

# Madison County

## Transportation Study

Madison County, Mississippi

December 2021



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## **1.0 Introduction**

The Madison County Board of Supervisors requested a planning level study of traffic circulation of selected arterial roadways in Madison County to help prioritize roadway improvements in high growth areas. Specific segments of roadways were identified for inclusion in the planning study, particularly in areas that are experiencing significant congestion levels and travel delays during peak hours, as well as future high growth areas. Existing peak hour traffic volumes and horizon year volumes were used to evaluate the study area roadways and intersections. The location of the project study area is within Madison County and is shown in **Figure 1**.

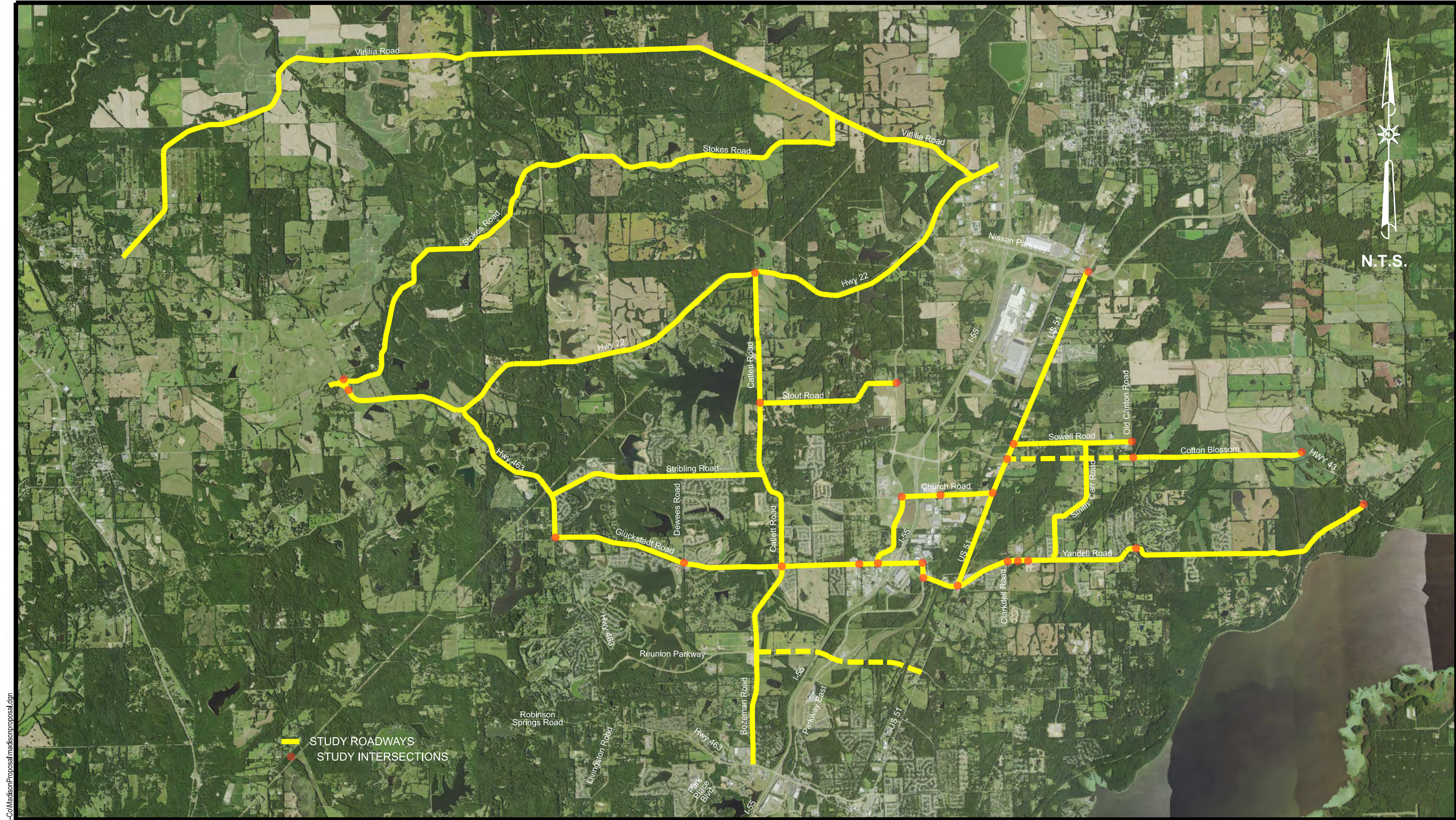
### **1.1 Project Background**

Madison County has experienced significant growth as urban sprawl has increased the demand for residential development. The corresponding retail growth and school enrollment increases have been equally significant. The Madison County population has increased from 54,287 in 1990 to 106,272 in 2019, representing a compound annual growth of 2.3% for the County. This growth has included the development of more industry. It is particularly related to the Nissan manufacturing plant and its suppliers within the I-55 corridor between Gluckstadt and Canton and with the Amazon building in the Industrial Park in Canton. This growth within the County has put a major strain on the existing roadways and intersections and has resulted in traffic congestion on many of the major routes.

The objectives of the project include:

- 1) Identifying the trends in existing traffic volumes and major congestion areas,
- 2) Evaluating traffic volumes; and,
- 3) Developing short term and long term improvements to help reduce traffic congestion and prioritize future roadway construction projects.





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STUDY AREA MAP

FIGURE  
1



## 2.0 Existing Conditions

### 2.1 Gluckstadt Road

Gluckstadt Road is an arterial roadway that extends approximately 5.8 miles from MS 463 to Weisenberger Road. The cross section of Gluckstadt Road is a two lane rural arterial roadway from MS 463 to approximately 1/3 mile west of Bozeman Road where the cross section widens to a three lane, rural cross section. In 2008/9, Gluckstadt Road was realigned and widened just west of Bozeman Road, and widened to a three lane urban cross section east to Distribution Drive. A 2012 project extended the widening of Gluckstadt Road east, to include the extension of Calhoun Station Parkway to Gluckstadt Road from Church Road. In 2015, the new Gluckstadt Road/I-55 interchange project was completed, widening Gluckstadt Road to a four lane divided roadway from Calhoun Station Parkway east to I-55 and to a six lane roadway east to Weisenberger Road. In 2019, Gluckstadt Road was modified, primarily with striping, to convert the center two-way left turn lane (TWLTL) to a second eastbound lane between Bozeman Road and Calhoun Station Parkway.

Gluckstadt Road is stop controlled at MS 463, signalized at Bozeman Road, Distribution Drive, Calhoun Station Parkway, I-55 SB Ramps, I-55 NB Ramps, Industrial Drive South, and Weisenberger Road. The posted speed limit is 35 mph east of Bozeman Road and 45 mph west of Bozeman Road. Signalization of Gluckstadt Road was recommended in 2016 but denied. A planned development in the northeast quadrant of the Hwy 463/Gluckstadt Road intersection is anticipated to meet signal warrants, and signalization is being considered at this intersection again.



Above: Gluckstadt Road, looking east between Johnstone and Reunion subdivisions

Gluckstadt Road widens to a three-lane roadway just east of the Mt. Pleasant Baptist Church, although there are no developments on either side of the roadway in this 0.4 mile section of roadway between the Church and Bozeman/Catlett Road. The morning peak hour traffic eastbound has been observed to queue from the signal at Bozeman Road west beyond the church.



Above: Gluckstadt Road east of Mt. Pleasant Baptist Church, looking east toward Bozeman Road.

Gluckstadt Road was modified between Bozeman Road and Calhoun Station Parkway/Dees Connector to provide two eastbound lanes and dedicated left turn lanes at the subdivision entrances. On the east end, the cross section was widened to provide a center turn lane and two eastbound lanes through the commercial development.



Above: Gluckstadt Road east of Bozeman Road/Catlett Road – w/ two eastbound lanes.





Above: Looking east on Gluckstadt Road through the commercial area.

The interchange with I-55/Gluckstadt Road experiences significant congestion in the morning peak as two southbound thru travel lanes on I-55 converge with the westbound to southbound loop ramp lane and the eastbound to southbound ramp. These four lanes merge into one lane and experience southbound delays, similar to the delays experienced at MS Hwy 463/I-55 prior to the widening of the I-55 mainline interstate. The reconstruction of the I-55 interchange at Gluckstadt Road included widening Gluckstadt Road to a seven lane facility east to Weisenberger Road.



Above: Gluckstadt Road at Weisenberger Road/Industrial Drive - looking east.



Above: Gluckstadt Road at Calhoun Station Parkway, looking east at I-55.

The widening for eastbound traffic helped to alleviate much of the congestion/delay along Gluckstadt Road eastbound; however, the westbound traffic only has one lane and routinely has significant westbound queues/delays. The future construction of the Reunion Parkway interchange is anticipated to help diffuse some of this traffic.

## 2.2 Weisenberger Road

Weisenberger Road transitions from a north/south route connecting Parkway East with Gluckstadt Road at its northwest terminus to an east/west arterial roadway connecting Parkway East with Yandell Road-US Highway 51. The north/south segment is approximately 1,000 LF and the east/west segment is approximately 0.5 miles. There is no posted speed limit on Weisenberger Road between Parkway East and US Highway 51. Weisenberger Road crosses the CNIC Railroad tracks with an at-grade crossing between Parkway East and US Highway 51. The crossing number is identified as #299762H. Bear Creek crosses Weisenberger Road just west of the CNIC at-grade railroad crossing, flowing from south to north.

Weisenberger Road widens at US Highway 51 to provide an eastbound left turn lane and a new dedicated right turn lane. The eastbound right turn lane is approximately 850 ft in length. Weisenberger Road widens at Parkway East to provide a channelized westbound right turn lane and a dedicated westbound left turn lane approximately 90 ft in length.

The presence of the CNIC railroad parallel to US Highway 51 restricts the roadway crossings to the west. No public crossings of the CNIC railroad exist between Weisenberger Road and MS 463 except a crossing on County Barn Road into North Place subdivision, approximately 0.8 miles north of MS 463. With many of the residential developments east of the CNIC Railroad desiring to commute to destinations to the south where most of the regional employment centers exist, the lack of east/west routes to I-55 puts significant traffic pressure on US Highway 51, Weisenberger Road and MS 463. Reunion Parkway is planned to extend across the railroad tracks and intersect US Highway 51 at Green Oak Lane.





Above: Weisenberger Road looking east at US Hwy 51.

The five-lane section of Weisenberger Road serves as an extension of Parkway East to the north. The primary traffic movements at Weisenberger Road/Parkway East are westbound to northbound in the AM and southbound to eastbound in the PM. The east approach of the Gluckstadt Road/Weisenberger Road intersection is a dead-end road.



Above: Weisenberger Road – Looking north at Gluckstadt Road.

## 2.3 Yandell Road

Yandell Road extends east of US Highway 51 as a three lane arterial roadway with a posted speed limit of 40 mph. Madison Crossing Middle School began in 2006 and relocated in 2009 to Germantown Middle School, transforming the campus to Madison Crossing Elementary School. Commuters and school traffic have continued to increase on Yandell Road, creating significant congestion and delays at the US Highway 51/Yandell Road/Weisenberger Road intersection. The proximity to Jackson, Nissan, Nissan suppliers, Gluckstadt Industrial Park and good local schools have drawn many residents to Yandell Road in recent years, along with construction of single family housing on the adjacent property. A westbound left turn lane was extended along Yandell Road to help with traffic queues at US Hwy 51. A right turn lane and acceleration lane exist at the Madison Crossing Elementary School. No other auxiliary turn lanes exist along Yandell Road, except at the intersection with US Highway 51. The east approach of Yandell Road was widened to provide a center turn lane to provide more left turn storage at Hwy 51.



Above: Yandell Road – Looking west toward US Hwy 51.

## 2.4 Old Canton Road

Old Canton Road is classified as a major collector roadway from Green Oak Lane to US Highway 51. The roadway is has approximately 21 ft of asphalt. Old Canton Road is the only continuous north/south route between US Highway 51 and MS Hwy 43 north of Green Oak Lane. The posted speed limit is 45 mph on Old Canton Road. Stop signs at all-way stops need to add the “All-Way” plaque and meet minimum mounting height standards (5 ft above the existing edge of pavement). Old Canton Road provides the east access to East Sowell Road and Cotton Blossom Road, as the majority of northbound traffic in the AM peak hour turns left onto East Sowell Road from Old Canton Road (143 vph/52%).

