VILLAGE MANNSDALE

HIGHWAY 463/GLUCKSTADT ROAD
MADISON COUNTY

CONCEPTUAL MASTER PLAN
NOVEMBER 27, 2019

Dean and Dean/Associates
architects
a professional association
DEAN • GEDDIE • GRANT • OUBRE

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39296-4685
4400 Old Canton Road
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39211

PROJECT NUMBER - 16033

SET NUMBER _____

0' 10' 20' 40' 80'

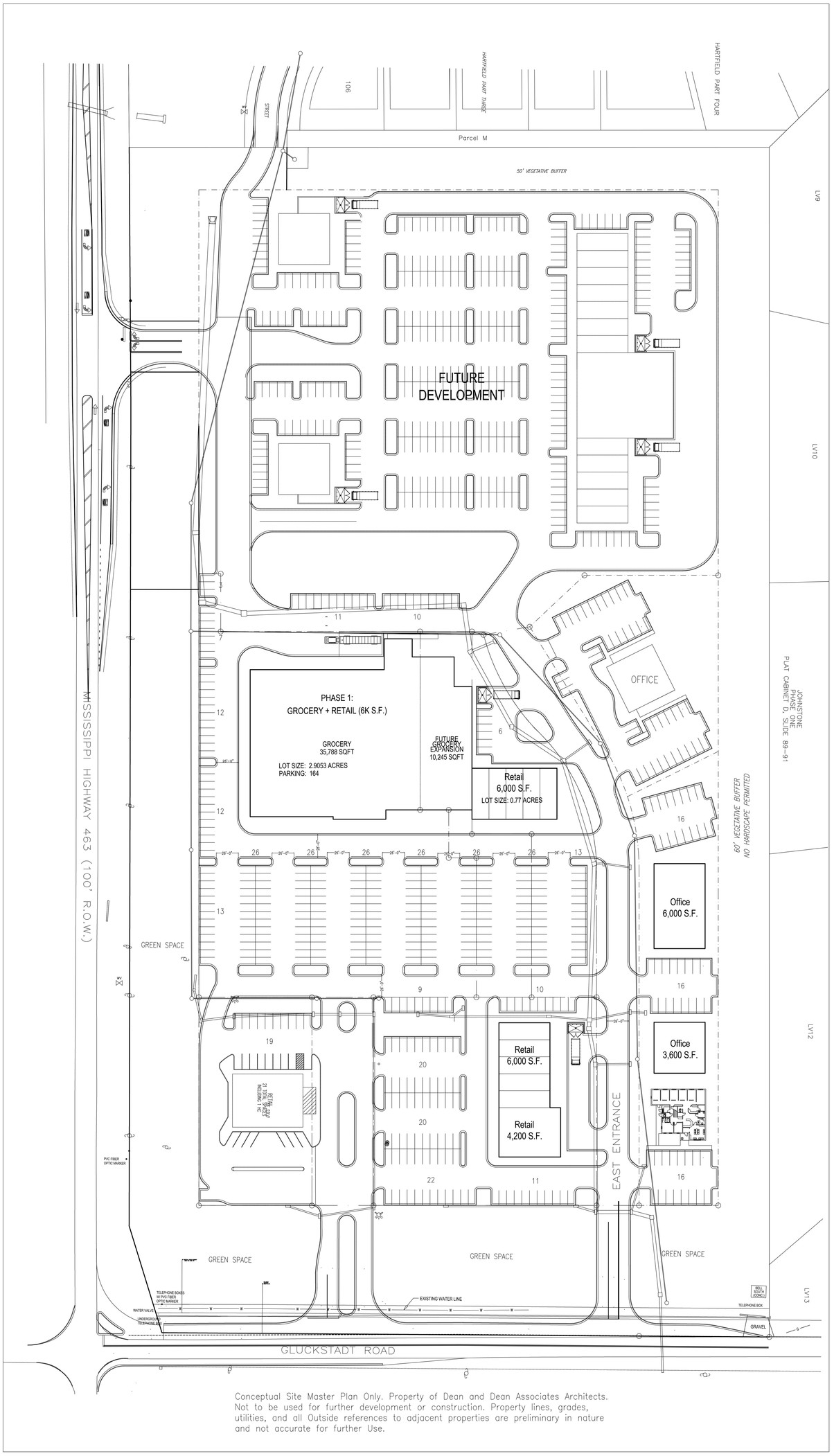
Scale : 1/16" = 1'-0"

0' 4' 8' 16' 32'

Scale : 1/8" = 1'-0"

0' 1' 5' 10' 20'

Scale : 1/4" = 1'-0"



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Sheet Number : ●

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VILLAGE MANNSDALE

MADISON COUNTY, MS

Project No. : 16033
Date: 11-22-19
Drawn: TAP
Checked: JAG

SITE PLAN

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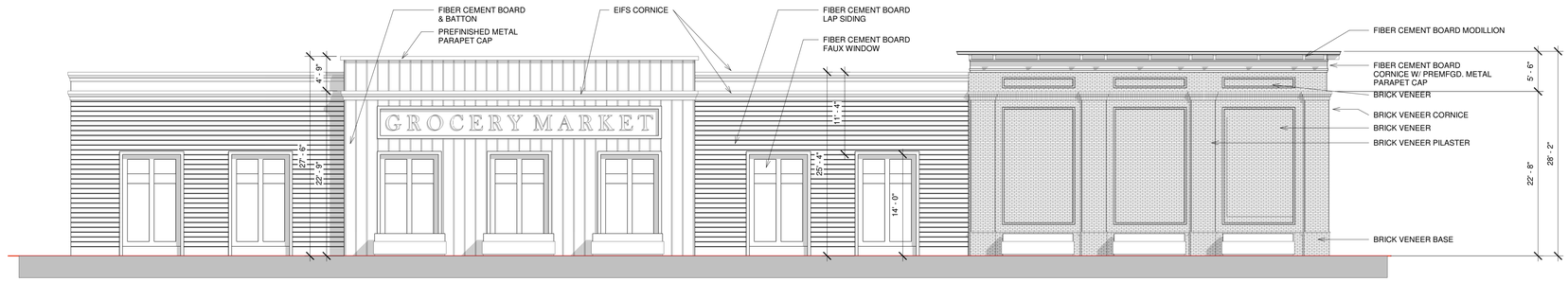
www.deandean.com

1 SOUTH ELEVATION - GROCERY
1/8" = 1'-0"



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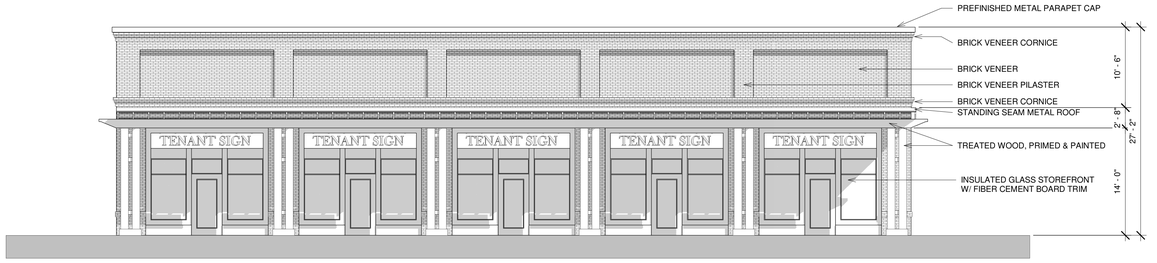
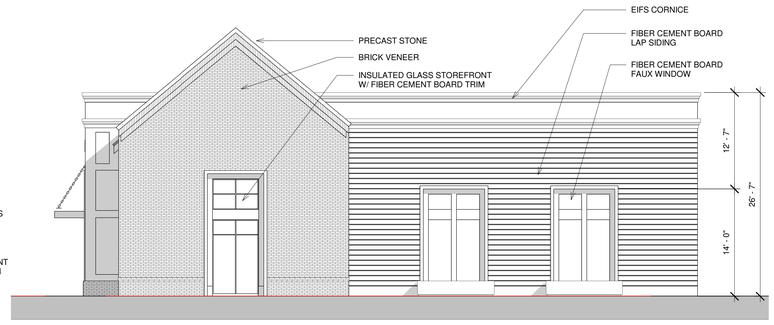


3 SOUTH ELEVATION - RETAIL
1/8" = 1'-0"

4 WEST ELEVATION - RETAIL
1/8" = 1'-0"



5 SOUTH ELEVATION - RETAIL
1/8" = 1'-0"

Scale : 1/16" = 1'-0"
0' 10' 20' 40' 80'

Scale : 1/8" = 1'-0"
0' 4' 8' 16' 32'

Scale : 1/4" = 1'-0"
0' 1' 5' 10' 20'

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VILLAGE MANNSDALE
MADISON COUNTY, MS

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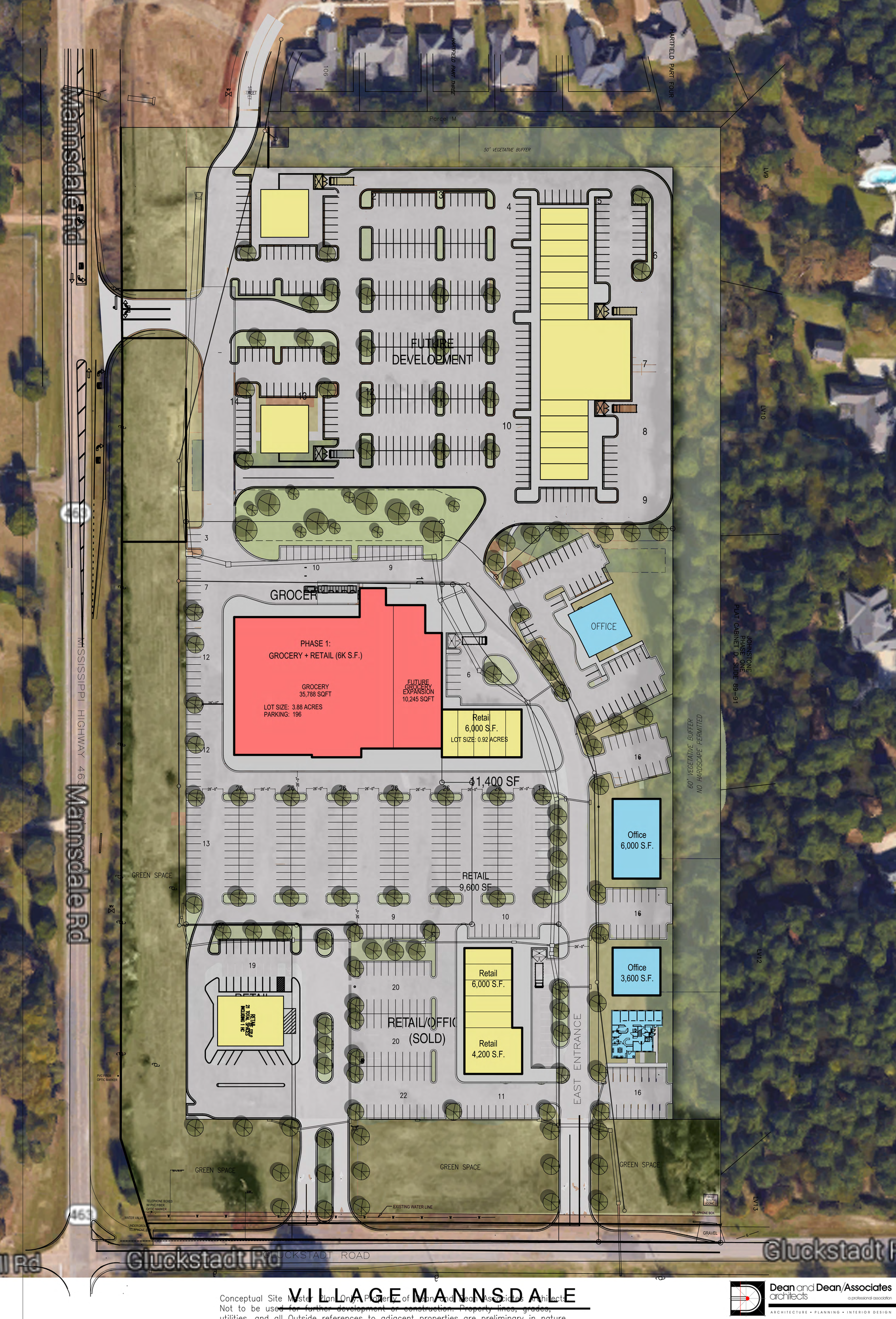
A201
EXTERIOR ELEVATIONS



VILLAGE MANNSDALE

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TRAFFIC IMPACT ANALYSIS

For

Village of Mannsdale
Gluckstadt Road/MS Hwy 463

September 2019

Prepared for

Stribling Lake, LLC.
P.O. Box 1260
Ridgeland, MS 39158

Prepared by:

NEEL-SCHAFFER

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1.0 Introduction

This report summarizes the results of a traffic analysis performed by Neel-Schaffer as requested by MDOT for the development of the Village of Mannsdale Commercial Development project site in unincorporated Madison County, Mississippi. The project site is located east of MS Highway 463, north of Gluckstadt Road, south of Hartfield subdivision and west of Johnstone subdivision. The project site is located within Section 22, Township 8 North, Range 1 East.

The purpose of this analysis is to estimate the trip generation potential for the project site and evaluate the anticipated impact of the site traffic on the adjacent roadways and intersections within the project study area. To analyze the related impact to the surrounding area, existing roadway capacity and non-site traffic levels-of-service were evaluated. In addition, a field review was conducted to observe existing land usage within the study area of the project site and the existing geometrics of the surrounding roadways.

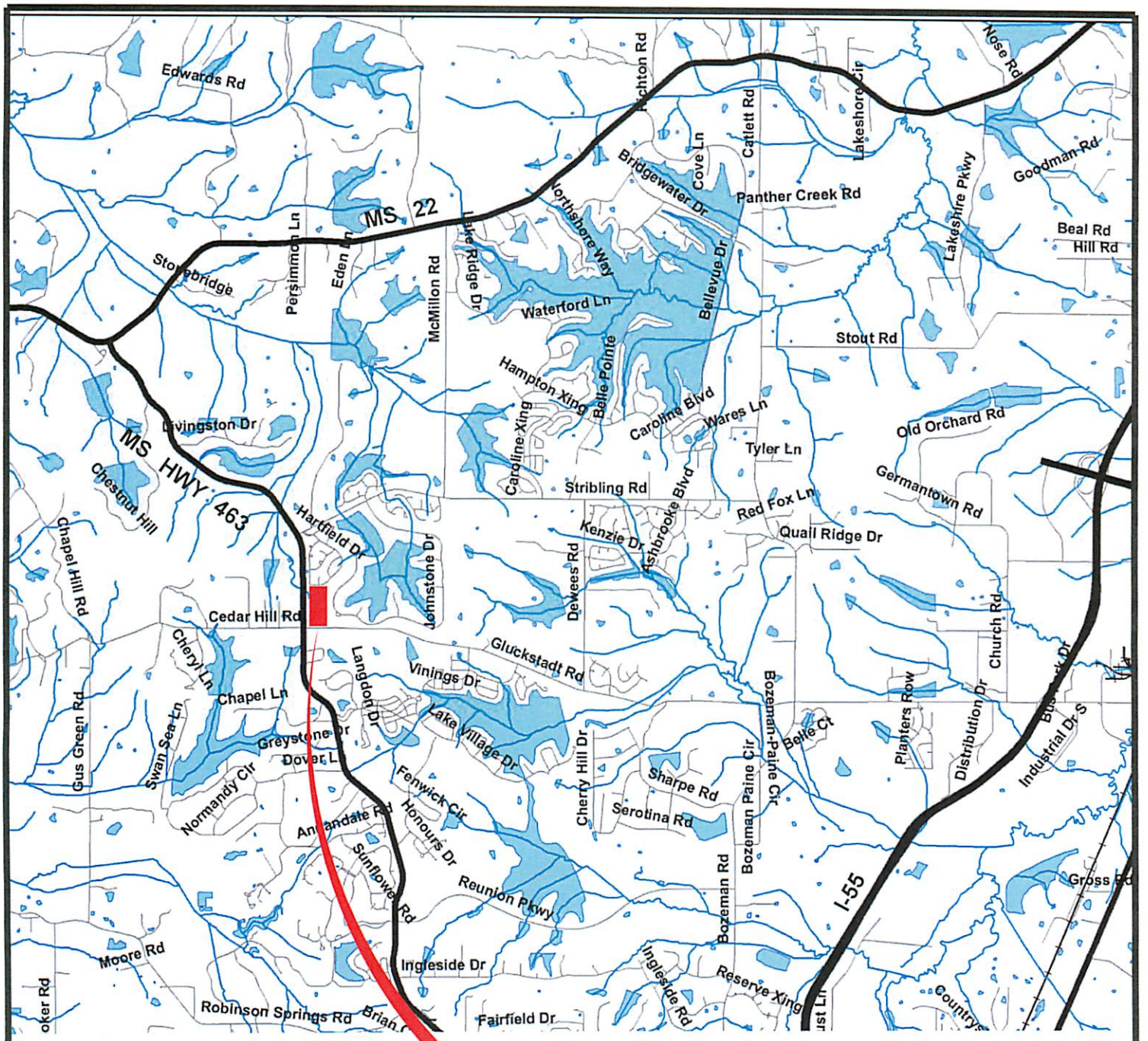
Access to the site is provided via MS Hwy 463 (proposed driveway) and Gluckstadt Road. This report addresses the traffic aspects of the proposed Village of Mannsdale Commercial development.

