

I. NEED AND PURPOSE

The proposed project would widen Forest Hill Road (CR 997) from a two-lane rural section to a four-lane divided urban section beginning at Vineville Avenue (US 41, SR19) and ending at Wimbish Road (CS 997) (see Figure 1, Project Location Map). The proposed project would also widen Forest Hill Road beginning at Wimbish Road and ending 650 feet south of Northside Drive from a two-lane rural section to a three-lane urban section. In addition, the proposed project would replace the bridge culvert over Sabbath Creek (a.k.a. Savage Creek). The purpose of this project would be to improve the safety and operational efficiency of Forest Hill Road and to provide additional capacity on the road from Vineville Avenue to Wimbish Road.

Forest Hill Road is classified as an urban minor arterial. An urban minor arterial is a facility that connects and augments a principal arterial system. Its main function is traffic mobility. The proposed Forest Hill Road improvement project connects the recently developed area of north Macon and Northside Drive to Vineville Avenue (US 41, SR 19). Vineville Avenue provides a connection into downtown Macon and to Mercer University. Forest Hill Road also links to Riverside Drive in north Macon via Wimbish Road.

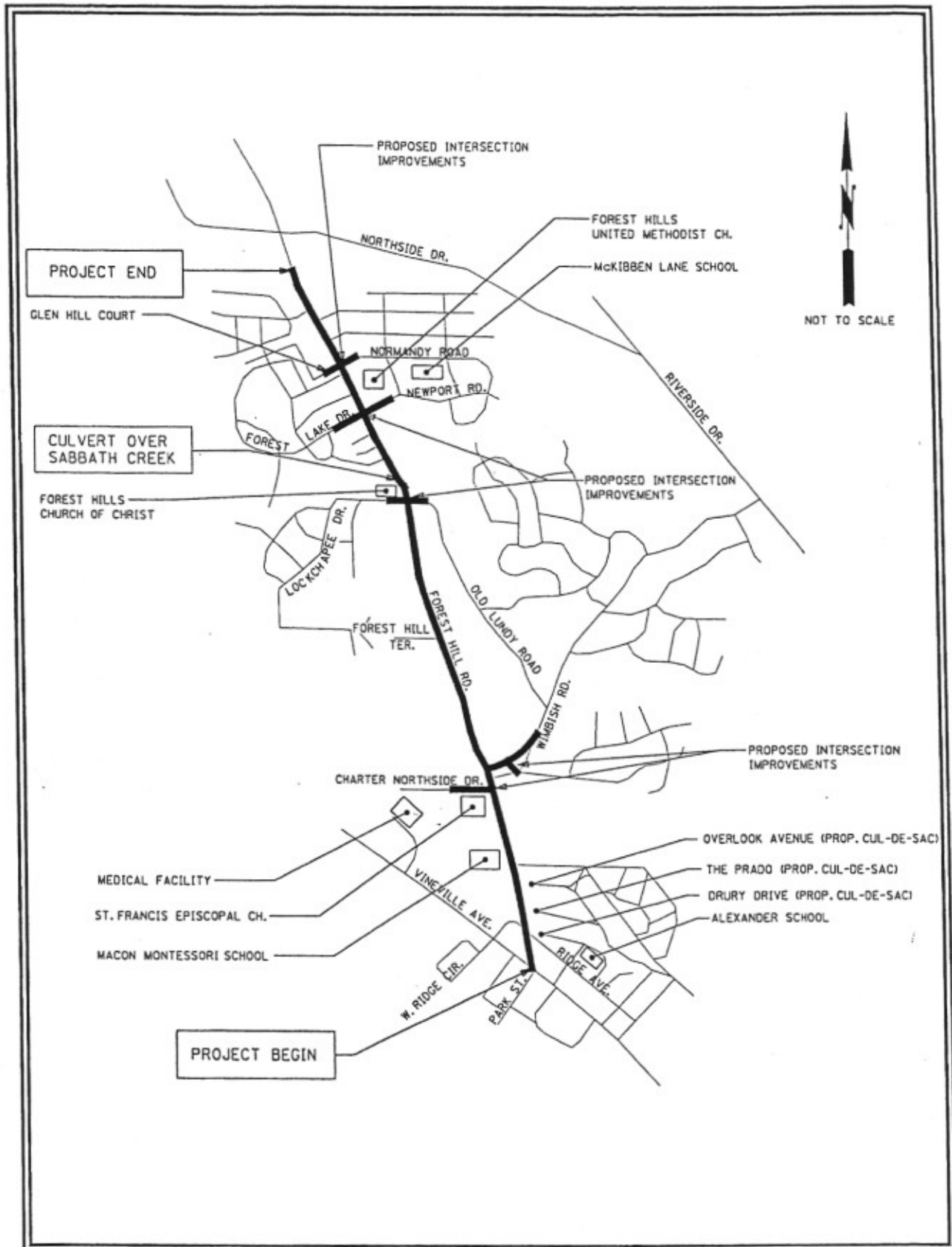
Logical Termini

The logical southern terminus for the widening of Forest Hill Road from a two-lane to a four-lane road is the Forest Hill Road/Vineville Avenue intersection. Approximately 90 percent of the southbound traffic on Forest Hill Road turns left or right onto Vineville Avenue. The remaining 10 percent of the southbound traffic on Forest Hill Road crosses Vineville Avenue to proceed south on Park Street. Average Annual Daily Traffic (AADT) for 1999 on Forest Hill Road just north of Vineville Avenue was 11,400. The AADT on Forest Hill Road just north of the Vineville Avenue intersection is projected to be 14,400 for the build year 2004 (see Figure 2a, Build and Design Year AADT). The AADT on Park Street in 1999 was 4,000. AADT on Park Street for the build year 2004 is projected to be 5,000. Because of the substantial break in traffic across the intersection of Vineville Avenue and Forest Hill Road, this intersection was selected as the logical terminus for the proposed project. Vineville Avenue at this intersection is a four-lane urban road with a flush median for left turns.

