APPENDIX C

Congestion Management Process

The congestion management process (CMP)completed by the CRTPO is outlined in detail in Chapter 5 of this document. This process is designed to identify and address congestion within the CRTPO planning area by establishing a CMP network that is analyzed to identify congested corridors. These corridors are then assigned congestion mitigation strategies.

The purpose of Appendix C is to provide details to support the information presented in Chapter 5.

Within the CMP, the project team identified 42 corridors in the CRTPO planning area that experience frequent congestion. These corridors are listed in Table C-1 below.

Each congested corridor and fiscally constrained project was then assigned congestion management strategies. Representatives from the Technical Coordinating Committee (TCC) led the assignment of these strategies. A full list of all the strategies that were considered by these representatives can be found in Table C-2.

Each strategy offers unique benefits that should be considered for other areas as well. The list of corridors and projects as well as their assigned strategies can be found in Table C-3 and C-4 below.

Table C-1: Congested Corridors Table

#	Corridor	From	To	Jurisdiction	Length (Miles)	Max TTI	Max V/C
1	NC-160	I-485 NB Ramp	NC-49 (S Tryon St)	Charlotte/ Mecklenburg County	5.1	1.32	1.92
2	NC-49	York / Mecklenburg County Line	Billy Graham Pkwy	Charlotte/ Mecklenburg County	11.9	1.4	1.47
3	I-77	Sunset Rd	York / Mecklenburg County Line	Charlotte/ Mecklenburg County	16.2	3.72	1.67
4	Billy Graham Pkwy/ Woodlawn Rd	I-85 SB Ramp	South Blvd	Charlotte/ Mecklenburg County	6.1	2.36	2.51
5	US-21/NC-115	Old Wilkesboro Rd/S Chipley Ford Rd	I-77	Statesville/Troutman/ Mooresville/Iredell County	20.4	1.61	1.87
6	Old Mountain Rd	Old Miller Rd/ Sportsmans Dr	US-21	Troutman/Iredell County	9.8	1.69	1.41
7	Cornelius Rd/Mazeppa Rd	Perth Rd	Triplett Rd	Mooresville/Iredell County	8	--	1.99
8	NC-150	Iredell County Boundary	Brumley Rd	Mooresville/Iredell County	11.7	1.99	2.52
9	Williamson Rd	Raceway Dr	I-77	Mooresville/Iredell County	2.7	1.92	1.6
10	I-77	NC-150	I-485	Mooresville/Cornelius/ Huntersville/Iredell/ Mecklenburg County	16.6	2.85	2.05
11	NC-115	Connector Rd/ Mazeppa Rd	US-21/ Statesville Rd	Mooresville/Cornelius/ Huntersville/ Charlotte/Iredell/ Mecklenburg County	24	1.75	2.04
12	W Catawba Ave	Lincoln / Mecklenburg County Line	Smith Circle	Cornelius/ Huntersville/ Mecklenburg County	8.2	2.88	2.39
13	NC-73	W Catawba Ave	Concord / Mecklenburg County Line	Huntersville/ Mecklenburg County	7.9	2.15	1.77
14	US-21	Catawba Ave	Mount Holly Huntersville Rd	Cornelius/ Huntersville/ Mecklenburg County	6.1	1.63	1.81

Table C-1: Congested Corridors Table (Continued)

#	Corridor	From	To	Jurisdiction	Length (Miles)	Max TTI	Max V/C
15	NC-16/ Brookshire Blvd	Gaston / Mecklenburg County Line	I-85	Charlotte/ Mecklenburg County	8.2	5.19	6.8
16	I-85	Gaston / Mecklenburg County Line	W Mallard Creek Church Rd	Charlotte/ Mecklenburg County	18.9	4.2	1.97
17	US-29	Moores Chapel Loop	I-77	Charlotte/ Mecklenburg County	9.5	3.27	2.33
18	N Tryon St/W Sugar Creek Rd	W 12th St	I-85	Charlotte/ Mecklenburg County	5.5	1.9	1.85
19	I-277	I-77 (South of Uptown)	I-77 (North of Uptown)	Charlotte/ Mecklenburg County	5.1	2.83	1.62
20	US-74	I-277	Wesley Chapel Stouts Rd/ Sardis Church Rd	Stallings/Indian Trail/ Charlotte/Matthews/ Mecklenburg/Union County	16	5.19	1.88
21	NC-24/ Albemarle Rd	US-74/E Independence Blvd	Arlington Church Rd	Charlotte/ Mecklenburg County	9.7	2.81	2.1
22	I-485	I-77	Albermarle Rd	Pineville/Charlotte/ Matthews/ Mecklenburg County	29.2	3.54	1.87
23	I-485	Moores Chapel Rd	I-77	Charlotte/ Mecklenburg County	11.8	3.21	1.55
24	Waxhaw Marvin Rd/ NC 75	New Town Rd	Waxhaw Hwy	Waxhaw/Marvin/ Union County	7.7	--	1.73
25	Cuthbertson Rd	Providence Rd S	New Town Rd	Waxhaw/Wesley Chapel/Union County	5.7	--	1.21
26	Crane Rd	New Town Rd	Providence Rd	Weddington /Union County	2.6	--	1.79
27	New Town Rd	Lancaster / Union County Line	Waxhaw Indian Trail Rd S	Marvin/Wesley Chapel/Union County	8.4	3.75	1.67
28	Waxhaw Indian Trail Rd S	Potter Rd	New Town Rd	Wesley Chapel/Union County	3.6	1.36	1.88
29	Weddington Rd	Providence Rd S	Airport Rd/ Creek Landing Dr	Weddington/Wesley Chapel/Union County	7	1.57	1.92

Table C-1: Congested Corridors Table (Continued)