2.0 Proposed Development

2.1 Site Location

The ± 25 acre project site is located east of MS Hwy 463, north of Gluckstadt Road, south of Hartfield subdivision and west of Johnston (gated) subdivision. Access to MS Hwy 463 is proposed to include a full access driveway ±1,150 ft north of Gluckstadt Road and two driveways on Gluckstadt Road (existing) ± 250 ft east of MS Highway 463 and ± 260 ft between driveways. These driveways were constructed around Year 2005/2006 based on historical aerial photographs.

An internal connection to Hartfield subdivision is proposed to connect to Brierfield Drive. There is no access to the site proposed from the east into Johnstone. The location of the project site is shown graphically in **Figure 1**.



MADISON COUNTY

S:\Projects\15352 Hwy 463 Gluckstadt Rd\CADD\vicinitymap.dgn

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VICINITY MAP

FIGURE 1

2.2 Land Use and Intensity

The project site is currently undeveloped, however, the site driveways and right turn lanes with curb/gutter along Gluckstadt Road exist (circa 2005/2006). The project site is anticipated to include:

Phase 1 - 2020
-46,050 SF Grocery Store,
-20,400 SF Retail development, and
-3,500 SF Office development.

Phase 2 - 2022
45,000 SF Retail development

Buildout of the project site is anticipated to be completed by Year 2022. A copy of the project site plan is provided in **Figure 2.**

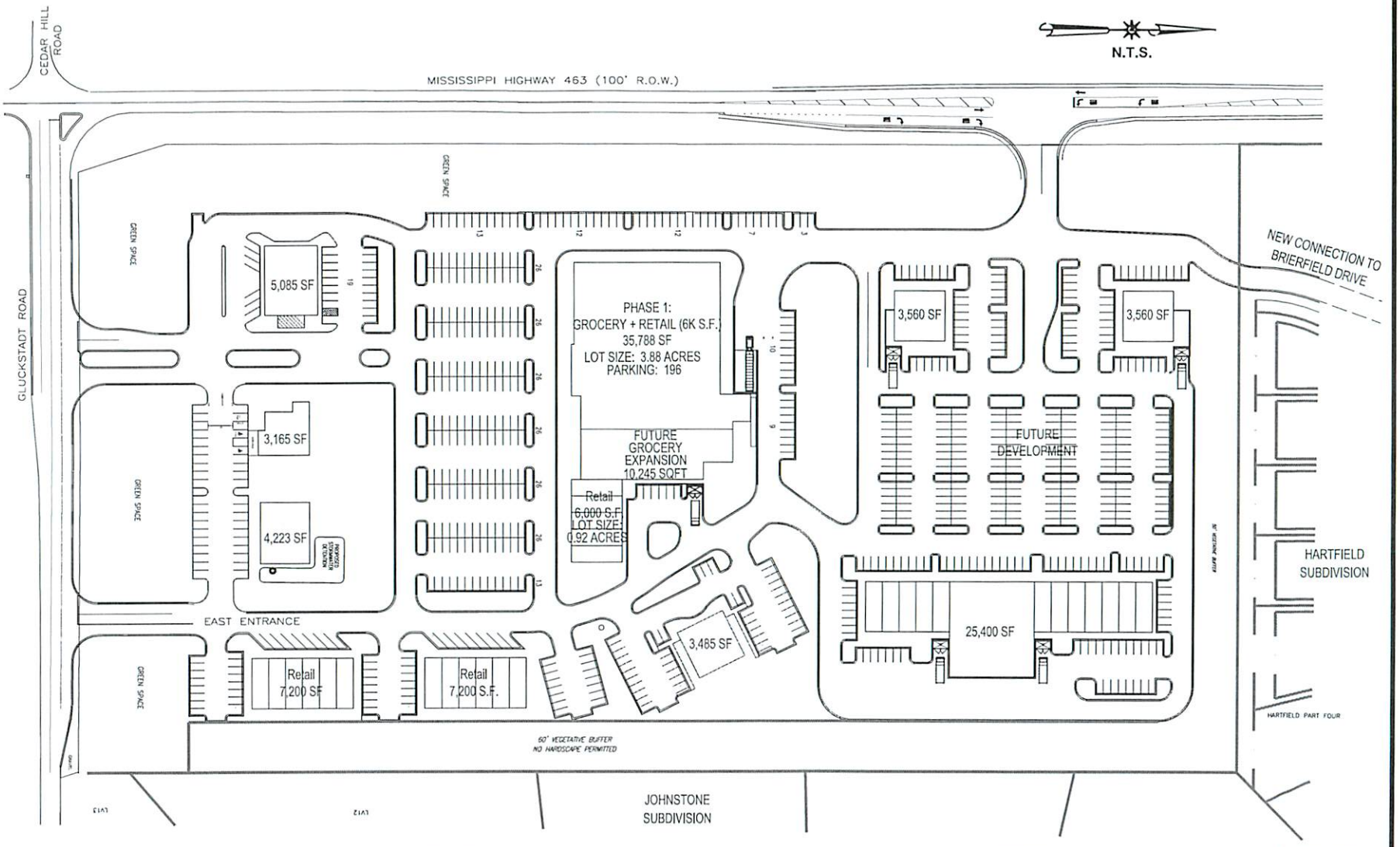
3.0 Existing Conditions

3.1 Study Area

The study area includes MS Hwy 463 from Gluckstadt Road north to the Hartfield subdivision, and Gluckstadt Road from MS Hwy 463 east to the property line at Johnstone. The study intersections within this corridor include the adjacent intersection of MS Hwy 463/Gluckstadt Road and the three project site driveways.

3.2 Adjacent Land Use

The property to the north of the site is the Hartfield subdivision that has approximately 182 lots with lot sizes near 0.25 acres. The Johnstone subdivision to the east has approximately 100 lots with larger lots and larger homes, with lot sizes ranging from approximately 1 to 4 acres. Property south of the site is owned by the Chapel of the Cross Episcopal church, which is just north of the Reunion subdivision. Property west of the site is rural large lot residential.



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S:\Projects\15352 Hwy 463 Gluckstadt Rd\CADD\site plan.dgn

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SITE PLAN

FIGURE 2

3.3 Roadways and Intersections

Roadways serving the project site include MS Highway 463 and Gluckstadt Road. A connection to Hartfield subdivision is proposed, as Hartfield has an internal street that stubs out to the south near the lift station and detention pond. The roadway connection is listed as Brierfield Drive in Hartfield and intersects Hartfield Drive.

MS Highway 463 is a north/south Principal Arterial roadway within the study area per the Functional Classification System for the Jackson Urbanized Area. The cross section of MS Highway 463 is a two-lane undivided roadway from Park Place-Mannsdale Park Drive, north to MS Highway 22. Travel lanes are ±12 ft wide with a minimal (0.5 ft) paved shoulder, with a rural cross section with open ditches for drainage. The posted speed limit on MS Highway 463 is 55 mph adjacent to the project site.

Few auxiliary lanes exist on MS Highway 463 in this 2-lane section of roadway. Auxiliary lanes include:

- A northbound left turn lane was added circa 2014 at MS Highway 22 as part of the Livingston Mercantile development.
- A northbound left turn lane at Mannsdale Upper Elementary in this same time period-circa 2014.
- A northbound left turn lane was constructed around 2007/2008 for the original Mannsdale Elementary School, just north of Stribling Road on MS Highway 463.
- Auxiliary left/right turn lanes were constructed on MS Highway 463 with the Reunion Parkway intersection project that signalized the intersection of MS Highway 463/Annandale Drive circa 2008 (without permit).
- The development of Brookstone Way west of Fairfield included a right turn lane circa 2000.
- Madison Middle School (MMS) construction included a traffic signal and left turn lane on MS Highway 463 circa 2004.
- Right turn lanes were constructed at Fairfield and Windsor Hills Drive around the same time period as the Middle School construction circa 2004.

Madison County submitted grant applications in September, 2018, to Central Mississippi Planning and Development District (CMPDD) to signalize MS Highway 463 at Stribling Road, Gluckstadt Road and Robinson Springs Road, but these projects were not funded. The section of MS Highway 463 from China Grove Church to MS Highway 22 is within the Mannsdale-Livingston Heritage Preservation (MLHP) Overlay District, that is part of the Madison County Zoning Ordinance. This Ordinance has a commission membership of 9 members. This overlay district is intended to help preserve the historical character of the area, per the Ordinance.

Above: Looking north on MS Highway 463 from north of the vertical curve on Gluckstadt Road.

Below: Looking south on MS Highway 463 from Gluckstadt Road.

Gluckstadt Road is an east/west Principal Arterial roadway extending east of MS Highway 463 to Parkway East. A short (±2000 ft) section of Gluckstadt Road extends east of Parkway East and terminates at the railroad tracks. Gluckstadt Road is one of only 3 Principal Arterial routes west of I-55 in Madison County between Canton and West County Line Road that provides access to I-55 (Highway 22 and Highway 463 are the other two routes). Gluckstadt Road was widened to a 3-lane urban section with curb/gutter in 2010 from Bozeman Road east to Distribution Drive. In 2012, this 3-lane section was extended east to Calhoun Station Parkway. The interchange was modified in 2014/2015 to include a loop ramp with a widened bridge at I-55/Gluckstadt Road. A current construction project is providing dual eastbound travel lanes on Gluckstadt Road from Bozeman Road east to I-55. The posted speed limit is 45 mph on Gluckstadt Road adjacent to the project site. Gluckstadt Road has ±40 ft of asphalt with curb/gutter on the south side from MS Highway 463 to the east project site driveway. The final lift of asphalt has not been applied to the southern section. The two access driveways into the site are existing, with dedicated right turn lanes. Gluckstadt Road changes names at MS Highway 463 to Cedar Hill Road extending west of MS Highway 463.

Looking east on Gluckstadt Road adjacent to site.

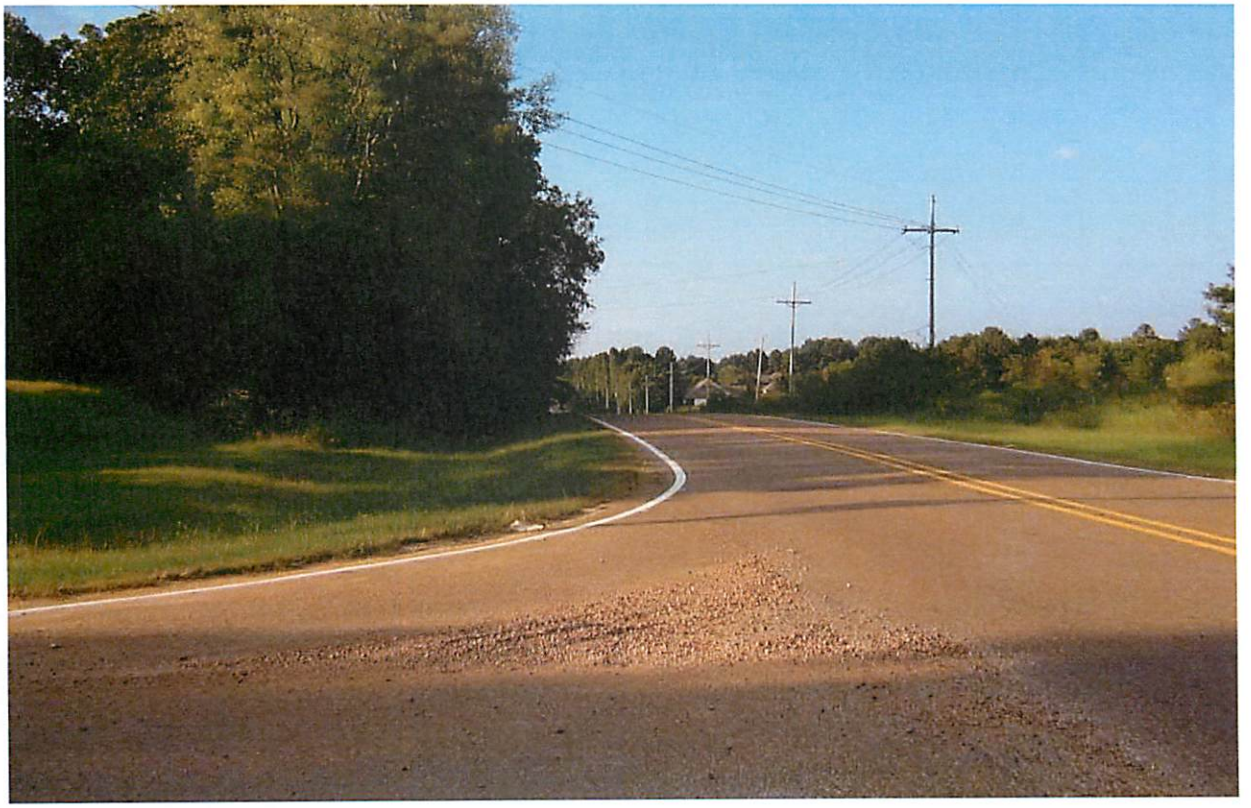
3.4 Traffic Volumes

The existing hourly turning movement traffic volumes were recorded on August 27, 2019, on MS Highway 463 at Gluckstadt Road. The 13-hour turning movement count recorded 6,804 vehicles in 13 hours on MS Highway 463 north of Gluckstadt Road. The daily volume is typically 65%-70% of the traffic in the 13-hour count, which would result in a daily volume of more than 9,500 vpd. The AM Peak hour had the highest volume with 988 vph from 6:45-7:45 AM and the PM peak had 860 vph from 4:00-5:00 PM.