The logical northern terminus for the widening of Forest Hill Road from a two-lane to a four-lane road would be the intersection with Wimbish Road. North of Wimbish Road the pavement would taper from a four-lane to a three-lane configuration. The 1999 AADT on Forest Hill Road south of Wimbish Road was 14,600. The 1999 AADT on Forest Hill Road north of Wimbish Road was 10,100. The AADT for Forest Hill Road south of Wimbish Road is projected to be 18,900 for the build year 2004 (see Figure 2a Build and Design Year AADT). The AADT on Forest Hill Road north of Wimbish Road is projected to be 11,500 for the build year 2004. The AADT on Wimbish Road is projected to be 9,000 for the build year 2004. Approximately 43 percent of the northbound traffic on Forest Hill Road turns right onto Wimbish Road. The split in traffic volumes at this

FIGURE 1
Project Location Map

STP-3213(1), & STP-3213(3)/BRMLB-3213(5), Bibb County, Georgia
P.I. No. 350520 & 351130/351135



Not to Scale

intersection indicates that this intersection is a logical terminus for the four-lane typical section. The proposed typical section of Forest Hill Road north of this intersection would be a three lane urban section.

The logical northern terminus for the proposed widening of Forest Hill Road from a two-lane to a three-lane road would be the southern end of the improved portion of Forest Hill Road that extends 650 feet south of the Forest Hill Road/Northside Drive intersection (see Figure 1, Project Location Map). This portion of Forest Hill Road was previously widened by project STP-3214(1), a Georgia Department of Transportation project that improved Northside Drive from a two-lane road to five-lane urban section.

AADT and Levels of Service

The AADT for six areas of the portion of Forest Hill Road proposed for improvements was evaluated to determine their level of service (LOS). Level of Service is a qualitative measure of the operational efficiency of a roadway under peak hour conditions as they are seen from the drivers perspective. There are a total of six (6) different LOS designations, from A to F, with LOS A representing the best case operational conditions with no delays in traffic and LOS F representing a complete breakdown in traffic flow. The LOS for this project was examined for three time frames and for two conditions. The LOS was evaluated for the existing conditions (1999), the build year under the no-build condition (2004), the build year under the build condition (2004), the design year under the no-build condition (2024), and the design year under the build condition. Table 1 summarizes the AADT, the LOS, the no-build and the build conditions for the proposed project.

