

City Council Work Session

Documents:

- 1- [WORK SESSION AGENDA.PDF](#)
- 2 - [TRAFFIC MANAGEMENT UPDATE.PDF](#)



CITY COUNCIL OF THE CITY OF GREENVILLE WORK SESSION MEETING

Monday, June 26, 2023 - 3:30 p.m.

Greenville City Hall, 206 S. Main Street

Citizens may access the meeting at the following web address:

<https://www.greenvillesc.gov/1694/Online-Meetings>

CITY COUNCIL: Mayor Knox White; Councilmembers Wil Brasington, John DeWorken, Dorothy Dowe, Lillian Flemming, Ken Gibson, Russell Stall

CITY STAFF: City Manager John McDonough, City Attorney Leigh Paoletti; City Clerk Camilla G. Pitman

AGENDA

1. **Call to Order** **3:30 p.m.**
2. **Traffic Management / ITS** **3:30 p.m.**
(Presented by Engineering Services Director Clint Link)
3. **Executive Session (S.C. Code §30-4-70):** **4:20 p.m.**
NOTE: City Council will leave the Work Session to conduct an Executive Session which is not open to the public. The Work Session meeting will adjourn following the completion of the Executive Session. No action will be taken prior to adjourning the meeting.
 - a. **Economic Development / Legal Briefing**
 - b. **Boards and Commissions / Personnel Update**
4. **Adjourn** **5:00 p.m.**



Traffic Management Update

June 26, 2023

Goals & Objectives

- Improve Traffic Flow on Corridors
- Prevent Neighborhood Cut Through Traffic
- Reduce Congestion During Rush Hour
- Assist Emergency Response
- Public Safety - Traffic Light Power Supply, School Zone Signage, Illuminated Street Signs for Visibility
- Study Traffic Patterns to Plan for the Future
- Real Time Monitoring for Public Information



Overview

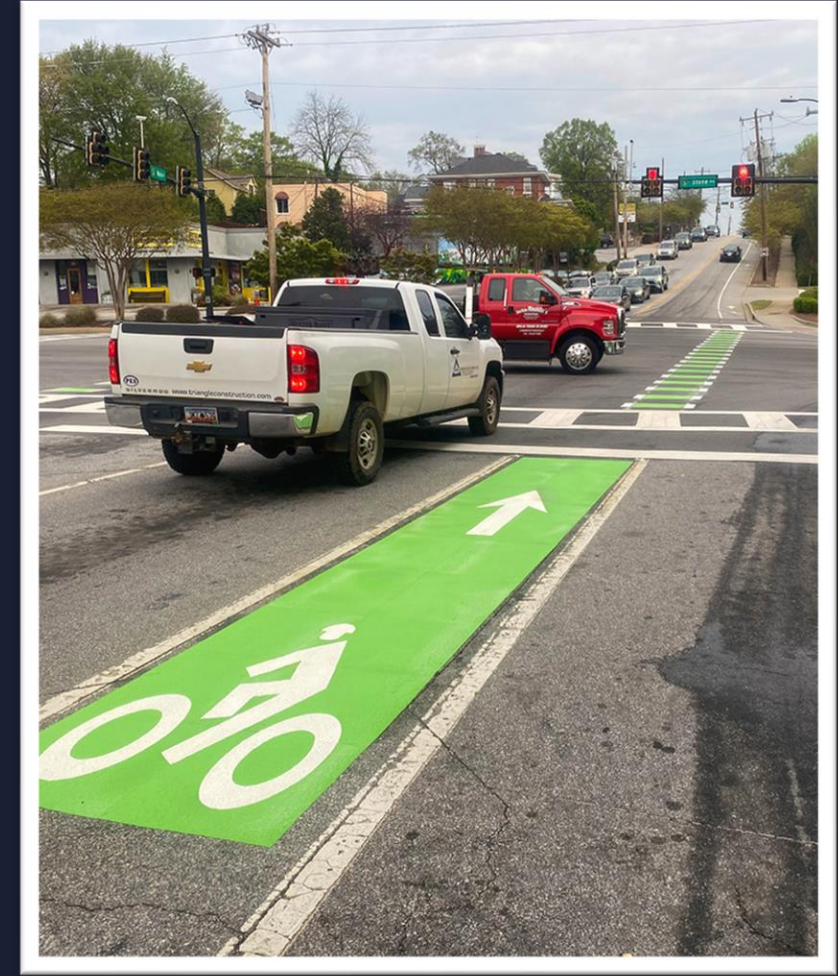
Traffic Engineering & Operations responsibilities:

- Safety/Studies
- Traffic Operations
- Signal/ITS/TMC
- Project Management
- Traffic Calming

The City maintains **206 signals**

- 15 signals are owned by the city
- 191 signals are owned by SCDOT
- 47 signals are mast arms owned by Duke

The City maintains approximately **10,000 signs** and installs pavement markings, such as stop bars and crosswalks, on neighborhood streets.



Overview



The average annual operating budget for signal maintenance and supplies is \$48,500.

- An additional \$40,000 was allocated for radar speed limit signs in FY 22, 23 & 24
- SCDOT reimburses approx. \$345,200 annually

18 employees dedicated to traffic management

- 3 engineers
- 1 engineering tech
- 1 traffic control supervisor
- 9 traffic control techs
- 3 signal system techs
- 1 administrative assistant



Investment in Traffic Management

Total Investment: \$18.7 million

- City: \$12 million
- SCDOT: \$6.7 million

• SCDOT Investments	\$3.59M	Upgrades, fiber, radio, and other equipment
• SCDOT SMA Reimbursements	\$3.1M	Signal maintenance & equipment upgrades
• City Signal Maintenance & Equipment	\$381k	Annual Operating Budget
• City Traffic Project Investments	\$392k	Viola TIF & Smart School Zones
• City Mast Arm Upgrades	\$2.46M	Utility undergrounding & SCDOT upgrade funding
• City NIB Investments	\$8.0M	Significant ITS project investments
• FY 24 Budget	\$814k	Traffic Management Center & 1 New FTE



Impact of Neighborhood Investment Bond

	Existing Facilities	NIB Construction	Total Need	Remaining Build-out	Cost to Build-out
Uninterruptible Power Supply	10	200	as needed	n/a	n/a
Travel Time Monitoring	14	25	131	92	\$460,000
Video Detection	50	28	206	128	\$2,560,000
Video Monitoring	11	39	90	40	\$200,000
Pre-emption	0	206	as needed	n/a	n/a

Other Key Investments

- **School Zones** - Ai Glance Smart School Zones were installed at 16 schools
- **Radar Speed Limit Signs** - 50 radar speed limit signs have been installed
- **Internally Illuminated Signs** - IISNSs are installed at 24 intersections throughout the city; 4 locations planned
- **RRFB Signs** - RRFBs have been installed at 1 intersection, with 2 planned
- **PHB Signals** - 1 PHB has been installed, with 2 additional locations planned
- **Traffic Count Stations** - IFB for count stations will be advertised in FY 24