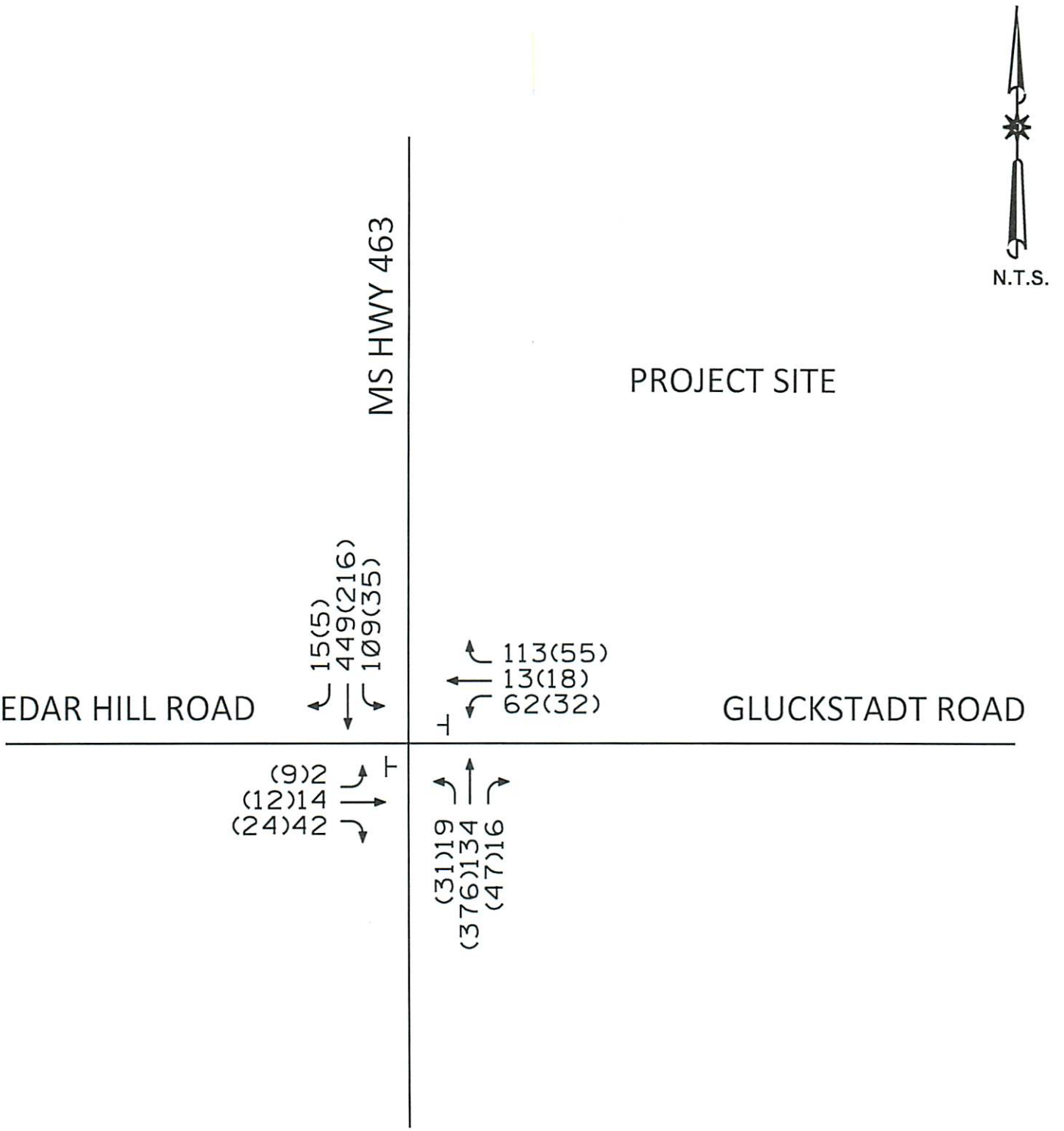
The traffic count revealed that 98.3% of the vehicles are passenger cars/trucks, 1.5% are single unit trucks/buses, and 0.1% are semi-trucks. The existing hourly turning movement traffic volumes are shown graphically in **Figure 3**.

3.5 Sight Distance

The intersection of MS Highway 463 with Gluckstadt Road exists south of the crest of a vertical curve. This vertical curve restricts sight distance at the intersection, obscuring southbound traffic. The posted speed limit is 55 mph on MS Highway 463.



Above: Looking north on MS Highway 463 from Cedar Hill Road.



COUNT DATE: 8/27/19
SOURCE: NEEL-SCHAFFER, INC.

LEGEND
XX - AM PEAK HOUR
(XX) - PM PEAK HOUR

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2019 EXISTING TRAFFIC

FIGURE 3

Sight distance at the intersection was field measured. The AASHTO A Policy on Geometric Design of Highway and Streets (Green Book), identifies that the critical design factor is Stopping Sight Distance (SSD). According to the "Green Book", if the available intersection sight distance for an entering or crossing vehicle is at least equal to the appropriate SSD for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. In some cases, this may require a major road vehicle to stop or slow to accommodate the maneuver of the minor road vehicle.

The crest vertical curve along MS Highway 463 (to the north) presents a limitation on available sight distance. Intersection sight distance for a major road driver to identify a vehicle entering the roadway is measured from a driver's eye height of 3.5 ft. The height of object is 4.35 ft, with the top 10 inches of the automobile that would need to be visible for the object to be identified as a vehicle. The sight distance criteria is intended for a major road vehicle identifying an entering/crossing vehicle to allow reciprocal sight distance, allowing each driver to see the other driver, a sight distance of 3.5 ft to 3.5 ft was evaluated. The 85th percentile speed is typically 5-10 mph above the posted speed limit. The existing roadway curves (horizontal and vertical) north and south of this area impact the speeds. The Stopping Sight Distance requirements outlined in the "Green Book" for these speeds are shown in **Table 1**.

Table 1
Stopping Sight Distance

Design Speed	Stopping Sight Distance
45 mph	360 ft
50 mph	425 ft
55 mph	495 ft
60 mph	570 ft
65 mph	645 ft

Note: SSD is for passenger cars on a level roadway.
Source: AASHTO, A Policy on Geometric Design of Highway and Streets, 2011.

Intersection Sight Distance was measured with a measuring wheel in the field from a point 14.5 ft from the edge of traveled way to the north for both Gluckstadt Road and Cedar Hill Road. The measurements were taken from a driver's eye height of 3.5 ft to a height of object of 3.5 ft. The measured Intersection Sight Distance from each side of MS Highway 463 is listed in **Table 2**.

Table 2
Field Measured Sight Distance

		Intersection Sight Distance	
Major Street	Cross Street	Left	Right
MS Highway 463	Gluckstadt Road	>700'	±490'
MS Highway 463	Cedar Hill Road	±470'	>700', but tree limbs affect

Source: Neel-Schaffer, 2019.

Based on the field measurements, Intersection Sight Distance at the study intersection is just at/or below the minimum Stopping Sight Distance conditions for the posted speed limit and does not meet the design speed criteria. With the pending introduction of more turning traffic to this intersection, improvements to sight distance and/or reducing the posted speed limit to 45 mph are recommended. This intersection is just outside of the city limits for City of Madison. State law in Mississippi prohibits County Sheriffs from using radar for speed enforcement in unincorporated areas, but with this being a State Highway, MS Highway Patrol can enforce speed limits on this corridor.

Warning signs (intersection ahead), reduced posted speed limit (45 mph) signs, north/south left turn lane construction and tree trimming in the southwest quadrant are recommended to improve the sight distance limitations at this adjacent intersection.

3.6 Capacity and Level of Service

The capacity and level of service (LOS) of an intersection is based on the delay, turning movement volumes, traffic composition, and roadway geometrics. The methodology used in this analysis is based on the *Highway Capacity Manual*, 2010 Edition (HCM 2010). 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 and F is 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 results of this analysis are shown in **Table 3.**

Table 3
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/	AM Peak	C	C	C	D	D	D	A	-	-	A	-	-
Gluckstadt Road	PM Peak	C	C	C	C	C	C	A	-	-	A	-	-

Source: Neel-Schaffer, 2019, HCM 2010.

The level of service analysis shows that the intersection of MS Highway 463 at Gluckstadt Road is currently operating with acceptable delays during the peak hours from a capacity perspective.

3.7 Crash Data

The historical intersection crash data was requested from MDOT for the Safety Analysis Management System (SAMS) database. Twelve crashes were reported at the intersection of Gluckstadt Road-Cedar Hill Road/MS Highway 463 in the 5 year crash history from 1/1/2014-12/31/2018.

-10 of the crashes occurred in daylight hours (83%)
-5 of the crashes had injuries (42%): All of the injury crashes were angle crashes
-10 of the crashes were in dry conditions (83%)
-7 angle crashes (58%), 4 rear end slow or stop crashes(33%), 1 sideswipe crash (8%)

The crash experience warrant for signals requires 5 or more crashes correctable by signalization to have occurred within a 12 month period. There were 4 angle crashes at the intersection in the 6 months between 4/2/16 and 10/6/16, and two angle crashes in 2018.

4.0 Projected Traffic

4.1 Site Traffic

The project site is planned to be developed with commercial/retail and office land uses. The land uses and intensity of development that have been proposed for this site include:

Phase 1 – Buildout 2020
46,050 SF Grocery Store
20,400 SF Retail development
3,500 SF Office development

Phase 2 – Buildout 2022
45,000 SF Retail development

The ±25-acre site is proposed to be developed in two phases that are anticipated to be completed by 2022. The trip generation potential for the proposed development was calculated using the ITE Trip Generation, 9th Edition.

Internal capture was calculated for the proposed development, as there are mixed supporting land uses. The level of the internal interaction of multi-use development sites is related to the types of combined supporting land uses. Depending on the types of land uses, they will interact and attract a portion of each other's trip generation. The level of attraction was estimated for the varying interacting types of land uses, and then calculated and reduced from the external total trips. The retail land uses are anticipated to interact with the supermarket development. A 5% reduction was applied to the retail land uses to account for the internal capture between supermarket development and retail development.

Some land uses have a high percentage of "Pass-by" trips. These are trips that are made on the way from an origin to a nearby destination but are not a new trip on the adjacent roadway. While *Pass-by* trips reduce the impact on the adjacent street, they do not reduce the site driveway traffic volumes. For this analysis, *Pass-by* trips were calculated to provide a more accurate estimate of the impacts of the project site on the adjacent street traffic volumes. The *Pass-by* trip volumes were reduced from the adjacent street traffic at the off-site intersection of MS Highway 463/Gluckstadt Road. *Pass-by* trip percentages are based on studies of similar land uses. The percentages for *Pass-by traffic* used in this analysis were identified in the Trip Generation Handbook. The calculated trip generation for the project site is detailed in **Table 4**. A detail of the intersection volume calculations is provided in the report Appendix.

Table 4
Trip Generation

Land Use	Intensity	Daily Trips	AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out
Supermarket-adj st	S.F.	4,475	157	97	60	439	224	215
Retail	S.F.	5,153	120	74	46	451	216	235
General Office	S.F.	39	5	4	1	5	1	4
	Subtotal	**9,667**	**282**	**175**	**107**	**895**	**441**	**454**
Internal Capture								
Retail - Supermarket	5%	515	12	7	5	45	22	23
	Subtotal	**9,152**	**270**	**168**	**102**	**850**	**419**	**431**
Pass-by Trips								
Supermarket	36%	1,611	57	35	22	158	81	77
Retail	44%	2,267	53	33	20	198	95	103
	Subtotal	3,878	110	68	42	356	176	180
	Net External Trips	5,274	160	100	60	494	243	251

Daily Traffic Generation

Supermarket	[ITE 850]	=	T = 66.95 * (X) + 1391.56
Retail	[ITE 820]	=	Ln(T) = 0.65*Ln(X)+5.83
General Office	[ITE 710]	=	T = 11.03*(X) ; Avg rate

AM Peak Hour Traffic Generation

Supermarket	[ITE 850]	=	T = 3.4 * X (62%in/38%out)
Retail	[ITE 820]	=	Ln(T) = 0.61*Ln(X)+2.24 ; (62%in/38%out)
General Office	[ITE 710]	=	T = 1.56*(X) ; (88%in/12%out) Avg rate

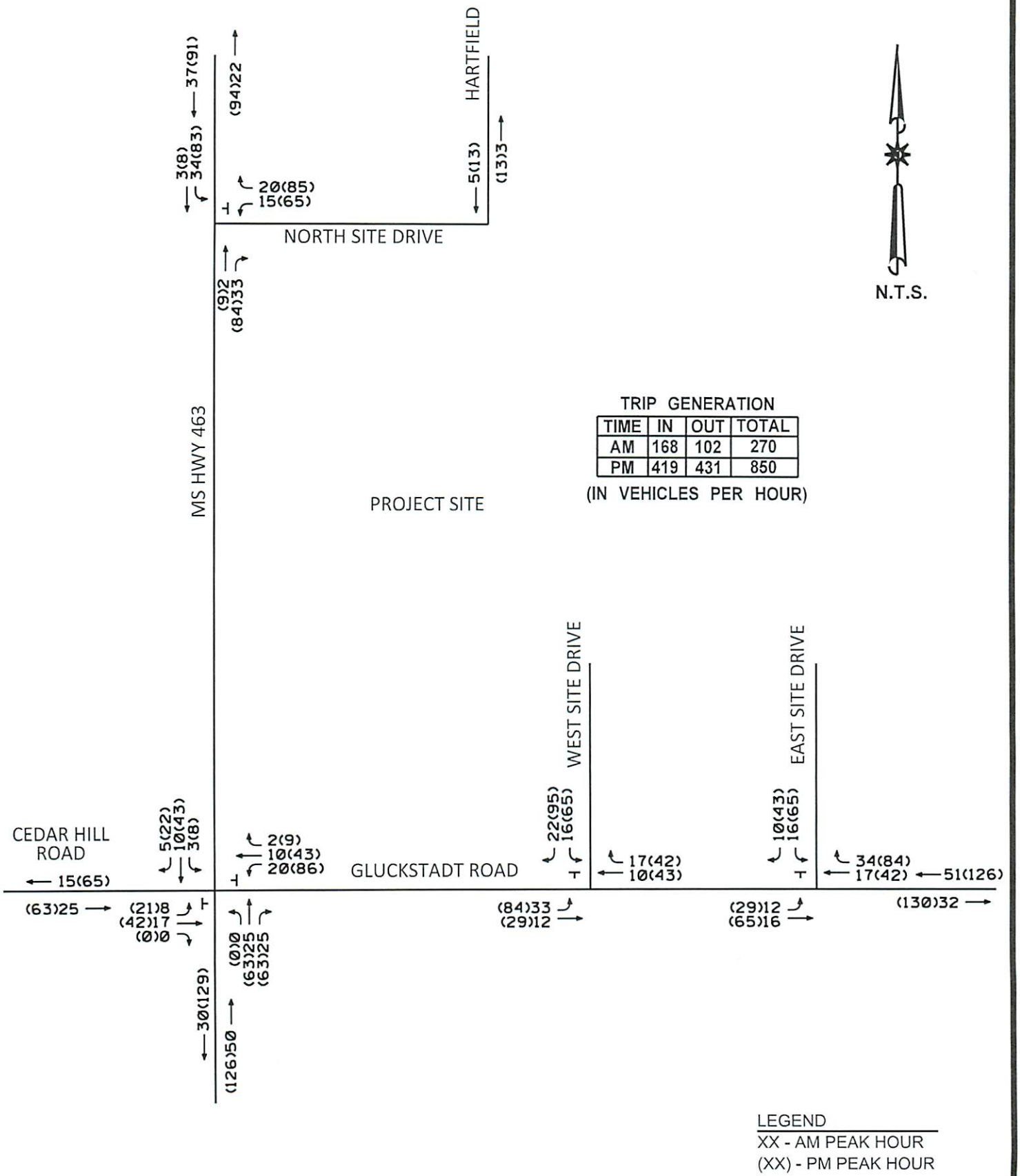
PM Peak Hour Traffic Generation

Supermarket	[ITE 850]	=	Ln(T) = 0.74*Ln(X)+3.25 ; (51%in/49%out)
Retail	[ITE 820]	=	Ln(T) = 0.67*Ln(X)+3.31 ; (48%in/52%out)
General Office	[ITE 710]	=	T = 1.49(X) ; (17%in/83%out) Avg rate

Source: ITE Trip Generation, 9th Edition, Neel-Schaffer, 2019.

4.2 Trip Distribution and Assignment

It was determined that an analysis of the travel patterns associated with existing land uses in the immediate area of the site should be used as the basis for trip distribution and assignment. The project site traffic distribution characteristics were estimated based upon current and expected land uses, demographic distribution in the surrounding areas, and the existing and future roadway network. The distributed site generated traffic was assigned to the roadway network within the study area and is shown in **Figure 4**.