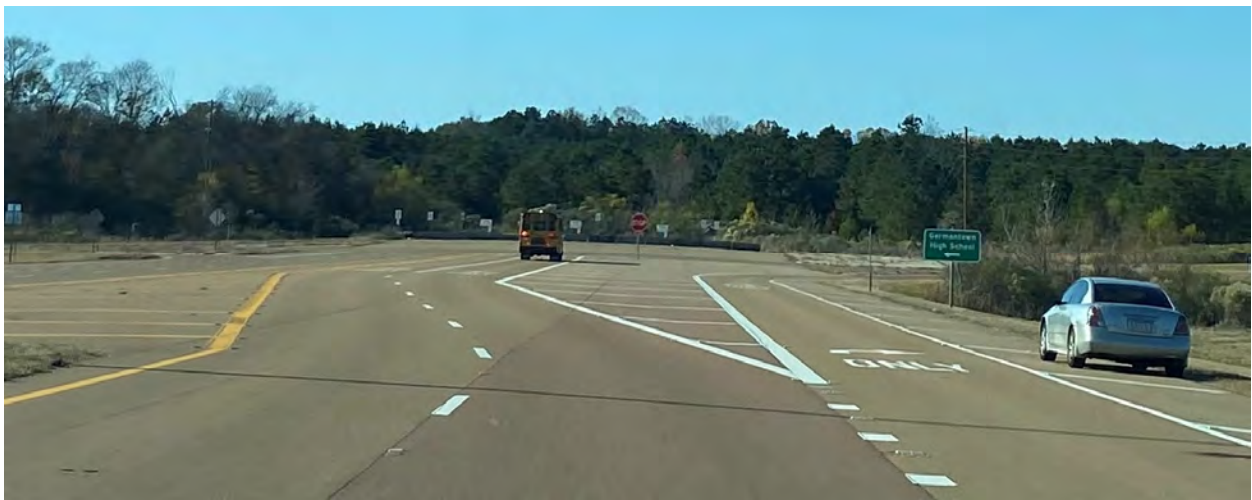




Above: Looking north on Old Canton Road at Harvey Crossing/N. Deerfield Drive.

## 2.5 Sowell Road

Sowell Road is classified as a minor arterial roadway. The interchange with I-55/Sowell Road was constructed circa 2004 to serve as the South Nissan interchange. The extension east of Old Jackson Road to US Hwy 51 was completed in stages, ultimately with completion in 2011. The alignment did not intersect with East Sowell Road, as there is an offset of approximately 1,300 ft between East Sowell Road and West Sowell Road. West Sowell was planned to extend west to Stribling Road, so the widened cross section has barricades/Dead-End signs across the intersection with Calhoun Station Parkway.



Above: West Sowell Road at Calhoun Station Parkway looking west at Dead-End/barricades.

East Sowell Road extends east of US Highway 51 and is approximately 19 ft in width with a 25 mph posted speed limit and limited right-of-way with residential structures built close to the roadway. East Sowell Road terminates at Old Canton Road. Traffic counts identified that during the AM Peak hour, 93% (199 vph) of westbound traffic at US Highway 51 turns left and goes south. East Sowell has a direct connection north of Yandell Road from Smith Carr Road.



Above: Looking west on East Sowell Road near Old Canton Road.

West Sowell Road has an interchange with I-55 and was originally planned to intersect with Stribling Road; however, the development of the Grayhawk subdivision blocked this extension to the west. The opportunity exists to extend West Sowell Road to Old Canton Road near Cotton Blossom Road. The posted speed limit on West Sowell Road is 35 mph. The cross section includes a six-lane divided roadway over I-55, which narrows to five lanes east of Old Jackson Road, then narrows to three lanes in the horizontal curve west of the railroad crossing, then gains an eastbound right turn lane at US Highway 51.



Above: Looking west on West Sowell Road near US Hwy 51.



## 2.6 Stout Road

Stout Road is an east/west unclassified roadway that connects Catlett Road with Calhoun Station Parkway. Stout Road bisects the Panther Creek subdivision that extends from MS Hwy 22 south to Germantown. The cross section includes 20 ft of asphalt with a posted speed limit of 35 mph. All-way stops are provided at Calhoun Station Parkway, Lakeshire Parkway, and Catlett Road. Sight distance is limited at the intersection with Catlett Road. A culvert on the east end of Stout Road, near Calhoun Station Parkway, has some erosion/embankment issues.



Above: Looking east on Stout Road from Catlett Road.



Above: Culvert/erosion at Stout Road, west of Calhoun Station Parkway.



## 2.7 Smith Carr Road

Smith Carr Road is a north/south unclassified roadway that connects Yandell Road with East Sowell Road. The roadway is approximately 17 ft wide with a 25 mph posted speed limit.



Above: Smith Carr Road – Looking south near East Sowell Road.

## 2.8 Cotton Blossom Road

Cotton Blossom Road is an east/west roadway that connects Old Canton Road with MS Hwy 43. The functional classification map shows West Sowell Road aligning with East Sowell Road and an extension of East Sowell transitioning south to Cotton Blossom Road. A portion of Cotton Blossom Road is classified as a Minor Arterial roadway. The majority of Cotton Blossom Road is gravel/not paved between Old Canton Road and MS Hwy 43. The east portion of Cotton Blossom Road at MS Hwy 43 is within 16<sup>th</sup> Section land. The western section of Cotton Blossom Road at Old Canton Road has approximately 20 ft of asphalt then transitions to gravel approximately 2,000 ft east of Old Canton Road.





Above: Looking east on Cotton Blossom Road, near the end of the asphalt.

Below: Looking east on Cotton Blossom Road, at transition from asphalt to gravel road.





## 2.9 Calhoun Station Parkway

Calhoun Station Parkway is a north/south roadway that connects Gluckstadt Road with MS Hwy 22. The functional classification map shows the portion south of Sowell Road as a Major Collector and the portion north of Sowell Road as a Minor Arterial. Calhoun Station Parkway was constructed on an alignment east of what is shown in the functional class map. The cross section of Calhoun Station Parkway north of Sowell Road is a two-lane roadway with 24 ft of asphalt, gravel shoulders, and a posted speed limit of 45 mph. Calhoun Station Parkway widens to a four-lane divided roadway from Sowell Road south to (south of) Church Road where it transitions to a three-lane roadway extending south to Gluckstadt Road. All-way stop control is provided at Stout Road and Sowell Road, while signals exist at Church Road and Gluckstadt Road.



Above: Calhoun Station Parkway, looking north at Stout Road.

Below: Calhoun Station Parkway, looking north at Germantown Schools.





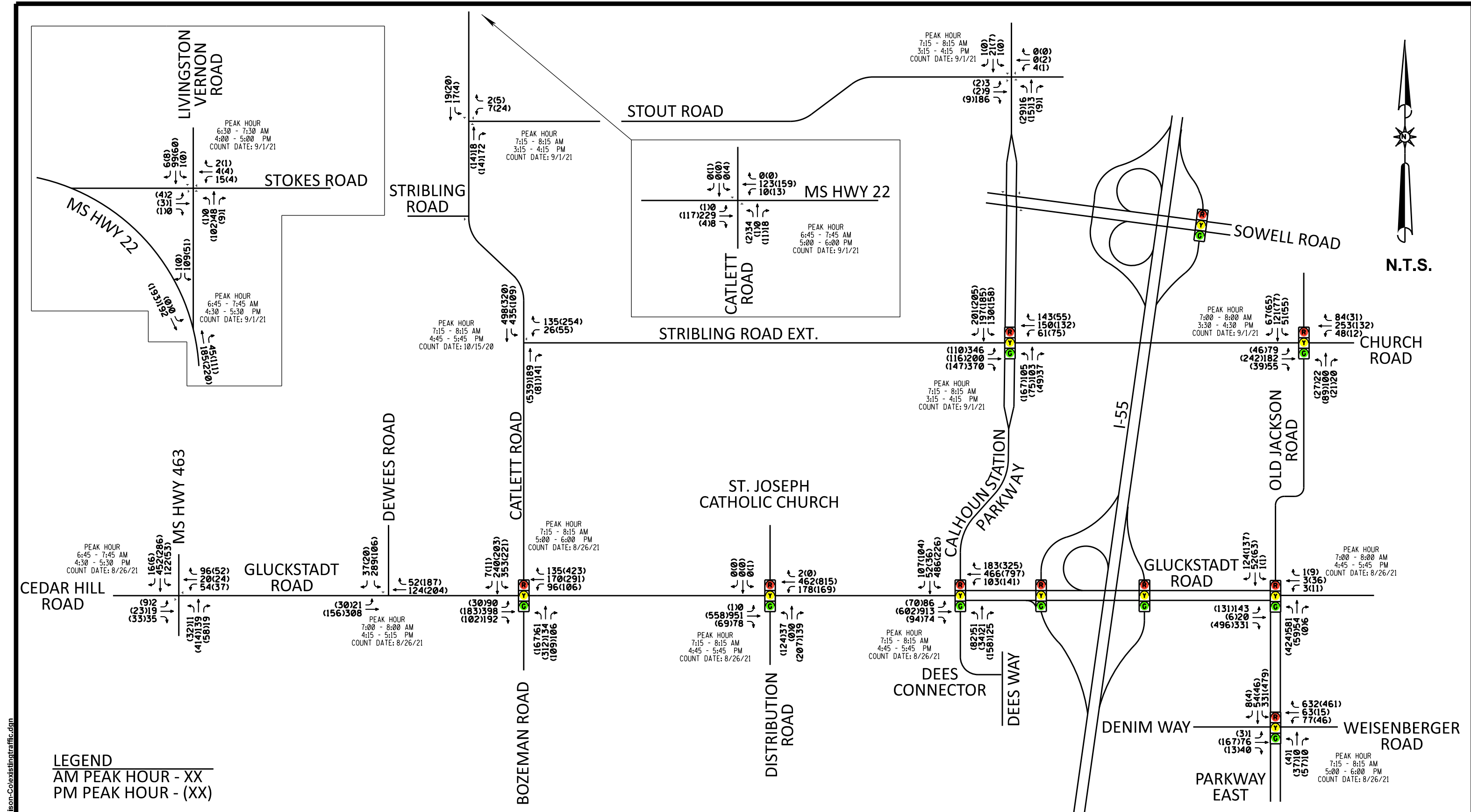
## 2.10 Traffic Volumes

Peak hour turning movement counts were collected at the study intersections. Peak hour volumes can be limited at intersections by the capacity of the intersection, as the traffic demand can exceed the capacity in the peak direction. In many cases, traffic volumes are at capacity or exceed capacity on the arterial roadways in the peak direction, especially during the AM Peak hour for traffic accessing local schools and traveling south to access I-55.

The study intersections are listed in **Table 1**. Existing (2021) peak hour turning movement volumes are shown graphically in **Figures 2A-B** (Figure 2A-west study area and Figure 2B-east study area).

Table 1 – Study Intersections

Location	Intersection		Location	Intersection	
1	MS Hwy 463	Gluckstadt Rd	15	Church Rd	Old Jackson Rd
2	Gluckstadt Rd	Deweese Rd	16	Church Rd	US Hwy 51
3	Gluckstadt Rd	Bozeman/Catlett	17	Yandell Rd	Old Canton Rd
4	Gluckstadt Rd	Distribution Drive	18	Yandell Rd	MS Hwy 43
5	Gluckstadt Rd	Calhoun Stn/Dees Connector	19	Cotton Blossom Rd	MS Hwy 43
6	Gluckstadt Rd	Weisenberger Rd	20	Nissan Pkwy	US Hwy 51
7	Parkway East	Weisenberger Rd	21	Sowell Rd (E)	Old Canton Rd
8	US Hwy 51	Weisenberger Rd	22	Cotton Blossom Rd	Old Canton Rd
9	MS Hwy 22	Livingston Vernon Rd	23	Sowell Rd (S)	US Hwy 51
10	Stokes Rd	Livingston Vernon Rd	24	Sowell Rd (E)	US Hwy 51
11	Catlett Rd	MS Hwy 22	25	Clarkdell Rd Ext	Yandell Rd
12	Catlett Rd	Stout Rd	26	Madison X'ing-W Dr	Yandell Rd
13	Stout Rd	Calhoun Stn Pkwy	27	Madison X'ing-E Dr	Yandell Rd
14	Church Rd	Calhoun Stn Pkwy	28	Stribling Rd Ext	Catlett Rd



