CHAPTER 3
Safety and Security Elements

Introduction

MAP-21, the most recently approved transportation authorization, emphasizes safety with directed funding for infrastructure safety, improving connections among modal safety programs, and creating an agenda to significantly reduce highway fatalities.

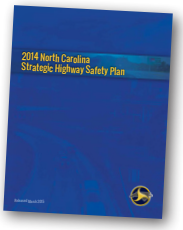
Safety

Safety is a primary concern of transportation system management, maintenance, and system expansion. Each State is required to identify key safety problems, establish relative severity and adopt strategic and performance-based goals to maximize safety. In addition, each State is required to develop a Strategic Highway Safety Plan (SHSP) which lays out strategies to address identified key safety problems. As projects are developed elements from the SHSP will be incorporated.

(*) Provisions that are included or supported in the MTP

The key areas of emphasis are:

Drivers



- Demographic Considerations*
- Driving While Impaired
- Emerging Issues and Data*
- Intersection Safety*
- Keeping Drivers Alert
- Lane Departure*
- Occupant Protection/Motorcycles
- Pedestrians and Bicyclists*
- Speed*

Demographic Considerations

- Focus on reduction of accidents involving older and younger drivers
  - Use of roadway design practices and traffic control devices beneficial to older drivers and pedestrians
  - Develop programs to help older drivers decide between driving or transportation alternatives
  - Improve driver education courses
  - Investigate programs, policies, and strategies in the US to reduce teen crashes
  - Engage and inform a diverse population on traffic safety
  - Improve electronic crash data collection and dissemination
  - Support lifelong driver education

Driving While Impaired

- Reduce number of fatalities and serious injuries associated with DWIs
  - Increase the DWI enforcement efforts
  - Redefine responsibilities of various State government offices in DWI license revocations
  - Expand the use of ignition interlock devices
  - Improve the process for how DWI cases are adjudicated and the sanctions are levied against offenders

Emerging Issues and Data

- Improve the State's data and data systems that support the SHSP
- Use improved data to identify and address safety concerns and additional emphasis areas that emerge.
  - Improve quality and usefulness of crash data
  - Improve completeness and accuracy of roadway inventory data
  - Increase the State's ability to use existing traffic safety data
  - Accommodate new issues that emerge in the highway safety field.

Intersection Safety

- Reduce intersection fatalities and serious injuries
  - Improve intersection visibility with enhanced signs and pavement markings
  - Traffic control enhancements
  - Use of proven safety countermeasures at signalized intersections
  - Support and enhance driver education and awareness programs

Keeping Drivers Alert

- Reduce fatalities and serious injuries due to distractions and drowsiness
  - Institute a ban on handheld cell phone use while driving
  - Promote the ban on texting while driving by increasing the visibility of law enforcement and the frequency of high-visibility enforcement campaigns
  - Investigate new and emerging technologies to prevent distracted driving
  - Continue implementing shoulder rumble strips and investigate additional countermeasures and programs that alert drowsy or distracted drivers
  - Improve the quality of data on driver distraction to demonstrate the extent of the

problem and need for solutions.

Lane Departure

- Reduce fatalities and serious injuries due to lane departure-related crashes
  - Keep vehicles on the roadway
  - Reduce crash potential when vehicles leave roadway
  - Reduce the severity of crashes when vehicles leave roadway
  - Support and enhance driver education and awareness

Occupant Protection/Motorcycles

- Reduce fatalities and serious injuries related to occupant protection and motorcycles
  - Improve seatbelt enforcement strategies
  - Identify high risk demographic group(s) to inform specific safety countermeasures and specific restraint use messages
  - Continue to support and promote NC's motorcycle helmet law
  - Identify high risk demographic group(s) to inform specific motorcycle safety countermeasures

Bicycle and Pedestrian

- Reduce pedestrian and bicyclist fatalities and serious injuries
  - Continue to develop safety training and education programs
  - Develop and implement plans, policies and resources
  - Continue to develop communication and leadership support for bicycle and pedestrian safety
  - Build on strong data and evaluation programs

Speed

- Reduce speed related fatalities and serious injuries
  - Set speed limits according to roadway type, area type and current conditions
  - Explore new avenue for enforcement and penalties
  - Investigate and address problem locations
  - Engage stakeholders to create a culture of safe speed

The Goal

The goal of the NC Strategic Highway Safety Plan is to reduce the number of fatalities and serious injuries from highway related accidents. North Carolina has set a goal to reduce fatalities and serious injuries over the next 30 years. The graph below from 2014 Strategic Highway Safety Plan shows a decline in fatalities and serious injuries relative to the number of accidents in 2013.

