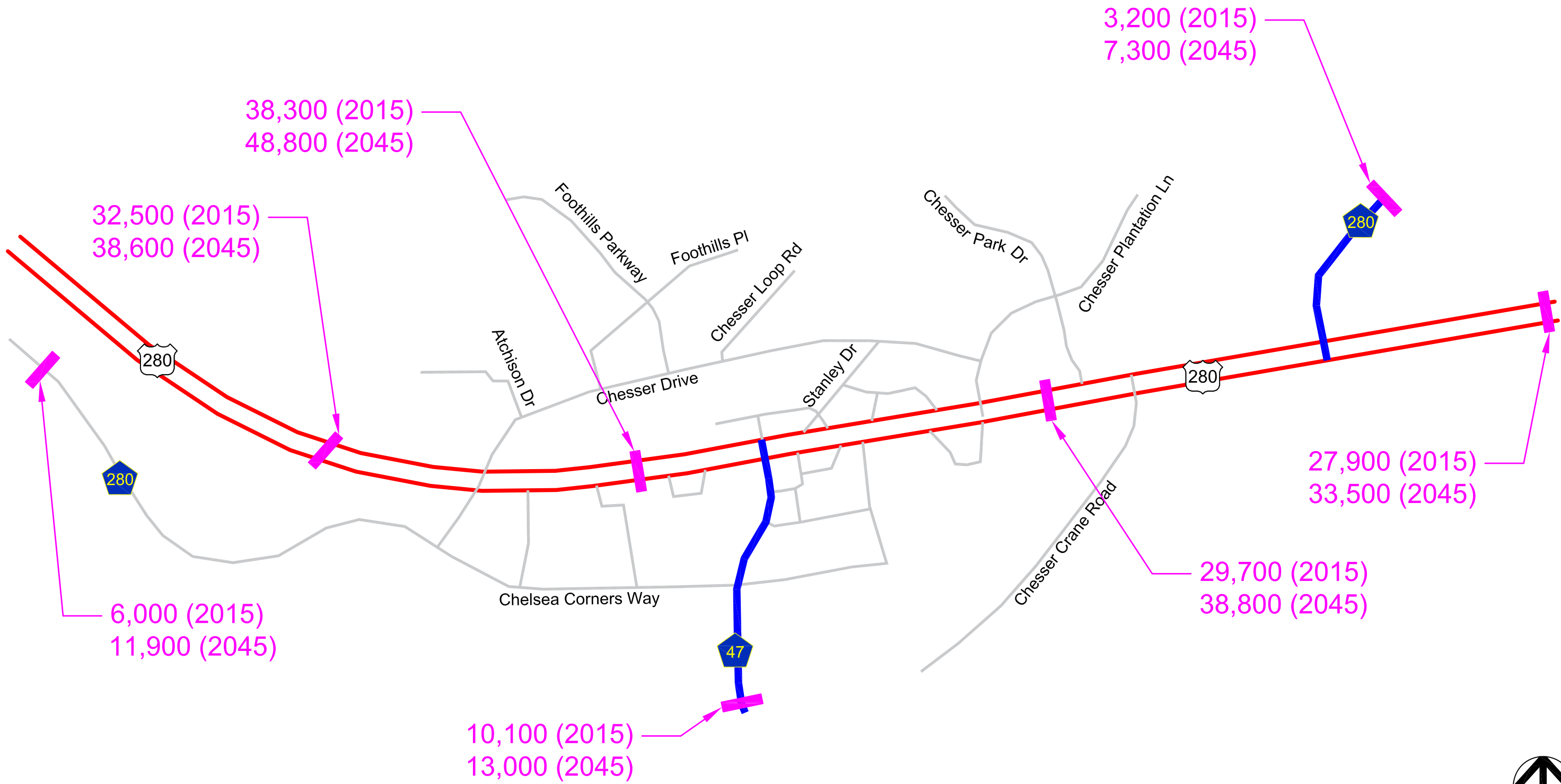
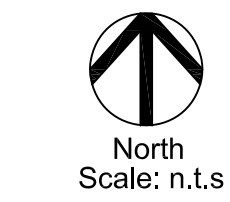


Figure 5 - Transportation Demand Model Output

U.S. Highway 280 APPLE - Chelsea, Alabama



December 2021

Traffic Growth Forecast

Combining the results of the historical traffic growth and the traffic growth projected by the regional transportation demand model, a per year growth rate in traffic of +1.5% per year was calculated. The +1.5% per year historical traffic growth rate was applied to existing traffic counts to develop future year 2045 traffic volumes. The anticipated future 2045 peak hour traffic volumes are shown in Figure 6. The anticipated daily traffic volumes are shown in Figure 7

Future 2045 Peak Hour Intersection Capacity Analysis

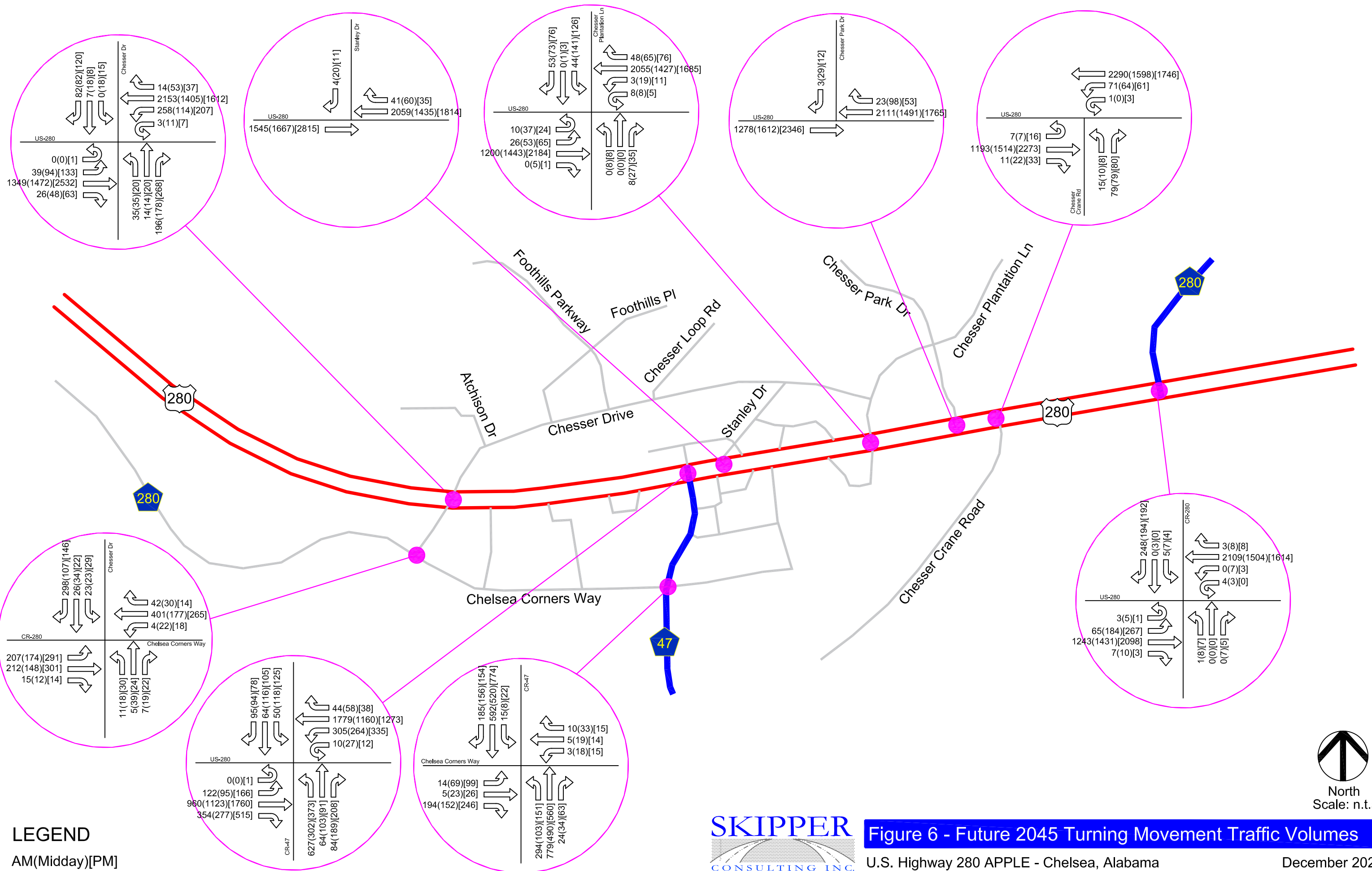
Peak hour intersection capacity analyses were performed for future year 2045 traffic conditions. The results are included in Appendix E and are summarized in Table 9.