#	Corridor	From	To	Jurisdiction	Length (Miles)	Max TTI	Max V/C
30	Providence Rd	S Wendover Rd	W South Main St	Charlotte/Waxhaw/ Weddington/ Mecklenburg/Union County	18.4	2.17	1.96
31	Potter Rd	Old Monroe Rd	Wesley Chapel Rd	Stallings/Indian Trail/ Weddington/Wesley Chapel/Union County	6	2.53	1.79
32	Chestnut Ln	Matthews Weddington Rd	Potter Rd	Stallings/Indian Trail/ Union County	1.7	--	1.16
33	Wesley Chapel Rd	Weddington Rd	US-74/ Independence Blvd	Wesley Chapel/Indian Trail/Union County	4.7	--	2.17
34	Old Charlotte Hwy/W John St/Old Monroe Rd	Matthews Township Pkwy	Dickerson Blvd/M.L. King Jr Blvd	Stallings/Indian Trail/ Matthews/Monroe/ Mecklenburg/Union County	12.7	2.59	1.94
35	Idlewild Rd/ Secrest Shortcut Rd	I-485SB Ramp	Unionville Indian Trail Rd W	Stallings/Indian Trail/ Mecklenburg/Union County	5.4	2.07	1.99
36	Ardrey Kell Rd	Marvin Rd	Providence Rd	Charlotte/ Mecklenburg County	4.6	1.73	1.91
37	Marvin Rd	US-521	Ardrey Kell Rd	Charlotte/ Mecklenburg County	0.8	1.76	2.51
38	Ballantyne Commons Pkwy/McKee Rd	Rea Rd	Weddington Rd	Charlotte/ Mecklenburg County	5.2	1.71	2.1
39	Weddington Rd/ Matthews Weddington Rd/S Trade St	W John St	Antioch Church Rd	Charlotte/Matthews/ Mecklenburg County	4.3	2.22	2.36
40	US-521	I-485 NB Ramp	Lancaster / Mecklenburg County Line	Charlotte/ Mecklenburg County	3.7	2.53	2.55
41	Matthews Township Pkwy	I-485	Wilgrove Mint Hill Rd	Charlotte/Mint Hill/Matthews/ Mecklenburg County	16.3	2.73	3.25
42	Lancaster Hwy/South Blvd	Clanton Road	US-521/ Johnston Rd	Charlotte/Pineville/ Mecklenburg County	12.2	2.64	3.4

Table C-2: List of Congestion Management Strategies

Strategies for Fully Controlled Access Facilities (Freeway)						
		Strategy and Description	Currently In Use	Term Effectiveness	Congestion Type	Public Acceptance
Demand Management	F1	**HOV Lanes (Fast Lane Access)** A high-occupancy vehicle lane is a restricted traffic lane reserved for the exclusive use of vehicles with a driver and one or more passengers, including carpools, vanpools, and transit buses. These restrictions may be only imposed during peak travel times or may always apply.	Yes	Long	Recurring	Low
	F2	**Variable Priced Lanes** Variable tolls on separated lanes within a highway, such as express toll lanes or high-occupancy toll (HOT) lanes. Variable tolls on entire roadways: both on toll roads and bridges, as well as on existing toll-free facilities during rush hours.	Possible Future	Long	Recurring	Low
	F3	**Congestion Pricing (HOT)** A system of surcharging users of public goods that are subject to congestion through excess demand, to reduce traffic congestion. Advocates claim this pricing strategy regulates demand, making it possible to manage congestion without increasing supply.	Possible Future	Mid	Recurring	Low
	F4	**Bridge Tolling** A toll bridge is a bridge where a monetary charge is required to pass over. Generally, the private or public owner, builder and maintainer of the bridge uses the toll to recoup their investment, in much the same way as a toll road.	NA	Long	Recurring	Low

Table C-2: List of Congestion Management Strategies (Continued)

Strategies for Fully Controlled Access Facilities (Freeway)						
		Strategy and Description	Currently In Use	Term Effectiveness	Congestion Type	Public Acceptance
Traffic Operations	F5	**Reversible Lanes or Movable Medians** Reversible lanes are defined as one or more lanes designated for movement one-way during part of the day and in the opposite direction during another part of the day. The principle is to make use of unused capacity in one direction to carry traffic in the other direction.	Possible Future	Mid	Recurring and Non-Recurring	Medium
	F6	**Spot Safety Improvements** The Spot Safety Program is used to develop smaller improvement projects to address safety, potential safety, and operational issues. NCDOT currently has a spot safety program.	Yes	Short	Non-Recurring	High
	F7	**Freeway Ramp Metering** Ramp meters are traffic lights set on highway on-ramps to regulate how frequently vehicles enter the freeway's traffic flow. By controlling the volume of traffic entering the freeway and dispersing platoons that make it difficult to merge onto the road, ramp metering lowers overall freeway congestion.	Possible Future	Mid	Recurring and Non-Recurring	Low
	F8	**Variable Speed Limits** A variable speed limit is a flexible restriction on the maximum speed at which drivers are permitted to travel along a certain section of road. An electronic traffic sign shows the current speed limit, which is adjusted based on the weather and road conditions. The minimum and maximum speeds are frequently listed on signs.	Possible Future	Mid	Recurring and Non-Recurring	Medium

Table C-2: List of Congestion Management Strategies (Continued)

Strategies for Fully Controlled Access Facilities (Freeway)						
		Strategy and Description	Currently In Use	Term Effectiveness	Congestion Type	Public Acceptance
Alternative Mode Promotion	F9	**Park-and-Ride Lot Improvements** Improvements to bicycle, bus, and transit locations where users park their vehicles/ bicycles.	Yes (Access Park and Ride)	Short	Recurring	High
	F10	**Use of Shoulder for Transit Vehicles During Peak Periods** This is a strategy created to temporarily adapt roadway capacity to heavy traffic volumes. It is feasible to serve more people and cars and avoid congestion, either completely or partially, during peak hours by allowing vehicles (either all vehicles or simply transit vehicles) to travel on the shoulder while obeying lower speed limits.	Possible Future	Mid	Recurring	High
	F11	**Improvements/ Added Capacity to Rail and Bus Transit** Improvements and adding capacity to rail and bus transit access points. This strategy may increase ridership and overall rider comfortability.	Yes	Mid-Long	Recurring	High
	F12	**Service Coordination (Buses/ Trains Sharing Real-Time Information)** Real-time scheduling of transfers across transit routes can decrease wait times for passengers and the unpredicatability of travel times.	Yes	Mid	Recurring and Non-Recurring	High
Land Use	F13	**Transportation-Land Use Plans with Local Governments** Zoning regulations are included in the comprehensive land use plans that local governments create, and they also utilize other rules to control land use. To address land use decisions, municipal governments typically also create more strategic plans.	Possible Future	Mid	Recurring	High

Table C-2: List of Congestion Management Strategies (Continued)