The 1999 AADT on Forest Hill Road between Vineville Avenue and Ridge Avenue was 11,400. This portion of the roadway was operating at LOS C in 1999. LOS C represents a range in which the influence of traffic density on operations becomes marked. Minor disruptions may be expected to cause serious local deterioration in service and queues may form behind any significant traffic disruption. The AADT for the build year 2004 under the no-build condition is projected to be 14,400. The LOS for the build year under the no-build condition would be LOS D. LOS D borders on unstable flow. Speeds and the ability to maneuver are severely constricted because of traffic congestion. Only the most minor of disruptions can be absorbed without the formation of extensive queues and the deterioration of service to LOS F, a complete breakdown in traffic flow. The AADT for the build year under the build condition is projected to be 14,400 (see Figure 2a, Build and Design Year Annual Average Daily Traffic: Forest Hill from Vineville Avenue to Wimbish Road). The LOS for the build year under the build condition would be LOS A. LOS A describes completely free-flowing traffic conditions where minor disruptions are easily absorbed. AADT for the design year 2024 under the no-build condition would be 16,200. This is the capacity of a two-lane road over a 24-hour period under normal conditions. The LOS for the design year under the no-build condition would be LOS F. The AADT for the design year 2024 under the build condition would be 23,300. The LOS for the design year under the build condition would be LOS B. LOS B is indicative of free-flowing traffic but the presence of other vehicles begins to be noticeable.

Table 1

**AADT and LOS for the Current Year, the Build Year and the Design Year
STP-3213(1) and STP-3213(3)/BRMLB-3213(5), Bibb County, P.I. Nos. 350520 and 351130/351135**

Location	Existing/ Proposed No. of Lanes	1999	2004 No-Build Condition AADT/LOS	2004 Build Condition AADT/LOS	2024 No-Build Condition AADT/LOS	2024 Build Condition AADT/LOS
Vineville Avenue to Ridge Avenue	2/4	11,400/C	14,400/D	14,400/A	16,200/F	22,300/B
Ridge Avenue to Charter Northside Drive	2/4	14,900/E	16,200/F	18,300/A	16,200/F	27,600/B
Charter Northside Drive to Wimbish Road	2/4	14,600/E	16,200/F	18,900/A	16,200/F	28,400/B
Wimbish Road to Lokchapee Drive	2/3	10,100/C	10,900/C	10,900/C	15,500/D	15,500/D
Lokchapee Drive to Forest Lake Drive	2/3	11,300/C	12,800/C	12,800/C	16,200/F	18,600/D
North of Forest Lake Drive	2/3	11,400/C	12,800/C	12,800/C	16,200/F	18,900/D

FIGURE 2a **Build (2004) and Design Year (2024) Annual Average Daily Traffic** **Forest Hill Road from Vineville Avenue to Wimbish Road**

