



Town Council
February 2023 Work Session
February 21, 2023 | 3:00 PM
Apex Town Hall | 73 Hunter Street, Apex, NC

- 1. Call to Order | Pledge of Allegiance**

- 2. Introductions and Agenda Overview**
Chris Johnson, Director, Transportation and Infrastructure

- 3. Transportation Planning**
Shannon Cox, Long-Range Planning Manager

- 4. Transportation/Traffic Engineering**
Russell Dalton, Traffic Engineering Manager

- 5. School Zone Traffic & Pedestrian Safety**
Sergeant Matthew Kutcher
Sergeant Joshua Klatt

- 6. Q & A**

- 7. Adjournment**

ANNOUNCEMENTS

Members of the public can access and view the meeting on the Town's YouTube Channel <https://www.youtube.com/c/TownofApexGov> or attend in-person.

Accommodation Statement: Anyone needing special accommodations to attend this meeting and/or if this information is needed in an alternative format, please contact the Town Clerk's Office. The Town Clerk is located at 73 Hunter Street in Apex Town Hall on the 2nd Floor, (email) allen.coleman@apexnc.org or (phone) 919-249-1260.



February 21, 2023

Town Council Work Session
Transportation Topics

AGENDA

- Transportation Planning
- Roadway Design & Street Maintenance
- School Zone Traffic & Pedestrian Safety



Transportation Planning



High Performing
Government



Economic
Vitality



Responsible
Development



A Welcoming
Community





Long Range Transportation Planning Principles & Process

- Regional coordination
- Land use and transportation linkage
- Transportation plans & maps, updates, public involvement
- Project prioritization and funding