Strategies for Fully Controlled Access Facilities (Non-Freeway)						
	Strategy and Description		Currently In Use	Term Effectiveness	Congestion Type	Public Acceptance
Demand Management	N14	**Access Management Program** The proactive control of vehicular access points to land parcels next to various types of roadways is known as access management (AM). AM refers to a collection of tools that state and municipal governments can utilize to regulate access to major thoroughfares, highways, and other roads.	Yes	Mid	Recurring and Non-Recurring	Medium
	N15	**HOV Lanes** Often known as a carpool lane, is a designated a restricted lane along a freeway or arterial corridor that is only open to buses, vanpools, and carpools. The regular or unrestricted lanes are typically right next to them. Carpoolers and bus riders can avoid the congestion in the neighboring, unrestricted (general-purpose) lanes by using these specific lanes.	Possible Future	Long	Recurring	Low
	N16	**Congestion Pricing** This is a method of using the market's power to cut down on the waste brought on by traffic congestion. Because most rush hour motorists on a typical metropolitan highway are not commuters, congestion pricing works by diverting purely discretionary rush hour highway traffic to other modes of transportation or to off-peak times.	Possible Future	Mid	Recurring	Low
	N17	**Bridge Tolling** Tolling and pricing involves charging fees for the use of a roadway facility. The revenue generated may be used to pay for highway operations and maintenance and, in many cases, as the primary source of repayment for long-term debt used to finance the toll facility itself.	NA	Long	Recurring	Low

Table C-2: List of Congestion Management Strategies (Continued)

Strategies for Fully Controlled Access Facilities (Non-Freeway)						
	Strategy and Description		Currently In Use	Term Effectiveness	Congestion Type	Public Acceptance
Traffic Operations	N18	**Imaging for Surveillance and Detection** Utilizing technology for transportation surveillance, detection, and traffic flows.	Yes	Short	Non-Recurring	High
	N19	**Traffic Signal Timing** Signal timing is a collection of parameters and logic designed to allocate the right-of-way at a signalized intersection.	Yes	Short	Recurring	Medium
	N20	**Service Patrols (E.g. IMAP)** Incident Management Assistance Patrols (IMAPs), aid stranded drivers and aid in the incident clearance process to facilitate smooth traffic flow.	Yes	Mid	Non-Recurring	High
	N21	**Variable Message Signs (VMS)** A more effective way to regulate traffic is to integrate text and graphic variable messages on variable message signs, which are electronic and intelligent display panels for roads.	Yes	Short	Recurring and Non-Recurring	High
	N22	**Emergency Management Systems (EMS)** The process that is designed to bring stability to a crisis and manage the impact on a community. The system can help recover operations and deliver basic transportation services after a regional disaster.	Yes	Short	Non-Recurring	High
	N23	**Turn Lane Construction and Extension** Construction of new turning lanes and the extension of existing turning lanes.	Yes	Short	Recurring	High
	N24	**SPOT Safety Improvements** The Spot Safety Program is used to develop smaller improvement projects to address safety, potential safety, and operational issues.	Yes	Mid	Non-Recurring	High

Table C-2: List of Congestion Management Strategies (Continued)

Strategies for Fully Controlled Access Facilities (Non-Freeway)						
		Strategy and Description	Currently In Use	Term Effectiveness	Congestion Type	Public Acceptance
Demand Management	N25	**Variable Speed Limits** A variable speed limit is a flexible restriction on the maximum speed at which drivers are permitted to travel along a certain section of road. An electronic traffic sign shows the current speed limit, which is adjusted based on the weather and road conditions.	Possible Future	Short	Recurring and Non-Recurring	High
Land Use	N26	**Transportation-Land Use Plans with Locals Governments** Zoning regulations are included in the comprehensive land use plans that local governments create, and they also utilize other rules to control land use. To address land use decisions, municipal governments typically also create more strategic plans.	Possible Future	Mid	Recurring	High
	N27	**Develop Overlay Districts to Manage Development Densities and Form** An overlay district, also referred to as an overlay zone, is a geographic zoning district that implements new restrictions on top of one or more existing zoning districts. In zoning rules, overlay districts are frequently utilized to encourage development patterns, including transit-oriented development.	NA	Mid	Recurring	Medium

Table C-2: List of Congestion Management Strategies (Continued)

Strategies for Fully Controlled Access Facilities (Non-Freeway)						
		Strategy and Description	Currently In Use	Term Effectiveness	Congestion Type	Public Acceptance
Alternative Mode Promotion	N28	**Transit Signal Priority Systems** Reduces the time a transit vehicle has wait at a red light by adjusting the timing of a traffic signal's red and green cycles. TSP functions by phasing or making slight adjustments to the traffic signal cycle when transit vehicles are nearby.	Yes	Mid	Recurring	High
	N29	**Park-and-Ride Lot Improvements** Improvements to bicycle, bus, and transit locations where users park their vehicles/ bicycles.	Yes	Short	Recurring	High
	N30	**Addition of Bicycle Racks at Public Transit Station/Stops** Adding additional bicycle racks at public transit stations/stops.	Yes	Short	Recurring	High
	N31	**Bicycle and Pedestrian Access to Transit Improvement** Improvements to bicycle and pedestrians transit access points.	Yes	Short	Recurring	High
	N32	**Sidewalk Gap Closure Program** Closing gaps and separation on sidewalks that will help with pedestrian safety.	Yes	Short	Non-Recurring	High
	N33	**Improve Pedestrian Facilities at Intersections** In fatal collisions between 2014 and 2016, 38% of bicyclists and 27% of pedestrians were struck at intersections.	Yes	Short	Recurring	High
	N34	**Creation of New Bicycle and Pedestrian Facilities** The construction of new bike-ped facilities.	Yes	Mid	Non-Recurring	High
	N35	**Bike Sharing Programs** A bike share program allows residents to acquire bikes for short or long distances by making bicycles and/or electric bicycles available to them.	Yes	Mid	Recurring	Medium

Table C-2: List of Congestion Management Strategies (Continued)

Strategies for Fully Controlled Access Facilities (Non-Freeway)						
	Strategy and Description		Currently In Use	Term Effectiveness	Congestion Type	Public Acceptance
Alternative Mode Promotion	N36	**Enhance Transit Amenities** Improvements to transit amenities such as real-time arrival information, shelters, waiting areas, site security and more.	Yes	Short	Recurring	High
	N37	**Use of Shoulders for Transit Vehicles During Peak Periods** This is a dynamic strategy created to temporarily adapt roadway capacity to heavy traffic volumes. It is feasible to serve a greater number of people and cars and avoid congestion, either completely or partially, during peak hours by allowing vehicles (either all vehicles or simply transit vehicles) to travel on the shoulder while obeying lower speed limits.	Possible Future	Mid	Recurring	High
	N38	**Safe Routes to School Initiatives** Safe Routes to School (SRTS) is an approach that promotes walking and bicycling to school through infrastructure improvements, enforcement, tools, safety education, and incentives to encourage walking and bicycling to school. Nationally, 10%–14% of car trips during morning rush hour are for school travel. SRTS initiatives improve safety and levels of physical activity for students.	Yes	Mid	Recurring	High
	N39	**Bicycle and/or Pedestrian Corridor Safety Studies and Implementation** Conducting a study along corridors to compile information on bicycle and pedestrian safety. Using that information to drive bike-ped safety implementation.	Yes	Mid	Recurring and Non-Recurring	High