Goal Year	Annual Lives Saved*	Serious Injuries Prevented*
2015	75	125
2020	260	435
2025	445	745
2030	630	1,055

**Relative to 2013*

FIGURE 3-1
NC Reduction Goals

Bicycle and Pedestrian

The MPO has developed and updated a plan to address the infrastructure and safety needs for bicyclists and pedestrians through the 2006 Greensboro Urban Area Bicycle, Pedestrian & Greenway Master Plan (BiPed). This comprehensive plan developed in 2006 and updated in 2015 analyzed the area's needs and included recommendations and action steps to enhance the safety of bicyclists and pedestrians. Actions taken to date include prioritized sidewalk project implementation, a new bike map, bike routes, bike and sidewalk improvements included in local and state roadway projects, detailed recording and analysis of bicycle and pedestrian accidents, and local government/MPO participation in bicycle and pedestrian safety education and outreach activities.

City of Greensboro

The Greensboro Congestion Management Process (CMP) examines the current and future planned roadway network, identifies causes of congestion, and explores options for reducing congestion. In addition to examining capacity constraints, methodologies for improving system efficiency and providing modal choices are identified. Safety is a consideration in the CMP, partly because roadway incidents are a significant source of traffic congestion. The CMP and MTP recommend continued use of incident management patrols, coordination with law enforcement agencies and implementation of safety and mobility projects by the City and the NCDOT to respond to safety trends and issues. Additional, City and NCDOT strategies aimed at increasing the efficiency of the transportation system without adding additional capacity to the roadways include:

- Expansion of Transit Operations;
- Advance Traveler Information System (ATIS) and Variable Message Signs (VMS); and
- The new Greensboro Signal System (project

U-4711).

Other than expanded transit systems and park and ride lots, GUAMPO has not implemented any other transportation demand management strategies (TDM) to reduce the number of single occupant vehicles on the roads. However, PART, with state funding, has expanded its Transportation Demand Management Program. By taking cars off the road, this program contributes to enhanced roadway safety for everyone.

Security

Highway

The Strategic Highway Network (STRAHNET) system of public highways provides access, continuity, and emergency transportation of military personnel and equipment. The 62,882-mile system, designated by the Federal Highway Administration in partnership with Department of Defense, comprises about 47,574 miles of Interstate and defense highways and 15,308 miles of other highways. STRAHNET is complemented by 2,000 miles of connectors—additional highway routes linking more than 200 military installations and ports to the network. Most large military convoys use the Strategic Highway Network. STRAHNET roadways are designated for use in times of rapid mobilization and deployment of armed forces. In the Greensboro Urban Area there are three STRAHNET routes and no connectors. The STRAHNET routes are I-40, I-85 and I-73 (see **Map 3-1**).

City of Greensboro

The City of Greensboro restricts access to design drawing plans, aerial photography, and similar documentation of public infrastructure to only the individuals and organizations that require this information, in the conduct of their business with the City and upon demonstration of such need. Public infrastructure includes the water and sanitary sewer system, storm water systems, public buildings, roadways and roadway bridges, telecommunication and data communication networks, and public security plans. NCDOT observes a similar infrastructure data policy.

Transit

The Mobility Greensboro Public Transportation Master Plan, prepared for GTA in June 2004, reviewed the findings of previous studies, recent guidance from APTA, FTA and others to develop a series of recommendations to maximize transit security in Greensboro:

1. Review City of Greensboro and GTA and its contractor's security plans to ensure compatibility and clarification regarding responsibility and procedures in the event of an incident. ***Completed***
2. Review security measures against checklists developed by FTA and APTA. ***Completed***
3. Contact the Greensboro Police Department to request random patrols of GTA headquarters, the Depot, and "hot spots" on Friday and Saturday evenings. ***Implemented***
4. Contact the Greensboro Fire Department and Guilford County EMS regarding security and emergency preparedness plans, and ensure that all are familiar with bus basics and are aware of the Depot's layout. ***Completed***
5. Establish an ongoing means of communication with Greensboro's Fire and Police Departments and the County EMS to ensure sharing of crime and security information among all concerned. ***Implemented***
6. Defined GTA role in non-transit emergencies. ***Completed***
7. Train all personnel in emergency response procedures and protocols, include annual refresher training. ***Implemented***
8. Conduct at least one emergency exercise annually. ***Incomplete***
9. Convert full time cameras from recorded mode to live feeds to security personnel. ***Complete for GTA Facilities***
10. Install bike lockers at the Depot to meet the moderate to long-term needs of transit users. ***Future Enhancement***
11. Continue coordination with GDOT regarding additional street lighting at bus stops. ***On-going Enhancement***