Regional Coordination

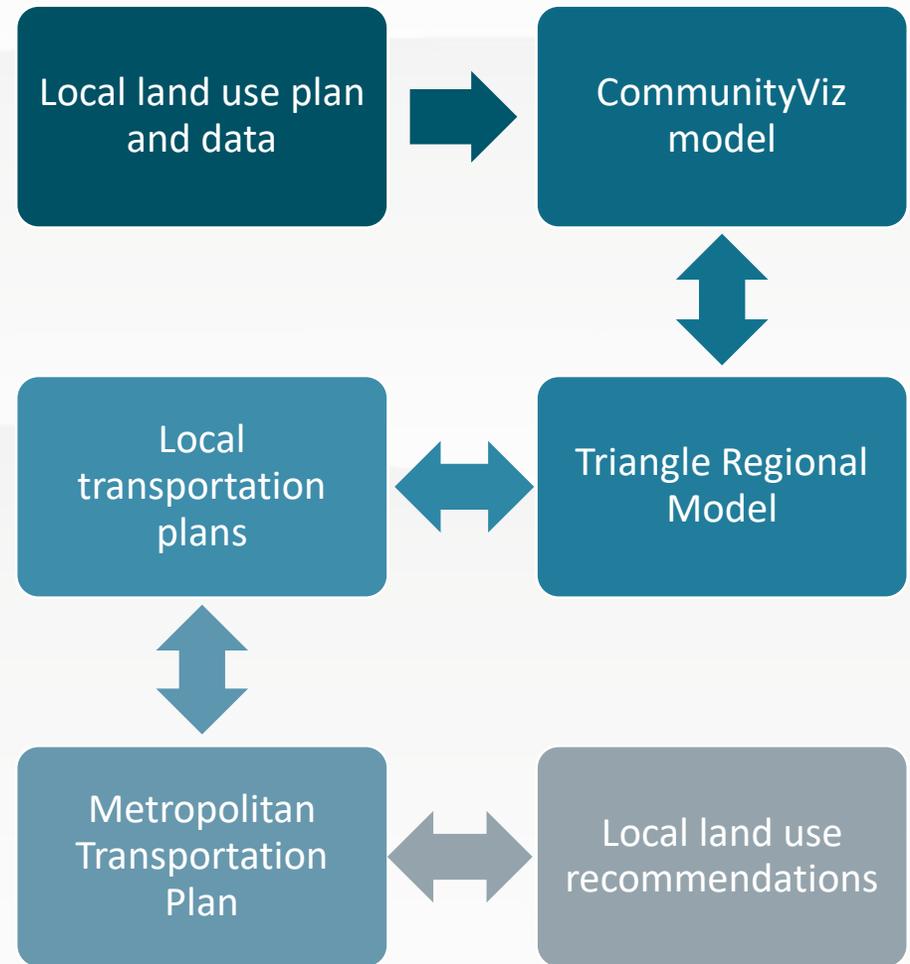
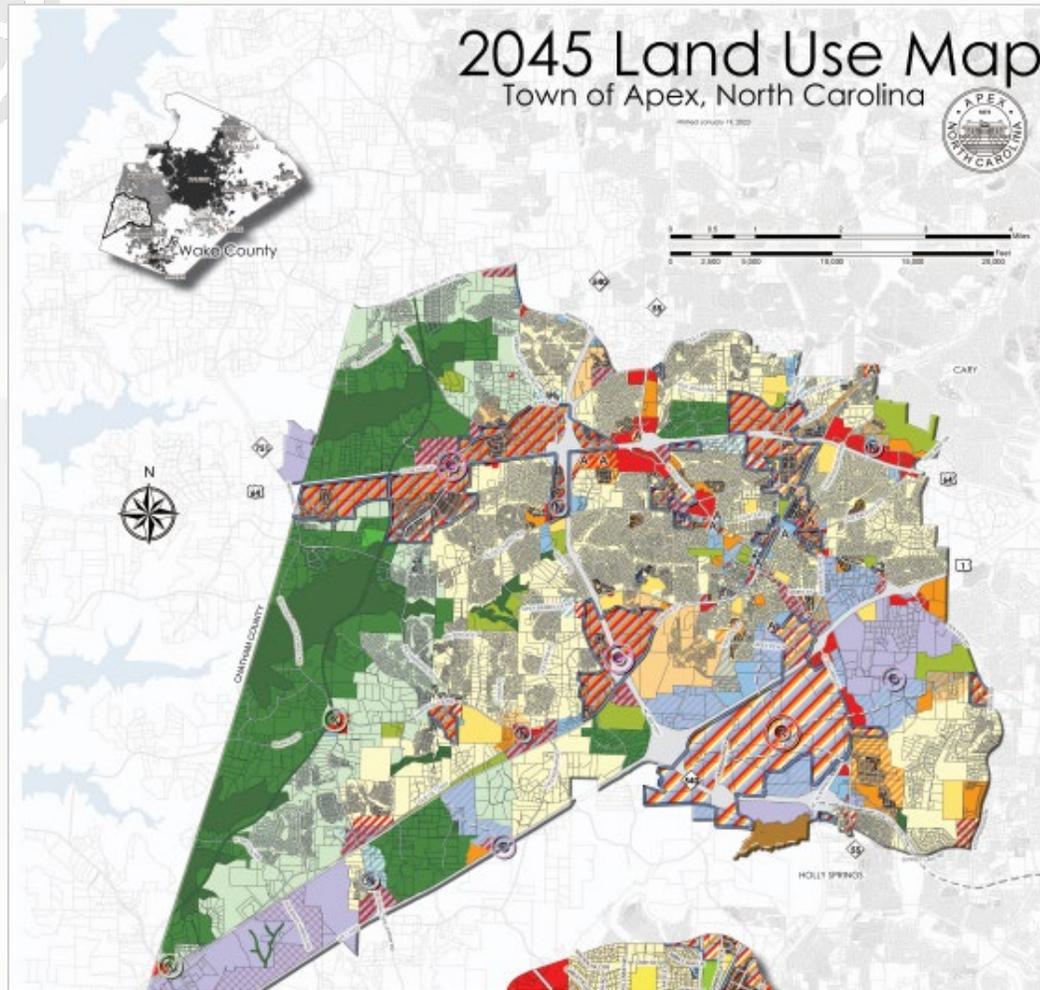
CAMPO Technical Coordinating Committee (TCC)

- Advises the Executive Board
- See [MPO101 Training](#)
- Regional land use and transportation modeling
- Regional input on statewide project prioritization
- Metropolitan Transportation Plan Development
- Management and disbursement of federal funds (LAPP)

Wake Transit Planning Advisory Committee (TPAC)

- Advises the CAMPO Executive Board & GoTriangle Board of Trustees
- Implementation of the Wake Transit Plan
- Funded by county tax
- Develops annual work plan, Wake Transit Plan updates, Wake Bus Plan, major investment studies, Community Funding Area Program Management Plan, etc.