Table C-2: List of Congestion Management Strategies (Continued)

Strategies for Fully Controlled Access Facilities (Regional)						
	Strategy and Description		Currently In Use	Term Effectiveness	Congestion Type	Public Acceptance
Traffic Operations	R40	**Traffic Management Centers (TMCs)** The road network and traffic are monitored and managed by the traffic management center. It represents organizations that oversee a variety of transportation infrastructure, such as freeway networks.	Yes	Mid	Non-Recurring	High
	R41	**Parking Management and Information Systems** Any parking management system's fundamental concept is self-evident: it's a system that aids individuals, businesses, and organizations in managing their parking spaces.	Yes	Short	Recurring	High
	R42	**511 Traveler Information** Simply stated, 511 is an easy-to-remember 3-digit telephone number, available nationwide, that provides current information about travel conditions.	Yes	Short	Recurring and Non-Recurring	High
	R43	**Highway Advisory Radio (HAR)** Travelers' Information Station (TIS, also called Highway Advisory Radio) for the purpose of disseminating information by broadcast radio to travelers. A license is required before construction of, or operation of, a Travelers' Information Station.	No	Short	Recurring and Non-Recurring	High
Alternative Mode Promotion	R44	**Improvements/ Added Capacity to Rail and Bus Transit** Improvements and adding capacity to rail and bus transit access points.	Yes	Mid-Long	Recurring	High

Table C-2: List of Congestion Management Strategies (Continued)

Strategies for Fully Controlled Access Facilities (Regional)						
		Strategy and Description	Currently In Use	Term Effectiveness	Congestion Type	Public Acceptance
Alternative Mode Promotion	R45	**Service Coordination (Buses/ Trains Sharing Real-Time Information)** Transfers are a major cause of the unpredictability in trip times. Real-time scheduling of transfers across transit routes can decrease wait times for passengers and the variability of travel times.	Yes	Mid	Recurring and Non-Recurring	High
	R46	**Bicycle / Pedestrian Education Program** Creation of a program, educating the public on bike-ped safety.	Yes	Mid	Recurring	High
Land Use	R47	**Encourage Regional Activity Centers** Regional Activity Centers are large, high-density mixed-use areas, typically along transit corridors or major roadways, that provide access to goods, services, dining, offices, entertainment, and residential for regional residents and visitors.	Yes	Mid	Recurring	Medium
	R48	**Live-Work Proximity Incentives** A program that motivates employees to have housing close to their place of employment.	NA	Long	Recurring	Medium
	R49	**Require MPO Review for Regional Scale Developments** Make it a requirement that MPOs analyze and review regional scaled sized development applications/projects before they are approved.	NA	Long	Recurring	Medium
	R50	**Growth Management Restrictions** Strategies used by government agencies at all levels to help guide the type, intensity, location, and timing of new development.	NA	Long	Recurring	Medium

Table C-2: List of Congestion Management Strategies (Continued)

Other Newly Added Strategies						
		Strategy and Description	Currently In Use	Term Effectiveness	Congestion Type	Source
New Strategies	O51	**Increasing Number of Lanes without Highway Widening** Takes advantage of excess width in the highway cross section used for breakdown lanes or median. Increase capacity by reducing congestion in the short term. Long-term effects on congestion depend on local conditions. Reduced traffic and congestion on parallel streets.	NA	NA	Recurring and Non-Recurring	Greensboro Urban Area MPO (GUAMPO)
	O52	**Geometric Design improvements** Includes widening to provide shoulders, additional turn lanes at intersections, improved sight lines, auxiliary lanes to improve merging and diverging. Reduce congestion by improving bottlenecks. Increase traffic flow and improve safety. Decrease incidents due to fewer conflict points.	Yes	NA	Recurring and Non-Recurring	GUAMPO
	O53	**Local Transit Circulator** Fixed-route service within an activity area, such as a Central Business District or campus, designed to reduce short trips by car. Reduce Vehicle Miles Traveled [VMT]. Reduce SOV trips. Increase transit ridership and boardings	Yes	NA	Recurring and Non-Recurring	GUAMPO
	O54	**Design Guidelines for Bicycle/Pedestrian-Oriented Development** Maximum block lengths, building setback restrictions, and streetscape enhancements are examples of design guidelines that can be codified in zoning encourage bicycle/ pedestrian activity. Increase pedestrian mode share. Discourage motor vehicle use for short trips. Reduce VMT and emissions.	NA	NA	Recurring and Non-Recurring	GUAMPO

Table C-2: List of Congestion Management Strategies (Continued)

Other Newly Added Strategies						
		Strategy and Description	Currently In Use	Term Effectiveness	Congestion Type	Source
New Strategies	O55	**Left Turn Restrictions; Curb Cut and Driveway Restrictions** Turning vehicles can impede traffic flow and are more likely to be involved in crashes.	NA	NA	Recurring and Non-Recurring	GUAMPO
	O56	**Preferential or Free Parking for HOVs and Parking Management** Reducing the availability of free parking spaces in congested areas, or providing preferential or free parking for HOVs. This provides an incentive for workers to carpool. Reduce work VMT. Increase vehicle occupancy.	NA	NA	Recurring and Non-Recurring	GUAMPO
	O57	**Dedicated Truck-Lanes – Concept 1** One additional lane, for a total of three lanes in each direction. The right lane in each direction would be limited to trucks, the left lane to other types of vehicles, and the middle lane could be used by both groups.	NA	NA	Recurring and Non-Recurring	FHWA
		Dedicated Truck-Lanes – Concept 2 One additional lane in each direction limited to heavy trucks, a breakdown lane, and an additional passing lane for trucks every few miles. Where feasible, the added lane would be constructed with the median, with a concrete barrier separating traffic flowing in opposite directions. Another barrier would separate the truck lane from existing passenger vehicle lanes.	NA	NA	Recurring and Non-Recurring	FHWA
		Dedicated Truck-Lanes – Concept 3 Two additional lanes in each direction for heavy trucks only. These lanes would be separated from existing lanes, which would be limited to passenger vehicles, by barriers.	NA	NA	Recurring and Non-Recurring	FHWA