TRIP GENERATION

TIME	IN	OUT	TOTAL
AM	168	102	270
PM	419	431	850

(IN VEHICLES PER HOUR)

LEGEND

XX - AM PEAK HOUR

(XX) - PM PEAK HOUR

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SITE TRAFFIC WITHOUT PASS-BY REDUCTION

FIGURE 4

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4.3 Non-Site Traffic Forecast

The buildout of the project site is planned to be completed in 2022. To forecast traffic to the opening year (2022), the census data for Madison County was researched to compare the population changes since 1990. The historical population changes per the US Census are listed in **Table 5**.

Table 5 - Historical Population Changes

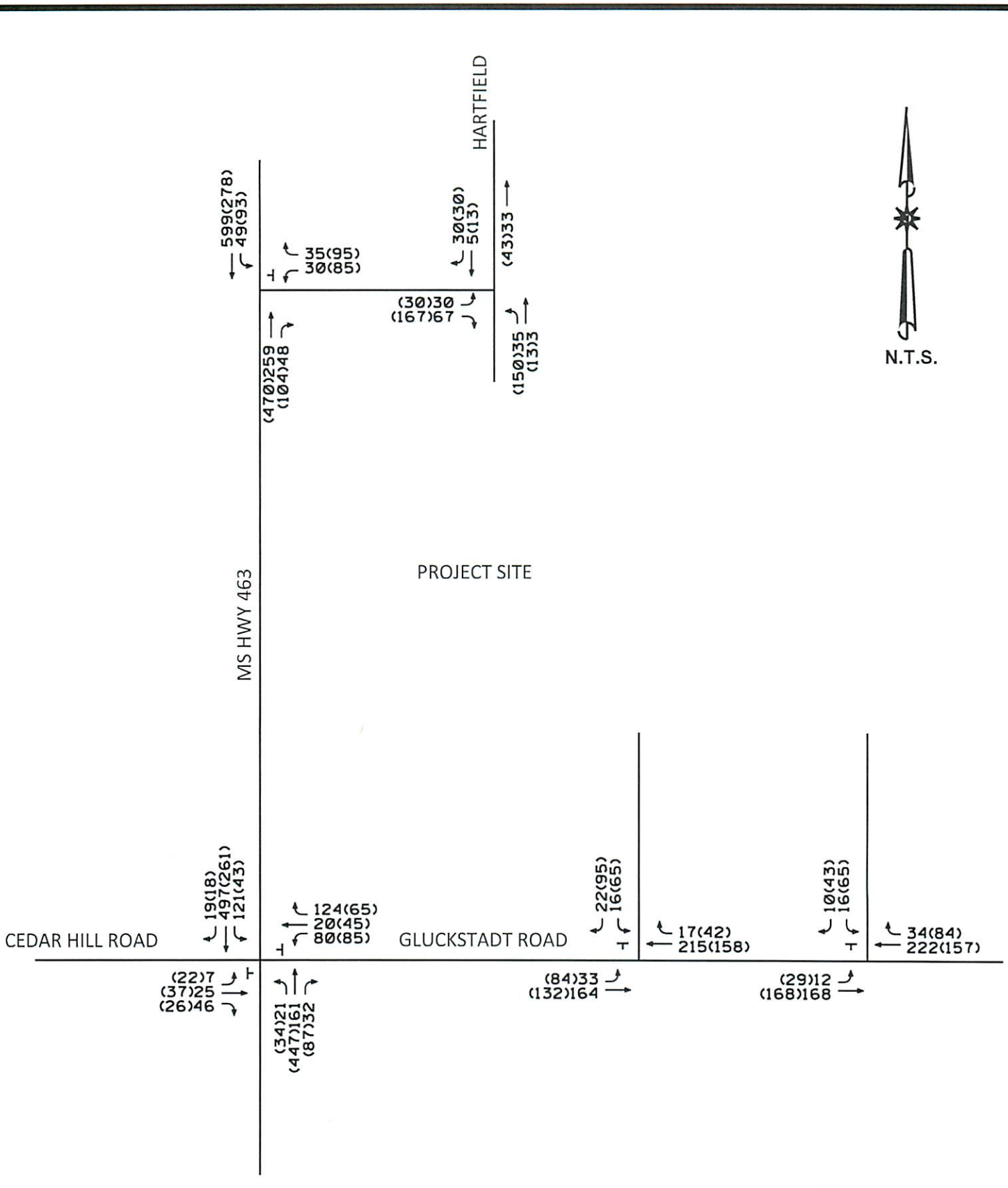
	Population by Year				Compound Annual % Change		
Location	1990	2000	2010	2017	'90-'00	'00-'10	'90-'17
Madison County	54,287	75,108	95,530	104,618	3.3%	2.4%	2.3%

Source: US Census.gov, Neel-Schaffer, 2019.

The population changes show area growth, as Madison County experiences accelerated growth. Current population estimates by the US Census are at 104,618 for Madison County in 2017. Based on the historical population trends, a 3% compound annual growth rate was applied to forecast existing 2019 traffic to the horizon year (2022), for traffic on MS Highway 463 and Gluckstadt Road.

4.4 Total Traffic

Site generated traffic volumes were added to non-site traffic volumes for the peak hours to arrive at total (Year 2022) traffic volumes. **Figure 5** illustrates the Year 2022 total traffic volumes at buildout for the development of the site. The traffic volume calculations are provided in the Appendix volume tables.



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2022 TOTAL TRAFFIC

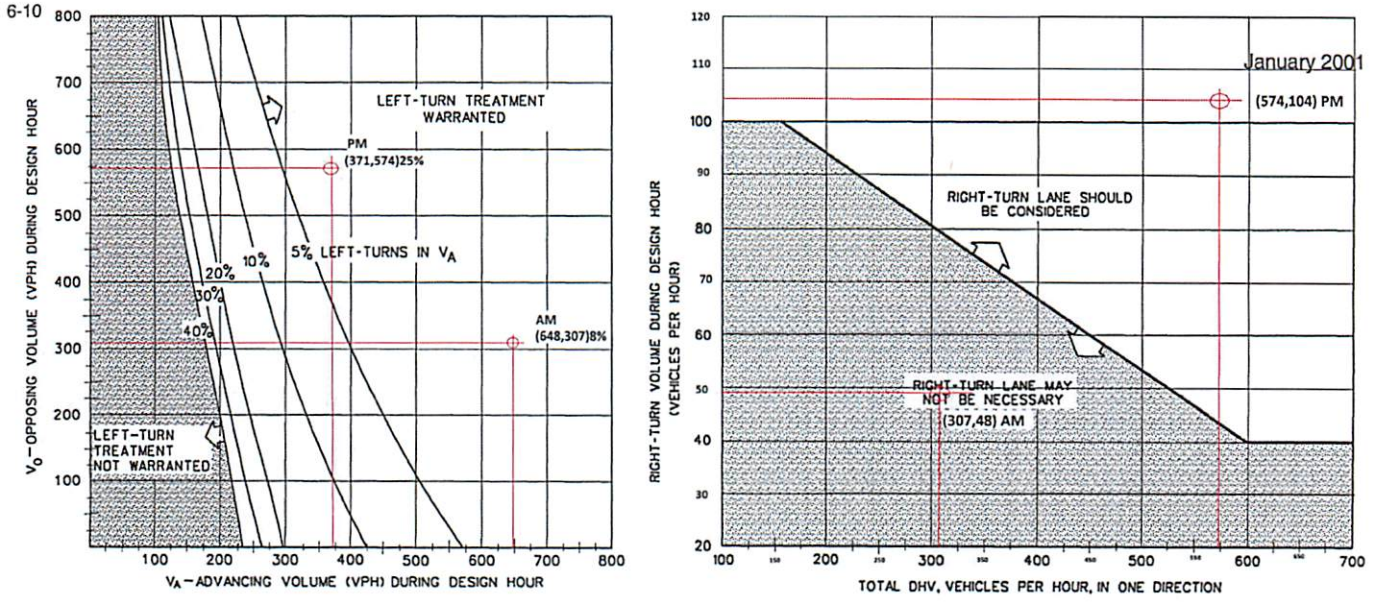
FIGURE 5

5.0 Traffic and Improvement Analysis

5.1 Auxiliary Turn Lane Warrants

The need for left turn/right turn lanes at the project site driveway on MS Highway 463 was evaluated using the turn lane graphs provided in the MDOT Roadway Design Manual. These graphs are based on design hour volumes and plotted points on graphs to determine if auxiliary turn lanes are warranted. An analysis of left turn volumes and right turn volumes was conducted, in relation to the existing and future year traffic volumes on MS Highway 463.

MS Hwy 463 Auxiliary Lane Warrants



Left turn warrants are forecast to be met for both the AM and PM peak hours. The right turn lane warrant is forecast to be met in the PM peak hour.

5.2 Site Access

The access to the project site is via MS Highway 463 and Gluckstadt Road. The access is planned to include a north driveway on MS Highway 463 near Hartfield subdivision and two existing driveways on Gluckstadt Road. These three access points are anticipated to serve the site with stop signs at the site driveways (unsignalized intersections). Each site drive is planned to have a dedicated left turn and right turn egress lane. The driveways on Gluckstadt Road have an existing right turn ingress lane. The 40 ft of pavement width is recommended to be striped with 4-10 ft travel lanes to accommodate the right turn ingress lane, 1-thru travel lane in each direction, and a center turn lane. The pavement width narrows to the east of the site, which will require some minor widening on Gluckstadt Road to the south to accommodate these four travel lanes east of the eastern site driveway.

5.3 Signal Warrants

The traffic volumes at the intersection of MS Highway 463/Gluckstadt Road were evaluated to determine if the signal warrants outlined in the Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition, are forecast to be met. The volume warrants are based on the higher volume minor street approach and the combined two-way major street approach volumes.

The 2019 13-hour turning movement count on MS Highway 463 was used for evaluation of the 8-hour, 4-hour, and peak hour volume warrants. Future year warrants were based on a combination of the calculated background growth and the trip generation estimates from the project site. The MUTCD outlines nine warrants for justification for installation of a traffic control signal. Four of the signal warrants listed are applicable to the MS Highway 463/Gluckstadt Road intersection adjacent to the project site. The applicable signal warrants, identified below, are vehicular volume based warrants and the crash experience warrant.

Warrant	Applicable
1) Eight-Hour Vehicular Volume	**Yes**
2) Four-Hour Vehicular Volume	**Yes**
3) Peak Hour	**Yes**
4) Pedestrian Volume	No
5) School Crossing	No
6) Coordinated Signal System	No
7) Crash Experience	**Yes**
8) Roadway Network	No
9) Intersection Near a Grade Crossing	No

Volume Warrants

The eight-hour warrant sets forth minimum volumes for eight hours of the day for the heaviest volume approach of the minor street and the combined approach volumes of the major street. The four-hour warrant and peak-hour warrant involve plotting points on a graph based on volumes from the major and minor streets. The plotted values are based on one lane on the major street and one lane on the minor street to determine if the warrants are satisfied, based on the existing/proposed intersection geometrics.

An evaluation of the future year traffic volumes was conducted for the MS Highway 463 intersection with Gluckstadt Road. The base year (2019) intersection volumes are from the 13-hour turning movement count conducted for this analysis. The threshold volumes for signal warrants are listed in **Table 6.**

Table 6
Signal Warrant Evaluation-Existing Traffic

Start	Approach				Warrant 1A		Warrant 1B		Warrant #2	Warrant #3
Time	NB	SB	NB+SB	WB	Major 500	Minor 150	Major 750	Minor 75	Four Hour	Peak Hour
06:00 AM	120	371	491	90	-	-	-	Yes	-	-
07:00 AM	166	509	675	158	Yes	Yes	-	Yes	Yes	Yes
08:00 AM	178	287	465	80	-	-	-	Yes	-	-
09:00 AM	158	234	392	84	-	-	-	Yes	-	-
10:00 AM	203	203	406	54	-	-	-	-	-	-
11:00 AM	231	205	436	71	-	-	-	-	-	-
12:00 PM	261	216	477	67	-	-	-	-	-	-
01:00 PM	292	191	483	84	-	-	-	Yes	-	-
02:00 PM	324	287	611	91	Yes	-	-	Yes	Yes	-
03:00 PM	319	260	579	79	Yes	-	-	Yes	-	-
04:00 PM	454	256	710	105	Yes	-	-	Yes	Yes	-
05:00 PM	478	225	703	96	Yes	-	-	Yes	Yes	-
06:00 PM	343	177	520	68	Yes	-	-	-	-	-
Subtotal	3,527	3,421	6,948	1,127	6	1	0	9	4	1
				Met?	No		No		**Yes**	**Yes**

Note: Warrants shown are based on 70% warrant for 1 lane on the major roadway/1 on the minor.
Reduced warrant based on posted speed > 40 mph. Count Date: 8/27/19
Source: MUTCD, 2009 Edition, Neel-Schaffer, 2019.

The warrant analysis revealed that existing traffic on MS Highway 463/Gluckstadt Road meets two of the vehicular volume based warrants (4-hour and peak-hour), using 100% of the right turn volume on the minor street. These right turns comprise approximately 50% of the approach traffic volumes.

With the addition of the site traffic, the intersection volumes are forecast to increase. The hourly volumes were evaluated with and without the development of the project site. The results of the warrant analysis with and without minor street right turning traffic are listed in **Tables 7** and **8** for horizon year traffic (2022).

Table 7
Signal Warrant Evaluation-Year 2022 Total Traffic

Start	Approach				Warrant 1A		Warrant 1B		Warrant #2	Warrant #3
Time	NB	SB	NB+SB	WB	Major 500	Minor 150	Major 750	Minor 75	Four Hour	Peak Hour
06:00 AM	139	406	545	101	Yes	-	-	Yes	-	-
07:00 AM	199	561	760	182	Yes	Yes	Yes	Yes	Yes	Yes
08:00 AM	225	325	550	106	Yes	-	-	Yes	-	-
09:00 AM	223	268	491	110	-	-	-	Yes	-	-
10:00 AM	286	244	530	96	Yes	-	-	Yes	-	-
11:00 AM	328	254	582	132	Yes	-	-	Yes	Yes	-
12:00 PM	371	276	647	146	Yes	-	-	Yes	Yes	-
01:00 PM	393	250	643	168	Yes	Yes	-	Yes	Yes	Yes
02:00 PM	424	355	779	177	Yes	Yes	Yes	Yes	Yes	Yes
03:00 PM	421	325	746	163	Yes	Yes	-	Yes	Yes	Yes
04:00 PM	568	321	889	193	Yes	Yes	Yes	Yes	Yes	Yes
05:00 PM	594	289	883	185	Yes	Yes	Yes	Yes	Yes	Yes
06:00 PM	447	229	676	140	Yes	-	-	Yes	Yes	-
Subtotal	4,618	4,103	8,721	1,899	12	6	4	13	9	6
				Met?	No		No		**Yes**	**Yes**

Note: Warrants shown are based on 70% warrant for 1 lane on the major roadway/1 on the minor.
Reduced warrant based on posted speed > 40 mph. Count Date: 8/27/19
Source: MUTCD, 2009 Edition, Neel-Schaffer, 2019.

Table 8
Signal Warrant Evaluation-Year 2022 Total Traffic – w/o Minor St Right Turn

Start	Approach				Warrant 1A		Warrant 1B		Warrant #2	Warrant #3
Time	NB	SB	NB+SB	WB	Major 500	Minor 150	Major 750	Minor 75	Four Hour	Peak Hour
06:00 AM	139	406	545	21	Yes	-	-	-	-	-
07:00 AM	199	561	760	92	Yes	-	Yes	Yes	Yes	-
08:00 AM	225	325	550	69	Yes	-	-	-	-	-
09:00 AM	223	268	491	61	-	-	-	-	-	-
10:00 AM	286	244	530	63	Yes	-	-	-	-	-
11:00 AM	328	254	582	96	Yes	-	-	Yes	-	-
12:00 PM	371	276	647	109	Yes	-	-	Yes	Yes	-
01:00 PM	393	250	643	102	Yes	-	-	Yes	Yes	-
02:00 PM	424	355	779	116	Yes	-	Yes	Yes	Yes	-
03:00 PM	421	325	746	110	Yes	-	-	Yes	Yes	-
04:00 PM	568	321	889	123	Yes	-	Yes	Yes	Yes	Yes
05:00 PM	594	289	883	120	Yes	-	Yes	Yes	Yes	Yes
06:00 PM	447	229	676	94	Yes	-	-	Yes	Yes	-
Subtotal	4,618	4,103	8,721	1,176	12	0	4	9	8	2
				Met?	No		No		**Yes**	**Yes**

Note: Warrants shown are based on 70% warrant for 1 lane on the major roadway/1 on the minor.
Reduced warrant based on posted speed > 40 mph. Count Date: 8/27/19
Source: MUTCD, 2009 Edition, Neel-Schaffer, 2019.