Future 2045 Peak Hour Roadway Segment Capacity Analysis

Existing peak hour roadway segment capacity analyses were performed for segments of U.S. Highway 280 within the study area using the method of analysis included in the 2010 *Highway Capacity Manual*. The results of the peak hour roadway segment capacity analyses are included in Appendix F and are summarized in Table 10.

Future 2045 Daily Roadway Segment Capacity Analysis

Roadway segment capacity analyses for future 2045 daily traffic conditions on the study corridors were performed using the daily capacity and level of service chart developed from information obtained from the Alabama Department of Transportation and the Highway Capacity Manual. Levels of service for the daily roadway segment capacity analyses conducted for the study area roadways are summarized in Figure 7 and Table 11.



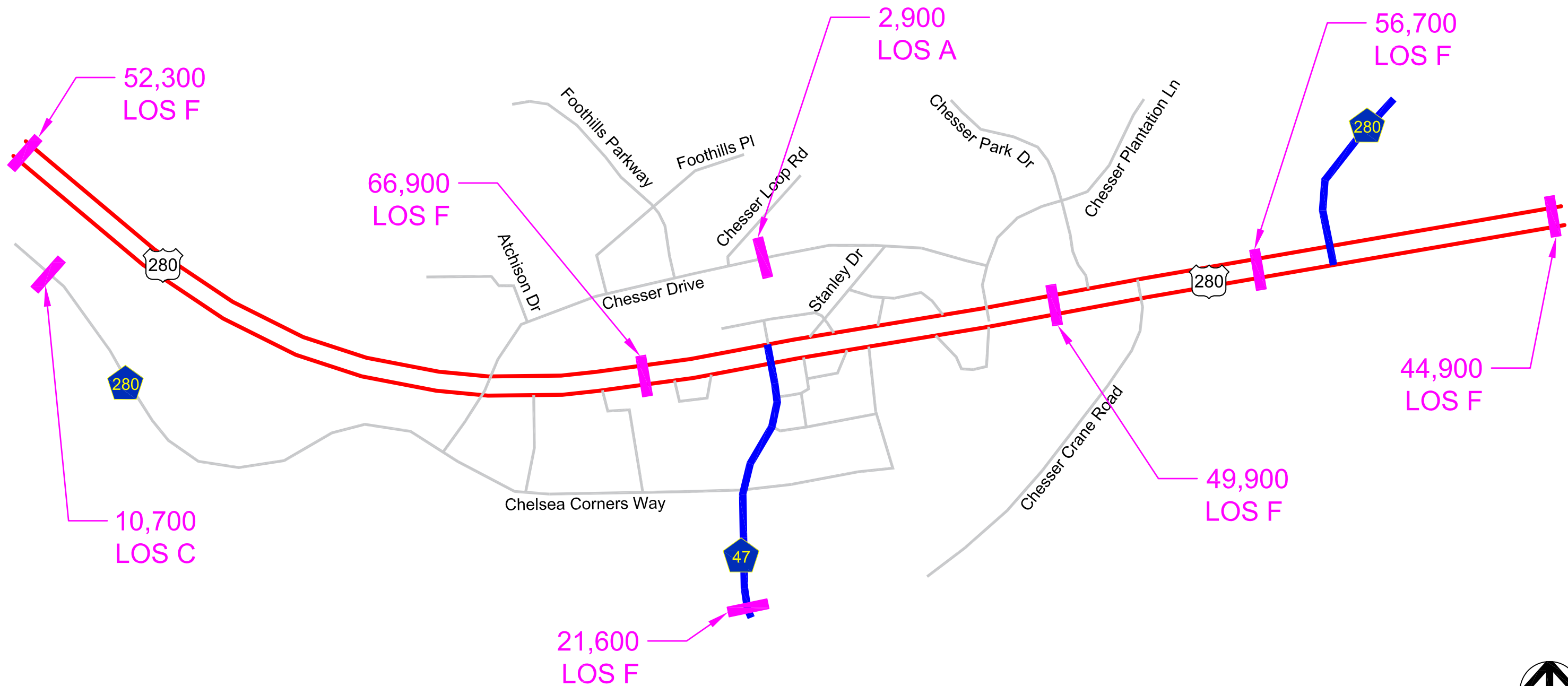


Figure 7 - Future 2045 Daily Traffic Volumes

U.S. Highway 280 APPLE - Chelsea, Alabama

December 2021

**Table 9
Future 2045 Intersection Capacity Analysis**

Intersection	Approach	Movement	Level of Service		
			AM Peak	Midday	PM Peak
U.S. Highway 280 at Chesser Drive	US-280 Eastbound	Left	D	C	D
	US-280 Westbound	Left	C	C	F
	Chesser Dr. Northbound	Left	F	F	F
		Through-Right	F	F	F
		Overall approach	F	F	F
Chesser Dr. Southbound	Left-Through-Right	F	F	F	
U.S. Highway 280 at County Road 47 (Signalized)	US-280 Eastbound	Left	F	F	F
		Through	D	D	F
		Right	C	C	C
		Overall approach	D	D	F
	US-280 Westbound	Left	F	F	F
		Through	F	C	D
		Right	B	B	C
		Overall approach	F	E	F
	County Road 47 Northbound	Left	F	F	F
		Through	E	E	E
		Right	E	E	E
		Overall approach	F	F	F
	Service Road Southbound	Left	E	F	F
		Through	E	F	F
		Right	E	E	E
Overall approach		E	F	F	
Overall intersection			F	E	F
U.S. Highway 280 at Stanley Drive	Stanley Dr. Southbound	Right	C	B	B
U.S. Highway 280 at Chesser Plantation Way	US-280 Eastbound	Left	D	C	C
	US-280 Westbound	Left	B	B	D
	Gas Station Northbound	Left-Through-Right	A	F	F
	Chesser Plantation Way	Left	F	F	F
		Through-Right	E	F	F
Overall approach	F	F	F		
U.S. Highway 280 at Chesser Park Drive	Chesser Park Dr. Southbound	Right	D	C	C
U.S. Highway 280 at Chesser Crane Road	US-280 Westbound	Left	B	C	E
	Chesser Crane Rd. Northbound	Left-Right	F	F	F