Table C-2: List of Congestion Management Strategies (Continued)

Other Newly Added Strategies						
		Strategy and Description	Currently In Use	Term Effectiveness	Congestion Type	Source
New Strategies	O58	**Dedicated Bus Rapid Transit Lanes** BRT is a high-capacity bus-based transit system that delivers fast and efficient service that may include dedicated lanes, busways, traffic signal priority, off-board fare collection, elevated platforms, and enhanced stations.	NA	NA	Recurring and Non-Recurring	NA
	O59	**Mobility Hubs** The convergence of many modes of transportation, including walking, biking, transit, and shared mobility, occurs at mobility hubs. Mobility hubs prioritize pedestrian accessibility, encourage mixed-use development, and enhance multi-modal transit connections to lessen traffic congestion and minimize reliance on private cars.	NA	NA	Recurring and Non-Recurring	Broward MPO

Table C-3: Congestion Management Strategies Assigned to Corridors

#	Corridor Name	Strategies Identified
1	NC-160	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (O52) Geometric Design Improvements
2	NC-49	(F6) Spot Safety Improvements (N19) Traffic Signal Timing (N33) Improve Pedestrian Facilities at Intersections (O52) Geometric Design Improvements
3	I-77	(F1) HOV Lanes (Fast Lane Access) (F2) Variable Priced Lanes (F7) Freeway Ramp Metering (F8) Variable Speed Limits
4	Billy Graham Pkwy/ Woodlawn Rd	(F11) Improvements/Added Capacity to Rail and Bus Transit (N14) Access Management Program (N19) Traffic Signal Timing (N24) SPOT Safety Improvements (N33) Improve Pedestrian Facilities at Intersections (O52) Geometric Design Improvements
5	US-21/NC-115	(N14) Access Management Program (N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N25) Variable Speed Limits (N26) Transportation-Land Use Plans with Local Governments (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (N38) Safe Routes to Schools Initiatives
6	Old Mountain Rd	(F13) Transportation-Land Use Plans with Local Governments (N23) Turn Lane Construction and Extension (N26) Transportation - Land Use Plans with Local Governments (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to Schools Initiatives (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/Pedestrian Education Program (R50) Growth Management Restrictions (O54) Design Guidelines for Bicycle/Pedestrian-Oriented Development
7	Cornelius Rd/ Mazeppa Rd	(N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to Schools Initiatives

Table C-3: Congestion Management Strategies Assigned to Corridors (Continued)

#	Corridor Name	Strategies Identified
8	NC-150	(N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N38) Safe Routes to Schools Initiatives
9	Williamson Rd	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N32) Sidewalk Gap Closure (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to Schools Initiatives
10	I-77	(F1) HOV Lanes (Fast Lane Access) (F2) Variable Priced Lanes (F6) SPOT Safety Improvements (F8) Variable Speed Limits (F13) Transportation-Land Use Plans with Local Governments (N24) SPOT Safety Improvements (N38) Safe Routes to Schools Initiatives
11	NC-115	(N14) Access Management Program (N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N38) Safe Routes to Schools Initiatives (O52) Geometric Design Improvements
12	W Catawba Ave	(N14) Access Management Program (N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N27) Develop Overlay Districts to Manage Development Densities and Form (N29) Park-and-Ride Lot Improvements (N30) Addition of Bicycle Racks at Public Transit Station/Stops (N31) Bicycle and Pedestrian Access to Transit Improvements (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersection (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to Schools Initiatives (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/Pedestrian Education Programs (R50) Growth Management Restrictions (O52) Geometric Design Improvement (O54) Design Guidelines for Bicycle/Pedestrian-Oriented Development (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions

Table C-3: Congestion Management Strategies Assigned to Corridors (Continued)

#	Corridor Name	Strategies Identified
13	NC-73	(N14) Access Management Program (N18) Imaging for Surveilance and Detection (N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N27) Develop Overlay Districts to Manage Development Densities and Form (N29) Park-and-Ride Improvements (N30) Addition of Bicycle Racks at Public Transit Station/Stops (N31) Bicycle and Pedestrian Access to Transit Improvement (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N36) Enhance Transit Amenities (N38) Safe Routes to Schools Initiatives (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/Pedestrian Eduction Program (O52) Geometric Design Improvements (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions (O59) Mobility Hubs
14	US-21	(N14) Access Management Program (N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N27) Develop Overlay Districts to Manage Development Densities and Form (N30) Addition of Bicycle Racks at Public Transit Station/Stops (N31) Bicycle and Pedestrian Access to Transit Improvements (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersection (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to Schools Initiatives (R46) Bicycle/Pedestrian Education Programs (R50) Growth Management Restrictions (O52) Geometric Design Improvement (O54) Design Guidelines for Bicycle/Pedestrian-Oriented Development (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
15	NC-16/ Brookshire Blvd	(N19) Traffic Signal Timing (N24) SPOT Safety Improvements (O52) Geometric Design Improvements
16	I-85	(F8) Variable Speed Limits (F2) Variable Priced Lanes (F1) HOV Lanes (Fast Lane Access) (F7) Freeway Ramp Metering
17	US-29	(N19) Traffic Signal Timing (N24) SPOT Safety Improvements (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities

Table C-3: Congestion Management Strategies Assigned to Corridors (Continued)

#	Corridor Name	Strategies Identified
18	N Tryon St/W Sugar Creek Rd	(N19) Traffic Signal Timing (N24) SPOT Safety Improvements (N33) Improve Pedestrian Facilities at Intersections (N36) Enhance Transit Amenities (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities
19	I-277	(F7) Freeway Ramp Metering (F8) Variable Speed Limits (O52) Geometric Design Improvements
20	US-74	(F11/R44) Improvements/Added Capacity to Rail and Bus Transit (N19) Traffic Signal Timing (N28) Transit Signal Priority Systems (N33) Improve Pedestrian Facilities at Intersections (N24) SPOT Safety Improvements (N26) Transportation Land Use Plans with Local Governments (N32) Sidewalk Gap Closure Program (N36) Enhance Transit Amenities (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to School Initiatives
21	NC-24/ Albemarle Rd	(N19) Traffic Signal Timing (N28) Transit Signal Priority Systems (N33) Improve Pedestrian Facilities at Intersections (N24) SPOT Safety Improvements (N32) Sidewalk Gap Closure Program (N36) Enhance Transit Amenities (N34) Creation of New Bicycle and Pedestrian Facilities
22	I-485	(F1) HOV Lanes (Fast Lane Access) (F3) Congestion Pricing (Hot) (F6) SPOT Safety Improvements (F13) Transportation-Land Use Plans with Local Governments (N37) Use of Shoulders for Transit Vehicles During Peak Periods (R40) Traffic Management Centers (TMC's) (R44) Improvements/Added Capacity to Rail and Bus Transit (R45) Service Coordination (Buses/Trains Sharing Real-Time Information) (R50) Growth Management Restrictions (O53) Local Transit Circulator (O59) Mobility Hubs
23	I-485	(F2) Variable Priced Lanes (F8) Variable Speed Limits (F7) Freeway Ramp Metering (F1) HOV Lanes (Fast Lane Access)