STP-3213(1) Bibb County, Georgia

P.I. No. 350520

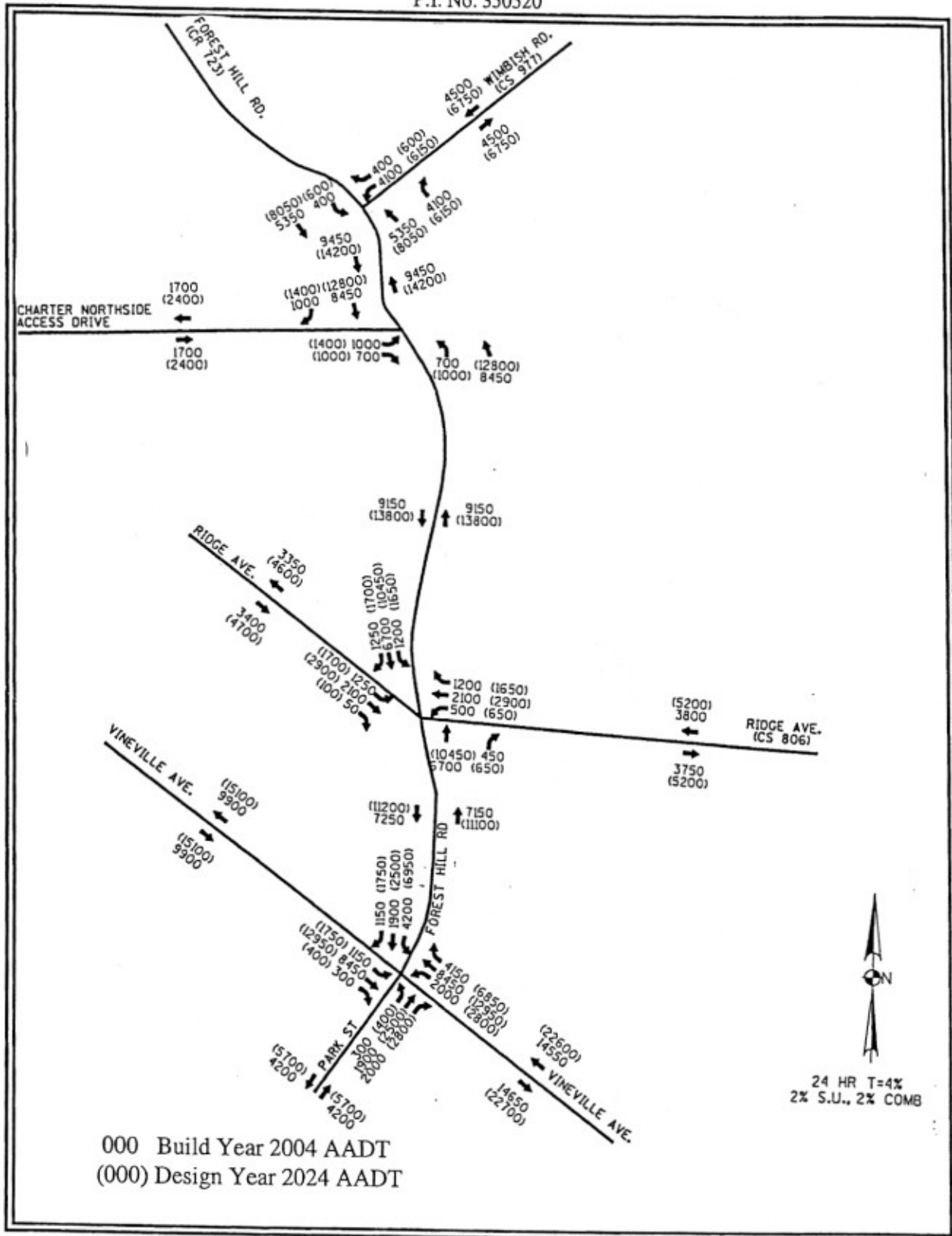
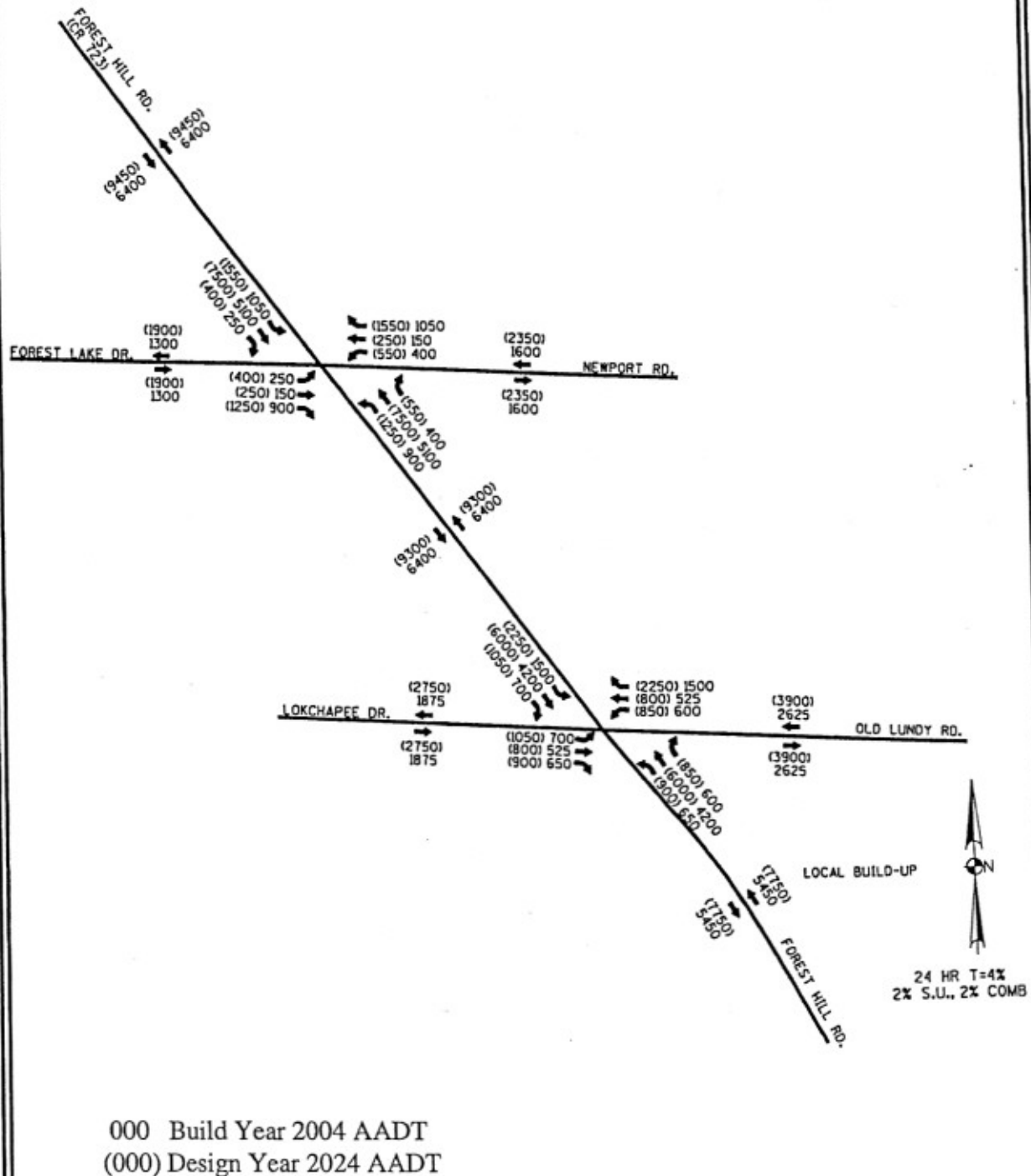