Regional Transportation and Land Use Linkage



Approximately an 18-month cycle
Updated every 4-5 years

Local Transportation and Land Use Linkage



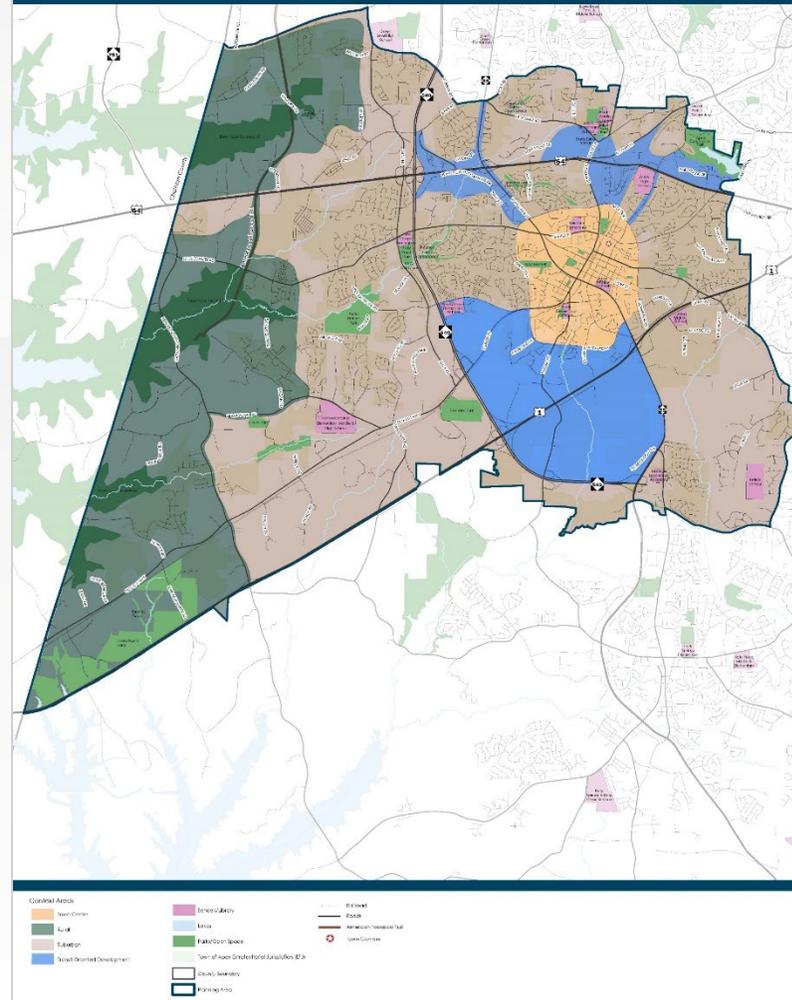
Context Areas

Public input gathered during the Advance Apex process indicates a strong desire to maintain the distinctive "feel" or context of different parts of the planning area. One way to do that is to design different roadway **cross-sections** and prioritize different **travel modes** based on the surrounding land use. An example **cross-section** is shown in the graphic. It describes desired street elements (like number of travel lanes, whether there is a median and how wide it is, whether there is a sidewalk, curb, etc.). Example **travel modes** include driving, transit, walking, and bicycling. Depending on the context area, different travel modes and street elements may be considered higher or lower priority. Four proposed context areas are recommended as a guide for determining the right cross section and mode priority for improved and new roadways.



Context Area	Mode Priority	Example
Rural This context type complements rural living and is characterized by lower densities, open space, and natural views. Residential properties tend to be widely spaced and include single-family homes or urban farms. This context may also include agricultural or forested areas.	High	
	Moderate	
	Low	
Suburban This context type typically includes residential and commercial areas of moderate density which are most easily accessible by car. Residential developments may include single-family homes, townhomes or multifamily with lower unit densities than in the mixed-use centers. Commercial areas are often located near heavily trafficked corridors that prioritize traffic access, capacity, and off-street parking supply.	High	
	Moderate	
	Low	
Transit Oriented This context type includes areas of residential, economic, entertainment, or community activity oriented around a major transit corridor. The design and scale of the development in this context encourages active living, with a comprehensive and interconnected network of walkable streets.	High	
	Moderate	
	Low	
Town Center This context type is the most flexible and offers a mix of housing types within close proximity to employment, shopping, and community activity. The scale of development, slower traffic speeds and emphasis on the pedestrian encourage active living. Development often includes small-lot or attached housing types mixed with retail, workplace, civic activities, and walkable mixed-	High	
	Moderate	
	Low	