Table C-3: Congestion Management Strategies Assigned to Corridors (Continued)

#	Corridor Name	Strategies Identified
24	Waxhaw Marvin Rd/NC 75	(N14) Access Management (N18) Imaging for Surveillance and Detection (N22) Emergency Management Systems (EMS) (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation Land Use Plans with Local Governments (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to School Initiatives (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/pedestrian Education Program (O52) Geometric Design Improvements (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
25	Cuthbertson Rd	(N14) Access Management (N18) Imaging for Surveillance and Detection (N22) Emergency Management Systems (EMS) (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation Land Use Plans with Local Governments (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to School Initiatives (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/pedestrian Education Program (O52) Geometric Design Improvements (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
26	Crane Rd	(F6) Spot Safety Improvements (F13) Transportation - Land Use Plans with Local Governments (N14) Access Management Program (N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N38) Safe Routes to Schools Initiatives (O52) Geometric Design Improvements
27	New Town Rd	(F6) Spot Safety Improvements (F13) Transportation - Land Use Plans with Local Governments (N14) Access Management Program (N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (O52) Geometric Design Improvements (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions

Table C-3: Congestion Management Strategies Assigned to Corridors (Continued)

#	Corridor Name	Strategies Identified
28	Waxhaw Indian Trail Rd S	(N18) Imaging for Surveillance and Detection (N19) Traffic Signal Timing (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N27) Develop Overlay Districts to Manage Development Densities and Form (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R47) Encourage Regional Activity Centers (R49) Require MPO Review for Regional Scale Developments (O52) Geometric Design Improvements (O54) Design Guidelines for Bicycle/Pedestrian-Oriented Development (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
29	Weddington Rd	(N18) Imaging for Surveillance and Detection (N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N27) Develop Overlay Districts to Manage Development Densities and Form (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to Schools Initiatives (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R47) Encourage Regional Activity Centers (R49) Require MPO Review for Regional Scale Developments (R50) Growth Management Restrictions (O54) Design Guidelines for Bicycle/Pedestrian-Oriented Development (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
30	Providence Rd	(N14) Access Management Program (N18) Imaging for Surveillance and Detection (N19) Traffic Signal Timing (N22) Emergency Management Systems (EMS) (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation Land Use Plans with Local Governments (N27) Develop Overlay Districts to Manage Development Densities and Form (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to School Initiatives (N39) Bicycle and/or Pedestrian Corridor Safety Studies and implementation (R46) Bicycle/Pedestrian Education Program (R47) Encourage Regional Activity Centers (R48) Live-Work Proximity Incentives (R49) Require MPO Review for Regional Scale Developments (R50) Growth Management Restrictions (O52) Geometric Design Improvements (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions

Table C-3: Congestion Management Strategies Assigned to Corridors (Continued)

#	Corridor Name	Strategies Identified
31	Potter Rd	(N18) Imaging for Surveillance and Detection (N19) Traffic Signal Timing (N28) Transit Signal Priority Systems (N33) Improve Pedestrian Facilities at Intersections (N24) SPOT Safety Improvements (N26) Transportation Land Use Plans with Local Governments (N32) Sidewalk Gap Closure Program (N36) Enhance Transit Amenities (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to School Initiatives
32	Chestnut Ln	(N18) Imaging for Surveillance and Detection (N19) Traffic Signal Timing (N28) Transit Signal Priority Systems (N33) Improve Pedestrian Facilities at Intersections (N24) SPOT Safety Improvements (N26) Transportation Land Use Plans with Local Governments (N32) Sidewalk Gap Closure Program (N36) Enhance Transit Amenities (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to School Initiatives
33	Wesley Chapel Rd	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N32) Sidewalk Gap Closure (N33) Improve Pedestrian Facilities at Intersections
34	Old Charlotte Hwy/W John St/Old Monroe Rd	(N14) Access Management Program (N18) Imaging for Surveillance and Detection (N19) Traffic Signal Timing (N28) Transit Signal Priority Systems (N33) Improve Pedestrian Facilities at Intersections (N24) SPOT Safety Improvements (N26) Transportation Land Use Plans with Local Governments (N32) Sidewalk Gap Closure Program (N36) Enhance Transit Amenities (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to School Initiatives

Table C-3: Congestion Management Strategies Assigned to Corridors (Continued)

#	Corridor Name	Strategies Identified
35	Idlewild Rd/ Secrest Shortcut Rd	(N14) Access Management Program (N18) Imaging for Surveillance and Detection (N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N28) Transit Signal Priority Systems (N33) Improve Pedestrian Facilities at Intersections (N24) SPOT Safety Improvements (N26) Transportation Land Use Plans with Local Governments (N32) Sidewalk Gap Closure Program (N36) Enhance Transit Amenities (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to School Initiatives (O52) Geometric Design Improvements
36	Ardrey Kell Rd	(N32) Sidewalk Gap Closure Program (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N34) Creation of New Bicycle and Pedestrian Facilities
37	Marvin Rd	(N32) Sidewalk Gap Closure Program (N23) Turn Lane Construction and Extension (N34) Creation of New Bicycle and Pedestrian Facilities
38	Ballantyne Commons Pkwy/McKee Rd	(N32) Sidewalk Gap Closure Program (N38) Safe Routes to Schools Initiatives (N33) Improve Pedestrian Facilities at Intersections (N23) Turn Lane Construction and Extension (N34) Creation of New Bicycle and Pedestrian Facilities
39	Weddington Rd/Matthews Weddington Rd/S Trade St	(N23) Turn Lane Construction and Extension (N32) Sidewalk Gap Closure Program (N24) SPOT Safety Improvements (N34) Creation of New Bicycle and Pedestrian Facilities (O52) Geometric Design Improvements
40	US-521	(N19) Traffic Signal Timing (N24) SPOT Safety Improvements (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections
41	Matthews Township Pkwy	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (O52) Geometric Design Improvements (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections
42	Lancaster Hwy/South Blvd	(N19) Traffic Signal Timing (N33) Improve Pedestrian Facilities at Intersections (N24) SPOT Safety Improvements (O52) Geometric Design Improvements (N32) Sidewalk Gap Closure Program