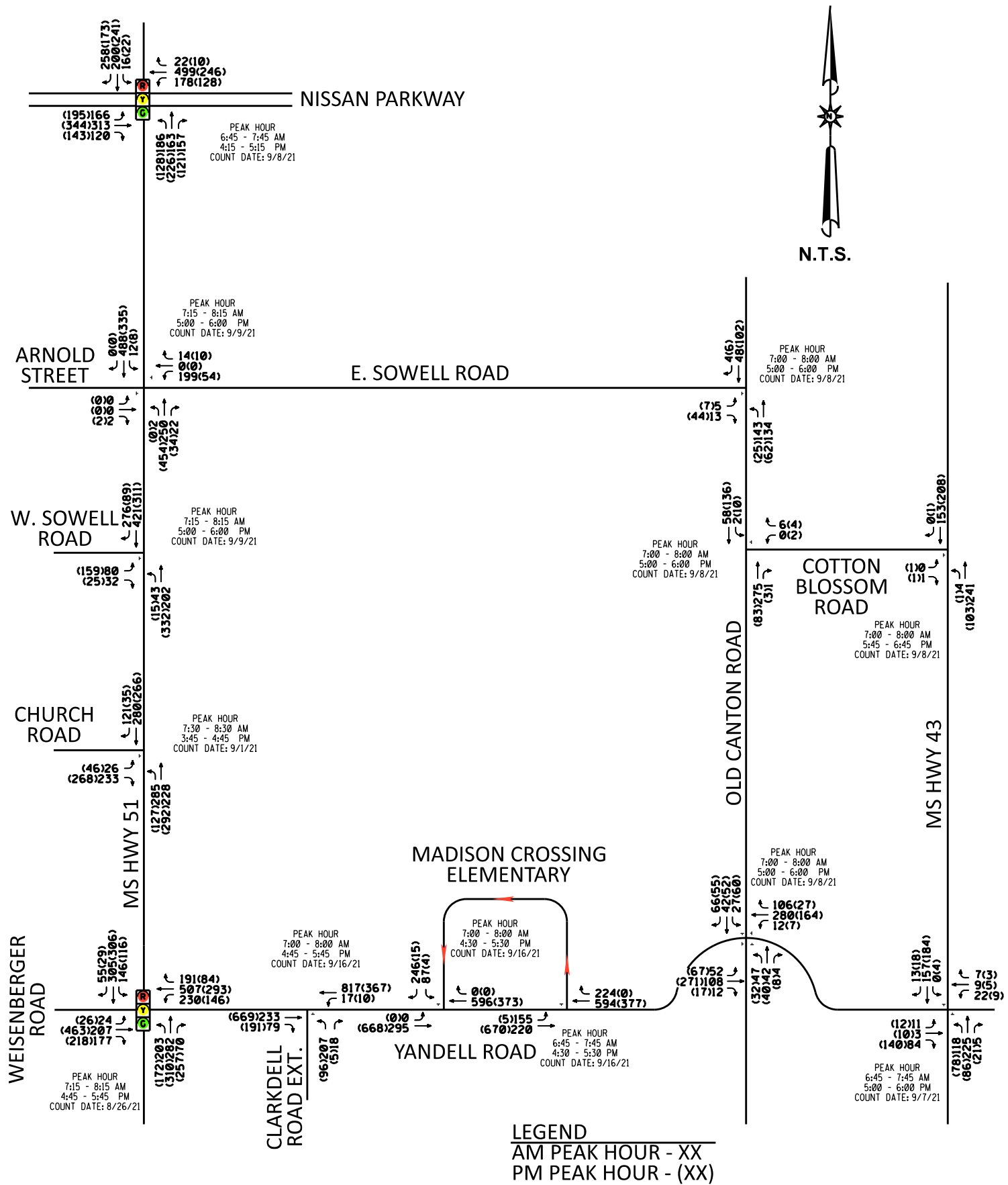
YEAR 2021 EXISTING TRAFFIC

Figure 2A

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YEAR 2021  
EXISTING TRAFFIC

Figure  
2B

## 3.0 Capacity Analysis

### 3.1 Methodology

The capacity and level-of-service (LOS) of an intersection is evaluated based on the average vehicular delay during the peak hour periods. Vehicular delays are directly related to the turning movement volumes, traffic composition, traffic control and roadway geometrics at the intersection. The methodology utilized in this analysis is based on the *Highway Capacity Manual*, 6<sup>th</sup> Edition (HCM). The level-of-service, as outlined in the HCM, is reported as a letter designation of LOS A through LOS F (A is least delay, E is capacity, and F is over capacity and experiences the most delay). The traffic volumes recorded at the study intersections during the AM and PM peak hours were analyzed using the information provided in the HCM

The Florida Department of Transportation (FDOT) Quality and Level-of-Service Manual provides planning level capacity for bidirectional hourly traffic volumes for roadways. Table 4-8 from the planning manual identifies that for State two-way arterials, a two lane highway in an area transitioning into an urbanized area with 0-1.99 signalized intersections per mile would have a peak hour capacity of approximately 860 vph in the peak direction. As density of traffic signals increases, the capacity decreases. While intersections are typically the controlling factors on capacity on a roadway, the link volumes are indicative of capacity limitations as well. The FDOT LOS tables are provided in the Appendix.

### 3.2 Arterial Link Capacity Level-of-Service

The intersection turning movement counts were used to develop link volumes on the east and west sides of the intersections. These 2021 arterial roadway link volumes were compared to the *planning level* capacity volumes to identify the *planning level* link levels-of-service.

The results of the arterial roadway link analysis are provided in **Table 2**.



**Table 2 – Year 2021 Existing Traffic  
Link Capacity/Levels-of-Service**

Intersection	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
MS Hwy 463/Gluckstadt Rd	160	170	134	113	B	B	B	B
Gluckstadt Rd/Deweese Rd	329	176	186	391	C	B	B	C
Gluckstadt Rd/Bozeman/Catlett	680	401	315	820	C	C	C	E
<b>Gluckstadt Rd/Distribution Drive</b>	1,029	642	628	984	C	C	C	F
<b>Gluckstadt Rd/Calhoun Stn/Dees</b>	1,073	752	766	1,263	C	D	C	F
Gluckstadt Rd/Weisenberger Rd	494	708	633	597	C	C	C	C
Parkway East/Weisenberger Rd	117	772	183	522	B	C	B	C
<b>US Hwy 51/Weisenberger Rd</b>	408	928	707	523	C	F	D	C
MS Hwy 22/Livingston Vernon	192	230	193	331	B	C	B	C
Stokes Rd/Livingston Vernon	49	106	112	68	B	B	B	B
Catlett Rd/MS Hwy 22	237	133	122	172	C	B	B	B
Catlett Rd/Stout Rd	190	36	28	24	B	B	B	B
Stout Rd/Calhoun Stn Pkwy	198	23	53	7	B	B	B	B
<b>Church Rd/Calhoun Stn Pkwy</b>	916	528	373	548	F	C	C	C
Church Rd/Old Jackson Road	316	385	327	175	C	C	C	B
Church Rd/US Hwy 51	513	401	419	301	C	C	C	C
Yandell Rd/Old Canton Rd	172	398	355	198	B	C	C	B
Yandell Rd/MS Hwy 43	98	38	162	17	B	B	B	B
MS Hwy 43/Cotton Blossom Rd	245	153	104	209	C	B	B	B
Nissan Pkwy/US Hwy 51	506	474	475	436	C	C	C	C
Sowell Rd (E)/Old Canton Rd	277	52	87	108	C	B	B	B
Old Canton Rd/Cotton Blossm. Rd	276	60	86	146	C	B	B	B
Sowell Rd (W)/US Hwy 51	245	697	347	400	C	D	C	C
Sowell Rd (E)/US Hwy 51	274	500	488	343	C	C	C	C
<b>Yandell Rd/Clarkdel Rd Ext</b>	312	834	860	377	C	E	E	C
Yandell Rd/Madison Xing-W. Dr	295	596	668	373	C	C	C	C
Yandell Rd/Madison Xing-E. Dr	375	818	675	377	C	D	C	C
<b>Catlett Rd/Stribling Rd Ext</b>	330	933	620	429	C	F	C	C

Source: Kiser Traffic and Engineering & Neel-Schaffer, 2021, FDOT Quality/Level-of-Service Manual Table 4-8.

The evaluation of the link volumes (from a planning level capacity analysis of link volumes) reveals that existing traffic volumes exceed link capacity during the AM or PM peak hours on:

- Gluckstadt Road (WB) from I-55 to Bozeman Road/Catlett Road,
- Yandell Road from US Hwy 51 to Clarkdel Road Extension, and
- Stribling Road Extension/Church Road between Catlett Road and Calhoun Station Pkwy.

Link volumes are good indicators of capacity constraints, but intersections typically dictate the operational level of service and capacity of roadways. Visual reviews of Yandell Road would reveal that this link is affected by the intersection at US Highway 51 in the AM peak.

### 3.3 Intersection Levels-of-Service

The 2021 existing traffic volumes were analyzed using the existing intersection geometrics and peak hour traffic volumes based on the information provided in the *Highway Capacity Manual*, 6<sup>th</sup> Edition (HCM). The results of the capacity analysis are shown in **Table 3** for signalized intersections and **Table 4** for unsignalized intersections.

Table 3- Signalized Intersections  
Year 2021 Existing Traffic Levels-of-Service

Signalized Intersection	Time Period	Approach LOS				Intersection LOS
		EB	WB	NB	SB	
Gluckstadt Rd/ Bozeman Rd#3	AM Peak	C	B	C	C	C
	PM Peak	C	B	C	C	C
Gluckstadt Rd/ Distribution Dr#4	AM Peak	C	B	B	A	C
	PM Peak	C	F	B	F	E
Gluckstadt Rd/ Calhoun Stn Pk#5	AM Peak	D	C	C	C	C
	PM Peak	B	F	C	C	E
Gluckstadt Rd/ Weisenberger#6	AM Peak	A	A	B	A	B
	PM Peak	B	A	B	A	B
Parkway East/ Weisenberger#7	AM Peak	B	B	B	B	B
	PM Peak	B	B	B	C	C
US Hwy 51/ Yandell Rd#8	AM Peak	C	F	C	C	E
	PM Peak	D	C	C	C	C
Calhoun Stn Pkwy Church Rd#14	AM Peak	C	B	B	B	C
	PM Peak	B	B	B	B	B
Old Jackson Rd/ Church Rd#15	AM Peak	C	C	A	A	B
	PM Peak	C	C	A	A	B
US Hwy 51/ Nissan Pkwy #20	AM Peak	C	C	B	B	C
	PM Peak	C	C	B	B	C

Source: Kiser Traffic and Engineering & Neel-Schaffer, 2021. HCM 6<sup>th</sup> Edition.

Signalized intersections were shown to be at/over capacity on Gluckstadt Road at Distribution Drive (PM), Gluckstadt Rd at Calhoun Station Parkway (PM), and Yandell Road at US Hwy 51 (AM). These intersections are key commuting corridors with few alternatives for residents. Gluckstadt Road and Yandell Road experience significant peak hour traffic queues/delays for commuting traffic.

The eastbound Gluckstadt Road movement exceeds 1,000 vph at Distribution Drive and Calhoun Station Parkway in the AM Peak hour and the parallel road to the north – Church Road/Stribling Road Extension, exceeds 900 vph during this same AM peak hour. Additionally, there is another 170 vph traveling north on Catlett Road and turning right on Stout Road. The combined AM Peak hour volume from Stout Road, Stribling Road Extension and Gluckstadt Road crossing Catlett Road is 1,622 vph. Providing 2 eastbound travel lanes has helped to decrease commuting delays in the AM peak, but the westbound movement has a single lane and is experiencing significant queues between Calhoun Station Pkwy and I-55.

Yandell Road exceeds 900 vph westbound in the AM peak at US Highway 51. A dedicated westbound right turn lane would alleviate some of the congestion in the AM peak, but ultimately, a five-lane roadway will be needed to accommodate the growth on Yandell Road. In addition to the 900 vph westbound at Hwy 51 on Yandell Road, an additional 200 vph use East Sowell Road to access US Hwy 51, primarily by Old Canton Road, with some using Smith Carr Road.



**Table 4 – Unsignalized Intersections**  
**Year 2021 Existing Traffic Levels-of-Service**

Unsignalized Intersection	Time Period	Critical Movement Level of Service											
		Eastbound			Westbound			Northbound			Southbound		
		Lt	Th	Rt	Lt	Th	Rt	Lt	Th	Rt	Lt	Th	Rt
MS Hwy 463/ Gluckstadt Rd #1	AM Peak	C	C	C	D	D	D	A	-	-	A	-	-
	PM Peak	C	C	C	D	D	D	A	-	-	A	-	-
Gluckstadt Rd/ Deweese Rd #2	AM Peak	A	-	-	-	-	-	-	-	-	C	-	C
	PM Peak	A	-	-	-	-	-	-	-	-	B	-	B
Livingston Vernon/ MS Hwy 22 #9	AM Peak	A	-	-	-	-	-	-	-	-	A	-	A
	PM Peak	A	-	-	-	-	-	-	-	-	B	-	B
Livingston Vernon / Stokes Rd #10	AM Peak	A	A	A	A	A	A	A	-	-	A	-	-
	PM Peak	A	A	A	A	A	A	A	-	-	A	-	-
MS Hwy22/ Catlett Rd #11	AM Peak	A	-	-	A	-	-	B	B	B	A	A	A
	PM Peak	A	-	-	A	-	-	A	A	A	B	B	B
US Hwy 51/ Church Road #16	AM Peak	E	-	B	-	-	-	A	-	-	-	-	-
	PM Peak	C	-	B	-	-	-	A	-	-	-	-	-
Yandell Road/ MS Hwy 43 #18	AM Peak	B	B	B	C	C	C	A	-	-	A	-	-
	PM Peak	B	B	B	B	B	B	A	-	-	A	-	-
Cotton Blossm Rd/ MS Hwy 43 #19	AM Peak	A	-	A	-	-	-	A	-	-	-	-	-
	PM Peak	B	-	B	-	-	-	A	-	-	-	-	-
Old Canton Rd/ E. Sowell Rd #21	AM Peak	A	-	A	-	-	-	A	-	-	-	-	-
	PM Peak	A	-	A	-	-	-	A	-	-	-	-	-
Old Canton Rd / Cotton Blossom #22	AM Peak	-	-	-	A	-	A	-	-	-	A	-	-
	PM Peak	-	-	-	A	-	A	-	-	-	A	-	-
US Hwy 51/ W. Sowell Rd #23	AM Peak	C	-	B	-	-	-	A	-	-	-	-	-
	PM Peak	C	-	B	-	-	-	A	-	-	-	-	-
US Hwy 51/ E. Sowell Rd #24	AM Peak	B	B	B	F	F	F	A	-	-	A	-	-
	PM Peak	B	B	B	C	C	C	A	-	-	A	-	-
Clarkdell Rd Ext/ Yandell Rd #25	AM Peak	-	-	-	A	-	-	F	-	F	-	-	-
	PM Peak	-	-	-	A	-	-	E	-	E	-	-	-
Madison X-ing Exit/ Yandell Rd #26	AM Peak	-	-	-	-	-	-	-	-	-	C	-	C
	PM Peak	-	-	-	-	-	-	-	-	-	C	-	B
Madison X-ing Ent/ Yandell Rd #27	AM Peak	B	-	-	-	-	-	-	-	-	-	-	-
	PM Peak	A	-	-	-	-	-	-	-	-	-	-	-
Stribling Rd Ext/ Catlett Rd #28	AM Peak	-	-	-	F	-	F	-	-	-	A	-	-
	PM Peak	-	-	-	F	-	F	-	-	-	A	-	-
All-Way Stop Intersection	Time Period	Approach Level-of-Service											
		Northbound			Southbound			Eastbound			Westbound		
Catlett Rd/ Stout Road #12	AM Peak	A			A			-			A		
	PM Peak	A			A			-			A		
Calhoun Stn Pkwy/ Stout Road #13	AM Peak	A			A			A			A		
	PM Peak	A			A			A			A		
Old Canton Rd/ Yandell Rd #17	AM Peak	B			B			A			A		
	PM Peak	B			B			A			B		

Source: Kiser Traffic and Engineering & Neel-Schaffer, 2021. HCM 6<sup>th</sup> Edition.