ITS Master Plan – Process and Partnerships

Stakeholders

- City of Greenville, SCDOT, GPATS, Greenville County

Workshop – June 1, 2022

- Stakeholders identified their needs for improved traffic management

Meeting - June 28, 2022

- Coordination with partner agencies

Workshop - August 8, 2022

- Finalize consensus of ITS vision

Completed by Mead & Hunt – January 2023



ITS Master Plan - Summary

Objectives

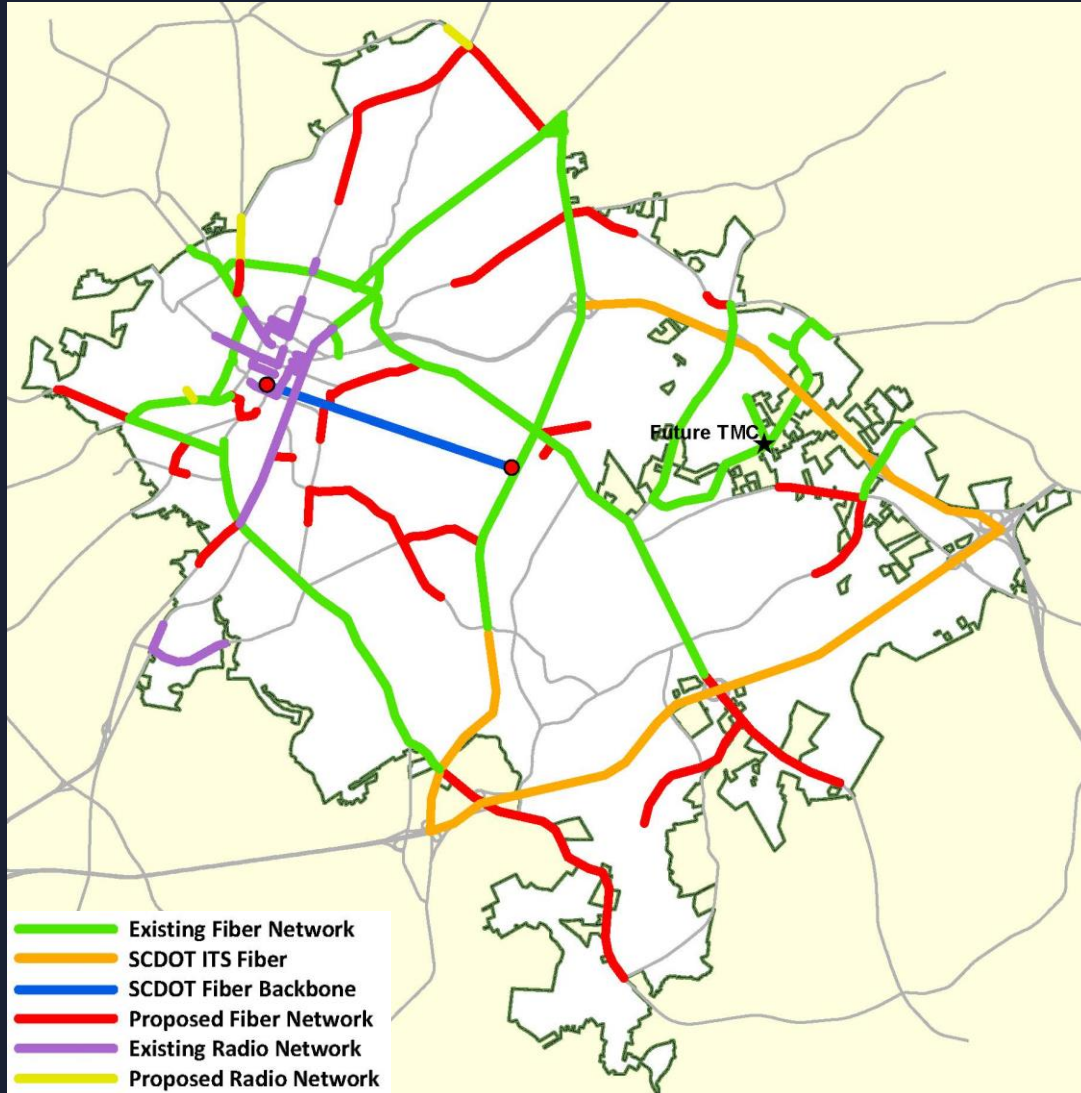
- Reduce fatalities & injuries and improve safety
- Reduce congestion and increase accessibility & mobility
- Promote efficient system management
- Enhance integration & connectivity of the transportation system
- Support travel & tourism and the economic vitality of the area

ITS Master Plan - Summary

Recommendations

- Telecommunications
- Signal Operations and Maintenance
- Traffic Monitoring
- Field Infrastructure
- Emerging Technologies
- Transportation Management

Recommendation: Telecommunications



End of:	2014	2019	2022	2023	Future
Fiber	9.5 mi	25.6 mi	31.6 mi	37.1 mi	53.6 mi
Signals	42	64	90	152	206
% Total	21%	32%	44%	75%	100%
Radio	0	0	13	43	44
% Radio	0%	0%	14%	28%	22%
% Fiber	100%	100%	86%	72%	76%

- Signal Communications
 - 5 signals (2%) will be standalone cellular
 - SCDOT estimates ~16.5 miles of fiber remain for 100% connectivity
 - DOT is presenting its plan for the Carbon Reduction component of IJA to the Commission in September 2023
 - Fiber funding statewide TBD