**Table 9 (Continued)
Future 2045 Intersection Capacity Analysis**

Intersection	Approach	Movement	Level of Service			
			AM Peak	Midday	PM Peak	
U.S. Highway 280 at County Road 280	US-280 Eastbound	Left	C	C	E	
	US-280 Westbound	Left	A	A	A	
	Driveway Northbound	Left-Through-Right	F	F	F	
	County Road 280 Southbound	Left-Through	F	F	F	
		Right	F	F	F	
Chesser Drive/ County Road 280/ Chelsea Corners Way (Four-Way Stop)	Driveway Northbound	Left-Through-Right	B	B	B	
	Chesser Drive Southbound	Left	C	B	B	
		Through-Right				
		Overall approach				
	County Road 280 Eastbound	Left	C	B	C	
		Through-Right				
		Overall approach				
	Chelsea Corners Way Westbound	Left-Through-Right	F	B	C	
	Overall intersection			F	B	C
	County Road 47 at Chelsea Corners Way	Chelsea Corners Way Eastbound	Left	F	F	F
Through-Right			F	D	F	
Overall approach			F	F	F	
Driveway Westbound		Left	F	F	F	
		Through-Right	F	D	F	
		Overall approach	F	F	F	
County Road 47 Northbound		Left	C	A	B	
County Road 47 Southbound	Left	B	A	A		

Table 10
Future 2045 Peak Hour Roadway Segment Capacity Analysis

Roadway	Segment	AM Peak		Midday Peak		PM Peak	
		Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound
US-280	East of CR-41	C	D	C	B	D	D
US-280	West of CR-47	D	E	C	C	E	D
US-280	East of Chesser Plantation Lane	B	D	C	C	D	C
US-280	West of CR-280	C	D	C	D	D	D
US-280	East of CR-280	B	C	B	B	D	C

Table 11
Future 2045 Daily Roadway Segment Levels of Service

Roadway	Location	Cross Section	Classification	Daily Volume	Daily Capacity	v/c Ratio	Segment LOS
US-280	East of County Road 43	4 Lane Divided	Urban Principal Arterial	52,300	33,900	1.54	F
US-280	West of County Road 47	4 Lane Divided	Urban Principal Arterial	66,900	33,900	1.97	F
US-280	East of Chesser Plantation Lane	4 Lane Divided	Urban Principal Arterial	49,900	33,900	1.47	F
US-280	West of CR-280	4 Lane Divided	Urban Principal Arterial	56,700	33,900	1.67	F
US-280	East of CR-280	4 Lane Divided	Urban Principal Arterial	44,900	33,900	1.32	F
CR-280	East of CR-11	2 Lane Undivided	Urban Minor Arterial	10,700	17,800	0.60	C
CR-47	South of Chelsea Corners Way	2 Lane Undivided	Urban Minor Arterial	21,600	17,800	1.21	F
Chesser Drive	East of Chesser Loop Road	2 Lane Undivided	Local Road	2,900	16,600	0.17	A

ANALYSIS OF IMPROVEMENTS

Improvement Concept

The proposed recommended improvement concept is shown in Figure 8. The following are the significant elements of the proposed improvement plan:

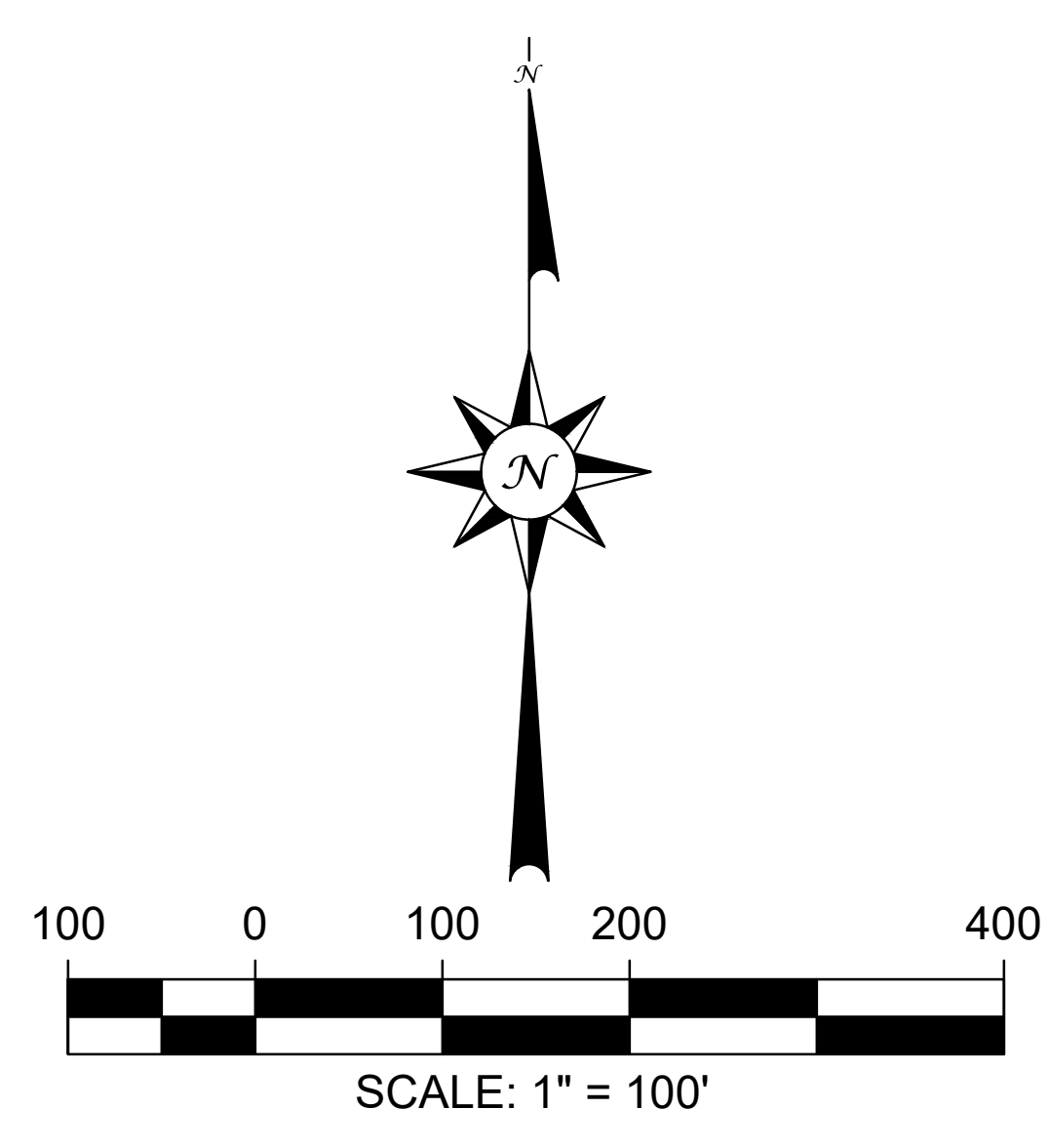
- Construction of a new right-in/right out access to U.S. Highway 280 westbound to the west of Chesser Drive
- Widening U.S. Highway 280 eastbound by one additional lane from west of Chesser Drive to County Road 47
- Conversion of the intersection of U.S. Highway 280 at Chesser Drive to a signalized RCUT
- Construction of dual left turn lanes from U.S. Highway 280 westbound onto Chesser Drive
- Construction of an auxiliary lane on U.S. Highway 280 eastbound between County Road 47 and Chesser Drive
- Constructing inter-parcel access along the south side of U.S. Highway 280 between Chesser Drive and County Road 47
- Closing accesses to gas stations on U.S. Highway 280 eastbound on either side of County Road 47
- Construction of dual left turn lanes from U.S. Highway 280 westbound onto County Road 47
- Widening County Road 47 from U.S. Highway 280 to the creek bridge south of Chesser Crane Road
- Construction of a roundabout at the intersection of County Road 47 at Chelsea Corners Way
- Eliminating cross street movements at the intersection of U.S. Highway 280 at County Road 47
- Closure of Stanley Drive at U.S. Highway 280
- Construction of a signalized Alabama-T at the intersection of U.S. Highway 280 at Chesser Plantation Way
- Closure of the median opening on U.S. Highway 280 for Chesser Crane Road
- Conversion of the intersection of U.S. Highway 280 at Old US-280 to an RCUT