The unsignalized intersection analysis of existing traffic identifies that the minor street traffic volumes are at/over capacity from a delay standpoint on:

- E. Sowell Road westbound left turns at US Hwy 51,
- Clarkdell Rd Ext northbound left turns at Yandell Road,
- Stribling Rd Ext at Catlett Road, westbound left and right turns at Catlett Road,

### 3.4 Historical Area Growth

The census data for Madison the City and Madison County were researched to compare the population changes since 1990. The historical population changes are listed in **Table 5**.

**Table 5**  
**Historical Population Growth Rate**

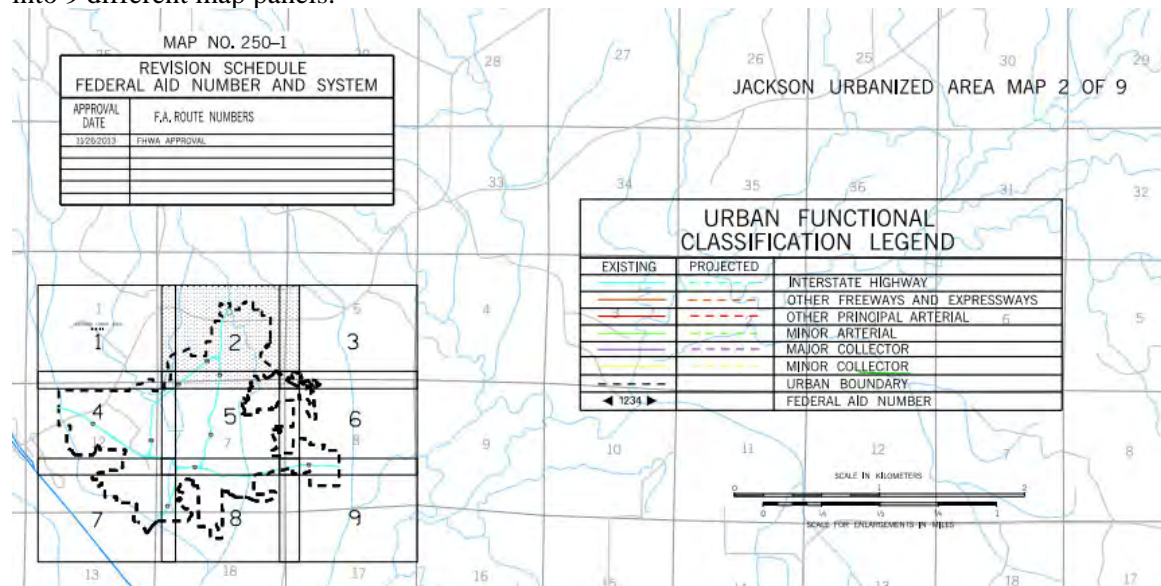
Location	Population by Year				Compound Annual Percent Change		
	1990	2000	2010	2019	'90-'00	'00-'10	'90-'19
Madison County	54,271	75,063	95,595	106,272	3.30%	2.45%	2.34%
City of Madison	8,027	18,978	24,262	25,592	8.99%	2.49%	4.08%

Source: US Census.gov.

The population changes are significant. as Madison County has seen a 29-year growth rate of 2.34% per year, and the City of Madison with 4.08% (annually) since 1990, although some of the city growth has been through annexation. These growth rates have put significant pressure on the existing roadway network.

### 4.0 Functional Classification of Roads – Proposed Map Updates

The Functional Classification of roadways in the Jackson Urbanized Area is a planning tool used to classify how roadways are intended to function. A designation of (Major/Minor) Arterial or Collector routes is assigned. This designation allows these routes to have potential for Federal funding if they are classified roadways that serve as importation components in the transportation network. The maps are provided on MDOT's website and because of the size/scale of the area and maps, the maps are separated into 9 different map panels.



Above: Map Key and legend for Functional Classification Map.



There is also a map for the unincorporated areas of Madison County that are not within the urban boundary. The urban maps and County map were evaluated to determine if there were roadways that need to be added to the functionally classified roads as the urban development expands into previously undeveloped areas of Madison County, or if there were roadways that need to be modified/removed from the map(s), or inconsistencies between the maps where they overlap. The maps show dashed lines for planned roadways, and in some instances, these plans no longer exist – or the roadways were constructed on different alignments.

#### 4.1 Proposed Madison County Map Changes – Outside of Jackson Urbanized Area

For the study area on this project, the area north of MS Hwy 22 and west of I-55 is (mostly) outside of the Jackson Urbanized Area and covered in the Madison County Functional Classification Map. Only two roadways are classified on the map in this area: Virililia Road and MS Highway 16. With the ±100 square miles of potentially developable land in this area, the existing roadways serving the area are recommended to be Functionally Classified, including:

Mt. Elam Road	- Classify as a Minor Collector
Patrick Road	- Classify as a Minor Collector
Cloud Road	- Classify as a Minor Collector
Old Yazoo City Rd	- Classify as a Major Collector
Stokes Road	- Classify as a Major Collector

As mentioned in this report, additional north/south connections are recommended between MS Highway 22 and Stokes Road. One option is an extension of Catlett Road north to Stokes Road, and another option is constructing a new Connector Road north of MS Highway 22 to Stokes Road east of Persimmon Creek and Stonebridge Drive. Both proposed routes are recommended to be classified as Major Collector Roadways. The proposed changes to the Madison County Functional Classification Map for areas outside of the Jackson Urbanized Area are shown in **Figure 3**.

#### 4.2 Proposed Madison County Map Changes – Within the Jackson Urbanized Area

##### Segments to Remove

The Flora area shows an extension of Cox Ferry Road over the existing railroad, extending east to Cane Creek Road, and an adjacent section of Harris Road extending due south to MS Hwy 22. The potential for a road extension over the existing railroad is unlikely, and we are not aware of plans to straighten out Harris Road. However, the existing section of Harris Road that shifts east and connects with MS Highway 22 is recommended to be added as a Major Collector, consistent with the existing section to the north. (Items #1, #2 & #24 on **Figures 4A-B**)

The section of Robinson Springs Road west of Pocahontas Road also shows a new crossing of the existing railroad. No plans exist to cross this railroad with an extension of Robinson Springs Road. (#3) Bozeman Road originally was on a different alignment, until a new section was constructed that aligns with Catlett Road. The map shows the old alignment as the Minor Arterial, when that section should be removed from the map, and the new alignment added. (#4, #17)

When the Sowell Road interchange was constructed on I-55, future plans to extend Sowell Road west to align with Stribling Road at Catlett Road were developed. However, the approval and development of the Grayhawk subdivision eliminated this option. (#5) The plan to extend a roadway west of Sowell Road and north to MS Hwy 22 was conceived, and ultimately was constructed as Calhoun Station Parkway, east of the alignment shown on the map. (#6, #20) Similarly, the section of CSP south of Church Road was also constructed on an alignment east of what is shown on the map. (#7, #18)

Nissan Drive and Nissan Parkway were constructed circa 2001, to serve as the primary access for the (new) Nissan plant. While plans may have existed to extend Nissan Drive north to MS Hwy 22, parallel to Soldier Colony Road, the construction of the Logistics Center on the north side of Nissan Parkway in 2014 blocked this route. (#8)

With the construction of the Sowell Road interchange with I-55 south of the Nissan plant, within the 16<sup>th</sup> Section land, an extension of Sowell Road east to US Highway 51 was planned. However, this extension was constructed in phases, with the interchange constructed circa 2005. In 2006 the first 2000 ft of Sowell Road extending east of Old Jackson Road was constructed. In 2010, the road was extended east/southeast on a new alignment that terminated west of the railroad tracks. By 2011, the roadway was extended southeast across the railroad tracks (at grade) and intersected US Highway 51, approximately 0.25 miles south of East Sowell Road. The East Sowell Road alignment is recommended to be removed, while the West Sowell Road alignment and future extension are recommended to be added to the map. (#9, #19)

The section of Gluckstadt Road east of Weisenberger is not a thru route, as the roadway is closed at the railroad spur. Urban Area Functional Class Map 2 does not reflect this, while Urban Area Functional Class Map 3 identifies the new route of Industrial Park Road North to Old Jackson Road. (#10, #21)

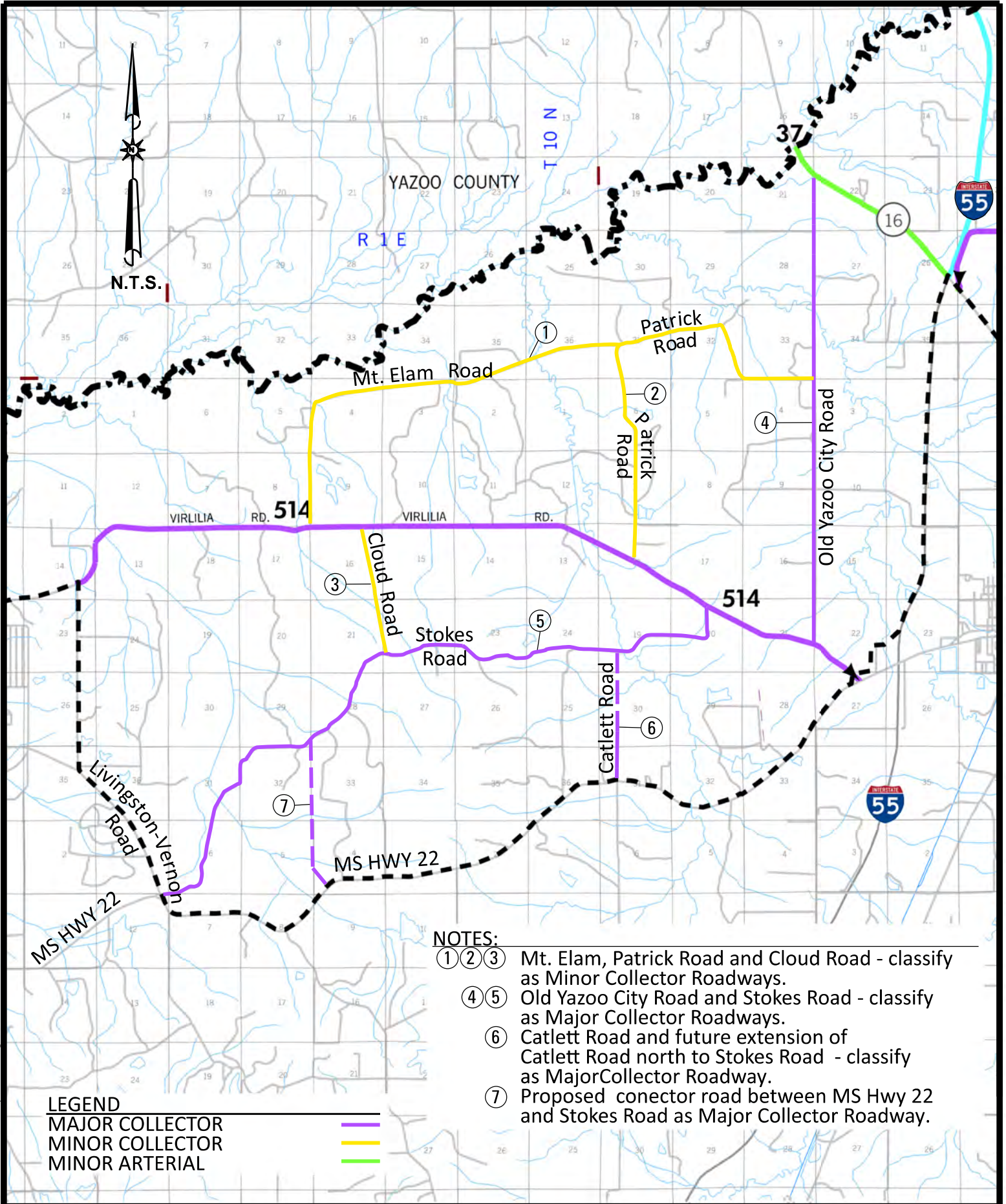
Cedar Hill Road is an extension of Gluckstadt Road west of MS Hwy 463. Cedar Hill Road provides access to Gus Green Road and Mt. Leopard Road, where there is a significant amount of land for residential development. These three roadways are recommended to be added to the Functional Classification Maps. (#11, #13, #14)

With the congestion experienced on Gluckstadt Road and Stribling Road Extension/Church Road east of Catlett Road, Stout Road is providing an alternate route for many people that travel Stribling Road. The northbound right turn from Catlett Road to Stout Road was recorded at 172 vph in the AM Peak hour. Stout Road is recommended to be classified as a Minor Collector roadway. (#12)

Both McMillon Road and Dewees Road provide important north/south connections between Principal and Minor Arterial routes. These two roadways are recommended to be added as Major Collector routes, as there are (residential) development plans underway for the properties adjacent to these roadways. (#15, #16)

Functional Class Maps 2 and 3 both list Green Oak Lane as Cotton Blossom Road. Recommend correcting the street name on both maps. (#22) Also, providing the interstate interchange configuration on the maps is recommended. (#23)





## PROPOSED FUNCTIONAL CLASS ROADWAYS FOR MADISON COUNTY

Figure 3



NOTES:

Remove from Map:

- ① Cox Ferry Road extension east of railroad.
- ② Harris Road extension.
- ③ Robinson Springs Road extension.
- ④ Old Bozeman Road.
- ⑤ Stribling Road connection to Sowell Road.
- ⑥ ⑦ Calhoun Station Parkway (was constructed on a different alignment).
- ⑧ New logistics center blocked extension of Nissan Parkway north.
- ⑨ West Sowell Road constructed on new alignment.
- ⑩ Road is closed at the RR spur and not a thru route.