FIGURE 2b

Build (2004) and Design Year (2024) Annual Average Daily Traffic
 Forest Hill Road from Lokchapee Drive to South Forest Lake Drive
 STP-3213(3) & BRMLB-3213(5), Bibb County, P.I. No. 351130 & 351135



The 1999 AADT on Forest Hill Road between Ridge Avenue and Charter Northside Drive was 14,900. This portion of the roadway was operating at LOS E in 1999. LOS E represents operations at or near capacity and is quite unstable. Disruptions cannot be damped or dissipated, and any disruption, no matter how minor, causes queues to form and further deterioration of service. The AADT for the build year 2004 under the no-build condition is projected to be 16,200. This LOS for the build year under the no-build condition would be LOS F. The AADT for the build year under the build condition is projected to be 18,300 (see Figure 2a, Build and Design Year AADT). The LOS for the build year under the build condition would be LOS A. The AADT for the design year 2024 under the no-build condition is projected to be 16,200. The LOS for the design year under the no-build condition would be LOS F. The AADT for the design year under the build condition is projected to be 27,600. The LOS for the design year under the build condition would be LOS B.

The 1999 AADT on Forest Hill Road between Charter Northside Drive and Wimbish Road was 14,600. This portion of the roadway was operating at LOS E in 1999. The AADT for this portion of the road for the build year 2004 under the no-build condition would be 16,200. The LOS under the no-build condition for the build year would be LOS F. AADT for the build year under the build condition would be 18,900 (see Figure 2a, Build and Design Year AADT). The LOS for the build year under the build condition would be LOS A. The AADT for the design year 2024 for the no-build condition would be 16,200. The LOS for the design year under no-build condition would be LOS F. The AADT for the design year under the build condition would be 28,400. The LOS for the design year under the build condition for the design year would be LOS B.