Recommendation: Signal Operation and Maintenance



Video Detection

- Install camera detection equipment on high-priority corridors
- Reduces impact of paving operations on vehicle detection using cameras
- Increased detection will facilitate the deployment of Automated Traffic Signal Performance Measures (ATSPM)
 - Signal operations can be automatically analyzed and improved



Recommendation: Traffic Monitoring

Video Monitoring Cameras

- To be installed on high-priority corridors
- Using PTZ functionality, TMC operators can verify signal operations before deploying field crews
- Allows for remote confirmation of incidents to better prepare responders
- Camera feeds can be used to inform the public of current traffic conditions



Recommendation: Traffic Monitoring

Travel Time Monitoring

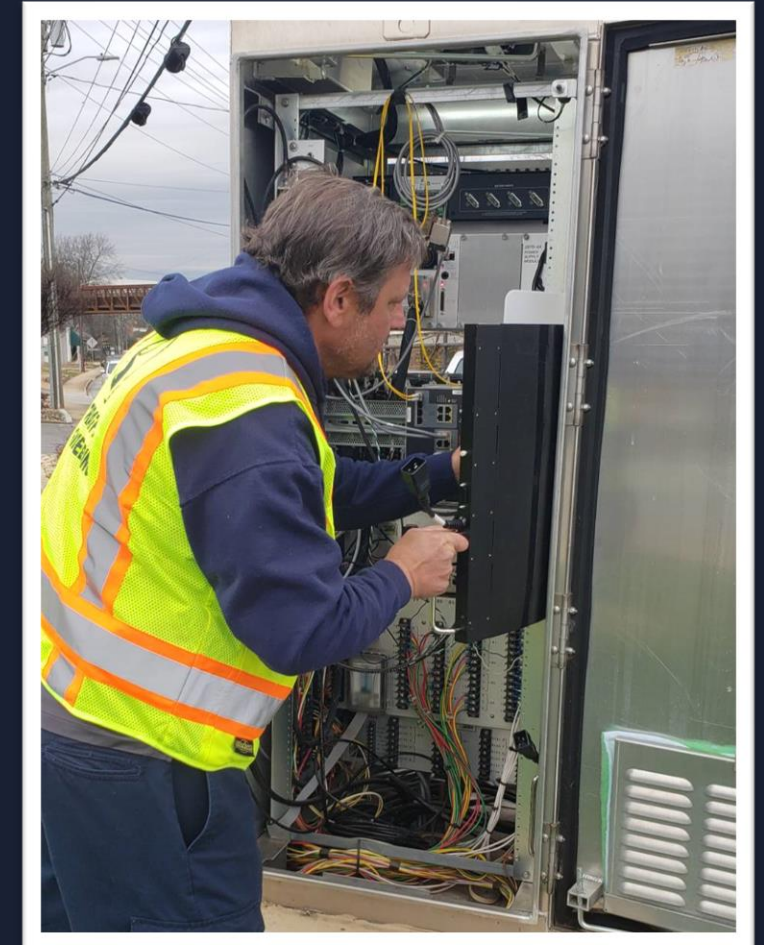
- Allows traffic engineers to identify areas of congestion in order to analyze and modify signal timings to improve vehicle flow
- Improved arterial operations will alleviate cut-through traffic in residential areas

Emergency/Transit Vehicle Preemption

- Pilot a project to integrate AI Glance equipment into SCDOT's fiber network and ATMS.now
- Create and institute an EVP policy
- Develop SOPs to guide the implementation and execution of EVP and TSP

Recommendation: Field Infrastructure

- Uninterruptible Power Supply
 - UPS systems allow for up to 3 hours of battery power in the event of an outage
 - Use communication technology to notify staff when an intersection is on UPS power
 - Signal operations are maintained, freeing up police resources
 - Unit fits in existing cabinet, reducing the footprint of the equipment
 - 120 (58%) intersections currently have UPS installed



Recommendation: Emerging Technologies

Near-Term Technology Implementation (Up to 2 years)

- Connected Signal System
- Hardware & Software Upgrades
- Cybersecurity
- Crowdsourcing

Mid-Term Technology Implementation (2 - 5 years)