Proposed Context Areas



Roadway Types and Recommendations

Special Street Designations

- Freight Route
- Future Local Connection

Collector Streets

- Minor Collector, Existing
- Minor Collector, Future
- Major Collector, Existing
- Major Collector, Future

Thoroughfares

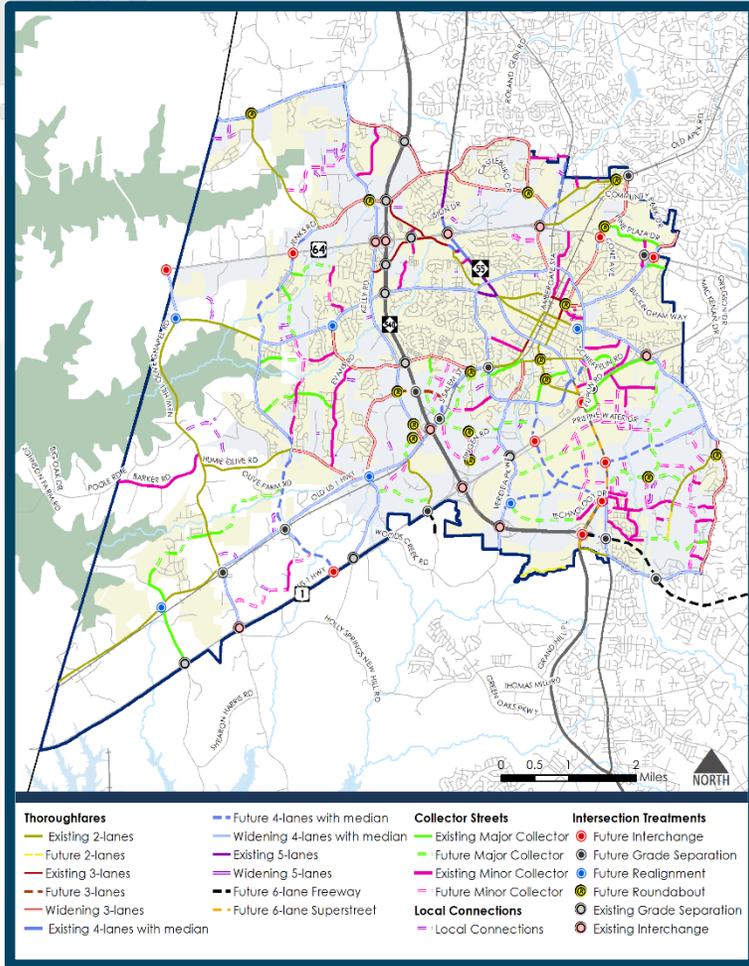
- 2-Lane, Existing
- 2-Lane, Future
- 3-Lane, Existing
- 3-Lane, Future
- 3-Lane, Widening
- 4-Lane with Median, Existing
- 4-Lane with Median, Future
- 4-Lane with Median, Widening
- 5-Lane, Existing
- 6-Lane with Median, Widening
- 6-Lane Superstreet, Future
- 6-Lane Freeway, Future