Other GTA security measures completed/implemented:

- Cameras on buses (accident activated) prior to FY 09.
- Newer buses since FY 09 equipped with full time cameras.
- Newer buses since FY 09 equipped with Mobile Data Terminals.
- Security cameras installed at GTA offices and Depot. The Depot houses security personnel as well as a police substation.
- GTA offices secured with 24 Hour guards and card

swipe locks.

Secure Bicycle Parking

The Greensboro BiPed Plan, under section 4.3.6 Ancillary Supportive Bicycle Facilities, identifies the need to establish safe and secure bike parking. Safe and secure bicycle parking is important not only to reduce theft and vandalism, but also to reduce the likelihood that loose bicycles or insecure bicycle parking could become a factor in terrorism or other criminal acts. Since the establishment of the BiPed plan, bike racks have been installed in the Central Business District, in parks, at several of the nearby colleges/universities, and in the underground parking area of Greensboro's Melvin Municipal Office Building for employees. GTA has been exploring ways to provide secured bike lockers to meet the needs of transit users and is encouraged to install bike lockers. Also the Greensboro Development Ordinance has been revised and offers developers the ability to reduce the number of vehicular parking spaces in exchange for secured bike parking. It is recommended that the City continue to implement bicycle parking and encourage its installation by developers, business owners, schools, and other institutions.

Disaster Preparedness

Guilford County Office of Emergency Management

The Guilford County Office of Emergency Management develops and maintains disaster plans for the area. It also works to prepare residents, businesses, industries, and governmental agencies for all types of hazards and emergencies.

Disaster plans for the area are developed in coordination with transportation, law enforcement, and operational agencies. These plans address issues such as evacuation, containment, and first responder actions, and are grouped under the heading of the Guilford County Multi-Jurisdictional Hazard Mitigation Plan.

Publicity steps are targeted to residents, business, and various agencies and include information about evacuation but also preparation. Individuals and families should be prepared for self-sufficiency for at least three days including providing for one's own shelter, first aid, food, water, and sanitation. Also, it is estimated that a company can lose up to 2% of its total annual revenue per week due to hazardous weather situations. Business and industry should take every opportunity to make sure that the company is prepared with Business Continuity and Emergency Plans as well as ensuring their workers are prepared themselves.

Guilford Metro 9-1-1

Guilford Metro 9-1-1 was established in 2004 to serve the community and local government agencies with effective communications services and as a facilitator of communications for Public Safety agencies in Guilford County. To be effective, Guilford Metro 9-1-1 utilizes all available resources to support the missions of subscriber agencies. Operations and Safety Engineers from the City and the NCDOT coordinate with law enforcement agencies and Metro 9-1-1 to support effective functioning of the 911 system.

Freight Safety and Security

Increasing safety and security are two important factors the MPOs must consider when evaluating and developing future recommendations. Two goals identified by the Triad MPOs regarding safety and security specifically for freight include: 1) addressing roadway operational issues on routes receiving significant freight movement, including roadway geometry, intersection configurations and capacity; and 2) working closely with the NCDOT Rail Division on planning studies and project development activities for rail safety projects, including rail grade separations at targeted locations.

However, multiple areas should be considered when studying safety and security issues in the freight movement sector. These range from standard practices of governing the speed that a heavyweight vehicle travels, the weight of the vehicle load, the proper operation of safety devices such as brakes, signaling devices, etc., as well as the routes that these vehicles take to and from locations. The North Carolina's weigh stations and the NC Highway Patrol's Motor Carrier Enforcement teams work to ensure that the trucks safely operate on our highways. In addition, the federally mandated Compliance, Safety and Accountability initiative (CSA) is working towards the removal of unsafe trucks from the road, truck drivers that have a history of unsafe driving, and closing down trucking operations with a history of non-compliance or high accident histories.