- Adaptive Signal Control
- Emergency vehicle preemption
- Transit signal priority

Long-Term Technology Implementation (5 - 10 years)

- Electric Vehicle Charging Stations
- Smart City Technology



Recommendation: Transportation Management

Traffic Management Center located in 204 Halton Road

- Allows remote monitoring or real-time traffic conditions
- TMC Operators will communicate traffic incidents and congestion to City Communications Department
 - Social Media
 - Text Alerts
 - Website Updates
- Centralized control of all ITS devices citywide, resulting in more efficient arterial operations
- Smarter use of existing roadway network, reducing costs for capacity expansion
- Fewer vehicle emissions = cleaner air



Benefits to our Neighborhoods

- Improved Public Communications – Easy access via website to real-time traffic conditions, advisories & notifications to help make informed travel decisions
- Traffic Management – Congestion management and improved level of service will keep traffic on the primary routes and reduce cut-through traffic
- System Efficiency & Reliability – Optimize performance and signal operations
- Vision Zero Initiative – Enhanced safety for bike, pedestrians and transit
- Emergency Vehicle Preemption – Improved response times



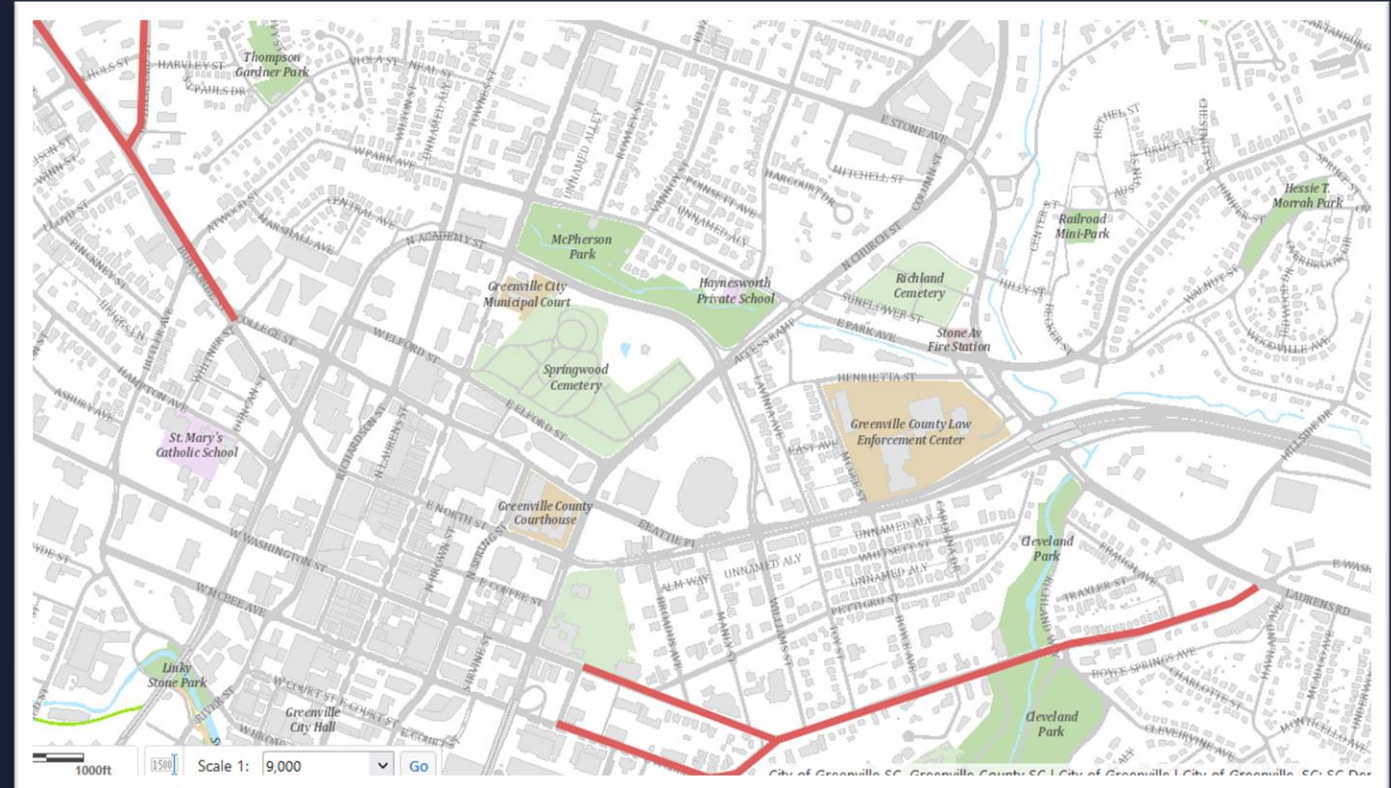
Reducing Congestion in Central Business District