Table C-4: Congestion Management Strategies Assigned to Fiscally Constrained Projects

ID	Corridor Name	Strategies Identified
CLT-1	3rd Street/4th Street (NC 16)	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements
CLT-13	Eastern Circumferential Road	(N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements
CLT-14	Eastern Circumferential Road	(N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements
CLT-16	Harrisburg Road	(N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N32) Sidewalk Gap Closure Program
CLT-17	I-485	(F2) Variable Priced Lanes (F1) HOV Lanes (Fast Lane Access) (F7) Freeway Ramp Metering (F8) Variable Speed Limits
CLT-19	Independence Boulevard (US 74)	(O52) Geometric Design Improvements
CLT-2/ MHL-1 A	Albemarle Road (NC 27)	(N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N23) Turn Lane Construction and Extension
CLT-20	John Belk Freeway (I-277)	(F8) Variable Speed Limits
CLT-22	Krefeld Drive	(N23) Turn Lane Construction and Extension
CLT-23	Lancaster Highway	(N14) Access Management Program (N23) Turn Lane Construction and Extension (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities
CLT-24	Mallard Creek Rd	(N23) Turn Lane Construction and Extension (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities
CLT-26	Mt. Holly Road (NC 27)	(N32) Sidewalk Gap Closure Program (N23) Turn Lane Construction and Extension
CLT-28	Mt Holly-Huntersville Rd	(N23) Turn Lane Construction and Extension (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities

Table C-4: Congestion Management Strategies Assigned to Fiscally Constrained Projects (Continued)

ID	Corridor Name	Strategies Identified
CLT-30	Old Statesville Road (NC 115)	(N23) Turn Lane Construction and Extension (N32) Sidewalk Gap Closure Program (N14) Access Management Program (N34) Creation of New Bicycle and Pedestrian Facilities
CLT-33	Steele Creek Rd (NC 160)	(N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities
CLT-34	West Boulevard and Piney Top Drive (NC 160)	(N32) Sidewalk Gap Closure Program (N23) Turn Lane Construction and Extension
CLT-35	Westinghouse Boulevard	(N19) Traffic Signal Timing (N24) SPOT Safety Improvements
CLT-36	Woodlawn Road	(N14) Access Management Program (N34) Creation of New Bicycle and Pedestrian Facilities (N33) Improve Pedestrian Facilities at Intersections
CLT-4	Archdale Drive Relocation	(N23) Turn Lane Construction and Extension
CLT-5	Ardrey Kell Road	(N23) Turn Lane Construction and Extension (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities
CLT-7	Arequipa Drive	(N23) Turn Lane Construction and Extension
CLT-110	South Boulevard at Tyvola Road	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension
CLT-113	I-85 at Billy Graham Parkway	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension
CLT-118B	WT Harris Blvd (NC 24) at Grier Rd (Intersection)	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension
CLT-119	I-485 at S Tryon Street	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension
CLT-120A	Billy Graham Pkwy at Morris Field Drive (Interchange)	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension

Table C-4: Congestion Management Strategies Assigned to Fiscally Constrained Projects (Continued)

ID	Corridor Name	Strategies Identified
CLT-I21B	Billy Graham Pkwy at NC 160 (Intersection)	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension
CLT-I22	I-77 at Westinghouse Blvd	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension
CLT-I23	I-77 at Nations Ford Road	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension
CLT-I24	I-77 at Tyvola Road	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension
CLT-I25B	Billy Graham Parkway at S Tryon Street and W Woodlawn Road (Intersection)	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension
CLT-I27	I-77 at S Tryon Street	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension
CLT-I28	I-485 at future Arrowood-Whitehall Connector	(N23) Turn Lane Construction and Extension
CLT-I3	Albemarle Road (NC 27) at WT Harris Boulevard (NC 24)	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension
CLT-I4	I-485 at Providence Road	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension
CLT-I6	I-85 and WT Harris Boulevard	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension
CLT-I7	I-85 and Mallard Creek Church Road	(O52) Geometric Design Improvements
CLT-I9	I-85 at Brookshire Freeway (NC 16)	(N19) Traffic Signal Timing (N33) Improve Pedestrian Facilities at Intersections
COR-2	Bailey Road Flyover	(N23) Turn Lane Construction and Extension (N26) Transportation-Land Use Plans with Local Governments (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities

Table C-4: Congestion Management Strategies Assigned to Fiscally Constrained Projects (Continued)

ID	Corridor Name	Strategies Identified
COR-3	Main Street (NC 115)	(N14) Access Management Program (N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N27) Develop Overlay Districts to Manage Development Densities and Form (N31) Bicycle and Pedestrian Access to Transit Improvement (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N36) Enhance Transit Amenities (N38) Safe Routes to Schools Initiatives (N39) Bicycle an/or Pedestrian Corridor Safety Studies and Implementation (O52) Geometric Design Improvements (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
DOT-1	US 74	(R41) Parking Management and Information Systems (O51) Increasing Number of Lanes without Highway Widening (O52) Geometric Design Improvements (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
HTV-11	Gilead Road	(N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N31) Bicycle and Pedestrian Acces to Transit Improvement (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N35) Bike Sharing Programs (N36) Enhance Transit Amenities (N38) Safe Routes to Schools Initiatives (O54) Design Guidelines for Bicycle/Pedestrian-Oriented Development (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
HTV-13	Hambright Road	(N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N28) Transit Signal Priority Systems (N29) Park-and-Ride Lot Improvements (N31) Bicycle and Pedestrian Acces to Transit Improvement (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N36) Enhance Transit Amenities (N38) Safe Routes to Schools Initiatives (O54) Design Guidelines for Bicycle/Pedestrian-Oriented Development

Table C-4: Congestion Management Strategies Assigned to Fiscally Constrained Projects (Continued)