These measures demonstrate that the state and national governments understand safe freight transportation is an important piece of economic viability. However, the safety and security of our regions businesses and citizens should not be left solely in the hands of government agencies. We need to maintain a proactive stance on any issues concerning freight movement and safety and work with the agencies and industries that are impacted by this economic sector.

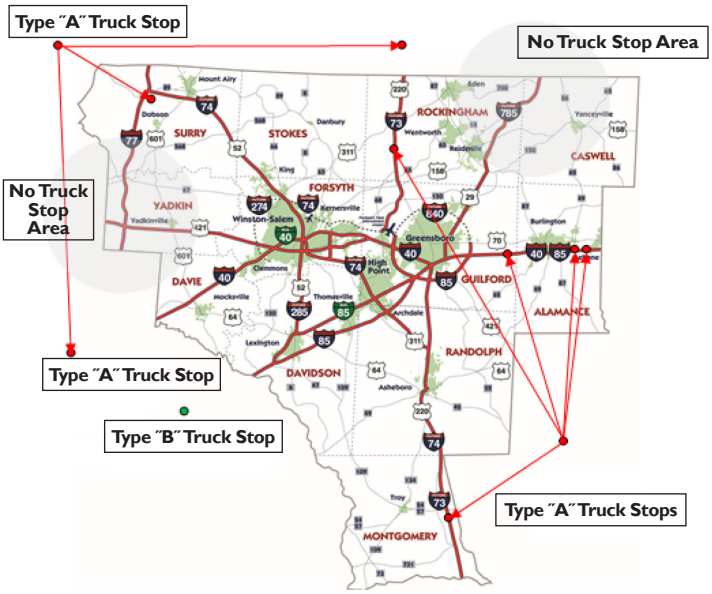


FIGURE 3-2
Major Piedmont Triad Truck Stops

The consistent availability of truck stops on major highways leading into and out of the study area requires additional attention. The map below (Figure 3-2), shows nine major truck stops leading into the Piedmont Triad. All but one are a type "A" facilities, considered as a full service "port of call" for the trucking industry. The remaining truck stop is a type "B" stop which provides most, but not all, services. However, there are no types "A" or "B" facilities on routes leading into the region from the north on US 29 (Future I-785) nor on US 421 entering the Triad from the west. The primary significance here is as Virginia develops the Berry Hill Mega Park at the north east corner of Rockingham County, there will not be a good opportunity for truckers to stop, refuel and rest before entering the region. Because truck stops are always provided by the private sector, adding one depends on the amount of freight traffic and demand from the trucking industry. As such, we need to support the existing facilities and ensure the owners of these facilities understand the importance we place in them for the greater good of the freight movement to and through the area.

Although there are many additional fueling facilities in and leading into the region, these additional facilities are not locations where a tired truck driver may stop, fuel, eat, shower and sleep before entering our region. It is best for truck drivers to have stopped and be fully rested "before" entering the region than being in a rush to get to a full service truck stop with the required facilities. This is especially important as our region copes with the expected growth. The increased freight traffic from secured and planned economic development projects will only further increase current traffic congestion. In addition, as the region's major interstates are part of a major traffic corridor, our future congestion challenges will be compacted by the increased economic development of other regions and states.

A "Share the Road Campaign" would major impact to the safety and security of freight movement safety and security. Similar to the NC State bicycle program, the campaign would alert the citizens of our region to the growing importance of the freight movement industry and how to operate a motor vehicle safely while sharing the road with heavy freight vehicles. The industry would happily receive a safety campaign like this because it shows that local leaders understand the importance of the industry and value the economic contribution of moving freight

Safety and security in transportation and logistics includes international cargo movements as well as domestic cargo movement. Since the capture area of the Metropolitan Transportation Plan(s) in the nation's core freight movement corridor, it is important to security as it applies to cargoes moving through the region.

The supply chain, and its freight movement component, are owned by a variety of private sector interests and regulated by multiple international, national, state, and local government jurisdictions. As such, those involved in local and regional transportation planning should become as familiar with the freight transportation industries efforts as possible. The following comments are contained in the Strategy to Enhance International Supply Chain Security– published in July 2007:

Supply Chain Node: One of 13 standard security control points that provide the foundation to assess and model intermodal container threats, vulnerabilities, and security counter measure and protection mechanisms. The better we understand the threat potential, the more prepared we become and the better we are able to plan our freight movement strategies around them.