Academy St. & Pete Hollis Blvd.

- Complete radio communications for Academy By-Pass Project
- Complete Cultural Corridor project to encourage motorists to use Academy St.
- Prioritize westbound traffic flow leaving Academy St. towards Pete Hollis Blvd. and Rutherford St.

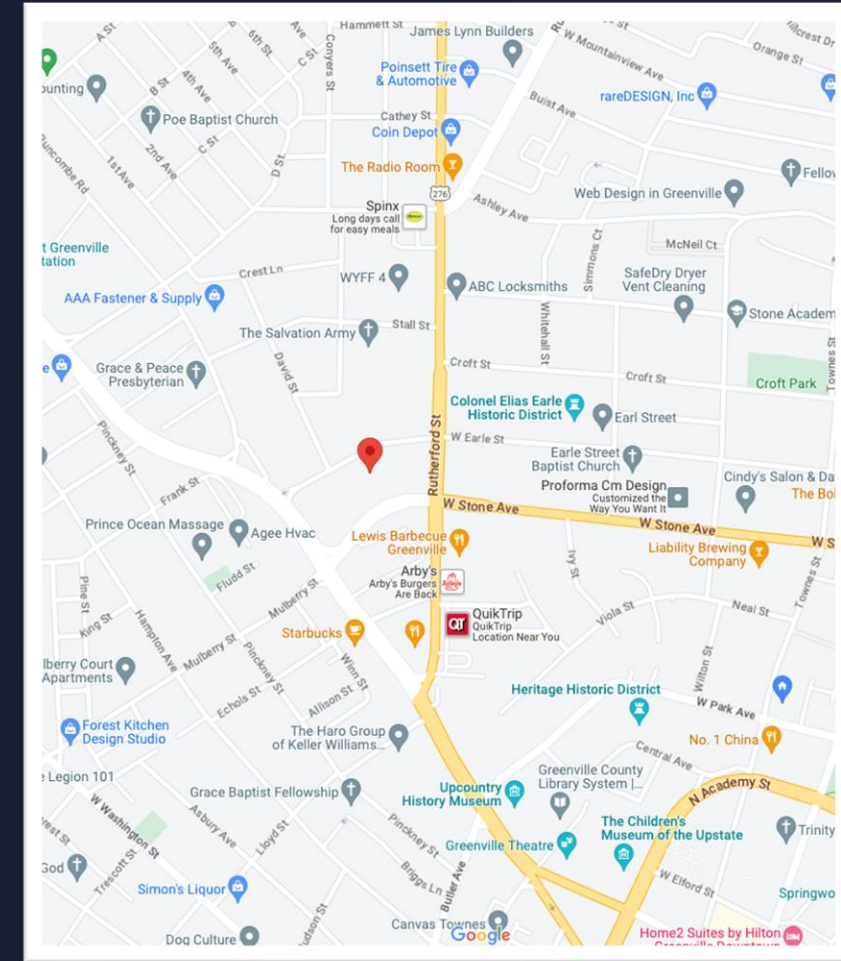
Washington St.