Additions for Map:

- ⑪ ⑪ ⑪ ⑪ Cedar Hill Road, new alignment of Bozeman Road, W. Sowell Road, Calhoun Station Parkway (north) - classify as Minor Arterials.
- ⑫ Stout Road - classify as Minor Collector.

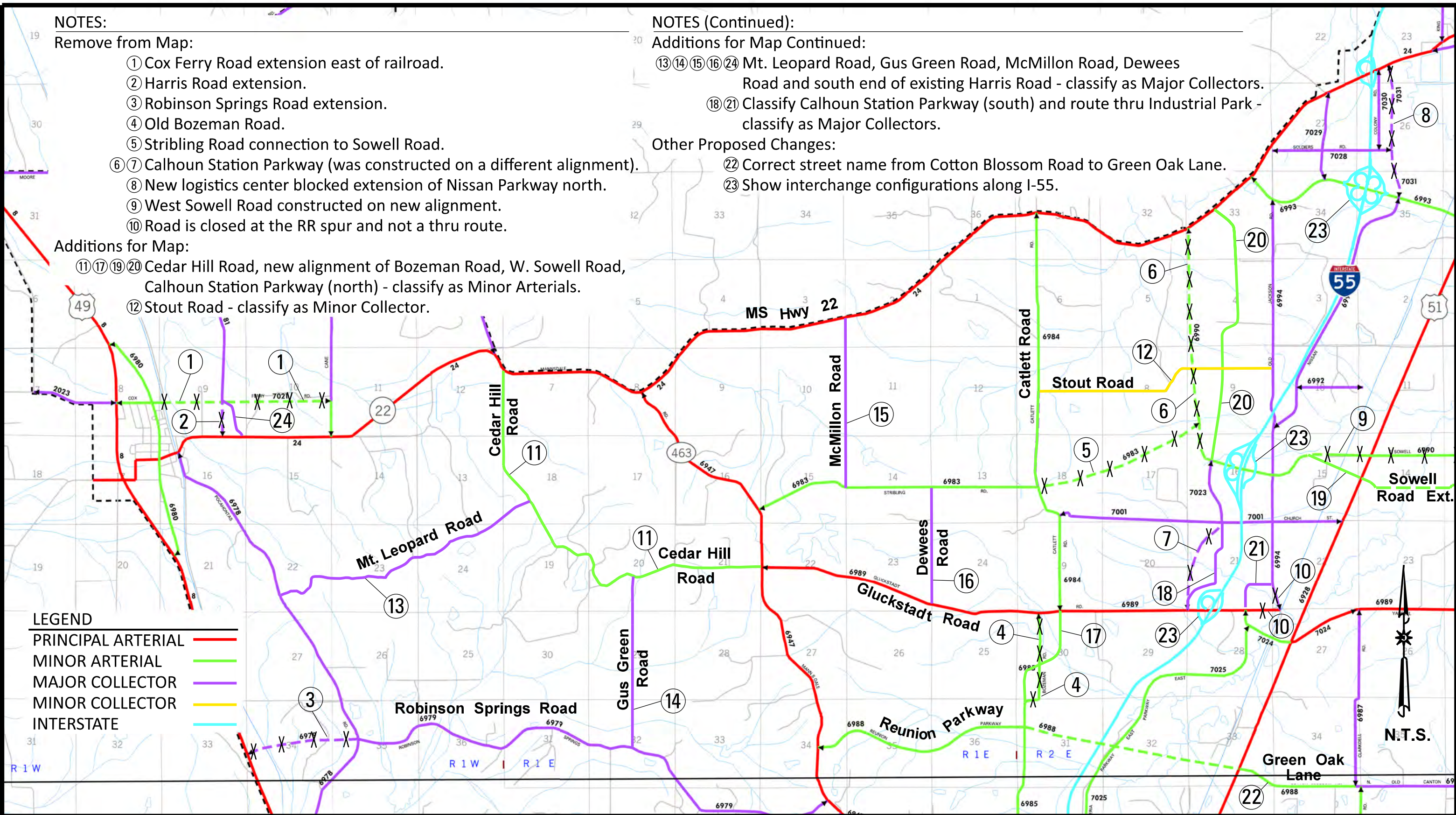
NOTES (Continued):

Additions for Map Continued:

- ⑬ ⑭ ⑮ ⑯ ⑰ Mt. Leopard Road, Gus Green Road, McMillon Road, Dewees Road and south end of existing Harris Road - classify as Major Collectors.
- ⑱ ⑲ Classify Calhoun Station Parkway (south) and route thru Industrial Park - classify as Major Collectors.

Other Proposed Changes:

- ⑳ Correct street name from Cotton Blossom Road to Green Oak Lane.
- ㉑ Show interchange configurations along I-55.



LEGEND

- PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- MAJOR COLLECTOR
- MINOR COLLECTOR
- INTERSTATE

PROPOSED URBAN MAP CHANGES

FIGURE 4A

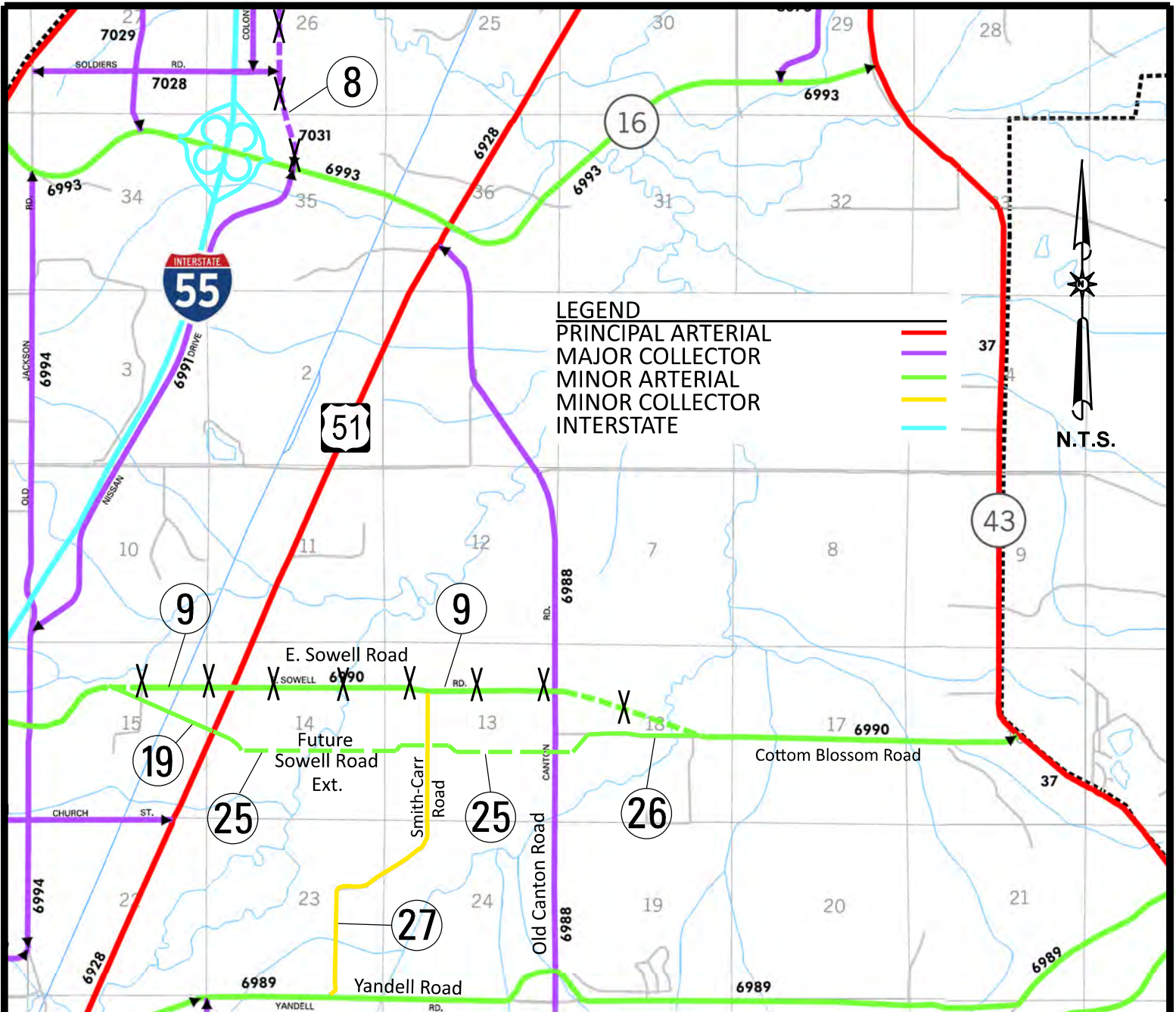


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## PROPOSED URBAN MAP CHANGES

FIGURE  
4B



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## 5.0 Roadway Improvements

Policy improvements can make a significant impact on future transportation demands and improve some of the current traffic issues facing Madison County. The adoption of policies requiring traffic studies for proposed developments, requiring construction of auxiliary left turn and right turn lanes for new developments, adoption of minimum right-of-way widths and building setbacks for Principal and Minor Arterials can help to reduce traffic issues similar to those Madison County is currently facing.

Construction of auxiliary turn lanes or new roadways can also provide relief to congestion issues. Some of the major routes in the County were evaluated to identify improvements to improve traffic circulation.

### 5.1 Yandell Road

Yandell Road is a vital link in the movement of traffic in Madison County. This two-lane roadway connects residential areas to schools and commercial areas, as well as the Interstate via US Highway 51 and Weisenberger Road. The west section of Yandell Road has commercial development, while the eastern sections have residential development along with the Madison Crossing Elementary School. Residential development is continuing on Yandell Road at an accelerated pace. Intersection improvements helped to provide some temporary relief of the congestion levels, but with the amount of undeveloped land, other access options are needed. The westbound 15 minute intervals from 6:30 AM – 8:30 AM at Yandell Rd/US Hwy 51 included:

<u>Start Time</u>	<u>Volume</u>	<u>Start Time</u>	<u>Volume</u>
6:30 AM	158 veh	7:30 AM	264 veh
6:45 AM	171 veh	7:45 AM	220 veh
7:00 AM	225 veh	8:00 AM	223 veh
7:15 AM	221 veh	8:15 AM	132 veh

This volume resulted in a westbound peak hour movement of 930 vph and 1,614 vehicles in two hours westbound in the morning. Widening Yandell Road to a five-lane/four-lane divided roadway is ultimately needed. Providing another access to US Highway 51 east of Bear Creek could also help to reduce the volume of traffic on Yandell Road. Three bypass options include:

- 1) Extend Clarkdell Road Extension north to intersect US Highway 51 north of Yandell Road,
- 2) Extend Church Road east to Smith Carr Road, or
- 3) Extend West Sowell Road east to Smith Carr Road and Cotton Blossom Road.

Each of these options would reduce the vehicular volume on Yandell Road and are shown in the Appendix in **Figures A1-A3**. Approximately 16% of the westbound traffic on Yandell Road turns right and goes north on Hwy 51 (from the 12-hr count), with 58% going west to Weisenberger and 26% turning left and going south on US Highway 51.

A shorter-term improvement could be to extend the westbound right turn lane on Yandell Road west to the Fire Station driveway, allowing for more people to access the right turn lane and execute right turns on red, and/or add an overlap phase. (Concept is shown in the Appendix in **Figure A-4**) Ultimately, widening Yandell Road to 5-lanes between US Highway 51 and Old Canton Road is recommended.