The 13 standard nodes are:

1. Supplier
2. Factory/Packaging
3. Empty container storage/dray
4. Drayage[1] of cargo to consolidator (if stuffing is not at factory)
5. Container stuffing/sealing (consolidation)
6. Container storage (foreign)
7. Drayage to terminal (from factory or consolidator)
8. Foreign terminal
9. Ocean commerce
10. United States terminal
11. Inland drayage or rail transfer/transport (United States)
12. Deconsolidation (United States)
13. Business processes/information transmission, in particular, the process for booking and transferring containers

Each of the control points faces different security threats, a one size fits all strategy is not appropriate.

State and Local Government

State and local governments under the National Incident Management System (NIMS) principles are responsible for incident management response and recovery efforts immediately after an incident. To manage their responsibilities, many of these government agencies currently have pre-established emergency response plans in place. However, recovery plans, especially for maritime infrastructure recovery and restoration of cargo flow, are not as prevalent. Many States engage individual task force groups to manage a myriad of disaster scenarios and response situations.

Due to the fact that the responsibilities, capabilities and organizational structures vary from agency to agency, it is difficult to establish specific functional responsibilities that each may be able to provide for recovery from a transportation disruption. However, to coordinate the Federal, State, and local government relationships, the following generic list of functional responsibilities for recovery that State, local, and tribal governmental agencies may perform was developed for the Maritime Infrastructure Recovery Plan, and is applicable for those portions of the international cargo supply chain falling within State and local government jurisdictions.

State Governments

- Coordinate State resources to address recovery;
- Make, amend, and rescind orders and regulations under certain emergency conditions in support of recovery efforts as appropriate;
- Communicate to the public recovery aspects of an emergency within State jurisdiction;
- Assist people, businesses, and organizations of the State cope with the consequences of recovery;
- Encourage participation in mutual aid and implement authorities for the State to enter into mutual aid agreements with other States, tribes, and territories to facilitate resource-sharing;
- Coordinate requests for federal assistance when it becomes clear that State or tribal capabilities will be insufficient or have been exceeded or exhausted;
- Engage in voluntary exchange of information with other Federal, State, local and tribal government agencies;
- Participate in various advisory committees and task forces regarding recovery management;
- Assist in the assessment of the economic impact created by a security incident;
- Assist in the identification of recovery resources and assets; and
- Provide resources as requested and as appropriate.

Local Governments

- Perform emergency first-responder activities as appropriate;

[1]Drayage is the transport of goods over a short distance, often as part of a longer overall move and is typically completed in a single work shift. Some research defines it specifically as "a truck pickup from or delivery to a seaport, border point, inland port, or intermodal terminal with both the trip origin and destination in the same urban area.

- Coordinate local resources to address recovery;
- Suspend local laws and ordinances, (dependent upon State and local law), under certain emergency conditions in support of recovery efforts as appropriate;
- Communicate to the public any type of declared emergency within local jurisdiction;
- Assist people, businesses, and organizations in the local area to cope with the consequences of any type of declared emergency and its recovery considerations;
- Negotiate and enter into mutual aid agreements with other jurisdictions to facilitate resource-sharing;
- Request State and, if necessary, Federal assistance through the governor of the State when the jurisdiction's capabilities have been exceeded or exhausted, or otherwise as appropriate;
- Engage in voluntary exchange of information with other Federal, State, local and tribal government agencies;
- Participate in various advisory committees and task forces regarding recovery management;
- Assist in the assessment of the economic impact created by a security incident;
- Assist in the identification of recovery resources and assets; and
- Provide resources as requested and as appropriate..

Private Sector

As the owners and operators of the vast majority of the infrastructure, assets, commodities, etc., the private sector plays the most important role in ensuring the overall security of the international cargo supply chain. During normal operations, while government entities legislate, regulate, validate and inspect, the private sector must operate the supply chain safely, securely, efficiently, and at a profit.

As a component of their business, private sector entities have responsibility for planning, operations, and advisory aspects relating to recovery of cargo movement and trade flow, and the restoration of passenger flow.

Following an incident that triggers implementation of this strategy, the Federal government will facilitate the restoration of commerce and recovery of the marine transportation in concert with private sector contingency planning.