Context
Local connections
Constraints
Stakeholder input
Traffic volume

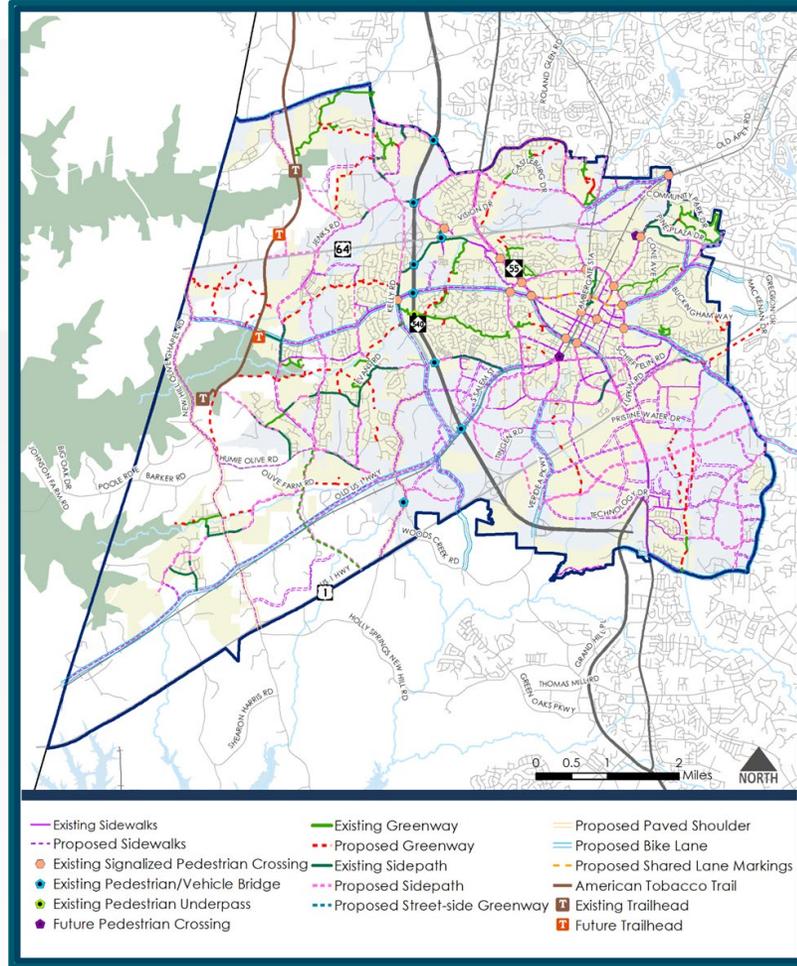
Congestion data (volume/capacity)
Crash data
MTP recommendations
Regional connections
Context
Stakeholder input (mainly impacts design)

Adopted Plans & Updates

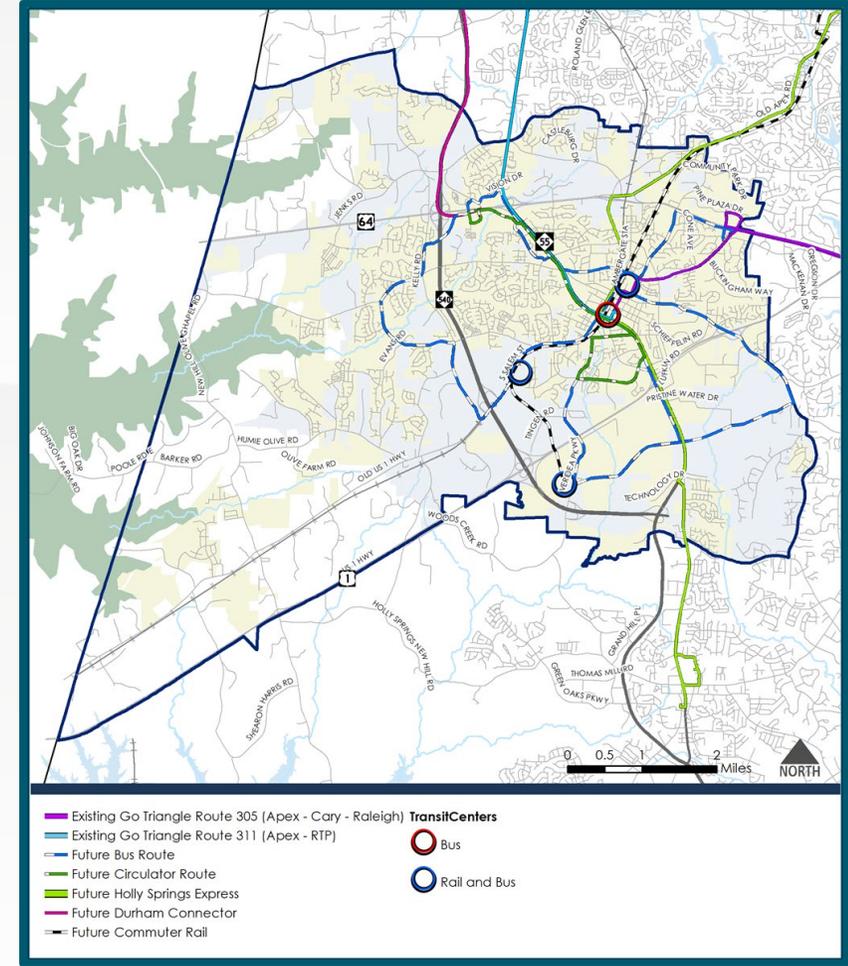
Thoroughfare & Collector Street Plan Map