**Madison Crossing Elementary School**

The school operates with the east drive as one-way northbound and the west drive as one-way southbound. A westbound right turn lane exists at the entrance, but no left turn lanes exist on Yandell Road at the school. Of the 12-hour traffic recorded at the site driveways, 28% returned to the east with 72% going west leaving the school, while the arrivals were more balanced with 50% entering from the east and 50% from the west with 659 vehicles entering the campus over 12 hours and 662 exiting over 12 hours. Construction of an eastbound left turn lane between the school driveways is recommended to help minimize the disruption to thru traffic that left turning traffic at the school has. The turn lane concept is shown in **Figure A5**.



Above: Looking east on Yandell Road at school entrance at 2:33 PM at queuing on Yandell Road.

**Old Canton Road/Yandell Road**

A signal warrant analysis was conducted at the intersection of Yandell Road/Old Canton Road, as the intersection currently operates as an all-way stop with single lane approaches. The intersection processes 800 vph in the AM and PM peak hours (total all approaches) and 500 vph in the mid-day peak. Constructing a channelized southbound right turn lane and channelized westbound right turn lane would help to decrease the intersection delays. Using a flatter 115 degree channelized right turn lane is recommended rather than the typical 140 degree channelized right turn lane to decrease the potential for rear-end collisions. The concept is shown in **Figure A6**. The warrant analysis is shown in **Table 6**.

Signs are recommended to be mounted at (or above) the minimum height outlined in the Manual on Uniform Traffic Control Devices (MUTCD), which states that *from the bottom of the sign to the elevation of the near edge of the pavement shall be five (5) feet*.

Table 6 – Old Canton Rd/Yandell Rd Signal Warrant Analysis-2021 Existing Traffic

Start Time	Approach						Warrant 1A		Warrant 1B		Warrant #2	Warrant #3
	EB	WB	EB+ WB	NB LT+Th	SB LT+Th	SB	Major- 350	Minor- 105	Major- 525	Minor- 53	Four Hour	Peak Hour
06:00 AM	68	250	318	45	47	99	-	-	-	-	-	-
07:00 AM	172	398	570	89	69	135	Yes	-	Yes	Yes	-	-
08:00 AM	131	245	376	31	40	85	Yes	-	-	-	-	-
09:00 AM	120	148	268	34	35	68	-	-	-	-	-	-
10:00 AM	154	147	301	50	56	96	-	-	-	Yes	-	-
11:00 AM	136	133	269	37	61	95	-	-	-	Yes	-	-
12:00 PM	144	131	275	29	49	80	-	-	-	-	-	-
01:00 PM	130	139	269	36	44	75	-	-	-	-	-	-
02:00 PM	183	133	316	42	61	92	-	-	-	Yes	-	-
03:00 PM	178	147	325	83	92	118	-	-	-	Yes	-	-
04:00 PM	357	191	548	54	119	159	Yes	Yes	Yes	Yes	Yes	-
05:00 PM	355	198	553	72	112	167	Yes	Yes	Yes	Yes	Yes	-
Subtotal	2,128	2,260	4,388	602	785	1,269	4	2	3	7	2	0
Count date: 9/9/21							Warrant Met?		No	No	No	No

Source: Kiser Traffic and Engineering &amp; Neel-Schaffer, 2021.

Warrants shown are based on 70% warrant for 1 lane on the major roadway/1 on minor with 0% SB right turns.

No warrants are met.

Clarkdell Rd Extension/Yandell Rd

A signal warrant analysis was also performed at the intersection of Clarkdell Road Ext and Yandell Road. The intersection is a 'T' intersection with Yandell Road, with no dedicated left turn or right turn lanes. The warrant analysis is shown in **Table 7**.

Table 7 – Clarkdell Rd Ext/Yandell Road Signal Warrant Analysis-2021 Existing Traffic

Start Time	Approach						Warrant 1A		Warrant 1B		Warrant #2	Warrant #3
	EB	WB	EB+ WB	NB Lt	NB Rt	NB Lt+Rt	Major- 350	Minor- 105	Major- 525	Minor- 53	Four Hour	Peak Hour
06:00 AM	186	384	570	153	13	166	Yes	Yes	Yes	Yes	Yes	-
07:00 AM	312	834	1,146	207	18	225	Yes	Yes	Yes	Yes	Yes	Yes
08:00 AM	330	410	740	137	5	142	Yes	Yes	Yes	Yes	Yes	Yes
09:00 AM	266	273	539	92	5	97	Yes	-	Yes	Yes	-	-
10:00 AM	254	257	511	69	3	72	Yes	-	-	Yes	-	-
11:00 AM	294	206	500	79	5	84	Yes	-	-	Yes	-	-
12:00 PM	305	238	543	77	6	83	Yes	-	Yes	Yes	-	-
01:00 PM	322	233	555	81	8	89	Yes	-	Yes	Yes	-	-
02:00 PM	404	300	704	82	4	86	Yes	-	Yes	Yes	Yes	-
03:00 PM	537	274	811	94	6	100	Yes	-	Yes	Yes	Yes	-
04:00 PM	764	379	1,143	99	7	106	Yes	-	Yes	Yes	Yes	Yes
05:00 PM	829	378	1,207	110	5	115	Yes	Yes	Yes	Yes	Yes	Yes
Subtotal	4,803	4,166	8,969	1,280	85	1,365	12	4	10	12	7	4
Count date: 9/16/21							Warrant Met?		No	Yes	Yes	Yes

Source: Kiser Traffic and Engineering &amp; Neel-Schaffer, 2021.

Warrants shown are based on 70% warrant for 1 lane on the major roadway/1 on minor with 0% NB right turns.

All 3 vehicular volume based warrants are met.



The intersection of Clarkdell Road Extension with Yandell Road meets all three volume based signal warrants without using any of the minor street right turns. Installation of a traffic signal with auxiliary left/right turn lanes is recommended.

## 5.2 MS Hwy 22

### MS Hwy 22 at Nissan Parkway

The construction of the Amazon Fulfillment Center in the Industrial Park on the north side of MS Highway 22 in Canton at Nissan Parkway is anticipated to generate a significant amount of truck traffic on MS Highway 22. Multiple single family residences exist along the two-lane section of MS Hwy 22 between Nissan Parkway and Old Jackson Road. With the Love's Truck Stop located on MS Hwy 22 at I-55, the majority of the truck traffic is anticipated to use MS Hwy 22 to access I-55. The cross section of MS Hwy 22 is 5-lanes from I-55 west to Virililia Road (0.5 miles), then narrows to 2-lanes. Widening MS Hwy 22 from Virililia Road west to Calhoun Station Parkway (1.8 miles) is recommended to accommodate the truck traffic and future Industrial Park traffic volumes. The existing two-lane road is recommended to serve the residential developments along the south side of MS Hwy 22 with a five-lane section serving the adjacent Industrial Park. This concept is shown graphically in the Appendix in **Figures A7-A9**.

### MS Hwy 22

MS Hwy 22 extends approximately 17 miles between I-55 in Canton and US Hwy 49 in Flora. Virililia Road parallels MS Hwy 22 to the north along most of this route. There are approximately 100 square miles of property (mostly undeveloped) south of the Big Black River between Kearney Park and I-55. This area has very limited access, with Virililia Road parallel to the Big Black River (to the south), MS Hwy 22 mostly parallel to Virililia Road, and Stokes Road meandering 10 miles east/west through this area connecting Virililia Road with Livingston Vernon Road. Richton Road is a dirt road that extends north of MS Hwy 22, west of Catlett Road, and terminates at Stokes Road to the north. The only paved road within this area that connects Stokes Road with MS Hwy 22 is a gated road for Charlton.



Above: Charlton gated access north of Hwy 22.



Above: Richton Road, looking north, north of Hwy 22.

In the functional classification map of the County, Virilia Road is the only classified roadway in this area, and is classified as a Major Collector. Paved connections to Stokes Road are recommended to include a north/south connector road east of Persimmon Creek/Stonebridge Drive and an extension of Catlett Road north of Hwy 22 to Stokes Road.

#### Hwy 22/Livingston Vernon Rd-Cedar Hill Rd

The intersection of MS Hwy 22 with Livingston Vernon Road and Cedar Hill Road is within a reverse horizontal curve, that curves around the Damascus Baptist Church and has very high angle intersections with Cedar Hill Road, Livingston Vernon Road and Stokes Road. As volumes increase on these high angle approaches and on MS Hwy 22, these horizontal curves will likely contribute to a higher crash rate at these intersections. The USGS maps from 1955 show this lane configuration, as there are no topographic constraints or structures that would dictate the decision to have these reverse horizontal curves. Straightening the alignment is recommended as this area is anticipated to see dense residential development in the next 10 years. The conceptual realignment is shown in the Appendix in **Figure A10**.

### 5.3 MS Hwy 463

The intersection of Robinson Springs Road/Hwy 463 was evaluated for the City of Madison. Signal warrants were met, and a northbound left turn lane is needed on MS Hwy 463 at this intersection. The northbound left turning volume on Hwy 463 totaled 855 vehicles over 13 hours, with an eastbound right turning volume of 958 vehicles in this same 13-hour period. The peak hour volumes totaled 1,678 vph in the PM peak and 1,507 vph in the AM peak. Left turn lane construction, along with signalization has been recommended at this intersection. In advance of these improvements, a paved shoulder on the east side of MS Hwy 463 would provide opportunity for crash reduction at this intersection.



Livingston Road/MS Hwy 463 intersection has a much lower minor street volume than Robinson Springs Road. The minor street volumes total less than 50 vph northbound, except from 5-6 PM, where the volumes recorded were 61 vph. During a 12-hour count, the mainline Hwy 463 volumes ranged from 1,034 to 1,615 vph for 9 of the 12 hours counted. Providing a left turn lane on MS Hwy 463 would reduce the impact that left turning vehicles have on mainline MS Hwy 463 traffic volumes. The lane concepts at Robinson Springs Road and Livingston Road are shown in **Figure A11**.

The Fairfield subdivision has delays associated with turning left from the subdivision onto MS Hwy 463. The adjacent middle school traffic routinely has traffic extend east and block the access. Signal warrants are not met at this intersection, however, extending the northbound left turn lane on MS Hwy 463 from the current end to Fairfield Drive would reduce the potential for left turning traffic to block the Fairfield entrance. Additionally, the extension of the turn lane would allow Fairfield traffic the opportunity to turn left across MS Hwy 463 while only needing a gap in the mainline traffic from one direction at a time. The turn lane construction concept at Fairfield Drive is shown in **Figure A12**.

The intersection of Gluckstadt Road with Cedar Hill Road and MS Hwy 463 has limited sight distance from a vertical curve on the north approach and from tree limbs in the southwest quadrant. This vertical curve limits sight distance to less than 500 ft for both Gluckstadt Road and Cedar Hill Road traffic looking north. The proposed retail development in the northeast quadrant of the intersection is anticipated to increase traffic at this intersection. The crash history identified four angle crashes in a six-month period from 4/2/16 to 10/6/16, but the crash threshold of five crashes in a 12-month period has not been met (to satisfy the crash experience signal warrant). Existing volumes do not meet volume warrants when excluding the minor street right turns. However, with the proposed development in the northeast quadrant, signal warrants are anticipated to be met when excluding minor street right turn volumes. Left turn lanes are recommended to be constructed on both MS Hwy 463 and Gluckstadt Road/Cedar Hill Road, concurrent with signalization of the intersection. The auxiliary lane concepts are shown in **Figure A13**.

Stribling Road at MS Highway 463 has been the subject of study and design with the proposed new 6<sup>th</sup> grade school campus on the 16<sup>th</sup> Section land on the west side of MS Hwy 463. A traffic study was conducted, as well as signal/roadway design for intersection improvements and signalization. A separate study is also underway to evaluate the Mannsdale Upper and Lower Elementary schools traffic circulation and queuing impacts to MS Hwy 463.

While there are multiple subdivisions along MS Hwy 463 that could benefit from left turn lane construction on MS Hwy 463 at the subdivision entrances/exits on the Highway, the Reunion subdivision main entrance at Reunion Blvd is located within a horizontal curve. This curve restricts the sight distance, and coupled with the 55 mph posted speed limit, the potential for rear-end crashes is increased. Construction of a left turn lane on MS Hwy 463 at the entrance to Reunion is recommended.

The lane drop on eastbound MS Hwy 463 at Crawford Street causes a weaving problem with many people forced to merge as they travel east across Welch Farms Road/Crawford Farms Blvd. The lane drop at Crawford Street creates a weaving issue with people that are expecting the lane to continue to Main Street. Extending the 3<sup>rd</sup> eastbound travel lane on MS Hwy 463 an additional 600 ft east to Main Street is recommended to reduce this (unnecessary) weaving movement. Additionally, the Main Street intersection with MS Hwy 463 is recommended to be modified to provide two northbound left turn lanes, as there are two receiving lanes on MS Hwy 463. Providing a second left turn lane would double the volume of traffic that could turn left onto Hwy 463 from Main Street during each signal cycle. With the single left turn lane on Main Street, the vehicles on Main Street routinely do not clear the intersection in one signal cycle. The improvements recommended at Hwy 463/Main Street are shown in **Figure A14**.