To assist the private sector in preparation for this role, the DHS advocates the following:

- Private sector owners and operators of vessels and facilities subject to United States government regulation are encouraged to expand their business continuity plans to include recovery operations as part of required planning pursuant to federal regulations, if such planning has not already been completed.;
- Owners and operators of vessels and facilities not subject to United States government regulation are encouraged to establish recovery operations and business continuity plans, in coordination with appropriate trade partners;
- All private sector recovery operations plans should include (1) a plan for evacuation, (2) adequate communications capabilities, and (3) a plan for business continuity;
- All private sector recovery operations plans should consider the existing American National Standard on Disaster/Emergency Management and Business Continuity Programs (NFPA 1600), which contains minimum criteria for disaster management and guidance in the development of a program for effective disaster preparedness response and recovery.

To assist in the development of recovery operations plans and other contingency planning, Business Roundtable guidance documents are recommended for private sector continuity of operations plan development.

It is anticipated that the private sector will implement business continuity plans/recovery operations plans

on their own accord, based on incident information provided by the Federal government. Information that may influence the decision to implement contingency plans and divert or redirect cargo and/or the conveyances include: national priorities; military requirements; MTS restrictions; and the expected duration of those restrictions.

To facilitate restoration of the flow of commerce, the following list of functional responsibilities that the private sector may perform was developed as part of the Maritime Infrastructure Recovery Plan, and is applicable within the overall cargo supply chain:

- Engage in voluntary exchange of information about recovery operations plans with other potentially affected private sector entities and the Federal government to mitigate potential congestion at non-incident site ports following the diversion of vessel traffic;
- Participate in various maritime industry stakeholder professional organizations and advisory committees such as the AMSCs regarding recovery management and contingency planning;
- Assist in the assessment of economic impact;
- Assist in the identification of recovery resources and assets;
- Provide resources to assist in recovery, as appropriate;
- When requested by the National Maritime Security Advisory Committee (NMSAC) during planning for recovery or the Sector Specific Agency (SSA) during actual recovery management operations, provide experts for advising on recovery management, especially regarding maritime salvage capability;
- Participate in pilot programs to test the effectiveness of the Federal government to communicate recovery activities to the private sector;
- Using existing information-sharing mechanisms such as the National Infrastructure Coordinating Center (NICC), AMSCs, Transportation Sector Coordinating Councils and Information Sharing and Analysis Centers (ISAC), communicate situational and operational information as well as physical asset capabilities for mitigation management (Strategy to Enhance International Supply Chain Security – July 2012).

The Local Government section and the Private Sector section are most important for this planning effort. In order to ensure and maintain a proper safety and security component within the region it is suggested that local government entities hold, at a minimum, annual meetings with jurisdictions and municipalities and private industry concerns operating in our area. The purpose of these meetings is to discuss and coordinate safety and security challenges and to better understand the responsibilities of all parties that would be involved. In addition, the discussion of a regional response team made up of joint members of this group would alleviate any confusion over jurisdiction and would create a strong team effort as it pertains to freight movement. Organizations that would be best prepared to coordinate meetings of this nature would be the regional MPO's. As they are already involved in day to day and long range regional planning efforts, an additional responsibility of this nature would make sense.

Recommendations

1. Continue and explore efforts to reduce the number of fatalities and to decrease the economic impact from highway related accidents
2. Continue to encourage City and NCDOT implementation of bicycle and pedestrian improvements, services, and programs;
3. Encourage local government and continue MPO participation in bicycle and pedestrian safety education and outreach activities;
4. Continue use of incident management patrols, coordination with law enforcement agencies, and implementation of safety and mobility projects by the City and the NCDOT to respond to safety trends and issues;
5. Address roadway operational issues on routes

receiving significant freight movement, including roadway geometry, intersection configurations and capacity;

6. Work closely with the NCDOT Rail Division on planning studies and project development activities for rail safety projects, including rail grade separations at targeted locations;
7. Encourage GTA to secure funding for live monitoring of full time cameras on all buses;
8. Encourage GTA to continue efforts to secure funding for AVL system;
9. Encourage GTA to continue contact with the Greensboro Fire Department and Guilford County EMS regarding security and emergency preparedness plans, and ensure that all are familiar with bus basics and are aware of the Depot's layout;
10. Encourage GTA to execute at least one emergency exercise annually;
11. Encourage GTA to provide bike lockers at the Depot;
12. Encourage the City to continue to implement bicycle parking and encourage its installation by developers, business owners, schools, and other institutions;
13. Encourage Transportation and Operational agencies continue to coordinate with the Guilford County Multi-Jurisdictional Hazard Mitigation Plan;
14. Encourage Transportation and Operational agencies to continue to work closely with Guilford Metro 9-1-1.