Bicycle & Pedestrian System Plan Map



Transit Plan Map

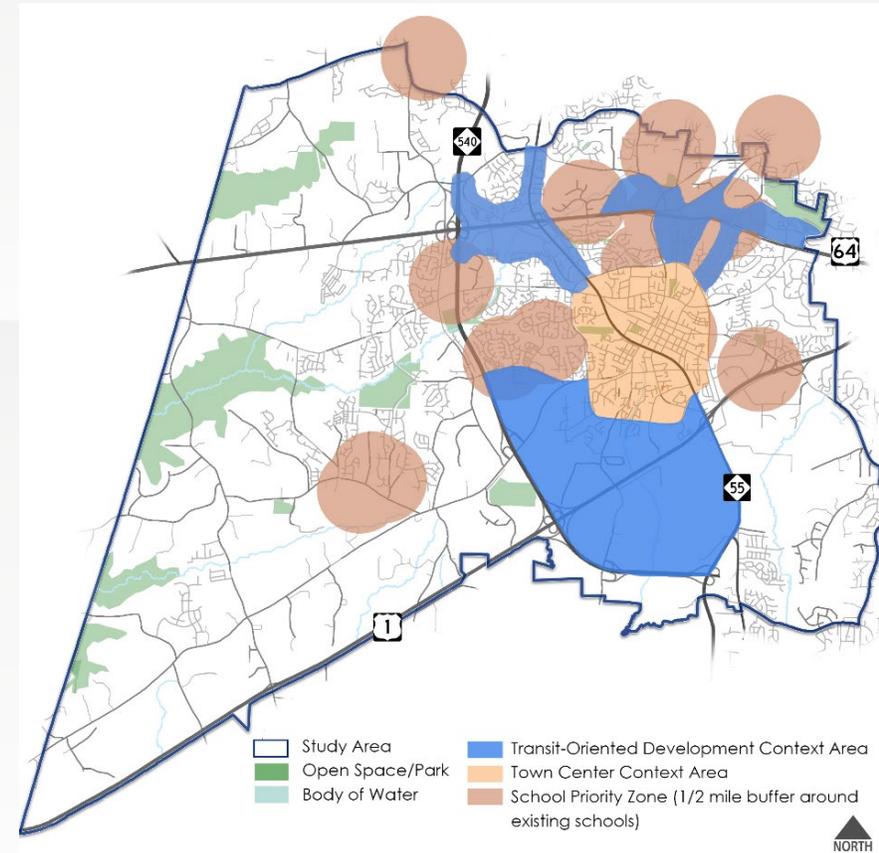


Local Transportation Prioritization

Considerations for staff recommendations informing the annual update of the 5-year Capital Improvement Plan.

Criteria

- Safety
- Congestion
- Connectivity
- Multimodal considerations
- Stakeholder priority and input
- Constraints
- State TIP
- Opportunities & funding strategy





Regional & Statewide Transportation Prioritization

- 10-year program, updated every 2 years
- The Metropolitan Transportation Improvement Program (TIP) and State Transportation Improvement Program (STIP) must be consistent
- All programmed projects must be in the Metropolitan Transportation Plan
- Programming occurs through the Strategic Transportation Prioritization (SPOT) process led by NCDOT (+LAPP and Bonus Allocation)
 - Guided by the Strategic Transportation Investments law
 - CAMPO submits up to 44 projects in each mode for scoring
 - CAMPO and the NCDOT Division Engineer assign local input points for Regional Impact and Division Needs projects
- Projects that are not funded for right-of-way in the first four years of the STIP are subject to reprioritization