## 5.4 Stout Road

Catlett Road extends north/south from MS Hwy 22 to Gluckstadt Road and has an all-way stop with Stout Road, approximately 1.1 miles north of Stribling Road. The morning congestion levels on Gluckstadt Road and Stribling Road Extension/Church Road divert traffic north to Stout Road. The traffic count recorded 172 vph making the northbound right turn at Stout Road from Catlett Road in the AM Peak Hour. Outside of this AM peak, the northbound right turn was less than 15 vph the rest of the day, and no other approach had a volume greater than 30 vph outside of this AM peak in the 12 hours counted. As volumes increase on Stribling Road Extension and Gluckstadt Road, Stout Road volumes will increase. The intersection with Catlett Road is an all-way stop, and while volumes don't meet all-way stop conditions, the sight distance is limited at this intersection. The Stop signs are recommended to meet the minimum mounting height (5 ft above the adjacent pavement), and to have the "All-Way" plaques added to the signposts.

The intersection of Stout Road with Calhoun Station Parkway is also an all-way stop. Similar to Catlett Road, the peak hour at Stout/CSP is 7:15-8:15 AM with 186 eastbound right turns from Stout Road onto Calhoun Station Parkway. The volumes the rest of the day are less than 45 vph for all approaches. All-way stops are intended where volumes are relatively equal, and the major street averages 300 vph for 8 hours of the day, and the minor street averages 200 vph for the same 8 hours. With 85<sup>th</sup> percentile speeds greater than 40 mph, the minimum volumes can be 70% of these values (210 vph major/140 vph minor). The intersection of Stout Road/Calhoun Station Parkway does not meet these volume warrants for 1 hour of the day. The intersection of Calhoun Station Parkway/Stout Road is recommended to be converted to a two-way stop for east/west traffic and free flow for north/south traffic on Calhoun Station Parkway.

The intersection of Stout Road with Lakeshire Parkway is stop controlled on all approaches. The signs include the use of the 4-WAY supplemental plaque. The MUTCD states that, "Supplemental plaques with legends such as 2-WAY, 3-WAY, 4-WAY, or other numbers of ways shall not be used with STOP signs." Conversion of these supplemental plaques from 4-WAY to All-Way is recommended.

## 5.5 Gluckstadt Road

### Gluckstadt Road – west of Catlett Road/Bozeman Road

The 0.45 mile section of Gluckstadt Road from Mt Pleasant Baptist Church east to Catlett Road/Bozeman Road has a center Two-Way Left-Turn Lane (TWLTL) with no development or intersecting roadways that would benefit from a turn lane. Restriping the section of roadway from a center turn lane to two eastbound lanes is recommended (similar to the restriping that was done east of Bozeman Road). A left turn lane is recommended to be maintained at the intersection with Catlett Road and an eastbound right turn lane is recommended to be constructed at Bozeman Road. The striping/widening concept is shown graphically in **Figure A15**.

### Gluckstadt Road/Dees Connector-Calhoun Station Parkway

Improvements have been made to the Gluckstadt Road/Calhoun Station Parkway intersection in stages over the years. The reconstruction of the I-55 interchange to the east included widening the east approach to a four-lane divided roadway, shifting the southern access west to Dees Connector (south) and Calhoun Station Parkway on the north, and installing a traffic signal. The Sprintmart gas station and GoShine Carwash are new developments at the intersection on the southeast and southwest quadrants. A new grocery store is under construction on Calhoun Station Parkway to the north. Gluckstadt Road west of Calhoun Station Parkway was modified to provide 2 eastbound lanes east of the Bozeman Road/ Catlett Road intersection. The north/south traffic was converted to split phasing and the southbound thru lane was restriped to be a shared thru/left turn lane, allowing for dual southbound left turns from Calhoun Station Parkway at Gluckstadt Road to improve the volume of southbound left turns each cycle.

The northbound traffic at the intersection has a dedicated left turn lane and a shared thru/right turn lane. This creates issues when there is a northbound thru vehicle, as none of the right turning traffic can make right turns on red. For the time periods counted, the northbound thru volume was 149 veh and right turns were 862 vehicles, identifying that 85% of people using this lane are making right turns. Construction of a dedicated northbound right turn lane is recommended on Dees Connector, extending from the Sprintmart driveway north to Gluckstadt Road. The right turn lane concept is shown in **Figure A16**.

#### Gluckstadt Road/Weisenberger Road

The intersection of Gluckstadt Road/Weisenberger Road has a free-flow eastbound right turn to southbound movement. The intersection striping and signage is recommended to be modified to provide additional information for drivers to alert them to this free-flow movement. Many drivers yield or stop, but the free flow condition has the right-of-way with an added lane southbound. Striping is recommended to be modified to better delineate this southbound lane addition, concurrent with a W4-3 *Added Lane* sign.



#### Gluckstadt Road/Deweese Road-Providence Drive

Deweese Road is currently being reconstructed between Gluckstadt Road and Stribling Road. The intersection with Gluckstadt Road has a taper along Gluckstadt Road but is not a full width right turn lane. Additionally, with the 300 houses in Providence accessing Gluckstadt Road via a single driveway and the Vertical Church on the south side of Gluckstadt Road, there is high demand for left turns onto and off of Gluckstadt Road in this 1,200 ft section of roadway. The residential development of the +600 acres of Westlake will put more demand on turning traffic to/from Deweese Road. Constructing a center turn lane and a dedicated westbound right turn lane at Deweese Road is recommended to improve traffic flow in this section of Gluckstadt Road. The center turn lane and right turn lane concepts are shown in **Figure A17**.

## 5.6 US Highway 51

#### US Highway 51/West Sowell Road

West Sowell Road was constructed as part of the new I-55 interchange project. A new railroad crossing was constructed to allow Sowell Road to extend east to US Highway 51. The intersection with US Highway 51 is south of East Sowell Road. A northbound left turn lane was constructed on US Highway 51 at (the new) West Sowell Road. The turning movement count was compared to the MUTCD vehicular volume based warrants. The warrant analysis is summarized in **Table 8**.



Table 8  
US Hwy 51/W. Sowell Road Signal Warrant Analysis

Start Time	Approach						Warrant 1A		Warrant 1B		Warrant #2	Warrant #3
	NB	SB	NB+ SB	EB Lt	EB Rt	EB Lt+Rt	Major- 350	Minor- 105	Major- 525	Minor- 53	Four Hour	Peak Hour
06:00 AM	149	364	513	44	23	67	Yes	-	-	-	-	-
07:00 AM	250	656	906	71	37	108	Yes	-	Yes	Yes	Yes	-
08:00 AM	179	401	580	71	15	86	Yes	-	Yes	Yes	-	-
09:00 AM	169	262	431	42	15	57	Yes	-	-	-	-	-
10:00 AM	195	245	440	37	21	58	Yes	-	-	-	-	-
11:00 AM	203	277	480	49	18	67	Yes	-	-	-	-	-
12:00 PM	251	255	506	64	23	87	Yes	-	-	Yes	-	-
01:00 PM	238	276	514	47	23	70	Yes	-	-	-	-	-
02:00 PM	326	289	615	72	30	102	Yes	-	Yes	Yes	-	-
03:00 PM	359	299	658	114	27	141	Yes	Yes	Yes	Yes	Yes	-
04:00 PM	350	331	681	123	32	155	Yes	Yes	Yes	Yes	Yes	-
05:00 PM	347	400	747	159	25	184	Yes	Yes	Yes	Yes	Yes	-
Subtotal	3,016	4,055	7,071	893	289	1,182	12	3	6	7	4	0
Count date: 9/9/21							Warrant Met?					
Source: Kiser Traffic and Engineering & Neel-Schaffer, 2021.												
Volumes are in vehicles per hour. Warrant 2 is met.												
							No		No		Yes	No

Warrants are based on 70% volume warrant for speeds greater than 40 mph with one lane on the major street and one lane on the minor. Warrant #2 is met with existing traffic for US Highway 51 at W. Sowell Road, without including any of the minor street right turns. Warrant 1B is within a few vph of being met for eight hours of the day. Signalization of the West Sowell Road intersection with US Highway 51 is recommended.

#### US Highway 51/Church Road

Church Road serves as a significant route connecting many of the Nissan suppliers, as well as Germantown school traffic. A signal warrant analysis was conducted at the intersection of US Highway 51 and Church Road. During the 13 hour count, 35% of northbound traffic (1,464 vehicles) turned left onto Church Road from US Highway 51. The AM peak hour northbound left turn volume was 285 vph (56%), with 228 vph northbound thru vehicles. The signal warrant was based on using the major street left turns as the minor street volume. The results of the warrant analysis are shown in **Table 9**.

Table 9  
US Hwy 51/Church Road Signal Warrant Analysis

Start Time	Approach						Warrant 1A		Warrant 1B		Warrant #2	Warrant #3
	NB	SB	NB+ SB	EB	NB Lt	EB Lt	Major- 350	Minor- 105	Major- 525	Minor- 53	Four Hour	Peak Hour
06:00 AM	172	164	336	91	67	25	-	-	-	Yes	-	-
07:00 AM	495	385	880	208	270	25	Yes	Yes	Yes	Yes	Yes	Yes
08:00 AM	376	322	698	208	189	22	Yes	Yes	Yes	Yes	Yes	-
09:00 AM	202	216	418	88	59	17	Yes	-	-	Yes	-	-
10:00 AM	207	219	426	67	56	26	Yes	-	-	Yes	-	-
11:00 AM	214	234	448	104	46	19	Yes	-	-	-	-	-
12:00 PM	310	212	522	114	87	30	Yes	-	-	Yes	-	-
01:00 PM	333	231	564	84	112	18	Yes	Yes	Yes	Yes	-	-
02:00 PM	313	252	565	145	73	39	Yes	-	Yes	Yes	-	-
03:00 PM	424	260	684	205	152	47	Yes	Yes	Yes	Yes	Yes	-
04:00 PM	423	291	714	298	119	46	Yes	Yes	Yes	Yes	Yes	-
05:00 PM	404	330	734	248	116	72	Yes	Yes	Yes	Yes	Yes	-
06:00 PM	340	215	555	144	118	42	Yes	Yes	Yes	Yes	-	-
Subtotal	4,213	3,331	7,544	2,004	1,464	428	12	7	8	12	5	1
Count date: 9/1/21							Warrant Met?				Yes	Yes

Source: Kiser Traffic and Engineering & Neel-Schaffer, 2021.

Volumes are in vehicles per hour. All 3 warrants are met using major st left turns as minor st volumes.

## 5.7 Distribution Drive

The lack of a frontage road on the west side of I-55 between Gluckstadt and Reunion Parkway puts more pressure on Gluckstadt Road and Bozeman Road. Internal connections are recommended to extend southwest of Distribution Drive and intersect with Reunion Boulevard. Much of the farmland south of Gluckstadt Road is anticipated to be developed as residential subdivisions. Planning for internal connections to distribute this traffic to the north, west and south is recommended. The conceptual street network is shown in **Figure A18**.

## **6.0 Arterial Widening Projects**

The continued development of residential property in Madison County will increase traffic demands on the roadway infrastructure. West of I-55, the east/west roadways connecting to I-55 are limited to include: MS Highway 463, Gluckstadt Road and MS Highway 22. MS Highway 463 and Gluckstadt Road are experiencing significant congestion in isolated areas. These three roadways are the only east/west Principal Arterial roadways west of I-55 between County Line Road and Canton. As wrecks occur on Bozeman Road, Gluckstadt Road and MS Highway 463, traffic shifts from one route to another. As these routes are currently at (or over) capacity, the traffic pattern changes that occur during a significant car crash overwhelms the community with excessive delays and increased traffic queues.

The widening of these arterial roadways is recommended. Conventional design in prior years has included widening from two/three lanes to five-lane and seven-lane roadways in urban areas in Mississippi. As many of these five and seven lane roadways have been constructed, jurisdictions have learned through increased crash histories that these roadways with two-way left turn lanes underperform when traffic volumes exceed 20,000-22,000 vpd. A multi-lane roadway with a two-way left turn lane has a significantly greater number of crashes than a similar roadway with a raised curb median. The typical section for a four-lane roadway is recommended to include raised curb medians to help reduce crash rates in the study corridors.

### **6.1 MS Hwy 463**

#### Park Place Blvd to Annandale/Reunion Parkway – 2.6 miles

MS Highway 463 is over capacity in the two-lane section between Park Place Boulevard and Annandale/Reunion Parkway based on existing 2021 traffic counts. Traffic forecasts show conservative estimates of increases to (in excess of) 25,000 vpd, based on a 1.5% compound annual growth. A four-lane divided roadway is needed to accommodate not only the existing traffic, but also the anticipated future growth in this 2.6 mile section of roadway.

Widening MS Highway 463 directly affects the Madison Middle School traffic circulation and the ability of emergency services to respond within this area during peak hours. The cross section of the four-lane roadway is recommended to include a sidewalk and multi-use path from Annandale to Park Place Boulevard, connecting these residential areas with the middle school, high school, and future multi-use paths along Highland Colony Parkway.