Future 2045 Peak Hour Traffic Volumes with Improvements

Projected 2045 traffic was reassigned based on the improvement concept. The resultant future 2045 peak hour traffic volumes are shown in Figure 9.

Future 2045 Peak Hour Intersection Capacity Analysis with Improvements

Peak hour intersection capacity analyses were performed for future year 2045 traffic conditions with the proposed improvements in place. The results are included in Appendix G and are summarized in Table 12.



- PAVEMENT REMOVAL / NEW GRASS AREAS
- NEW PAVEMENT WIDENING
- NEW TRUCK APRON
- NEW TRUCK BLISTER
- FUTURE



Figure 8

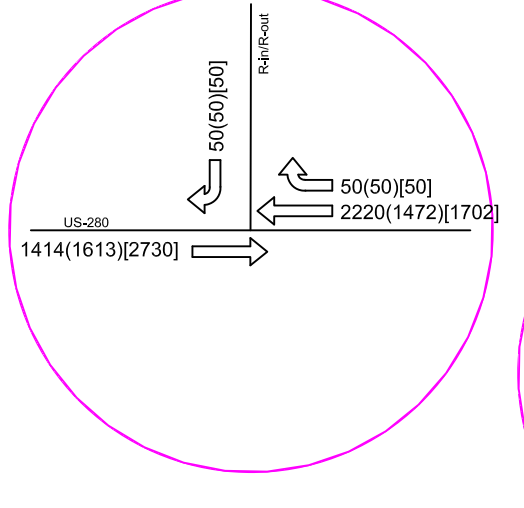
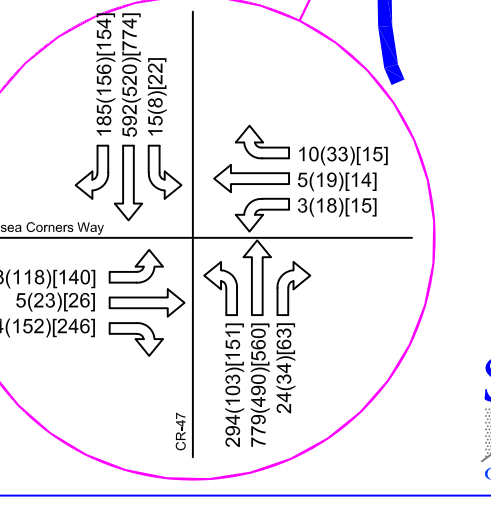
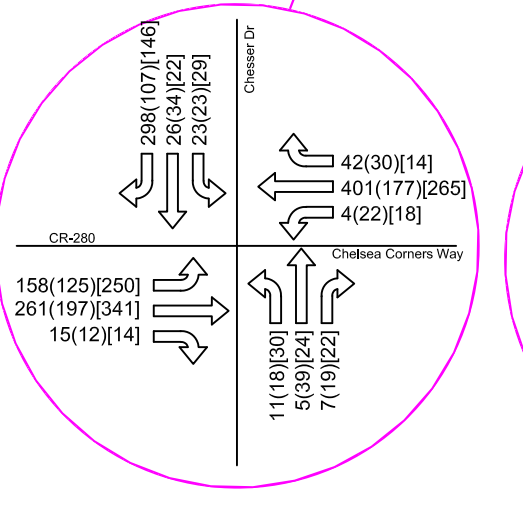
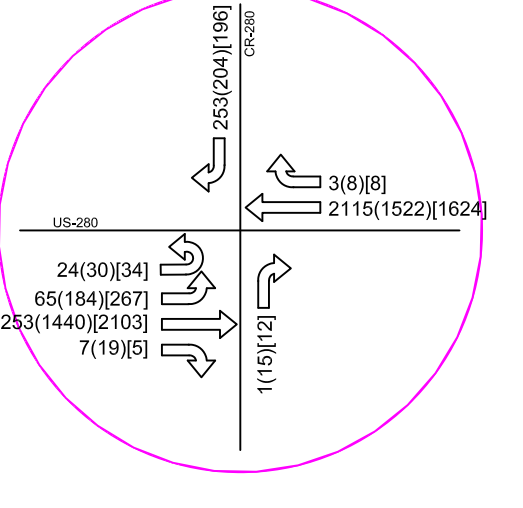
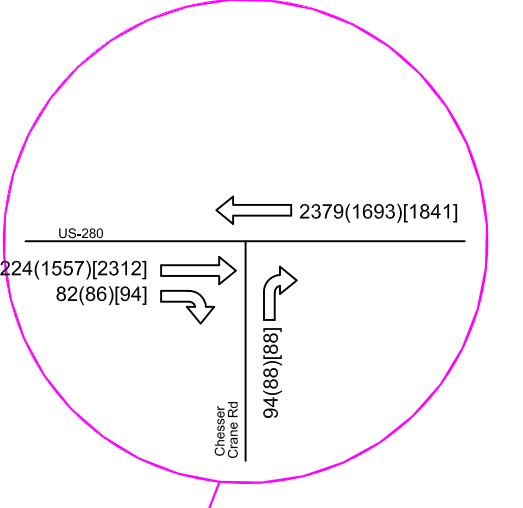
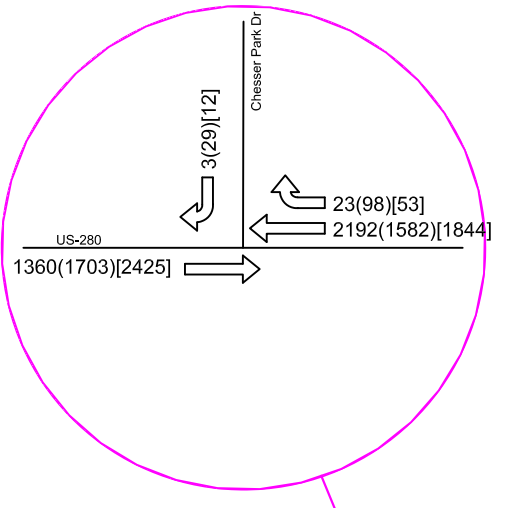
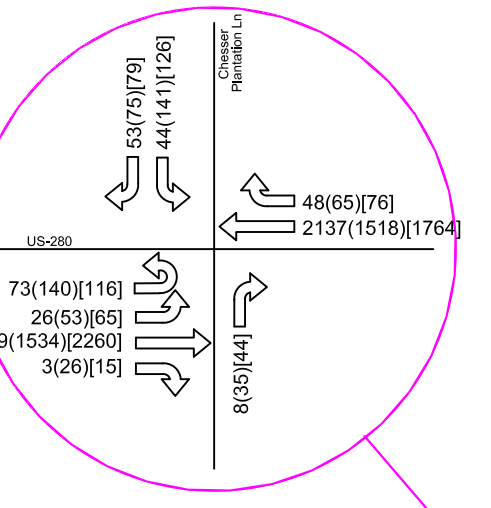
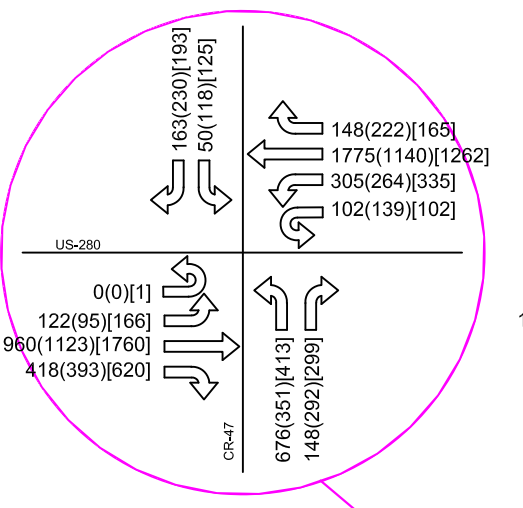
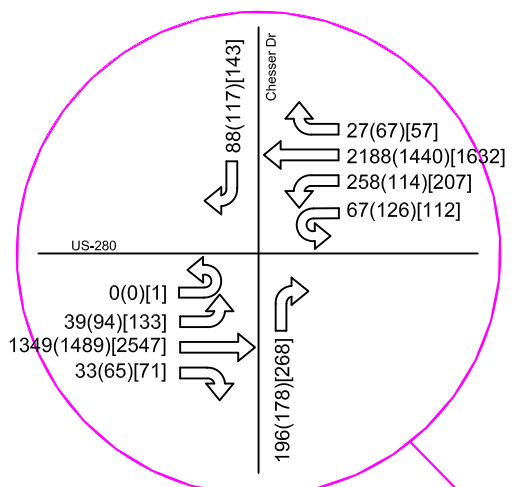
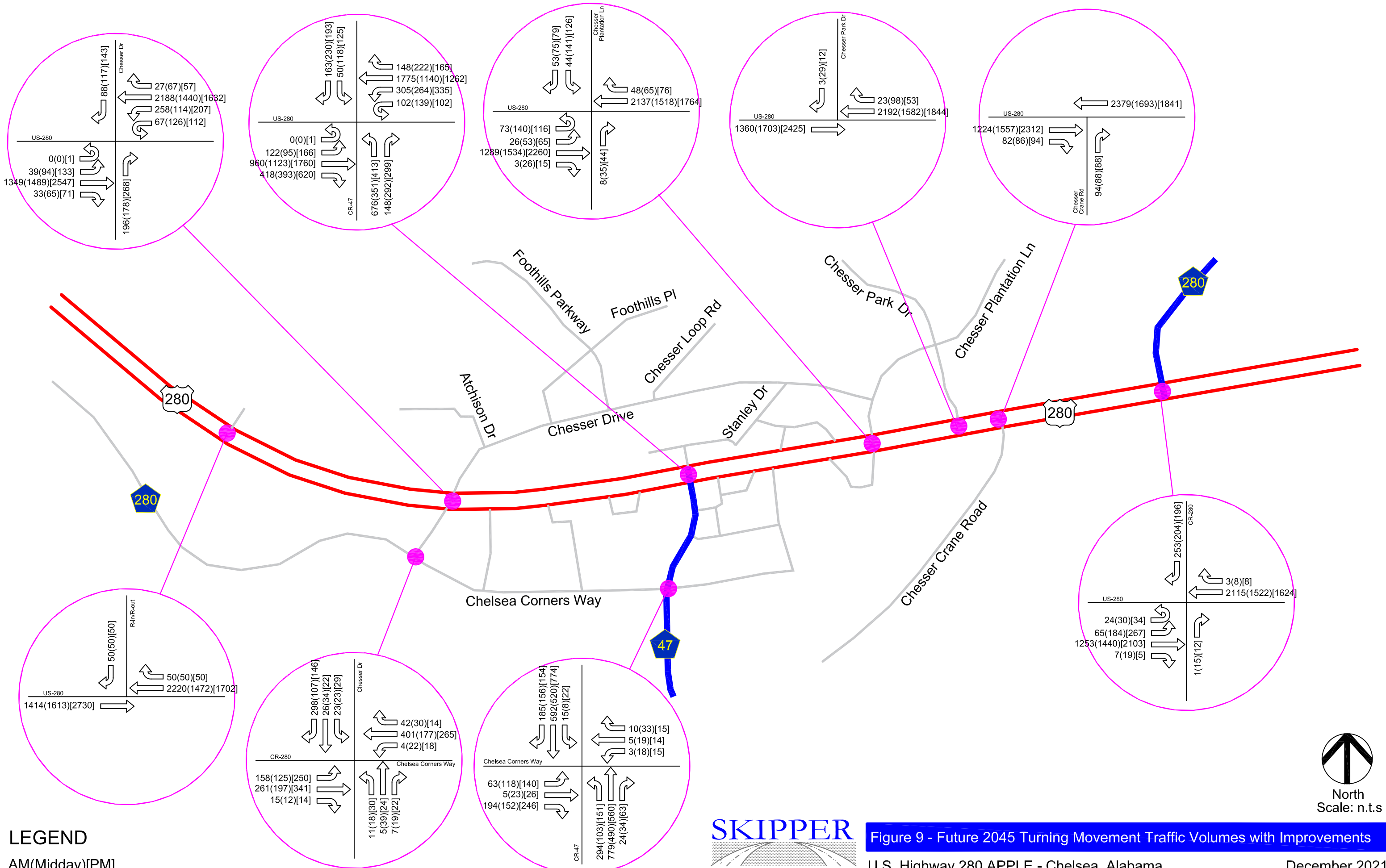