TIP Project Schedules

TIP ID	Project	Fiscal Year								Source
		2023	2024	2025	2026	2027	2028	2029	2030+	
R-2721B	NC 540 Southeast Extension	Green								Adopted STIP
SM-57050	Apex Peakway/Old Raleigh Rd Intersection	Green								Adopted STIP
HE-0010	US 1/New Hill Holleman Road, US 1/Friendship Rd Interchange		Blue	Green						Adopted STIP
HL-0007	NC 55/Technology Drive Intersection		Blue	Green	Green					Preliminary STIP
U-5301	US 64 Corridor from W of Laura Duncan to US 1				Blue	Blue	Blue	Green	Red	Preliminary STIP
U-2901B	NC 55 - Replace Railroad Bridge					Blue	Blue	Green	Red	Proposed STIP Amendment
R-5887	US 64/NC 751 Interchange Conversion					Blue	Blue	Green	Red	Preliminary STIP
U-2901B	NC 55 corridor from US 1 to Olive Chapel Road						Blue	Blue	Red	Proposed STIP Amendment
U-5825	Ten Ten Rd/Center Street corridor from Apex Peakway to Kildaire Farm						Blue	Blue	Red	Preliminary STIP
U-6066	US 1 corridor from NC 55 to US 64 (includes NC 55 interchange)								Red	Preliminary STIP
U-6117	Upgrade Apex Townwide Signal System	<i>Not programmed, but proposed for "swap".</i>								CAMPO STIP Subcommittee

Funding Status	
ROW & Utilities	Blue
Construction	Green
Remaining Phase(s) Unfunded	Red

Roadway Design & Street Maintenance



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Government



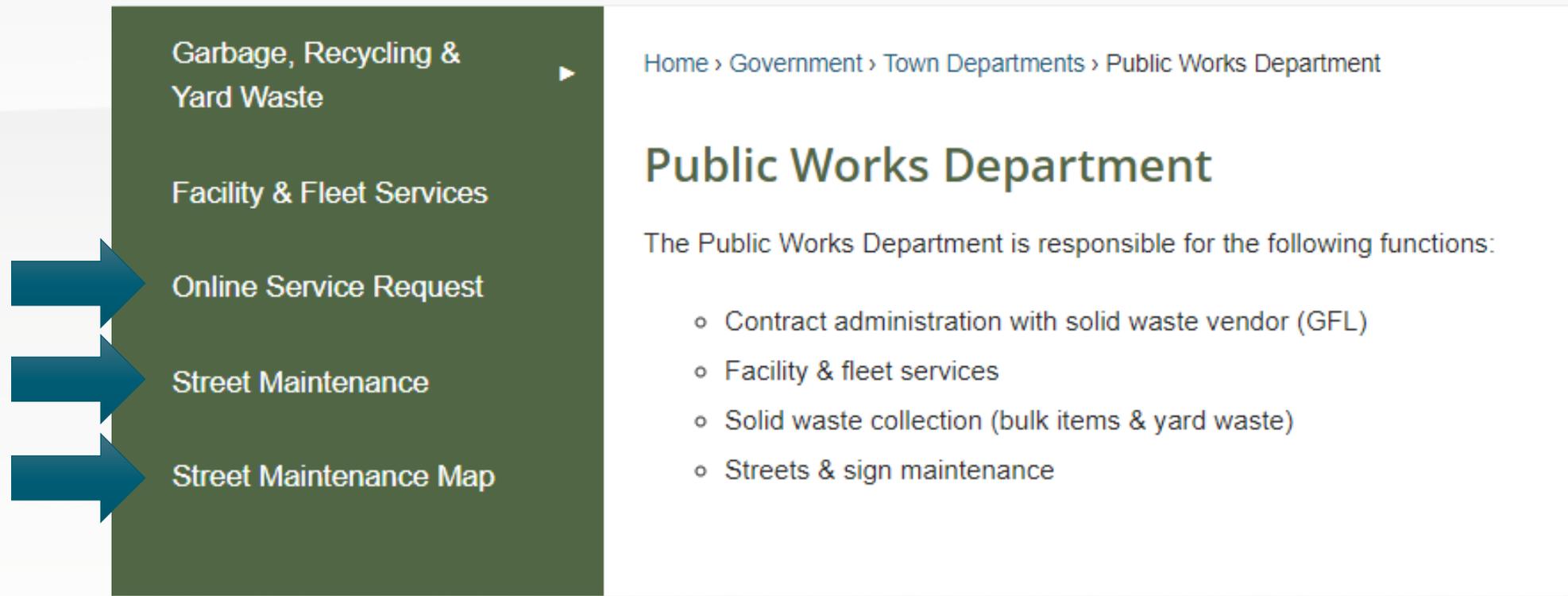
Responsible
Development



A Welcoming
Community

State-maintained Roads vs Town Streets

Online requests and GIS street inventory (apexnc.org)