The 1999 AADT on Forest Hill Road between Wimbish Road and Lokchapee Drive/Old Lundy Road was 10,100. This portion of the roadway was operating at LOS C in 1999. The AADT on this portion of the road for the build year 2004 under the no-build condition is projected to be 10,900. The LOS for the build year under the no-build condition would be LOS C. The AADT for the build year under the build condition would be LOS C (see Figure 2b, Build and Design Year Annual Average Daily Traffic: Forest Hill From Wimbish Road to Northside Drive). The LOS for the build year under the build condition would be LOS C. The AADT for the design year 2024 under the no-build condition would be 15,500. The LOS for the design year under the no-build condition would be LOS D. The AADT for the design year under the build condition would be 15,500. The LOS for the design year under the build condition would be LOS D.

The 1999 AADT on Forest Hill Road between Lokchapee Drive/Old Lundy Road and Forest Lake Drive was 11,300. This portion of the roadway was operating at LOS C in 1999. The AADT for the build year under the no-build condition would be 12,800. The LOS for the build year under the no-build condition would be LOS C. AADT for the build year under the build condition would be 12,800. The LOS for the build year under the build condition would be LOS C. The AADT for the design year 2024 under the no-build condition would be 16,200. The LOS for the design year under the no-build condition would be LOS F. The AADT for the design year under the build condition is projected to be 18,900. The LOS for the design year under the build condition would be LOS D. The improved LOS on this portion of Forest Hill Road is the result of upgrades to the intersection with Lokchapee Drive/Old Lundy Road. These improvements include realigning these roads to create a four-way intersection, the addition of turn lanes, and signalization of the intersection.

The 1999 AADT on Forest Hill Road north of Forest Lake Drive/Newport Road was 11,400. This portion of the road was operating at LOS C in 1999. The AADT for this portion of the road for the build year 2004 under the no-build condition is projected to be 12,800. The LOS for the build year under the no-build condition would be LOS C. The AADT for the build year under the build condition would be 12,800. The LOS for the build year for the build condition would be LOS C. The AADT for the design year 2024 is projected to be 16,200. The LOS for the design year under the no-build condition would be LOS F. The AADT for the design year under the build condition would be 18,900. The LOS for the design year for the build condition would be LOS D.

Intersection Operations

To further support the need for the proposed project to widen Forest Hill Road from a two-lane to a four-lane road from Vineville Avenue to Wimbish Road, three signalized intersections were evaluated for LOS at peak AM and PM operations for 1999 and 2024. The intersection of Forest Hill Road with Lokchapee Drive/Old Lundy was also evaluated for the no-build and build condition for the design year. Table 2 summarizes the LOS under the build and no-build conditions during four time frames.

Table 2

Intersection LOS for the Existing and Design Year Conditions
STP-3213(1) and STP-3213(3)/BRMLB-3213(5), Bibb County
P.I. Nos. 350520 and 351130/351135

Intersections with Forest Hill Road	1999 AM Peak (No-Build)	1999 PM Peak (No-Build)	2024 AM Peak (No-Build)	2024 PM Peak (No-Build)	2024 AM Peak (Build)	2024 PM Peak (Build)
Vineville Avenue	C	C	E	E	D	D
Ridge Avenue	D	F	F	F	C	C
Wimbish Road	C	F	F	F	C	B
Lokchapee Dr. / Old Lundy Rd.	N/A	N/A	F	F	C	C

The intersection of Forest Hill Road and Vineville Avenue is presently operating at LOS C for both the peak AM and the peak PM hours. Under the no-build condition for the design year 2024, the LOS for both the AM peak and the PM peak is projected to be LOS E. Under the build condition for the design year, the LOS is projected to be LOS D for both the AM and PM peak traffic hours.

The intersection of Forest Hill Road and Ridge Avenue is presently operating at LOS D for the AM peak and LOS F for the PM peak. Without the proposed improvements this intersection is projected to operate at LOS F for both the peak AM and PM hours in 2024. Under the build condition for the design year 2024, this intersection is projected to operate at LOS C for both the AM and PM peak traffic hours.

The intersection of Forest Hill Road and Wimbish Road is presently operating at LOS C for the AM peak and LOS F for the PM peak. Without the proposed improvements in the design year 2024, this intersection is projected to operate at LOS F for both the AM peak and the PM peak. Under the build condition for the design year 2024, the LOS is projected to be LOS C for the AM peak and LOS B for the PM peak.

The intersection of Forest Hill Road with Lokchapee Drive/Old Lundy Road would not be signalized until the build year 2004. Without the proposed improvements in the design year 2024 this intersection is projected to operate at LOS F for both the AM and PM peaks. Under the build condition for the design year, the LOS is projected to be LOS C for both the AM and PM peak traffic hours.