- Prioritize eastbound Washington St. traffic flow through coordinated signal timings
- Analyze Washington St./McBee Ave. intersection to improve roadway geometry
- Adjust signal timing at Cleveirvine St. to optimize left-turn operations



Improving Safety Along Stone Avenue

- Corridor study currently underway by HDR, Inc.
- Use origin-destination data to determine where the majority of motorists are traveling
- Evaluate R/W acquisition at Stone Ave. and Rutherford St. to install a channelized westbound right-turn lane
- Coordinate with SCDOT's roadway safety audit project to study alternate intersection treatments
- Perform feasibility study for I-385/Stone Avenue Interchange improvements



Improvements on Augusta Street

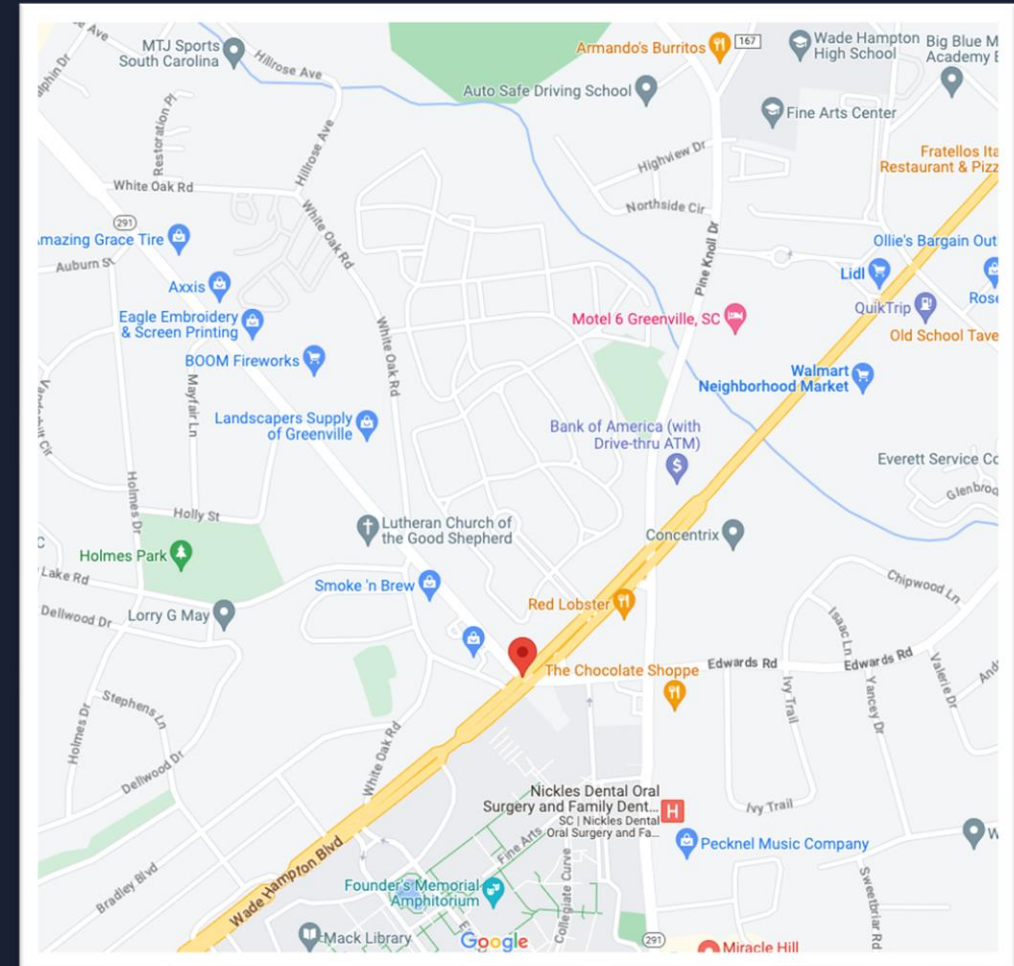
- Implement signal modifications at Augusta/Mauldin
- Evaluate options to install exclusive right-turn lane onto northbound Church St.
- Implement access management in Phase II of Augusta St. road diet project to improve traffic flow towards Mauldin Rd.
- Optimize signal timings to improve eastbound signal progression during PM rush hour



Plans for North Pleasantburg Drive



- Optimize signal operations at the Pleasantburg/Wade Hampton/Pine Knoll triangle to prioritize northbound Pleasantburg Dr. traffic
- Perform feasibility study to evaluate alternatives for intersection improvements at North Pleasantburg/Wade Hampton Blvd
- Analyze westbound left-turn from E. North St. to Pleasantburg Dr. to improve traffic flow





Questions