Table 12
Future 2045 Intersection Capacity Analysis with Improvements

Intersection	Approach	Movement	Level of Service	
			AM Peak	PM Peak
U.S. Highway 280 at New Right-In/Right-Out	Right-In/Right-Out Southbound	Right	F	
U.S. Highway 280 at Chesser Drive	US-280 Eastbound	Left	D	D
		Through	B	C
		Right	A	A
		Overall approach	B	C
	US-280 Westbound	U-Turn	A	C
		Left	A	C
		Through	A	A
		Right	A	A
	Overall approach	A	B	
	Chesser Dr. Northbound	Right	B	A
Chesser Dr. Southbound	Right	A	A	
Overall intersection			A	B
U.S. Highway 280 at County Road 47 (Signalized)	US-280 Eastbound	Left	F	F
		Through	B	C
		Right	C	B
		Overall approach	D	C
	US-280 Westbound	Left	E	F
		Through	C	A
		Right	A	A
		Overall approach	C	D
	County Road 47 Northbound	Left	F	F
		Right	D	F
		Overall approach	F	F
	Service Road Southbound	Left	D	E
		Right	D	E
		Overall approach	D	E
Overall intersection			D	D
U.S. Highway 280 at Chesser Plantation Way	US-280 Eastbound	Left	D	C
		Through-Right	A	A
		Overall approach	A	B
	US-280 Westbound	Through	D	C
		Right	A	A
		Overall approach	D	C
	Gas Station Northbound	Right	E	E
	Chesser Plantation Way	Left	E	F
		Through-Right	E	E
		Overall approach	E	E
Overall intersection			C	C

Table 12 (Continued)
Future 2045 Intersection Capacity Analysis with Improvements

Intersection	Approach	Movement	Level of Service	
			AM Peak	PM Peak
U.S. Highway 280 at Chesser Park Drive	Chesser Park Dr. Southbound	Right	D	B
U.S. Highway 280 at Chesser Crane Road	Chesser Crane Rd. Northbound	Right	C	E
U.S. Highway 280 at County Road 280	US-280 Eastbound	Left	B	C
		Through-Right	A	A
		Overall approach	A	A
	US-280 Westbound	Through-Right	A	A
	Driveway Northbound	Right	A	A
	County Road 280 Southbound	Right	A	A
	Overall intersection			A
Chesser Drive/ County Road 280/ Chelsea Corners Way (Four-Way Stop)	Driveway Northbound	Left-Through-Right	B	B
	Chesser Drive Southbound	Left	C	B
		Through-Right		
		Overall approach		
	County Road 280 Eastbound	Left	C	C
		Through-Right		
Overall approach				
Chelsea Corners Way Westbound	Left-Through-Right	F	C	
Overall intersection			F	C
County Road 47 at Chelsea Corners Way (Roundabout)	Chelsea Corners Way Eastbound	Left-Through-Right	C	D
	Driveway Westbound	Left-Through-Right	B	A
	County Road 47 Northbound	Left-Through	B	A
		Through-Right	C	B
	County Road 47 Southbound	Left-Through	B	B
		Through-Right	C	B
Overall intersection			C	B

Cost Estimate

The opinion of cost for construction of the recommended improvements is shown in the following table.