Signalization of the intersection of Gluckstadt Road-Cedar Hill Road with MS Highway 463 is recommended, based on the satisfaction of warrants 2 and 3. Having 4 angle crashes in a 6 month period is very close to satisfying the crash warrant (5 angle crashes in 12 months) and exemplifies the risks associated with the limited sight distance and high speeds at this intersection.

5.4 Capacity/Level of Service

The Year 2022 total traffic volumes were evaluated using the information provided in the *Highway Capacity Manual, 2010 Edition*. The lane geometry and intersection control includes existing conditions for the no-build scenario and both signalized and unsignalized for the build condition for the intersection of MS Highway 463/Gluckstadt Road. The results of the analysis are shown in **Tables 9** and **10**.

Table 9 – Year 2022 No-Build 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/	AM Peak	C	C	C	**E**	**E**	**E**	A	-	-	A	-	-
Gluckstadt Road	PM Peak	C	C	C	C	C	C	A	-	-	A	-	-

Source: Neel-Schaffer, 2019, HCM 2010.

Table 10 - Year 2022 Total Traffic Levels-of-Service

Intersection Control	Time Period	Approach LOS				Intersection LOS
		EB	WB	NB	SB	
Signalized						
MS Hwy 463/	AM Peak	C	B	B	B	B
Gluckstadt Road	PM Peak	C	B	B	B	B

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/	AM Peak	**E**	C	C	**F**	D	B	A	-	-	A	-	-
Gluckstadt Road	PM Peak	**E**	C	C	**F**	D	B	A	-	-	A	-	-
MS Hwy 463/	AM Peak	-	-	-	C	-	B	-	-	-	A	-	-
North Drive	PM Peak	-	-	-	D	-	B	-	-	-	A	-	-
Gluckstadt Rd/	AM Peak	A	-	-	-	-	A	-	-	-	B	-	A
East Drive	PM Peak	A	-	-	-	-	A	-	-	-	B	-	A
Gluckstadt Rd/	AM Peak	A	-	-	-	-	A	-	-	-	B	-	A
West Drive	PM Peak	A	-	-	-	-	A	-	-	-	B	-	A

Source: Neel-Schaffer, 2019, HCM 2010.

The intersection of Gluckstadt Road/MS Highway 463 is shown to have a failing LOS in 2022 in both the AM and PM peak hours with existing geometry and stop control. With the addition of north/south left turn lanes and a traffic signal, the intersection is forecast to operate at LOS B with the addition of site traffic and background growth. Existing traffic volumes meet signal warrants without the development of the project site. Signalization of the intersection of MS Highway 463/Gluckstadt Road is recommended, concurrent with the construction of north/south left turn lanes on MS Highway 463.

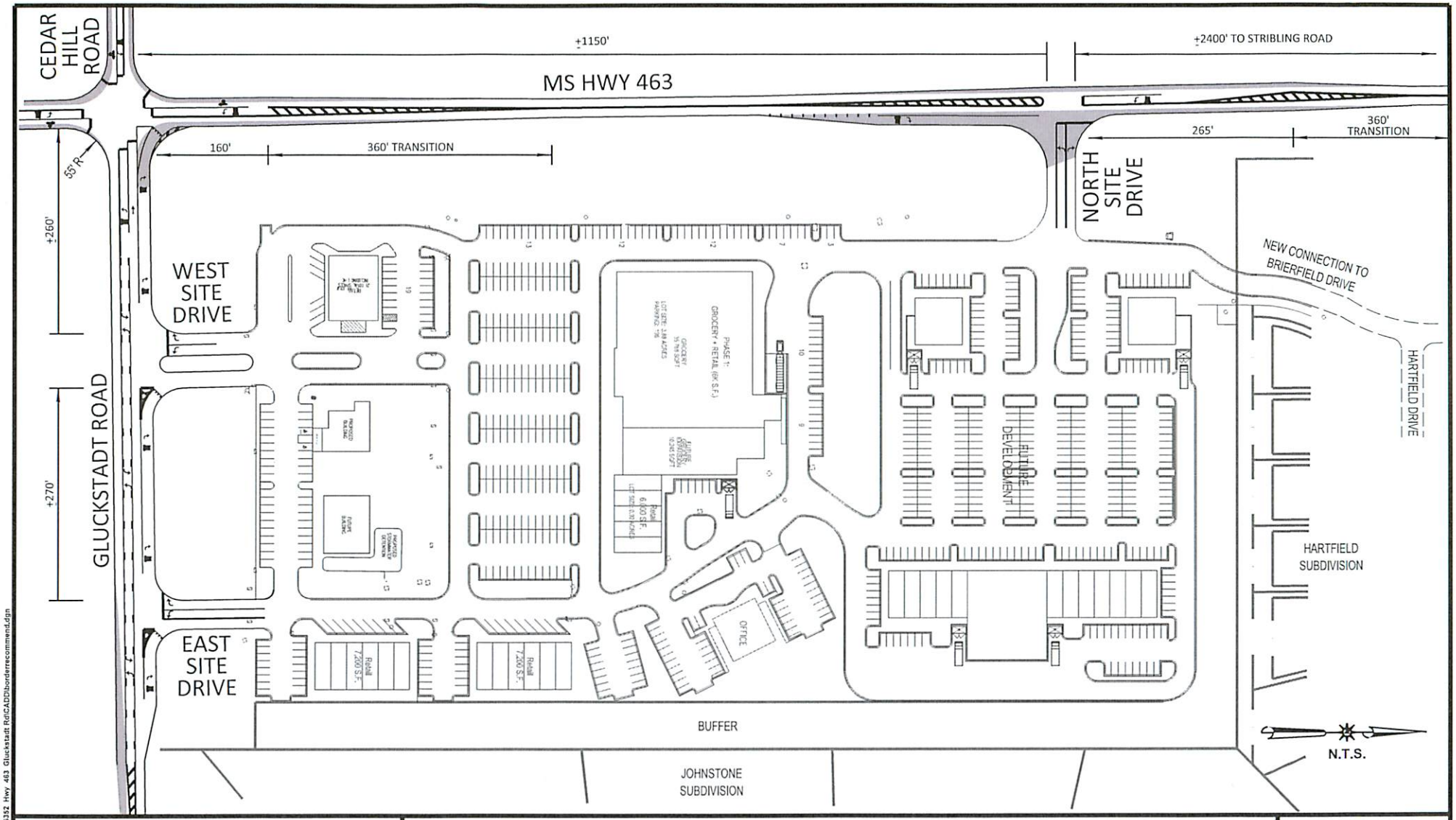
6.0 Recommendations and Conclusions

The development of the project site with the Village of Mannsdale grocery/retail/office development is not anticipated to create significant off-site capacity related deficiencies with the implementation of the recommendations identified in this analysis.

The signal warrant analysis reveals that the existing traffic meets two of the three volume based warrants. The County had previously submitted applications to MDOT/CMPDD (Central MS Planning and Development District) to get funding to install a traffic signal at this intersection; however, that funding was not authorized. Existing levels-of-service show deficiencies on westbound traffic (LOS D) with that LOS dropping to LOS E by 2022 without the development of this project site. With the anticipated addition of the project site, this LOS is forecast to drop to LOS F. Due to sight distance limitations and the calculated satisfaction of warrants 2 and 3 (four hour and peak hour signal warrants), signalization of the intersection of MS Highway 463/Gluckstadt Road-Cedar Hill Road is recommended. Additional improvements to the intersection are recommended to include construction of north/south left turn lanes, tree trimming in the southwest quadrant to improve sight distance, and posted speed limit reduction to 45 mph on MS Highway 463. Warning signs (signal ahead) along with active flashing yellow lights to warn southbound traffic on MS Highway 463 of a pending red indication when approaching the vertical curve (Prepare to Stop When Flashing). The turning radius in the southeast quadrant of the intersection is recommended to be improved (55 ft min), to allow right turns from MS Highway 463 without coming to a complete stop.

The north site driveway was calculated to meet the MDOT threshold criteria to install a left turn and a right turn ingress lane on MS Highway 463. The site driveways on Gluckstadt Road have existing right turn lanes. The total 40 ft of asphalt is recommended to be striped to include one thru lane in each direction (east/west), a center left turn lane, and dedicated right turn lanes. Some minor widening of Gluckstadt Road is likely to be necessary to transition from the 3 lane section to 2 lane east of the site.

The intersection of MS Highway 463/Gluckstadt Road is currently operating with minor street delays, has substandard sight distance and a crash history of angle crashes. Signalization of the intersection would help to alleviate some of the sight distance deficiencies and background traffic congestion related delays. The recommended improvements along with the proposed lane assignments at each of the site driveways are shown graphically in **Figure 6**.



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RECOMMENDED IMPROVEMENTS

FIGURE 6

Appendix

MS Hwy 463/Gluckstadt Road-Cedar Hill Rd.

Seasonal Adjustment Factor	1
Annual Growth Factor	3.0%
Base Year	2019
Horizon Year 1	2022

Start Time	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour													
2019 Existing Traffic	19	134	16	109	449	15	2	14	42	62	13	113	988
2022 Non-Site Traffic	21	146	17	119	491	16	2	15	46	68	14	123	1,078
Site Traffic w/o Pass-by reduction	0	25	25	3	10	5	8	17	0	20	10	2	125
Site Traffic w/ Pass-by reduction	0	15	15	2	6	3	5	10	0	12	6	1	75
2022 Total Traffic	21	161	32	121	497	19	7	25	46	80	20	124	1,153
PM Peak Hour													
2019 Existing Traffic	31	376	47	35	216	5	9	12	24	32	18	55	860
2022 Non-Site Traffic	34	411	51	38	236	5	10	13	26	35	20	60	939
Site Traffic w/o Pass-by reduction	0	63	63	8	43	22	21	42	0	86	43	9	400
Site Traffic w/ Pass-by reduction	0	36	36	5	25	13	12	24	0	50	25	5	231
2022 Total Traffic	34	447	87	43	261	18	22	37	26	85	45	65	1,170

Source: Neel-Schaffer, 2019.

MS Hwy 463/Site Driveway-North

Seasonal Adjustment Factor	1
Annual Growth Factor	3.0%
Base Year	2019
Horizon Year 1	2022

Start Time	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour													
2019 Existing Traffic	0	249	0	0	573	0	0	0	0	0	0	0	822
2022 Non-Site Traffic	0	272	0	0	626	0	0	0	0	0	0	0	898
Site Traffic	0	2	33	34	3	0	0	0	0	15	0	20	107
Hartfield Diversion		-15	15	15	-30					15		15	15
2022 Total Traffic	0	259	48	49	599	0	0	0	0	30	0	35	1,020
PM Peak Hour													
2019 Existing Traffic	0	440	0	0	256	0	0	0	0	0	0	0	696
2022 Non-Site Traffic	0	481	0	0	280	0	0	0	0	0	0	0	761
Site Traffic	0	9	84	83	8	0	0	0	0	65	0	85	334
Hartfield Diversion		-20	20	10	-10					20		10	30
2022 Total Traffic	0	470	104	93	278	0	0	0	0	85	0	95	1,125

Source: Neel-Schaffer, 2019.

Gluckstadt Road/W. Site Driveway

Seasonal Adjustment Factor	1
Annual Growth Factor	3.0%
Base Year	2019
Horizon Year 1	2022

Start Time	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour													
2019 Existing Traffic	0	0	0	0	0	0	0	139	0	0	188	0	327
2022 Non-Site Traffic	0	0	0	0	0	0	0	152	0	0	205	0	357
Site Traffic	0	0	0	16	0	22	33	12	0	0	10	17	110
2022 Total Traffic	0	0	0	16	0	22	33	164	0	0	215	17	467
PM Peak Hour													
2019 Existing Traffic	0	0	0	0	0	0	0	94	0	0	105	0	199
2022 Non-Site Traffic	0	0	0	0	0	0	0	103	0	0	115	0	218
Site Traffic	0	0	0	65	0	95	84	29	0	0	43	42	358
2022 Total Traffic	0	0	0	65	0	95	84	132	0	0	158	42	576

Source: Neel-Schaffer, 2019.

Gluckstadt Road/E. Site Driveway

Seasonal Adjustment Factor	1
Annual Growth Factor	3.0%
Base Year	2019
Horizon Year 1	2022

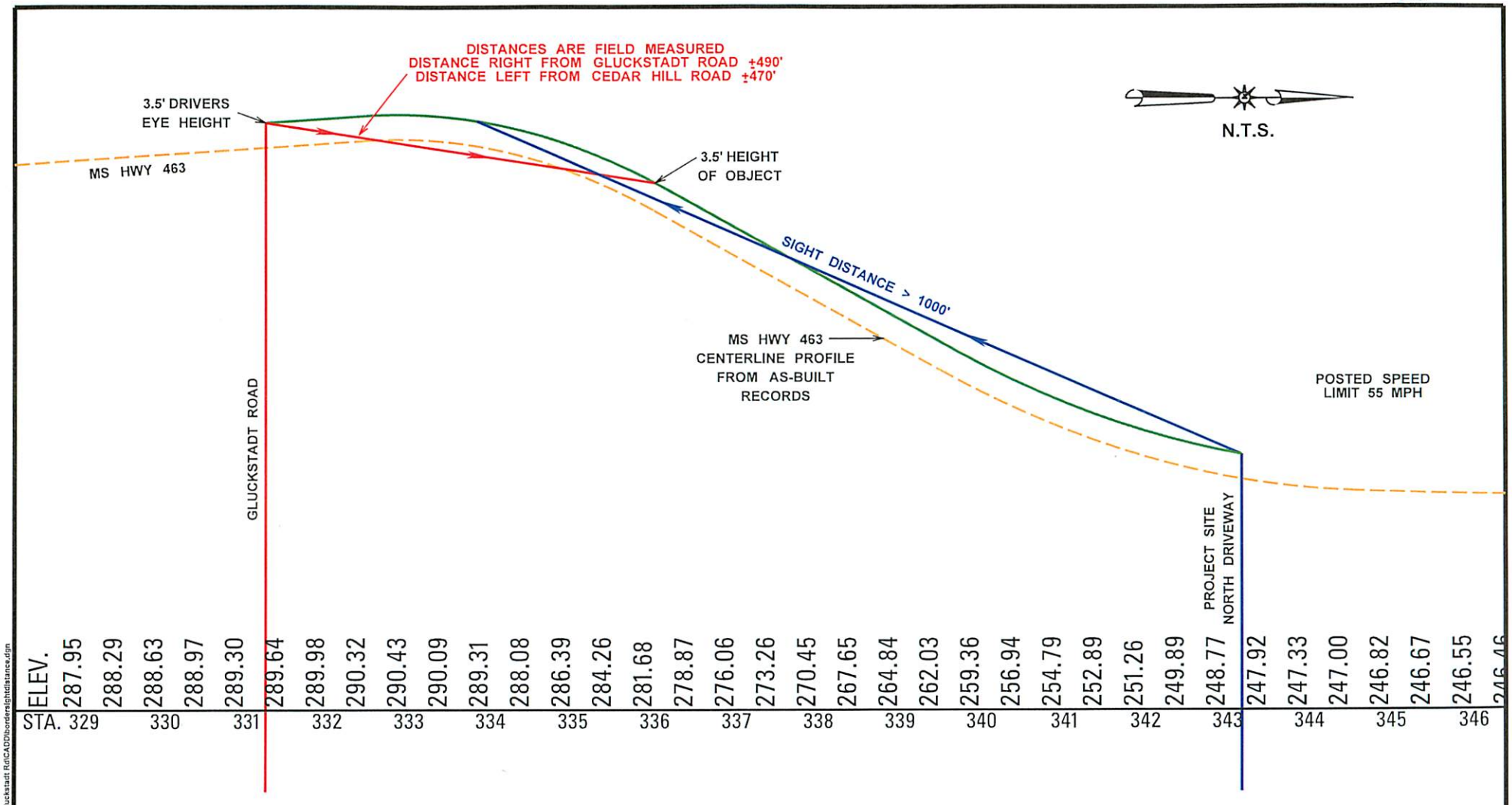
Start Time	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour													
2019 Existing Traffic	0	0	0	0	0	0	0	139	0	0	188	0	327
2022 Non-Site Traffic	0	0	0	0	0	0	0	152	0	0	205	0	357
Site Traffic	0	0	0	16	0	10	12	16	0	0	17	34	105
2022 Total Traffic	0	0	0	16	0	10	12	168	0	0	222	34	462
PM Peak Hour													
2019 Existing Traffic	0	0	0	0	0	0	0	94	0	0	105	0	199
2022 Non-Site Traffic	0	0	0	0	0	0	0	103	0	0	115	0	218
Site Traffic	0	0	0	65	0	43	29	65	0	0	42	84	328
2022 Total Traffic	0	0	0	65	0	43	29	168	0	0	157	84	546

Source: Neel-Schaffer, 2019.