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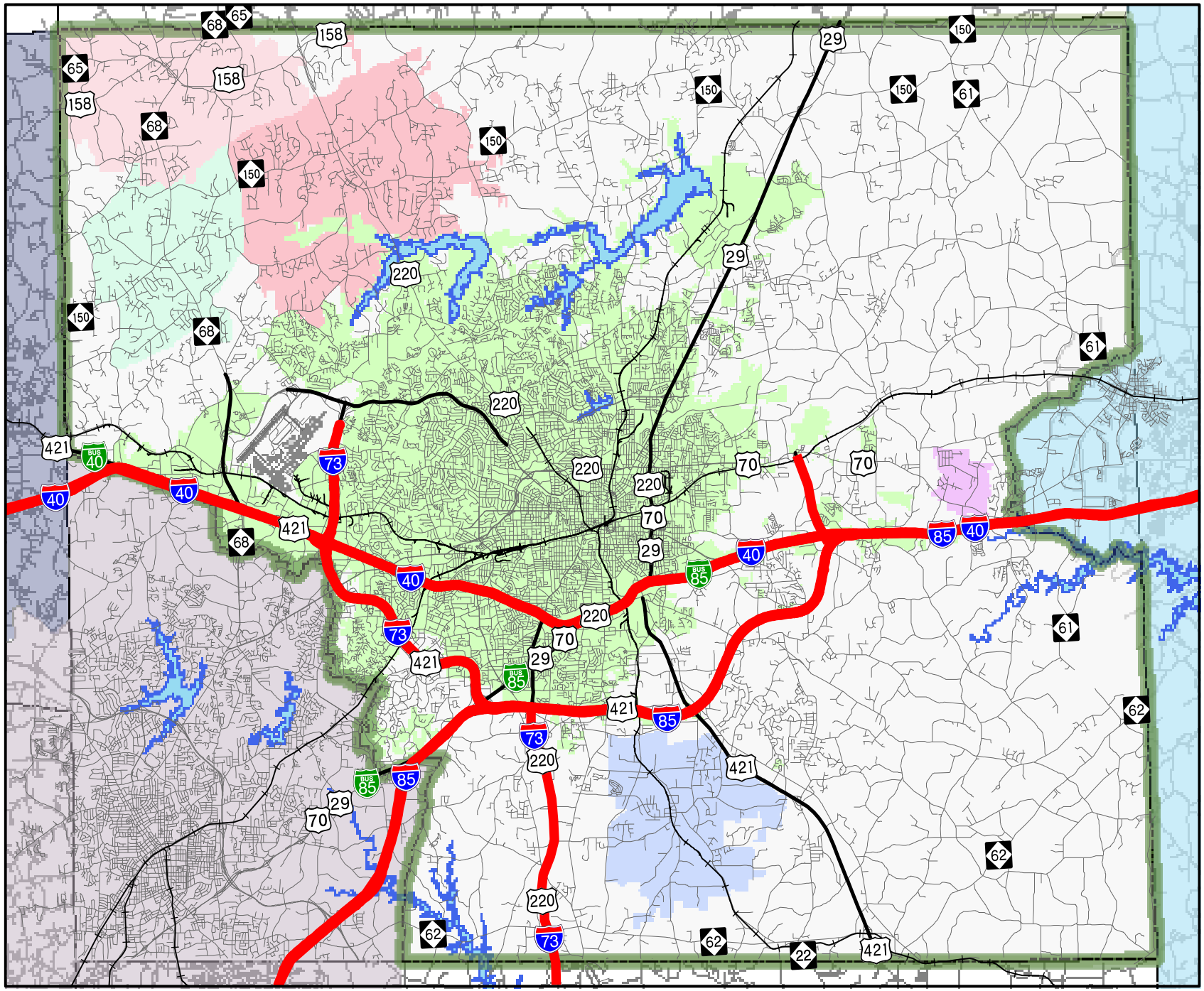

2040 METROPOLITAN TRANSPORTATION PLAN

Strategic Highway Network

STRAHNET

Legend

Strategic Highway

MPO Boundary

N
W
E
S

0 1 2 4 Miles

Map 3-1

greensboro urban area MPO
metropolitan planning organization

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