Accident Rates

Accident data for the years 1997, 1998, and 1999 substantiates the need for the proposed improvements to Forest Hill Road (see Table 3). From 1997 through 1999, the portions of Forest Hill Road to be improved by the proposed project had a total of 174 accidents. Ninety-one of these accidents or 52 percent were rear-end collisions. Rear-end collisions are the result of traffic volumes that exceed capacity coupled with motorists turning left and right into driveways and side streets without turn lanes. The frequency of accidents would decrease with the addition of appropriate turn lanes and increased capacity on Forest Hill Road. The high percentage of rear-end collisions indicates the need to separate through traffic from turning movements to reduce the number of accidents and injuries. The proposed construction of a 15-foot raised, grassed median on the four-lane portion of the project would help prevent head-on collisions and sideswipe collisions with vehicles moving in opposite directions. The addition of the center turn lane north of Wimbish Road would improve the safety and operational efficiency of the remainder of this project by separating left hands turns from through traffic.

The accidents on Forest Hill Road from 1997 through 1999 resulted in 85 injuries. During this time period, there were three fatalities as a result of automobile accidents on the portion of Forest Hill Road proposed for improvement. With such a substantial number of injuries and fatalities on this short segment of roadway, it is necessary to implement improvements for safety and operational efficiency.

Statewide, the 1997 accident rate for urban minor arterials such as Forest Hill Road was 552 accidents per year per 100 million travel miles. The accident rate for Forest Hill Road for 1997 was 593 accidents per 100 million travel miles. This figure is 1.1 times greater than the statewide

average. The statewide rate for injuries on similar roads in 1997 was 251 injuries per 100 million travel miles. The 1997 accidents on Forest Hill Road resulted in an injury rate of 334 injuries per 100 million travel miles. This figure is 1.3 times greater than the statewide average. The statewide fatality rate for similar roads for 1997 was 2.94 fatalities for 100 million travel miles. The fatality rate on Forest Hill Road for 1997 was 10.38 fatalities for 100 million travel miles. This figure is 4.2 times greater than the statewide fatality rate.

TABLE 3

**Accident, Injury, and Fatality Rates* for Forest Hill Road
STP-3213(1) and STP-3213(3)/BRMLB-3213(5), Bibb County
P.I. Numbers: 350520 and 351130/351135**

Year	No. of Accidents	No. of Injuries	No. of Fatalities	Accident Rate	Injury Rate	Fatality Rate	Statewide Accident Rate	Statewide Injury Rate	Statewide Fatality Rate
1997	57	28	1	591	290	10.38	552	251	2.94
1998	55	31	2	593	334	21.6	525	233	1.24
1999	62	26	0	592	248	0	N/A	N/A	N/A

*All Rates are accidents, injuries, or fatalities per 100 million travel miles. Source: Georgia Department of Public Safety, Accident Reporting Unit.

Statewide, the 1998 accident rate for urban minor arterials such as Forest Hill Road was 525 accidents per year per 100 million travel miles. The accident rate for Forest Hill Road for 1998 was 591 accidents per 100 million travel miles. This figure is 1.1 times greater than the statewide average. The statewide rate for injuries on similar roads in 1998 was 233 injuries per 100 million travel miles. The 1998 accidents on Forest Hill Road resulted in an injury rate of 334 injuries per 100 million travel miles. This figure is 1.4 times greater than the statewide average. The statewide fatality rate for similar roads for 1998 was 1.24 fatalities for 100 million travel miles. The fatality rate on Forest Hill Road for 1998 was 21.6 fatalities for 100 million travel miles. This Figure is 17.4 times greater than the statewide fatality rate.

In 1999, the most recent year for which accident data has been compiled, there were a total of 62 accidents on the portion of Forest Hill proposed for improvement. These 62 accidents resulted in an accident rate of 592 accidents per 100 million travel miles. The 26 injuries occurring in 1999 resulted in an injury rate of 248 injuries per year per 100 million travel miles. There were no fatalities on Forest Hill Road in 1999. Statewide accident, injury, and fatality data for 1999 are not yet available for comparison but they normally do not change significantly from year to year.