SAMS Crash Data - 5-Year Crash Summary
Gluckstadt Road/MS Highway 463

SAMS Crash ID	County Name	Traffic Flow Description	Reported Time	Reported Date	SAMS Crash Type Description	Vehicle Count	SAMS Injury Count	SAMS Fatality Count	SAMS Injury Severity	Road Condition	DUI Involved	Light Condition	Agency Case ID	Latitude	Longitude	MUCR Injury Count
770273	Madison [45]	North	07:34	02/06/2014	Angle	2	2		4	Dry	0	Daylight	010206140001	32.524	-90.192	2
859883	Madison [45]	East	16:32	03/22/2015	Rear end slow or stop	2			5	Wet	0	Daylight	2015-4258	32.524	-90.192	0
902731	Madison [45]	North	01:07	09/20/2015	Rear end slow or stop	2			5	Dry	0	Dark-Lit	2015-15411	32.524	-90.192	0
951535	Madison [45]	South	18:13	04/02/2016	Angle	2	1		4	Dry	0	Daylight	010402160003	32.524	-90.192	1
955277	Madison [45]	North	01:05	04/16/2016	Angle	2			5	Dry	0	Dark-Unlit	010416160001	32.524	-90.192	0
986433	Madison [45]	East	10:05	08/27/2016	Rear end slow or stop	2			5	Dry	0	Daylight	2016-13261	32.524	-90.192	0
992457	Madison [45]	East	07:28	09/26/2016	Angle	2	2		3	Dry	0	Daylight	2016-15151	32.524	-90.192	2
995814	Madison [45]	South	15:30	10/06/2016	Angle	2	1		4	Dry	0	Daylight	011006160006	32.524	-90.192	1
1010899	Madison [45]	West	08:15	12/12/2016	Rear end slow or stop	2			5	Wet	0	Daylight	2016-19331	32.524	-90.192	0
1037501	Madison [45]	South	15:33	04/07/2017	Sideswipe	2			5	Dry	0	Daylight	010407170003	32.524	-90.192	0
1098111	Madison [45]	North	14:07	01/03/2018	Angle	2			5	Dry	0	Daylight	2018-109	32.524	-90.192	0
1172445	Madison [45]	North	16:11	12/04/2018	Angle	2	1		4	Dry	0	Daylight	011204180004	32.524	-90.192	1

Source: MDOT, 2019.



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MS HWY 463 SIGHT DISTANCE

FIGURE A1

Neel-Schaffer

B1

P.O. Box 22625
Jackson, MS 39225

Intersection: MS Hwy 463/Gluckstadt Rd
Counter: Ja. Kiser
County/State: Madison/MS
Weather: Rain from 3:50-4:15 PM

File Name : traffic-count
Site Code : 00000000
Start Date : 8/27/2019
Page No : 1

Groups Printed- Autos - Buses - Semi Trucks

	HWY 463 Southbound					GLUCKSTADT RD Westbound					HWY 463 Northbound					GLUCKSTADT RD Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
06:00 AM	3	39	0	0	42	3	2	6	0	11	1	11	0	0	12	0	1	2	0	3	0	68	68
06:15 AM	10	58	2	0	70	2	0	9	0	11	1	18	2	0	21	2	2	4	0	8	0	110	110
06:30 AM	13	99	3	0	115	2	1	16	0	19	0	38	2	0	40	2	4	8	0	14	0	188	188
06:45 AM	16	126	2	0	144	4	4	41	0	49	5	38	4	0	47	1	2	12	0	15	0	255	255
Total	42	322	7	0	371	11	7	72	0	90	7	105	8	0	120	5	9	26	0	40	0	621	621
07:00 AM	20	146	5	0	171	20	4	32	0	56	8	30	3	0	41	1	4	18	0	23	0	291	291
07:15 AM	40	112	3	0	155	17	2	26	0	45	1	27	5	0	33	0	1	9	0	10	0	243	243
07:30 AM	33	65	5	0	103	21	3	14	0	38	5	39	4	0	48	0	7	3	0	10	0	199	199
07:45 AM	13	66	1	0	80	13	4	2	0	19	6	31	7	0	44	1	8	7	0	16	0	159	159
Total	106	389	14	0	509	71	13	74	0	158	20	127	19	0	166	2	20	37	0	59	0	892	892
08:00 AM	6	72	0	0	78	10	4	6	0	20	8	36	7	0	51	1	6	8	0	15	0	164	164
08:15 AM	4	53	1	0	58	13	4	13	0	30	8	27	9	0	44	3	2	5	0	10	0	142	142
08:30 AM	5	64	1	0	70	7	0	4	0	11	4	32	5	0	41	2	4	9	0	15	0	137	137
08:45 AM	8	72	1	0	81	10	3	6	0	19	1	33	8	0	42	0	1	11	0	12	0	154	154
Total	23	261	3	0	287	40	11	29	0	80	21	128	29	0	178	6	13	33	0	52	0	597	597
09:00 AM	5	54	0	0	59	10	3	5	0	18	4	32	4	0	40	1	0	8	0	9	0	126	126
09:15 AM	11	53	0	0	64	15	1	16	0	32	2	21	6	0	29	0	2	14	0	16	0	141	141
09:30 AM	4	49	0	0	53	5	0	11	1	16	2	33	9	0	44	1	0	12	0	13	1	126	127
09:45 AM	8	48	2	0	58	10	0	8	0	18	7	31	7	0	45	0	0	10	0	10	0	131	131
Total	28	204	2	0	234	40	4	40	1	84	15	117	26	0	158	2	2	44	0	48	1	524	525
10:00 AM	12	40	1	0	53	7	1	2	0	10	1	31	5	0	37	2	0	4	0	6	0	106	106
10:15 AM	6	42	2	0	50	6	2	9	0	17	9	32	15	0	56	0	4	7	0	11	0	134	134
10:30 AM	12	41	2	0	55	3	2	9	0	14	5	32	5	0	42	1	3	9	0	13	0	124	124
10:45 AM	1	43	1	0	45	5	2	6	0	13	10	50	8	0	68	2	2	10	0	14	0	140	140
Total	31	166	6	0	203	21	7	26	0	54	25	145	33	0	203	5	9	30	0	44	0	504	504
11:00 AM	14	48	0	0	62	3	8	9	0	20	4	42	7	0	53	1	2	5	0	8	0	143	143
11:15 AM	8	40	2	0	50	12	0	11	0	23	7	33	3	0	43	2	5	7	0	14	0	130	130
11:30 AM	4	34	0	0	38	9	0	5	0	14	7	42	9	0	58	0	1	5	0	6	0	116	116
11:45 AM	4	50	1	0	55	11	2	1	0	14	5	64	8	0	77	0	1	7	0	8	0	154	154
Total	30	172	3	0	205	35	10	26	0	71	23	181	27	0	231	3	9	24	0	36	0	543	543
12:00 PM	8	50	1	0	59	16	1	9	0	26	6	42	14	0	62	1	2	4	0	7	0	154	154
12:15 PM	5	46	0	0	51	6	3	5	0	14	3	47	10	0	60	0	3	6	0	9	0	134	134
12:30 PM	6	53	1	0	60	5	4	3	0	12	8	53	6	0	67	3	1	4	0	8	0	147	147
12:45 PM	4	40	2	0	46	3	3	9	0	15	9	55	8	0	72	1	2	8	0	11	0	144	144
Total	23	189	4	0	216	30	11	26	0	67	26	197	38	0	261	5	8	22	0	35	0	579	579
01:00 PM	7	36	0	0	43	7	2	5	0	14	12	51	4	0	67	2	1	5	0	8	0	132	132
01:15 PM	11	31	0	0	42	3	3	12	0	18	3	60	11	0	74	1	4	6	0	11	0	145	145
01:30 PM	3	42	2	0	47	5	3	16	0	24	6	60	8	0	74	1	1	11	0	13	0	158	158
01:45 PM	8	51	0	0	59	5	3	20	0	28	4	62	11	0	77	3	2	7	0	12	0	176	176
Total	29	160	2	0	191	20	11	53	0	84	25	233	34	0	292	7	8	29	0	44	0	611	611
02:00 PM	14	34	1	0	49	9	2	9	0	20	7	68	15	0	90	0	1	8	0	9	0	168	168
02:15 PM	18	64	0	0	82	12	3	26	0	41	4	58	13	0	75	0	1	7	0	8	0	206	206
02:30 PM	28	62	4	0	94	7	1	7	0	15	8	65	9	0	82	2	1	3	0	6	0	197	197
02:45 PM	6	53	3	0	62	4	5	6	0	15	11	56	10	0	77	1	3	3	0	7	0	161	161
Total	66	213	8	0	287	32	11	48	0	91	30	247	47	0	324	3	6	21	0	30	0	732	732
03:00 PM	9	58	0	0	67	8	3	10	0	21	9	53	8	0	70	3	4	4	0	11	0	169	169
03:15 PM	19	58	0	0	77	2	2	9	0	13	12	52	9	0	73	0	8	3	0	11	0	174	174
03:30 PM	10	43	2	0	55	8	1	7	0	16	5	67	16	0	88	1	3	6	0	10	0	169	169
03:45 PM	11	48	2	0	61	10	4	15	0	29	4	65	19	0	88	0	3	5	0	8	0	186	186
Total	49	207	4	0	260	28	10	41	0	79	30	237	52	0	319	4	18	18	0	40	0	698	698

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File Name : traffic-count
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Groups Printed- Autos - Buses - Semi Trucks

	HWY 463 Southbound					GLUCKSTADT RD Westbound					HWY 463 Northbound					GLUCKSTADT RD Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	5	54	2	0	61	8	6	9	0	23	8	96	17	0	121	1	3	4	0	8	0	213	213
04:15 PM	9	59	2	0	70	11	4	21	0	36	6	104	10	0	120	2	4	5	0	11	0	237	237
04:30 PM	9	55	0	0	64	5	5	12	0	22	7	95	9	0	111	2	2	9	0	13	0	210	210
04:45 PM	12	48	1	0	61	8	3	13	0	24	10	81	11	0	102	4	3	6	0	13	0	200	200
Total	35	216	5	0	256	32	18	55	0	105	31	376	47	0	454	9	12	24	0	45	0	860	860
05:00 PM	9	43	4	0	56	7	7	11	0	25	11	99	12	0	122	1	4	2	0	7	0	210	210
05:15 PM	10	53	1	0	64	9	7	11	0	27	11	92	13	0	116	0	1	4	0	5	0	212	212
05:30 PM	11	42	2	0	55	5	1	17	0	23	5	101	20	0	126	2	3	6	0	11	0	215	215
05:45 PM	13	36	1	0	50	7	2	12	0	21	10	90	14	0	114	3	2	4	0	9	0	194	194
Total	43	174	8	0	225	28	17	51	0	96	37	382	59	0	478	6	10	16	0	32	0	831	831
06:00 PM	9	45	0	0	54	12	0	13	0	25	5	77	14	0	96	0	1	5	0	6	0	181	181
06:15 PM	5	37	0	0	42	8	3	12	0	23	12	93	9	0	114	1	1	2	0	4	0	183	183
06:30 PM	5	37	1	0	43	4	2	7	0	13	9	49	8	0	66	0	2	8	0	10	0	132	132
06:45 PM	4	33	1	0	38	1	2	4	0	7	7	54	6	0	67	0	1	2	0	3	0	115	115
Total	23	152	2	0	177	25	7	36	0	68	33	273	37	0	343	1	5	17	0	23	0	611	611
Grand Total	528	2825	68	0	3421	413	137	577	1	1127	323	2748	456	0	3527	58	129	341	0	528	1	8603	8604
Apprch %	15.4	82.6	2			36.6	12.2	51.2			9.2	77.9	12.9	0		11	24.4	64.6	0				
Total %	6.1	32.8	0.8		39.8	4.8	1.6	6.7		13.1	3.8	31.9	5.3	0	41	0.7	1.5	4	0	6.1	0	100	
Autos	510	2786	65		3361	406	135	568		1110	318	2708	446	0	3472	56	125	338	0	519	0	0	8462
% Autos	96.6	98.6	95.6	0	98.2	98.3	98.5	98.4	100	98.4	98.5	98.5	97.8	0	98.4	96.6	96.9	99.1	0	98.3	0	0	98.3
SU Trucks-Buses	18	35	3		56	7	2	9		18	5	35	10	0	50	2	4	3	0	9	0	0	133
% SU Trucks-Buses	3.4	1.2	4.4	0	1.6	1.7	1.5	1.6	0	1.6	1.5	1.3	2.2	0	1.4	3.4	3.1	0.9	0	1.7	0	0	1.5
Semi Trucks	0	4	0		4	0	0	0		0	0	5	0	0	5	0	0	0	0	0	0	0	9
% Semi Trucks	0	0.1	0	0	0.1	0	0	0	0	0	0	0.2	0	0	0.1	0	0	0	0	0	0	0	0.1

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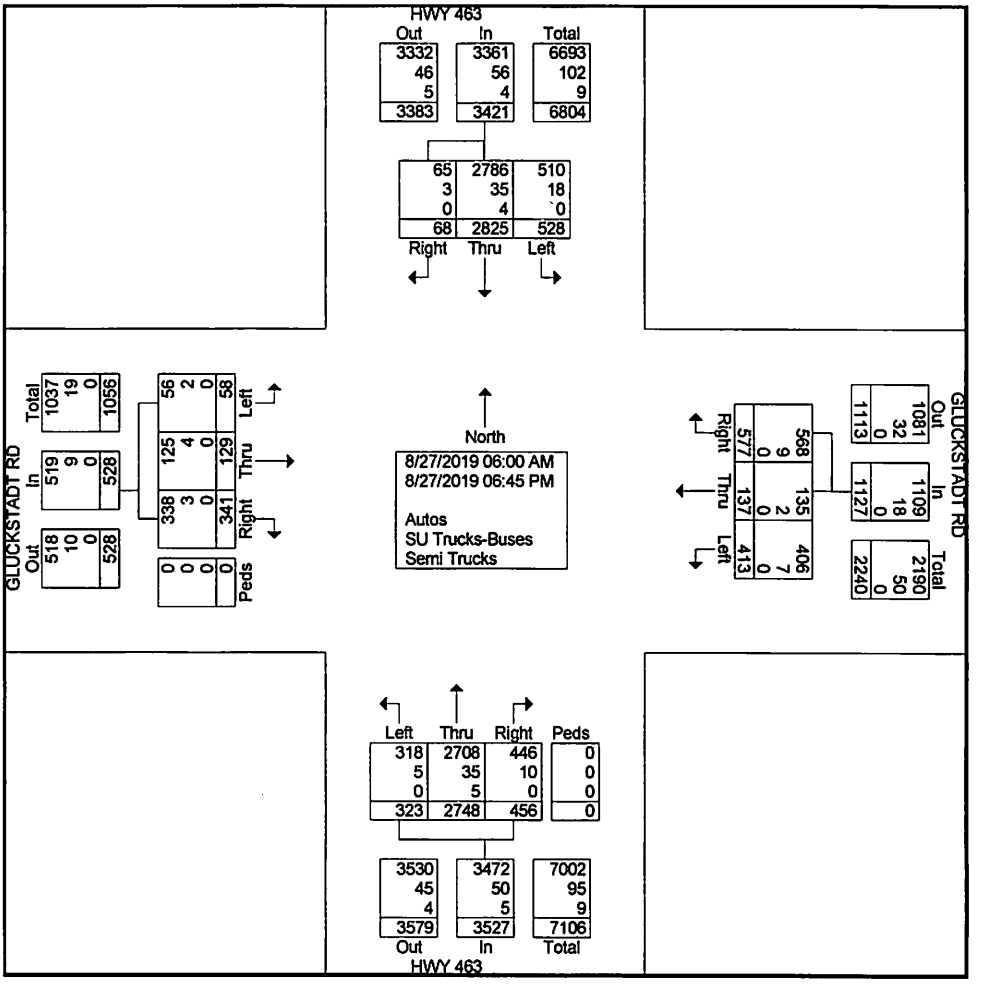