PRELIMINARY OPINION OF PROBABLE COSTS					
US-280 AND CR-47					
CHELSEA, ALABAMA					
ROADWAY	ITEM		ITEM	UNIT	
QUANTITY	NUMBER	UNIT	DESCRIPTION	PRICE	TOTAL
3500	206D-000	LINEAR FOOT	REMOVING PIPE	\$ 25.00	\$ 87,500.00
700	206D-001	LINEAR FOOT	REMOVING GUARDRAIL	\$ 7.00	\$ 4,900.00
3100	206D-003	LINEAR FOOT	REMOVING CURB AND GUTTER	\$ 15.00	\$ 46,500.00
6	206E-001	EACH	REMOVING INLETS	\$ 500.00	\$ 3,000.00
4	206E-019	EACH	REMOVING GUARDRAIL END ANCHOR (TYPE 10 SERIES)	\$ 400.00	\$ 1,600.00
6	206E-050	EACH	REMOVING SLOPE PAVED HEADWALL	\$ 350.00	\$ 2,100.00
17300	210A-000	CUBIC YARD	UNCLASSIFIED EXCAVATION	\$ 10.00	\$ 173,000.00
10000	210D-001	CUBIC YARD	BORROW EXCAVATION (LOOSE TRUCKBED MEASUREMENT)	\$ 15.00	\$ 150,000.00
2700	214A-000	CUBIC YARD	STRUCTURE EXCAVATION	\$ 20.00	\$ 54,000.00
1100	214B-001	CUBIC YARD	FOUNDATION BACKFILL, COMMERCIAL	\$ 50.00	\$ 55,000.00
12750	301A-012	SQUARE YARD	CRUSHED AGGREGATE BASE COURSE, TYPE B, PLANT MIXED, 6" COMPACTED THICKNESS	\$ 15.00	\$ 191,250.00
12750	401A-000	SQUARE YARD	BITUMINOUS TREATMENT A	\$ 2.00	\$ 25,500.00
3110	405A-000	GALLON	TACK COAT	\$ 4.00	\$ 12,440.00
2100	424A-360	TON	SUPERPAVE BITUMINOUS CONCRETE WEARING SURFACE LAYER, 1/2" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	\$ 150.00	\$ 315,000.00
2050	424B-651	TON	SUPERPAVE BITUMINOUS CONCRETE UPPER BINDER LAYER, 1" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	\$ 150.00	\$ 307,500.00
2175	424B-681	TON	SUPERPAVE BITUMINOUS CONCRETE LOWER BINDER LAYER, 1" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	\$ 150.00	\$ 326,250.00
3500	530A-002	LINEAR FOOT	24" ROADWAY PIPE (CLASS 3 R.C.)	\$ 75.00	\$ 262,500.00
1	600A-000	LUMP SUM	MOBILIZATION	\$ 465,895.00	\$ 465,895.00
2700	610D-003	SQUARE YARD	FILTER BLANKET, GEOTEXTILE	\$ 5.00	\$ 13,500.00
1250	614A-000	CUBIC YARD	SLOPE PAVING	\$ 750.00	\$ 937,500.00
4	619A-053	EACH	24" ROADWAY PIPE END TREATMENT, CLASS 2	\$ 1,200.00	\$ 4,800.00
4	621A-022	EACH	JUNCTION BOXES, TYPE 1 (MODIFIED)	\$ 5,000.00	\$ 20,000.00
20	621C-015	EACH	INLETS, TYPE S1 OR S3 (1 WING)	\$ 6,000.00	\$ 120,000.00
3100	623C-000	LINEAR FOOT	COMBINATION CURB & GUTTER, TYPE C	\$ 55.00	\$ 170,500.00
1200	650A-000	CUBIC YARD	TOPSOIL	\$ 30.00	\$ 36,000.00
3	652A-100	ACRE	SEEDING	\$ 1,000.00	\$ 3,000.00
9700	654A-000	SQUARE YARD	SOLID SODDING	\$ 6.00	\$ 58,200.00
3	665A-000	ACRE	TEMPORARY SEEDING	\$ 550.00	\$ 1,650.00
9	665B-001	TON	TEMPORARY MULCHING	\$ 400.00	\$ 3,600.00
4500	665J-002	LINEAR FOOT	SILT FENCE	\$ 4.00	\$ 18,000.00
4500	665O-001	LINEAR FOOT	SILT FENCE REMOVAL	\$ 1.50	\$ 6,750.00
4000	665Q-002	LINEAR FOOT	WATTLE	\$ 8.00	\$ 32,000.00
1	680A-001	LUMP SUM	GEOMETRIC CONTROLS	\$ 100,000.00	\$ 100,000.00
4	701A-227	MILE	SOLID WHITE, CLASS 2, TYPE A TRAFFIC STRIPE (5" WIDE)	\$ 3,400.00	\$ 13,600.00
3	701A-230	MILE	SOLID YELLOW, CLASS 2, TYPE A TRAFFIC STRIPE (5" WIDE)	\$ 3,400.00	\$ 10,200.00
4	701A-239	MILE	BROKEN WHITE, CLASS 2, TYPE A TRAFFIC STRIPE (5" WIDE)	\$ 2,000.00	\$ 8,000.00
3000	701B-205	LINEAR FOOT	DOTTED, CLASS 2, TYPE A, TRAFFIC STRIPE	\$ 2.00	\$ 6,000.00
8	701C-000	MILE	BROKEN TEMPORARY TRAFFIC STRIPE	\$ 900.00	\$ 7,200.00
14	701C-001	MILE	SOLID TEMPORARY TRAFFIC STRIPE	\$ 900.00	\$ 12,600.00
2400	703A-002	SQUARE FOOT	TRAFFIC CONTROL MARKINGS, CLASS 2, TYPE A	\$ 5.00	\$ 12,000.00
500	703B-002	SQUARE FOOT	TRAFFIC CONTROL LEGENDS, CLASS 2, TYPE A	\$ 5.00	\$ 2,500.00
800	703D-001	SQUARE FOOT	TEMPORARY TRAFFIC CONTROL MARKINGS	\$ 2.00	\$ 1,600.00
400	703E-001	SQUARE FOOT	TEMPORARY TRAFFIC CONTROL LEGENDS	\$ 2.00	\$ 800.00
2500	705A-037	EACH	PAVEMENT MARKERS, CLASS A-H, TYPE 2-D	\$ 5.00	\$ 12,500.00
400	710A-115	SQAURE FOOT	SIGNS	\$ 25.00	\$ 10,000.00
560	710B-001	LINEAR FOOT	SIGN POST	\$ 15.00	\$ 8,400.00
1500	740B-000	SQUARE FOOT	CONSTRUCTION SIGNS	\$ 8.00	\$ 12,000.00
300	740D-000	EACH	CHANNELIZING DRUMS	\$ 50.00	\$ 15,000.00
300	740E-000	EACH	CONES (36 INCHES HIGH)	\$ 15.00	\$ 4,500.00

12	740F-002	EACH	BARRICADES, TYPE III	\$ 250.00	\$ 3,000.00
6	740I-002	EACH	WARNING LIGHTS, TYPE B	\$ 260.00	\$ 1,560.00
300	740M-001	EACH	BALLAST FOR CONE	\$ 6.00	\$ 1,800.00
6	741C-010	EACH	PORTABLE SEQUENTIAL ARROW AND CHEVRON SIGN UNIT	\$ 4,000.00	\$ 24,000.00
6	742A-003	EACH	PORTABLE CHANGEABLE MESSAGE SIGN, TYPE 3	\$ 8,000.00	\$ 48,000.00
1		LUMP SUM	TRAFFIC SIGNALS (4 AT \$250,000 EACH)	\$ 1,000,000.00	\$ 1,000,000.00
				Subtotal	\$5,224,695
				Right-of-Way	\$300,000
				Utilities	\$500,000
				Construction Total	\$6,024,695
				With 10% Contingency	\$6,627,164

Phase 1 Improvements

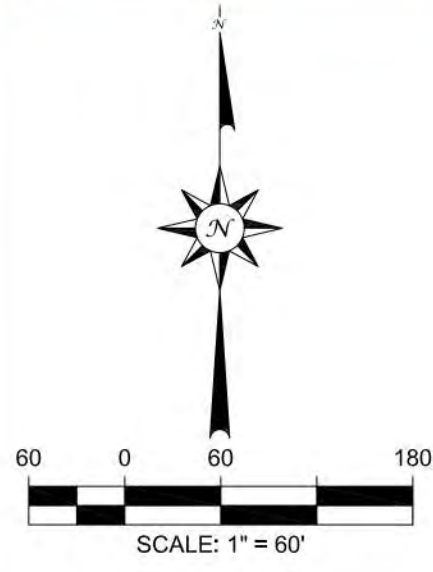
In order to provide direction for a potential Phase 1 project within the ALDOT right-of-way, an additional improvement drawing was prepared. The recommended Phase 1 improvements within the ALDOT right-of-way are shown in Figure 10.

Phase 1 Cost Estimate

The opinion of cost for construction of the recommended improvements within the ALDOT right-of-way for Phase 1 recommendations is shown in the following table.