ID	Corridor Name	Strategies Identified
HTV-22	Mt Holly-Huntersville Rd	(N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (O54) Design Guidelines for Bicycle/Pedestrian-Oriented Development
HTV-24	NC 73	(N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation
HTV-25A	Old Statesville Road (NC 115)	(N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N31) Bicycle and Pedestrian Acces to Transit Improvement (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to Schools Initiatives (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (O54) Design Guidelines for Bicycle/Pedestrian-Oriented Development (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
HTV-3	Beatties Ford Road	(N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N27) Develop Overlay Districts to Mange Development Densities and Form (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to Schools Initiatives (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation
HTV-4	Birkdale Commons Parkway	(N26) Transportation-Land Use Plans with Local Governments (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to Schools Initiatives (O54) Design Guidelines for Bicycle/Pedestrian-Oriented Development

Table C-4: Congestion Management Strategies Assigned to Fiscally Constrained Projects (Continued)

ID	Corridor Name	Strategies Identified
HTV-11	Hambright Road at Mt Holly-Huntersville Road	(N33) Improve Pedestrian Facilities at Intersections
HTV-12	Old Statesville Rd (NC 115) at Gilead Road/ Huntersville-Concord Road	(N33) Improve Pedestrian Facilities at Intersections
INT-2	Wesley Chapel-Stouts Road	(N19) Traffic Signal Timing (N23) Turn Lane Cosntruction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections
MAT-10	John Street	(F6) SPOT Safety Improvements (F13) Transportation-Land Use Plans with Local Governments (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Government (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities (N36) Enhance Transit Amenities (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/Pedestrian Education Program (O53) Local Transit Circulator (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
MAT-11	Matthews Township Parkway (NC 51)	(F6) SPOT Safety Improvements (F13) Transportation-Land Use Plans with Local Governments (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Government (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities (N36) Enhance Transit Amenities (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/Pedestrian Education Program (O53) Local Transit Circulator (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions

Table C-4: Congestion Management Strategies Assigned to Fiscally Constrained Projects (Continued)

ID	Corridor Name	Strategies Identified
MAT-12	Matthews Township Parkway (NC 51)	(F6) SPOT Safety Improvements (F13) Transportation-Land Use Plans with Local Governments (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Government (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities (N36) Enhance Transit Amenities (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/Pedestrian Education Program (O53) Local Transit Circulator (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
MAT-14	McKee Road Extension	(F6) SPOT Safety Improvements (F13) Transportation-Land Use Plans with Local Governments (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Government (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/Pedestrian Education Program (O53) Local Transit Circulator (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
MAT-15	Independence Boulevard (US 74)	(F6) SPOT Safety Improvements (F13) Transportation-Land Use Plans with Local Governments (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Government (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities (N36) Enhance Transit Amenities (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/Pedestrian Education Program (O53) Local Transit Circulator (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
MAT-7	Independence Pointe Parkway	(F6) SPOT Safety Improvements (F13) Transportation-Land Use Plans with Local Governments (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Government (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities (N36) Enhance Transit Amenities (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/Pedestrian Education Program (O53) Local Transit Circulator (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions

Table C-4: Congestion Management Strategies Assigned to Fiscally Constrained Projects (Continued)

ID	Corridor Name	Strategies Identified
MAT-8	Independence Pointe Parkway	(F6) SPOT Safety Improvements (F13) Transportation-Land Use Plans with Local Governments (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Government (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities (N36) Enhance Transit Amenities (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/Pedestrian Education Program (O53) Local Transit Circulator (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
MAT-9	John Street	(F6) SPOT Safety Improvements (F13) Transportation-Land Use Plans with Local Governments (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Government (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities (N36) Enhance Transit Amenities (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/Pedestrian Education Program (O53) Local Transit Circulator (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
MAT-11	NC 51 at Fullwood Lane	(F6) SPOT Safety Improvements (F13) Transportation-Land Use Plans with Local Governments (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Government (N32) Sidewalk Gap Closure Program (N34) Creation of New Bicycle and Pedestrian Facilities (N39) Bicycle and/or Pedestrian Corridor Safety Studies and Implementation (R46) Bicycle/Pedestrian Education Program (O53) Local Transit Circulator (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions
MHL-3	Matthews-Mint Hill Road (NC 51)	(N23) Turn Lane Construction and Extension (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities
MHL-5	Fairview Road (NC 218)	(N23) Turn Lane Construction and Extension (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities

Table C-4: Congestion Management Strategies Assigned to Fiscally Constrained Projects (Continued)

ID	Corridor Name	Strategies Identified
MHL-11	Albemarle Road (NC 27) at Blair Road	(F6) SPOT Safety Improvements (F13) Transportation-Land Use Plans with Local Governments (N14) Access Management Program (N18) Imaging for Surveillance and Detection (N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N27) Develop Overlay Districts to Manage Development Densities and Form
MON-12	Skyway Drive (US 601)	(N14) Access Management Program (N23) Turn Lane Construction and Extension (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions (F13) Transportation-Land Use plans with Local Governments
MON-3	Morgan Mill Road (NC 200)	(N14) Access Management Program (N23) Turn Lane Construction and Extension (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions (F13) Transportation-Land Use plans with Local Governments
MON-4	Old Charlotte Highway	(N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (O52) Geometric Design Improvements (O55) Left Turn Restrictions; Curb Cut and Driveway Restrictions (F13) Transportation-Land Use plans with Local Governments
MSV-11	Langtree Road	(N19) Traffic Signal Timing (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to Schools Initiative (R48) Live-Work Proximity Incentives
MSV-15	Oakridge Farm Highway (NC 150)	(N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to Schools Initiatives (R48) Live-Work Proximity Incentives

Table C-4: Congestion Management Strategies Assigned to Fiscally Constrained Projects (Continued)

ID	Corridor Name	Strategies Identified
MSV-19	Talbert Road	(N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to Schools Initiatives
MSV-20	Grayson Drive	(N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N34) Creation of New Bicycle and Pedestrian Facilities (N38) Safe Routes to Schools Initiatives
MSV-14	NC 115 at Shinnville Rd	(N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N38) Safe Routes to Schools Initiatives
MSV-19	NC 801 at NC 150	(N24) SPOT Safety Improvements (N26) Transportation-Land Use Plans with Local Governments (N38) Safe Routes to Schools Initiatives
UNI-11	Idlewild Road at Mill Grove Road at Indian Trail Fairview Road	(F6) Spot Safety Improvements (F13) Transportation - Land Use Plans with Local Governments (N14) Access Management Program (N19) Traffic Signal Timing (N23) Turn Lane Construction and Extension (N24) SPOT Safety Improvements (N32) Sidewalk Gap Closure Program (N33) Improve Pedestrian Facilities at Intersections (N38) Safe Routes to Schools Initiatives (O52) Geometric Design Improvements