### **6.2 Gluckstadt Road**

#### Bozeman Road to Calhoun Station Parkway – 1.5 miles

Gluckstadt Road was widened to a three-lane curb and gutter section in 2008/2009. Building the curbs and gutters onto the three-lane roadway severely limited the east/west capacity of this Principal Arterial roadway. With the access to I-55 primarily limited to two interchanges west of I-55, the three-lane section was not sufficient to accommodate existing or projected traffic volumes. The absence of a connection between Distribution Drive and Dees Drive restricts one of the largest industrial developed areas in the County to a single access point. A second eastbound thru lane was striped/constructed between Bozeman Road and Calhoun Station Parkway in 2020.



Since the three-lane widening of Gluckstadt Road, many developments have been approved without sufficient building setbacks or with appropriate driveway widths, spacing, or turning radii. The introduction of numerous driveways with insufficient turning radii adversely affects traffic on Gluckstadt Road. Traffic turning into developments must come to a near complete stop to enter the facility because of insufficient turning radii. The lack of appropriate building setbacks severely limits the available space for future roadway widening and could result in expensive building acquisitions to get sufficient space to provide for adequate roadway capacity and public utilities.

Widening Gluckstadt Road to a four-lane divided roadway is essential to the future development of Madison County and the anticipated increases in traffic. Existing traffic volumes reveal that there is an immediate need for widening Gluckstadt Road in this 1.5 mile section from Bozeman Road to Calhoun Station Parkway. Existing volumes range from approximately 13,000 vpd east of Bozeman Road to (in excess of) 20,000 vpd east of Calhoun Station Parkway. The interchange to the east was widened to a four lane divided roadway, but cannot diffuse that level of traffic westbound because of the single westbound travel lane on Gluckstadt Road, west of Calhoun Station Parkway. Gluckstadt Road is recommended to be widened to include four thru travel lanes, a center median, and a multi-use path.

If sufficient right-of-way cannot be acquired in some of the more developed eastern sections of Gluckstadt Road to accommodate a raised center median, a Two-Way-Left-Turn-Lane (TWLTL) could be constructed in place of the raised median. Securing additional right-of-way and appropriate setbacks is recommended to begin as soon as possible, as the adjacent property is developing at an accelerated rate.

## 6.3 Yandell Road

### US Highway 51 to Smith Carr Road - 1.6 miles

Existing developments on Yandell Road have been constructed with minimal setbacks within narrow right-of-way. The ultimate width of Yandell Road is restricted between US Highway 51 and Clarkdell Road Extension due to these right-of-way constraints. A new turn lane was constructed east of US Highway 51, extending approximately 1,800 ft on Yandell Road. However, the section of roadway adjacent to the Madison Crossing School was not widened. Widening Yandell Road to provide a five-lane or four-lane divided roadway for the 1.6 miles from US Highway 51 to Smith Carr Road is recommended. Some of the shorter term options include a parallel route to diffuse some of the traffic from Yandell Road north.

## 6.4 US Highway 51

### Tisdale Road to Yandell Road – 2.5 miles

MDOT widened US Highway 51 through Ridgeland and Madison in 2007, terminating the project approximately 1.4 miles north of Hoy Road (just north of Tisdale Road). Traffic demands on US Highway 51 are significant as US Highway 51 serves as a parallel facility to I-55 and much of the interstate traffic diverts to US Highway 51 when there are major delays on I-55. Additionally, the presence of the Nissan plant and suppliers, industrial employers in the Gluckstadt area, and the school traffic for Germantown attracts commuters and school traffic to US Highway 51. Widening US Highway 51 to a four-lane divided roadway is recommended. The widening is recommended to extend 2.5 miles from the existing five-lane, north to 0.4 miles north of Yandell Road where the potential for the Clarkdell Road Extension could intersect US Highway 51.

## 7.0 Summary of Recommendations and Conclusions

The study area has many congested areas and areas of new growth. Commuters along the study corridors are well aware of the extended traffic queues and delays associated with peak hour travel. The elementary and middle school traffic circulation creates isolated issues within the study corridors, particularly on heavy commuting routes (Hwy 463 and Yandell Road).

The combined effects of providing auxiliary lanes at new developments (when justified), improved turning radii, appropriate right-of-way widths, access management practices and more efficient/modern traffic control detection and controllers will significantly improve the infrastructure and future efficiency of the County roadways.

The County has many All-Way stop controlled intersections that do not meet the criteria for All-Way stop control. Additionally, many of the signs are not at the proper mounting height. Studies have demonstrated that improperly placed signs do not obtain the same compliance rates as properly placed signs. The County's All-Way stop controlled intersections are recommended to be reviewed (County wide) and brought into compliance with sign standards outlined in the *Manual on Uniform Traffic Control Devices* (MUTCD).

Congestion is occurring on I-55 southbound at Gluckstadt Road on most weekday morning commutes. This is a similar pattern to the I-55/Hwy 463 interchange after the interchange was reconstructed. The four-lane interstate had two southbound thru lanes and two heavily traveled ramps merging into two interstate travel lanes (four southbound lanes merging into two). This is a similar pattern at Gluckstadt Road and I-55, as there are two southbound ramp lanes merging into two southbound thru lanes, and congestion occurs. The construction of the Reunion Parkway interchange will help to diffuse some of this traffic, but until I-55 is widened north to Gluckstadt Road, it is likely that these morning southbound delays will continue.

### Short Term Improvements

Many short-term improvements were identified to help reduce the congestion and delays in the study area. The short-term improvements identified are summarized in **Table 10** with peak hour entering volumes and ranking of the total crashes. The improvements are sorted by total number of crash rankings.

Table 10  
Summary of Short-Term Improvements

Intersection	Improvement Description
US Highway 51/ Yandell Rd	Widen east approach to provide 240 ft right turn lane.
Yandell Road	Widen from 2 lane to 3 lane (w/o curb and gutter - rural section) between Westfalen Dr and Glenwild Trail (east of Madison Crossing Elementary). Include sidewalk and multi-use path if feasible. (0.9 miles)
Yandell Road/ Clarkdell Rd Ext	Install traffic signal. Construct westbound left turn lane, northbound right turn lane, and eastbound right turn lane.
Yandell Road/ Old Canton Road	Construct westbound right turn lane and southbound right turn lane. Improve sign compliance with MUTCD.
Robinson Springs/ MS Hwy 463	Construct WB left turn lane extending from Livingston Rd to Robinson Springs Rd.
Livingston Rd/ MS Hwy 463	Construct EB right turn lane, extending from Robinson Springs Rd to Livingston Rd.
Middle School/ MS Hwy 463	Extend center turn lane $\pm 1,400$ ft to provide full width center turn lane between MMS and Fairfield Drive.
Gluckstadt Rd/ MS Hwy 463	Construct N/S left turn lanes, NB right turn lane, improve NB right turn radii, add intersection lighting, install signal, widen minor street approaches to 3 lanes.
Reunion Blvd/ MS Hwy 463	Construct southbound left turn lane on Hwy 463.
Crawford Farms- Main St/Hwy 463	Widen Hwy 463 to 3 eastbound lanes between Crawford St and Main Street. Widen Main Street to provide dual northbound left turn lanes.
Stout Rd/Calhoun Stn Pkwy	Remove north/south Stop signs, convert to two-way stop. Repair erosion/asphalt on north side of Stout Road.
Gluckstadt Road/ Deweese-Providence	Widen Gluckstadt Rd to provide 3-lane section from Dewees Rd east to Providence Drive. Construct westbound right turn lane at Dewees Road.
Gluckstadt Road/ West of Bozeman	Restripe Gluckstadt Rd to provide 2 eastbound lanes from Mt. Pleasant Baptist Church to Bozeman Road. Construct eastbound left turn and right turn lane at Bozeman Road.
Gluckstadt Road/ Bozeman Road	Restripe north approach to provide dual SB lefts.
Gluckstadt Road/ Dees Connector	Construct northbound right turn lane from gas station driveway to Gluckstadt Road.
Gluckstadt Rd / Weisenberger Rd	Restripe southbound lane to better delineate dedicated thru and provide <i>added lane</i> (W4-3) signing.
US Hwy 51/ Church Road	Signalize intersection and widen Hwy 51 to provide northbound left turn lane. Realign intersection to intersect at 90 degree angle.
US Hwy 51/ W. Sowell Road	Signalize intersection.
MS Hwy 22/ Livingston Vernon	Realign MS Hwy 22 to flatten horizontal curves and have 90 degree intersections with Cedar Hill Road/Livingston Vernon Road and Stokes Road.

Source: Kiser Traffic and Engineering & Neel-Schaffer, 2021.



Long Term Improvements

The long-term improvements were identified as larger capital investments with improvements to a roadway corridor or new roadway construction. The Functional Classification of streets identifies the major transportation corridors as Principal or Minor Arterial Streets. These transportation corridors are vital to the quality of life of the people living and working in these areas. The improvements to these roadways are recommended to include multi-use paths, when feasible, as multi-use paths have been demonstrated to add to the quality of life in communities and have a positive impact on property values. A summary of the long-term improvements is provided in **Table 11**.

Table 11  
Summary of Long-Term Improvements

Roadway	Improvement Description	Project Length (mi)
MS Highway 463	Widen from 2 lane to 4 lane divided between Park Place Boulevard and Annandale/Reunion Parkway. Include sidewalk and multi-use path.	2.6
US Highway 51	Widen from 2 lane to 4 lane divided between Tisdale Road and Yandell Road. Include sidewalk and multi-use path.	2.5
Alt 1 Clarkdell Rd Ext	Extend Clarkdell Rd Extension north of Yandell Road and west to US Hwy 51, with a bridge over Bear Creek.	0.5
Alt 2 Church Rd Ext	Extend Church Road east of US Hwy 51 with a bridge over Bear Creek, terminating at Smith Carr Road.	1.1
Alt 3 W. Sowell Rd Ext	Extend 3 lane roadway east of US Highway 51 w/ bridge over Bear Creek, to Cotton Blossom Road.	2.0
Yandell Road	Widen from 2/3 lanes to 4 lanes (w/curb and gutter) between US Hwy 51 and Smith Carr Road. Include sidewalk and multi-use path if feasible.	1.6
Gluckstadt Road	Widen from 3/4 lane undivided to 4 lane divided between Calhoun Station Parkway and Bozeman Road. Include multi-use path.	1.5
MS Hwy 22	Widen from 2 lanes to 5 lanes from Virilila Rd west to Calhoun Station Pkwy. Include separated access to residences on south side of Hwy 22.	1.8
Distribution Drive	Extend roadway south to intersect with Reunion Parkway to the south, Bozeman Road to the west and Gluckstadt Road to the north.	2.5
Reunion Parkway- Phase 2	New construction of 4 lane divided roadway from Bozeman Road to Parkway East with new interchange at I-55.	1.2
Reunion Parkway- Phase 3	New construction of 2 lane roadway from Parkway East to US Highway 51. Includes bridge over railroad and bridge over Bear Creek.	1.5
Catlett Road	Extend Catlett Road north of Hwy 22 to Stokes Road	1.8
New Road	Connect MS Hwy 22 w/ Stokes Rd, east of Persimmon Creek	2.1

Source: Kiser Traffic and Engineering & Neel-Schaffer, 2021.

## Appendix

• Concept Graphics	
○ Clarkdell Road Extension – Concept.....	A1
○ Church Road Extension – Concept.....	A2
○ West Sowell Road Extension – Concept.....	A3
○ Yandell Road/US Hwy 51 Right Turn Lane – Concept.....	A4
○ Yandell Road/Madison X-ing – Left Turn Lane – Concept .....	A5
○ Yandell Road/Old Canton Road – Right Turn Lane – concept.....	A6
○ Hwy 22 – 5 Lane Concept by Industrial Park.....	A7-9
○ Hwy 22/Livingston Vernon Realignment Concept.....	A10
○ Hwy 463/Robinson Springs Rd-Livingston Rd Concept.....	A11
○ Hwy 463/Fairfield Drive-Middle School – Concept.....	A12
○ Hwy 463/Gluckstadt Rd-Cedar Hill Rd – Concept.....	A13
○ Hwy 463/Main Street-Crawford St – Concept.....	A14
○ Gluckstadt Road – 2 Eastbound Lanes - Concept.....	A15
○ Gluckstadt Road – Calhoun Station Pkwy/Dees Connector .....	A16
○ Gluckstadt Road – Dewees Rd .....	A17
○ Future Roadway Connections – West of I-55 .....	A18
• Turning Movement Traffic Counts	
○ 1-MS Hwy 463/Gluckstadt Rd: Count Date 8/26/21 .....	B1-5
○ 2-Gluckstadt Rd/Dewees Rd: Count Date 8/26/21 .....	B6-10
○ 3-Gluckstadt Rd/Bozeman/Catlett: Count Date 8/26/21 .....	B11-15
○ 4-Gluckstadt Rd/Distribution Drive: Count Date 8/26/21 .....	B16-20
○ 5-Gluckstadt Rd/Calhoun Stn/Dees: Count Date 8/26/21 .....	B21-25
○ 6-Gluckstadt Rd/Weisenberger Rd: Count Date 8/26/21 .....	B26-31
○ 7-Parkway East/Weisenberger Rd: Count Date 8/26/21 .....	B32-37
○ 8-US Hwy 51/Weisenberger Rd: Count Date 8/26/21 .....	B38-43
○ 9-MS Hwy 22/Livingston Vernon: Count Date 9/1/21 .....	B44-48
○ 10-Stokes Rd/Livingston Vernon: Count Date 9/1/21 .....	B49-53
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