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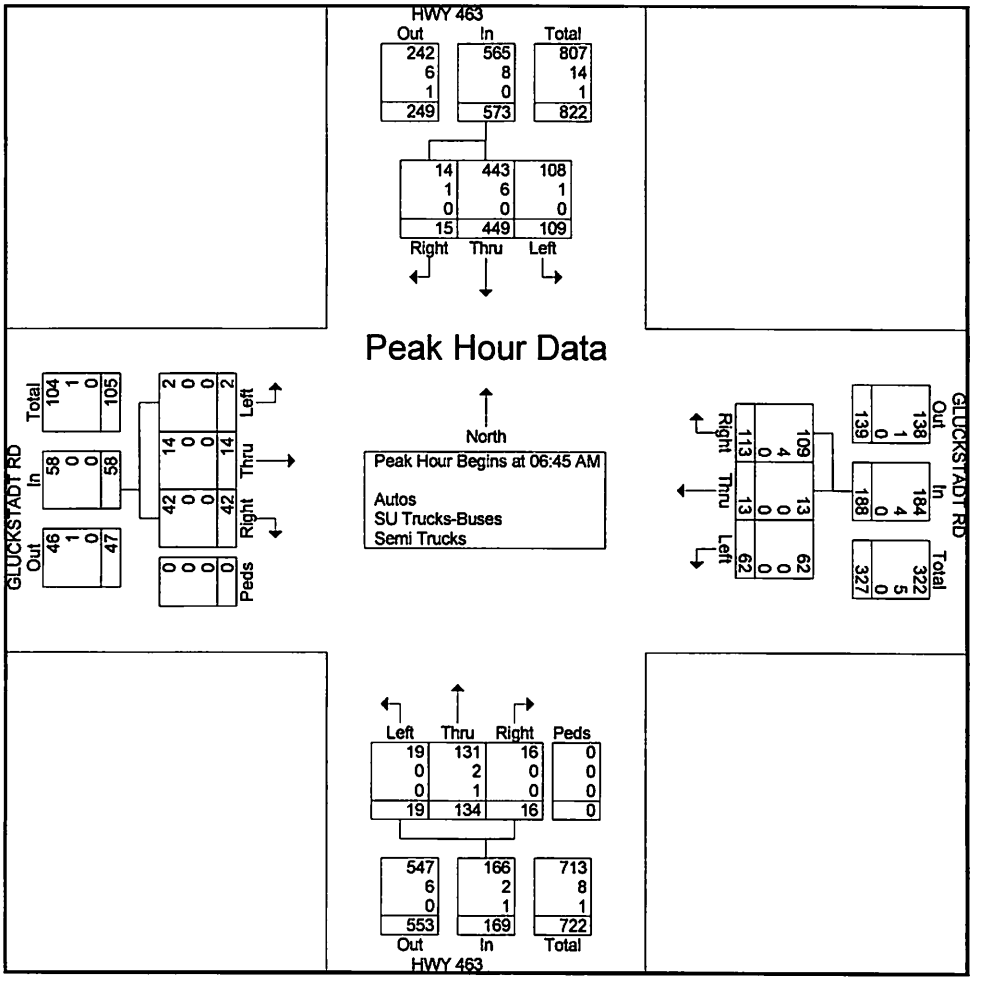
	HWY 463 Southbound				GLUCKSTADT RD Westbound				HWY 463 Northbound					GLUCKSTADT RD Eastbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 06:45 AM																			
06:45 AM	16	126	2	144	4	4	41	49	5	38	4	0	47	1	2	12	0	15	255
07:00 AM	20	146	5	171	20	4	32	56	8	30	3	0	41	1	4	18	0	23	291
07:15 AM	40	112	3	155	17	2	26	45	1	27	5	0	33	0	1	9	0	10	243
07:30 AM	33	65	5	103	21	3	14	38	5	39	4	0	48	0	7	3	0	10	199
Total Volume	109	449	15	573	62	13	113	188	19	134	16	0	169	2	14	42	0	58	988
% App. Total	19	78.4	2.6		33	6.9	60.1		11.2	79.3	9.5	0		3.4	24.1	72.4	0		
PHF	.681	.769	.750	.838	.738	.813	.689	.839	.594	.859	.800	.000	.880	.500	.500	.583	.000	.630	.849
Autos	108	443	14	565	62	13	109	184	19	131	16	0	166	2	14	42	0	58	973
% Autos	99.1	98.7	93.3	98.6	100	100	96.5	97.9	100	97.8	100	0	98.2	100	100	100	0	100	98.5
SU Trucks-Buses	1	6	1	8	0	0	4	4	0	2	0	0	2	0	0	0	0	0	14
% SU Trucks-Buses	0.9	1.3	6.7	1.4	0	0	3.5	2.1	0	1.5	0	0	1.2	0	0	0	0	0	1.4
Semi Trucks	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Semi Trucks	0	0	0	0	0	0	0	0	0	0.7	0	0	0.6	0	0	0	0	0	0.1



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Intersection: MS Hwy 463/Gluckstadt Rd
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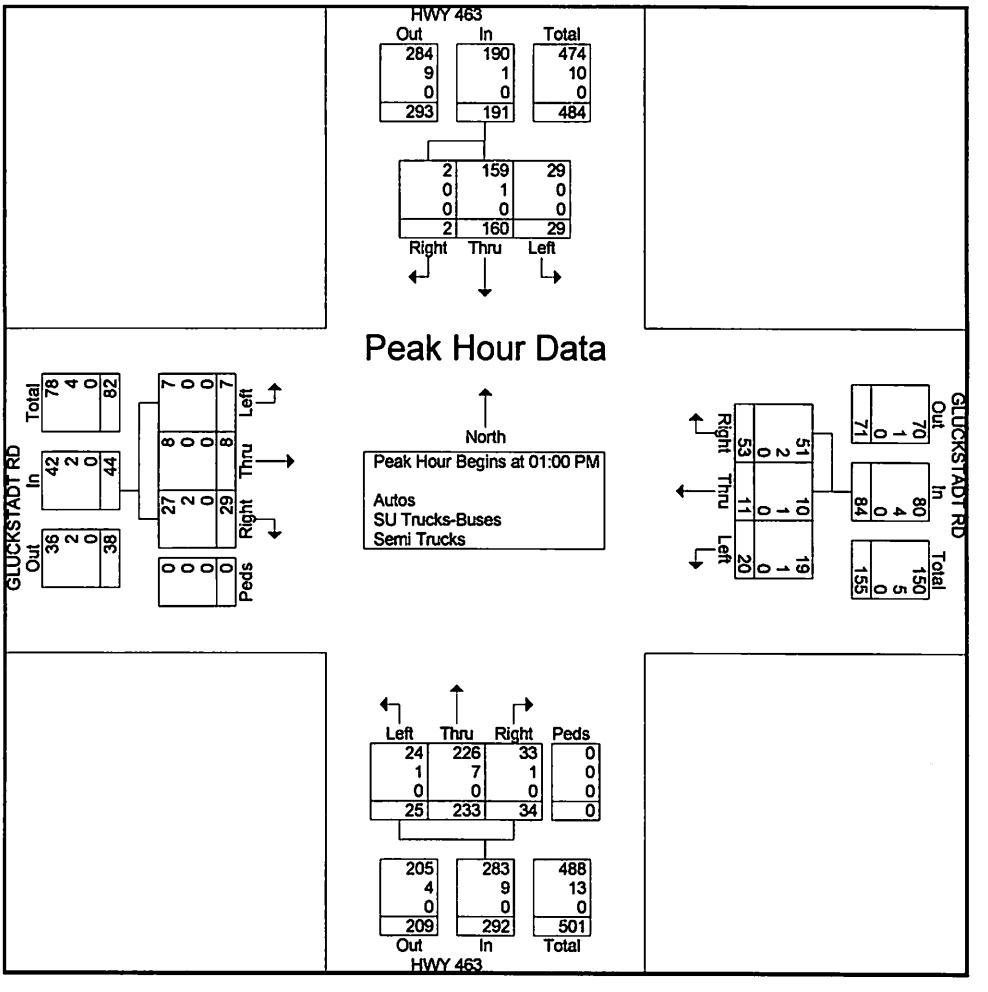
	HWY 463 Southbound				GLUCKSTADT RD Westbound				HWY 463 Northbound					GLUCKSTADT RD Eastbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 01:00 PM																			
01:00 PM	7	36	0	43	7	2	5	14	12	51	4	0	67	2	1	5	0	8	132
01:15 PM	11	31	0	42	3	3	12	18	3	60	11	0	74	1	4	6	0	11	145
01:30 PM	3	42	2	47	5	3	16	24	6	60	8	0	74	1	1	11	0	13	158
01:45 PM	8	51	0	59	5	3	20	28	4	62	11	0	77	3	2	7	0	12	176
Total Volume	29	160	2	191	20	11	53	84	25	233	34	0	292	7	8	29	0	44	611
% App. Total	15.2	83.8	1		23.8	13.1	63.1		8.6	79.8	11.6	0		15.9	18.2	65.9	0		
PHF	.659	.784	.250	.809	.714	.917	.663	.750	.521	.940	.773	.000	.948	.583	.500	.659	.000	.846	.868
Autos	29	159	2	190	19	10	51	80	24	226	33	0	283	7	8	27	0	42	595
% Autos	100	99.4	100	99.5	95.0	90.9	96.2	95.2	96.0	97.0	97.1	0	96.9	100	100	93.1	0	95.5	97.4
SU Trucks-Buses	0	1	0	1	1	1	2	4	1	7	1	0	9	0	0	2	0	2	16
% SU Trucks-Buses	0	0.6	0	0.5	5.0	9.1	3.8	4.8	4.0	3.0	2.9	0	3.1	0	0	6.9	0	4.5	2.6
Semi Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Semi Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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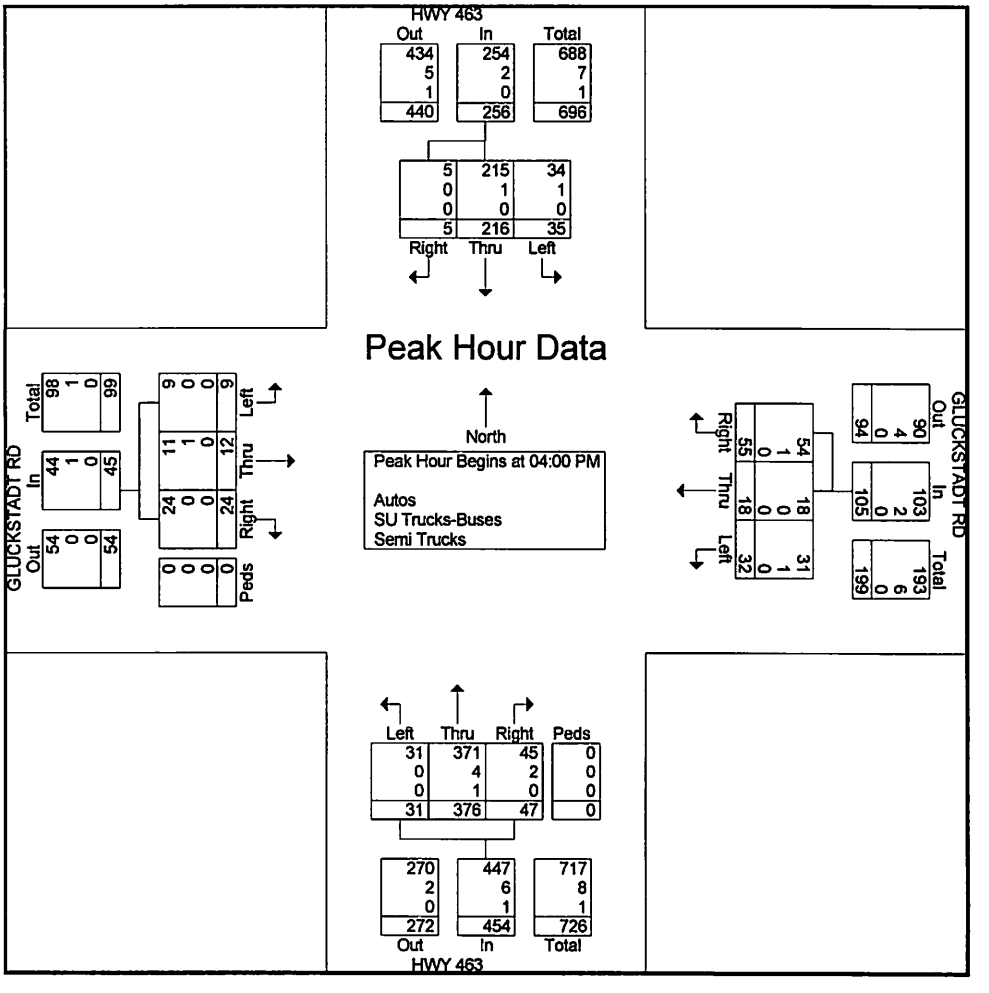
	HWY 463 Southbound				GLUCKSTADT RD Westbound				HWY 463 Northbound					GLUCKSTADT RD Eastbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:00 PM																			
04:00 PM	5	54	2	61	8	6	9	23	8	96	17	0	121	1	3	4	0	8	213
04:15 PM	9	59	2	70	11	4	21	36	6	104	10	0	120	2	4	5	0	11	237
04:30 PM	9	55	0	64	5	5	12	22	7	95	9	0	111	2	2	9	0	13	210
04:45 PM	12	48	1	61	8	3	13	24	10	81	11	0	102	4	3	6	0	13	200
Total Volume	35	216	5	256	32	18	55	105	31	376	47	0	454	9	12	24	0	45	860
% App. Total	13.7	84.4	2		30.5	17.1	52.4		6.8	82.8	10.4	0		20	26.7	53.3	0		
PHF	.729	.915	.625	.914	.727	.750	.655	.729	.775	.904	.691	.000	.938	.563	.750	.667	.000	.865	.907
Autos	34	215	5	254	31	18	54	103	31	371	45	0	447	9	11	24	0	44	848
% Autos	97.1	99.5	100	99.2	96.9	100	98.2	98.1	100	98.7	95.7	0	98.5	100	91.7	100	0	97.8	98.6
SU Trucks-Buses	1	1	0	2	1	0	1	2	0	4	2	0	6	0	1	0	0	1	11
% SU Trucks-Buses	2.9	0.5	0	0.8	3.1	0	1.8	1.9	0	1.1	4.3	0	1.3	0	8.3	0	0	2.2	1.3
Semi Trucks	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Semi Trucks	0	0	0	0	0	0	0	0	0	0.3	0	0	0.2	0	0	0	0	0	0.1



Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	14	42	62	13	113	19	134	16	109	449	15
Future Vol, veh/h	2	14	42	62	13	113	19	134	16	109	449	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	15	46	67	14	123	21	146	17	118	488	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	997	937	496	960	937	155	504	0	0	163	0	0
Stage 1	732	732	-	197	197	-	-	-	-	-	-	-
Stage 2	265	205	-	763	740	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	223	265	574	236	265	891	1061	-	-	1416	-	-
Stage 1	413	427	-	805	738	-	-	-	-	-	-	-
Stage 2	740	732	-	397	423	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	164	229	574	185	229	891	1061	-	-	1416	-	-
Mov Cap-2 Maneuver	164	229	-	185	229	-	-	-	-	-	-	-
Stage 1	404	377	-	787	722	-	-	-	-	-	-	-
Stage 2	612	716	-	310	374	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.8	27.1	1	1.5
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1061	-	-	396	362	1416	-	-
HCM Lane V/C Ratio	0.019	-	-	0.159	0.564	0.084	-	-
HCM Control Delay (s)	8.5	0	-	15.8	27.1	7.8	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	3.3	0.3	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	12	24	32	18	55	31	376	47	35	216	5
Future Vol, veh/h	9	12	24	32	18	55	31	376	47	35	216	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	13	26	35	20	60	34	409	51	38	235	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	857	842	238	836	819	435	240	0	0	460	0	0
Stage 1	314	314	-	503	503	-	-	-	-	-	-	-
Stage 2	543	528	-	333	316	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	277	301	801	287	310	621	1327	-	-	1101	-	-
Stage 1	697	656	-	551	541	-	-	-	-	-	-	-
Stage 2	524	528	-	681	655	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	224	279	801	253	287	621	1327	-	-	1101	-	-
Mov Cap-2 Maneuver	224	279	-	253	287	-	-	-	-	-	-	-
Stage 1	673	630	-	532	522	-	-	-	-	-	-	-
Stage 2	440	510	-	619	629	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.3	18.6	0.5	1.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1327	-	-	398	378	1101	-	-
HCM Lane V/C Ratio	0.025	-	-	0.123	0.302	0.035	-	-
HCM Control Delay (s)	7.8	0	-	15.3	18.6	8.4	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	1.2	0.1	-	-

Intersection	
Int Delay, s/veh	9.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	15	46	68	14	123	21	146	17	119	491	16
Future Vol, veh/h	2	15	46	68	14	123	21	146	17	119	491	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	16	50	74	15	134	23	159	18	129	534	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1090	1024	543	1048	1023	168	551	0	0	177	0	0
Stage 1	801	801	-	214	214	-	-	-	-	-	-	-
Stage 2	289	223	-	834	809	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	193	235	540	206	236	876	1019	-	-	1399	-	-
Stage 1	378	397	-	788	725	-	-	-	-	-	-	-
Stage 2	719	719	-	362	394	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	136	199	540	155	199	876	1019	-	-	1399	-	-
Mov Cap-2 Maneuver	136	199	-	155	199	-	-	-	-	-	-	-
Stage 1	369	344	-	768	707	-	-	-	-	-	-	-
Stage 2	581	701	-	271	342	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.4	39.6	1	1.5
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1019	-	-	359	316	1399	-	-
HCM Lane V/C Ratio	0.022	-	-	0.191	0.705	0.092	-	-
HCM Control Delay (s)	8.6	0	-	17.4	39.6	7.8	0	-
HCM Lane LOS	A	A	-	C	E	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	5	0.3	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	13	26	35	20	60	34	411	51	38	236	5
Future Vol, veh/h	10	13	26	35	20	60	34	411	51	38	236	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	14	28	38	22	65	37	447	55	41	257	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	934	918	260	912	893	475	262	0	0	502	0	0
Stage 1	342	342	-	549	549	-	-	-	-	-	-	-
Stage 2	592	576	-	363	344	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	246	272	779	255	281	590	1302	-	-	1062	-	-
Stage 1	673	638	-	520	516	-	-	-	-	-	-	-
Stage 2	493	502	-	656	637	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	192	249	779	220	258	590	1302	-	-	1062	-	-
Mov Cap-2 Maneuver	192	249	-	220	258	-	-	-	-	-	-	-
Stage 1	646	609	-	499	495	-	-	-	-	-	-	-
Stage 2	402	482	-	590	608	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.9	21.6	0.5	1.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1302	-	-	356	340	1062	-	-
HCM Lane V/C Ratio	0.028	-	-	0.15	0.368	0.039	-	-
HCM Control Delay (s)	7.8	0	-	16.9	21.6	8.5	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	1.6	0.1	-	-

Intersection	
Int Delay, s/veh	8.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	25	46	80	20	124	21	161	32	121	497	19
Future Vol, veh/h	7	25	46	80	20	124	21	161	32	121	497	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	27	50	87	22	135	23	175	35	132	540	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1132	1071	551	1092	1064	193	561	0	0	210	0	0
Stage 1	815	815	-	239	239	-	-	-	-	-	-	-
Stage 2	317	256	-	853	825	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	180	221	534	192	223	849	1010	-	-	1361	-	-
Stage 1	371	391	-	764	708	-	-	-	-	-	-	-
Stage 2	694	696	-	354	387	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	121	185	534	136	187	849	1010	-	-	1361	-	-
Mov Cap-2 Maneuver	121	185	-	136	187	-	-	-	-	-	-	-
Stage 1	361	336	-	744	690	-	-	-	-	-	-	-
Stage 2	551	678	-	253	332	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.2	32.8	0.8	1.5
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1010	-	-	121	321	136	187	849	1361	-	-
HCM Lane V/C Ratio	0.023	-	-	0.063	0.24	0.639	0.116	0.159	0.097	-	-
HCM Control Delay (s)	8.6	0	-	36.7	19.7	69.5	26.8	10	7.9	0	-
HCM Lane LOS	A	A	-	E	C	F	D	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.9	3.4	0.4	0.6	0.3	-	-

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	37	26	85	45	65	34	447	87	43	261	18
Future Vol, veh/h	22	37	26	85	45	65	34	447	87	43	261	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	40	28	92	49	71	37	486	95	47	284	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1056	1043	294	1030	1006	534	304	0	0	581	0	0
Stage 1	388	388	-	608	608	-	-	-	-	-	-	-
Stage 2	668	655	-	422	398	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	203	229	745	212	241	546	1257	-	-	993	-	-
Stage 1	636	609	-	483	486	-	-	-	-	-	-	-
Stage 2	448	463	-	609	603	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	135	207	745	161	217	546	1257	-	-	993	-	-
Mov Cap-2 Maneuver	135	207	-	161	217	-	-	-	-	-	-	-
Stage 1	608	574	-	462	465	-	-	-	-	-	-	-
Stage 2	334	443	-	514	569	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.1	33.7	0.5	1.2
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1257	-	-	135	295	161	217	546	993	-	-
HCM Lane V/C Ratio	0.029	-	-	0.177	0.232	0.574	0.225	0.129	0.047	-	-
HCM Control Delay (s)	8	0	-	37.3	20.9	53.8	26.4	12.6	8.8	0	-
HCM Lane LOS	A	A	-	E	C	F	D	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.9	3	0.8	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	35	259	48	49	599
Future Vol, veh/h	30	35	259	48	49	599
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	100	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	38	282	52	53	651

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1039	282	0	0	334	0
Stage 1	282	-	-	-	-	-
Stage 2	757	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	255	757	-	-	1225	-
Stage 1	766	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	244	757	-	-	1225	-
Mov Cap-2 Maneuver	244	-	-	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	463	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.5	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	244	757	1225	-
HCM Lane V/C Ratio	-	-	0.134	0.05	0.043	-
HCM Control Delay (s)	-	-	22	10	8.1	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.2	0.1	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	164	215	17	16	22
Future Vol, veh/h	33	164	215	17	16	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	178	234	18	17	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	252	0	-	0	484	234
Stage 1	-	-	-	-	234	-
Stage 2	-	-	-	-	250	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1313	-	-	-	542	805
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	792	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1313	-	-	-	527	805
Mov Cap-2 Maneuver	-	-	-	-	592	-
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	792	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1313	-	-	-	592	805
HCM Lane V/C Ratio	0.027	-	-	-	0.029	0.03
HCM Control Delay (s)	7.8	-	-	-	11.3	9.6
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	0.1

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	168	222	34	16	10
Future Vol, veh/h	12	168	222	34	16	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	125	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	183	241	37	17	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	278	0	-	0	450	241
Stage 1	-	-	-	-	241	-
Stage 2	-	-	-	-	209	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1285	-	-	-	567	798
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	826	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1285	-	-	-	561	798
Mov Cap-2 Maneuver	-	-	-	-	561	-
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	826	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1285	-	-	-	561	798
HCM Lane V/C Ratio	0.01	-	-	-	0.031	0.014
HCM Control Delay (s)	7.8	-	-	-	11.6	9.6
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	85	95	470	104	93	278
Future Vol, veh/h	85	95	470	104	93	278
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	100	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	92	103	511	113	101	302

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1015	511	0	0	624	0
Stage 1	511	-	-	-	-	-
Stage 2	504	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	264	563	-	-	957	-
Stage 1	602	-	-	-	-	-
Stage 2	607	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	236	563	-	-	957	-
Mov Cap-2 Maneuver	236	-	-	-	-	-
Stage 1	538	-	-	-	-	-
Stage 2	607	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.8	0	2.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	236	563	957	-
HCM Lane V/C Ratio	-	-	0.391	0.183	0.106	-
HCM Control Delay (s)	-	-	29.7	12.8	9.2	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	1.8	0.7	0.4	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	84	132	158	42	65	95
Future Vol, veh/h	84	132	158	42	65	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	91	143	172	46	71	103

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	218	0	-	0	497	172
Stage 1	-	-	-	-	172	-
Stage 2	-	-	-	-	325	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1352	-	-	-	532	872
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	732	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1352	-	-	-	496	872
Mov Cap-2 Maneuver	-	-	-	-	543	-
Stage 1	-	-	-	-	801	-
Stage 2	-	-	-	-	732	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1352	-	-	-	543	872
HCM Lane V/C Ratio	0.068	-	-	-	0.13	0.118
HCM Control Delay (s)	7.9	-	-	-	12.6	9.7
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4	0.4

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	29	168	157	84	65	43
Future Vol, veh/h	29	168	157	84	65	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	125	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	183	171	91	71	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	262	0	-	0	418	171
Stage 1	-	-	-	-	171	-
Stage 2	-	-	-	-	247	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1302	-	-	-	591	873
Stage 1	-	-	-	-	859	-
Stage 2	-	-	-	-	794	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1302	-	-	-	576	873
Mov Cap-2 Maneuver	-	-	-	-	576	-
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	794	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1302	-	-	-	576	873
HCM Lane V/C Ratio	0.024	-	-	-	0.123	0.054
HCM Control Delay (s)	7.8	-	-	-	12.1	9.4
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	25	46	80	20	124	21	161	32	121	497	19
Future Volume (veh/h)	7	25	46	80	20	124	21	161	32	121	497	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	8	27	50	87	22	135	23	175	35	132	540	21
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	292	63	116	377	525	446	313	489	98	597	689	27
Arrive On Green	0.11	0.11	0.11	0.07	0.28	0.28	0.03	0.32	0.32	0.09	0.39	0.39
Sat Flow, veh/h	1225	586	1085	1774	1863	1583	1774	1508	302	1774	1781	69
Grp Volume(v), veh/h	8	0	77	87	22	135	23	0	210	132	0	561
Grp Sat Flow(s),veh/h/ln	1225	0	1671	1774	1863	1583	1774	0	1810	1774	0	1851
Q Serve(g_s), s	0.3	0.0	1.9	1.8	0.4	3.0	0.4	0.0	3.9	2.1	0.0	11.9
Cycle Q Clear(g_c), s	0.3	0.0	1.9	1.8	0.4	3.0	0.4	0.0	3.9	2.1	0.0	11.9
Prop In Lane	1.00		0.65	1.00		1.00	1.00		0.17	1.00		0.04
Lane Grp Cap(c), veh/h	292	0	178	377	525	446	313	0	587	597	0	716
V/C Ratio(X)	0.03	0.00	0.43	0.23	0.04	0.30	0.07	0.00	0.36	0.22	0.00	0.78
Avail Cap(c_a), veh/h	660	0	680	465	1176	1000	463	0	2171	636	0	2221
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.9	0.0	18.6	14.2	11.6	12.5	10.4	0.0	11.5	8.3	0.0	12.0
Incr Delay (d2), s/veh	0.0	0.0	1.6	0.3	0.0	0.4	0.1	0.0	0.4	0.2	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.0	0.9	0.2	1.3	0.2	0.0	2.0	1.0	0.0	6.3
LnGrp Delay(d),s/veh	17.9	0.0	20.3	14.5	11.6	12.9	10.5	0.0	11.9	8.5	0.0	13.9
LnGrp LOS	B		C	B	B	B	B		B	A		B
Approach Vol, veh/h		85			244			233			693	
Approach Delay, s/veh		20.0			13.4			11.7			12.9	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	8.5	18.9	7.8	9.2	5.7	21.7		17.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.0	53.4	5.5	18.1	5.0	53.4		28.1
Max Q Clear Time (g_c+I1), s	4.1	5.9	3.8	3.9	2.4	13.9		5.0
Green Ext Time (p_c), s	0.0	1.1	0.0	0.3	0.0	3.4		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
3: MS Hwy 463 & Cedar Hill Rd/Gluckstadt Rd

PM-Pk-2022-total-sig-463.syn
09/13/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	37	26	85	45	65	34	447	87	43	261	18
Future Volume (veh/h)	22	37	26	85	45	65	34	447	87	43	261	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	24	40	28	92	49	71	37	486	95	47	284	20
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	101	71	365	498	423	535	606	119	335	702	49
Arrive On Green	0.10	0.10	0.10	0.07	0.27	0.27	0.04	0.40	0.40	0.05	0.41	0.41
Sat Flow, veh/h	1266	1022	715	1774	1863	1583	1774	1514	296	1774	1720	121
Grp Volume(v), veh/h	24	0	68	92	49	71	37	0	581	47	0	304
Grp Sat Flow(s),veh/h/ln	1266	0	1737	1774	1863	1583	1774	0	1811	1774	0	1841
Q Serve(g_s), s	0.8	0.0	1.7	2.0	0.9	1.6	0.6	0.0	13.5	0.7	0.0	5.6
Cycle Q Clear(g_c), s	0.8	0.0	1.7	2.0	0.9	1.6	0.6	0.0	13.5	0.7	0.0	5.6
Prop In Lane	1.00		0.41	1.00		1.00	1.00		0.16	1.00		0.07
Lane Grp Cap(c), veh/h	276	0	171	365	498	423	535	0	725	335	0	752
V/C Ratio(X)	0.09	0.00	0.40	0.25	0.10	0.17	0.07	0.00	0.80	0.14	0.00	0.40
Avail Cap(c_a), veh/h	644	0	675	476	1155	982	668	0	1960	454	0	1994
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.7	0.0	20.1	15.6	13.1	13.4	7.9	0.0	12.6	9.4	0.0	10.0
Incr Delay (d2), s/veh	0.1	0.0	1.5	0.4	0.1	0.2	0.1	0.0	2.1	0.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.9	1.0	0.5	0.7	0.3	0.0	7.0	0.3	0.0	2.9
LnGrp Delay(d),s/veh	19.8	0.0	21.6	16.0	13.2	13.6	7.9	0.0	14.7	9.6	0.0	10.3
LnGrp LOS	B		C	B	B	B	A		B	A		B
Approach Vol, veh/h		92			212			618			351	
Approach Delay, s/veh		21.1			14.5			14.3			10.2	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	6.8	23.5	8.0	9.2	6.4	23.9		17.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.5	51.5	6.5	18.5	5.5	51.5		29.5
Max Q Clear Time (g_c+I1), s	2.7	15.5	4.0	3.7	2.6	7.6		3.6
Green Ext Time (p_c), s	0.0	3.6	0.0	0.3	0.0	1.6		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	13.7
HCM 2010 LOS	B