PRELIMINARY OPINION OF PROBABLE COSTS IMPROVEMENTS WITHIN US-280 RIGHT-OF-WAY CHELSEA, ALABAMA					
ROADWAY	ITEM	UNIT	ITEM	UNIT	
QUANTITY	NUMBER		DESCRIPTION	PRICE	TOTAL
500	206D-000	LINEAR FOOT	REMOVING PIPE	\$ 25.00	\$ 12,500.00
300	206D-001	LINEAR FOOT	REMOVING GUARDRAIL	\$ 7.00	\$ 2,100.00
600	206D-003	LINEAR FOOT	REMOVING CURB AND GUTTER	\$ 15.00	\$ 9,000.00
0	206E-001	EACH	REMOVING INLETS	\$ 500.00	\$ -
2	206E-019	EACH	REMOVING GUARDRAIL END ANCHOR (TYPE 10 SERIES)	\$ 400.00	\$ 800.00
4	206E-050	EACH	REMOVING SLOPE PAVED HEADWALL	\$ 350.00	\$ 1,400.00
10700	210A-000	CUBIC YARD	UNCLASSIFIED EXCAVATION	\$ 10.00	\$ 107,000.00
6000	210D-001	CUBIC YARD	BORROW EXCAVATION (LOOSE TRUCKBED MEASUREMENT)	\$ 15.00	\$ 90,000.00
400	214A-000	CUBIC YARD	STRUCTURE EXCAVATION	\$ 20.00	\$ 8,000.00
200	214B-001	CUBIC YARD	FOUNDATION BACKFILL, COMMERCIAL	\$ 50.00	\$ 10,000.00
3960	301A-012	SQUARE YARD	CRUSHED AGGREGATE BASE COURSE, TYPE B, PLANT MIXED, 6" COMPACTED THICKNESS	\$ 15.00	\$ 59,400.00
3960	401A-000	SQUARE YARD	BITUMINOUS TREATMENT A	\$ 2.00	\$ 7,920.00
710	405A-000	GALLON	TACK COAT	\$ 4.00	\$ 2,840.00
320	424A-360	TON	SUPERPAVE BITUMINOUS CONCRETE WEARING SURFACE LAYER, 1/2" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	\$ 150.00	\$ 48,000.00
640	424B-651	TON	SUPERPAVE BITUMINOUS CONCRETE UPPER BINDER LAYER, 1" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	\$ 150.00	\$ 96,000.00
665	424B-681	TON	SUPERPAVE BITUMINOUS CONCRETE LOWER BINDER LAYER, 1" MAXIMUM AGGREGATE SIZE MIX, ESAL RANGE C/D	\$ 150.00	\$ 99,750.00
500	530A-002	LINEAR FOOT	24" ROADWAY PIPE (CLASS 3 R.C.)	\$ 75.00	\$ 37,500.00
1	600A-000	LUMP SUM	MOBILIZATION	\$ 236,100.00	\$ 236,100.00
2000	610D-003	SQUARE YARD	FILTER BLANKET, GEOTEXTILE	\$ 5.00	\$ 10,000.00
900	614A-000	CUBIC YARD	SLOPE PAVING	\$ 750.00	\$ 675,000.00
4	619A-053	EACH	24" ROADWAY PIPE END TREATMENT, CLASS 2	\$ 1,200.00	\$ 4,800.00
0	621A-022	EACH	JUNCTION BOXES, TYPE 1 (MODIFIED)	\$ 5,000.00	\$ -
0	621C-015	EACH	INLETS, TYPE S1 OR S3 (1 WING)	\$ 6,000.00	\$ -
600	623C-000	LINEAR FOOT	COMBINATION CURB & GUTTER, TYPE C	\$ 55.00	\$ 33,000.00
900	650A-000	CUBIC YARD	TOPSOIL	\$ 30.00	\$ 27,000.00
2	652A-100	ACRE	SEEDING	\$ 1,000.00	\$ 2,000.00
7300	654A-000	SQUARE YARD	SOLID SODDING	\$ 6.00	\$ 43,800.00
2	665A-000	ACRE	TEMPORARY SEEDING	\$ 550.00	\$ 1,100.00
6	665B-001	TON	TEMPORARY MULCHING	\$ 400.00	\$ 2,400.00
1500	665J-002	LINEAR FOOT	SILT FENCE	\$ 4.00	\$ 6,000.00

1500	665O-001	LINEAR FOOT	SILT FENCE REMOVAL	\$ 1.50	\$ 2,250.00
3000	665Q-002	LINEAR FOOT	WATTLE	\$ 8.00	\$ 24,000.00
1	680A-001	LUMP SUM	GEOMETRIC CONTROLS	\$ 40,000.00	\$ 40,000.00
3	701A-227	MILE	SOLID WHITE, CLASS 2, TYPE A TRAFFIC STRIPE (5" WIDE)	\$ 3,400.00	\$ 10,200.00
2	701A-230	MILE	SOLID YELLOW, CLASS 2, TYPE A TRAFFIC STRIPE (5" WIDE)	\$ 3,400.00	\$ 6,800.00
2	701A-239	MILE	BROKEN WHITE, CLASS 2, TYPE A TRAFFIC STRIPE (5" WIDE)	\$ 2,000.00	\$ 4,000.00
3000	701B-205	LINEAR FOOT	DOTTED, CLASS 2, TYPE A, TRAFFIC STRIPE	\$ 2.00	\$ 6,000.00
4	701C-000	MILE	BROKEN TEMPORARY TRAFFIC STRIPE	\$ 900.00	\$ 3,600.00
10	701C-001	MILE	SOLID TEMPORARY TRAFFIC STRIPE	\$ 900.00	\$ 9,000.00
1800	703A-002	SQUARE FOOT	TRAFFIC CONTROL MARKINGS, CLASS 2, TYPE A	\$ 5.00	\$ 9,000.00
300	703B-002	SQUARE FOOT	TRAFFIC CONTROL LEGENDS, CLASS 2, TYPE A	\$ 5.00	\$ 1,500.00
700	703D-001	SQUARE FOOT	TEMPORARY TRAFFIC CONTROL MARKINGS	\$ 2.00	\$ 1,400.00
300	703E-001	SQUARE FOOT	TEMPORARY TRAFFIC CONTROL LEGENDS	\$ 2.00	\$ 600.00
1500	705A-037	EACH	PAVEMENT MARKERS, CLASS A-H, TYPE 2-D	\$ 5.00	\$ 7,500.00
300	710A-115	SQAURE FOOT	SIGNS	\$ 25.00	\$ 7,500.00
420	710B-001	LINEAR FOOT	SIGN POST	\$ 15.00	\$ 6,300.00
1000	740B-000	SQUARE FOOT	CONSTRUCTION SIGNS	\$ 8.00	\$ 8,000.00
200	740D-000	EACH	CHANNELIZING DRUMS	\$ 50.00	\$ 10,000.00
200	740E-000	EACH	CONES (36 INCHES HIGH)	\$ 15.00	\$ 3,000.00
8	740F-002	EACH	BARRICADES, TYPE III	\$ 250.00	\$ 2,000.00
4	740I-002	EACH	WARNING LIGHTS, TYPE B	\$ 260.00	\$ 1,040.00
200	740M-001	EACH	BALLAST FOR CONE	\$ 6.00	\$ 1,200.00
4	741C-010	EACH	PORTABLE SEQUENTIAL ARROW AND CHEVRON SIGN UNIT	\$ 4,000.00	\$ 16,000.00
4	742A-003	EACH	PORTABLE CHANGEABLE MESSAGE SIGN, TYPE 3	\$ 8,000.00	\$ 32,000.00
1		LUMP SUM	TRAFFIC SIGNALS (3 AT \$250,000 EACH)	\$ 750,000.00	\$ 750,000.00
			Subtotal		\$2,596,300
			Right-of-Way		\$-
			Utilities		\$150,000
			Construction Total		\$2,746,300
			With 10% Contingency		\$3,020,930



- PAVEMENT REMOVAL / NEW GRASS AREAS
- NEW PAVEMENT WIDENING
- NEW TRUCK APRON
- NEW TRUCK BLISTER
- FUTURE SITES



**US HWY 280
 IMPROVEMENTS IN
 CHELSEA, SHELBY COUNTY,
 ALABAMA**



FIGURE 10