The image shows a screenshot of a website for the Public Works Department. On the left, a dark green sidebar contains a menu with four items: 'Garbage, Recycling & Yard Waste', 'Facility & Fleet Services', 'Online Service Request', and 'Street Maintenance Map'. Three blue arrows point from the left towards the 'Online Service Request', 'Street Maintenance', and 'Street Maintenance Map' items. The main content area on the right has a breadcrumb trail: 'Home > Government > Town Departments > Public Works Department'. Below this is the title 'Public Works Department' and a paragraph stating 'The Public Works Department is responsible for the following functions:'. A bulleted list follows, listing: 'Contract administration with solid waste vendor (GFL)', 'Facility & fleet services', 'Solid waste collection (bulk items & yard waste)', and 'Streets & sign maintenance'.

Garbage, Recycling & Yard Waste

Facility & Fleet Services

Online Service Request

Street Maintenance

Street Maintenance Map

Home > Government > Town Departments > Public Works Department

Public Works Department

The Public Works Department is responsible for the following functions:

- Contract administration with solid waste vendor (GFL)
- Facility & fleet services
- Solid waste collection (bulk items & yard waste)
- Streets & sign maintenance

State-maintained Roads vs Town Streets

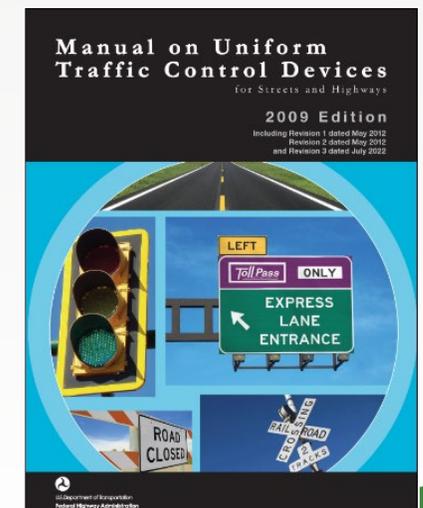
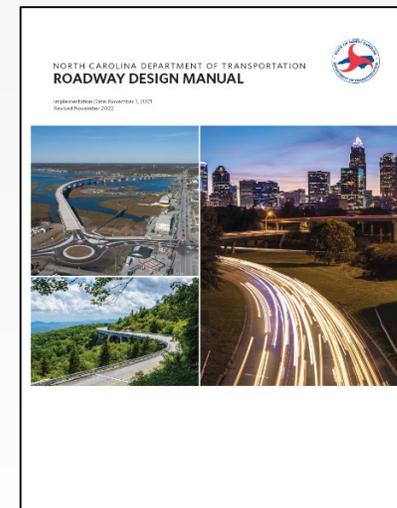
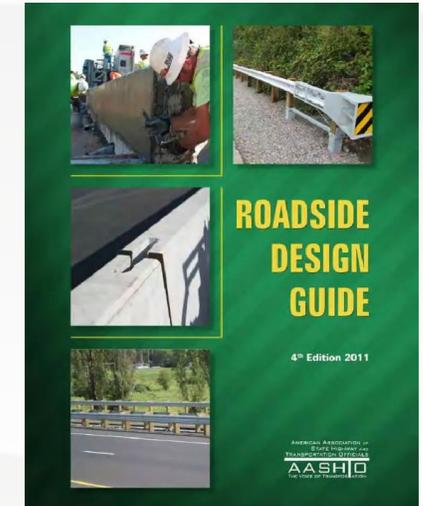
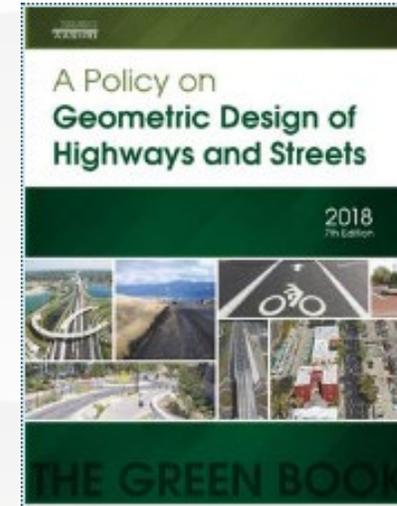
- Highways (US, NC) are state-maintained priority routes
- Thoroughfares (state vs Town-maintained)
 - Proposed “new” thoroughfares may/may not immediately be accepted by NCDOT
 - “Mileage swap” for roads the Town wants exchanged to NCDOT



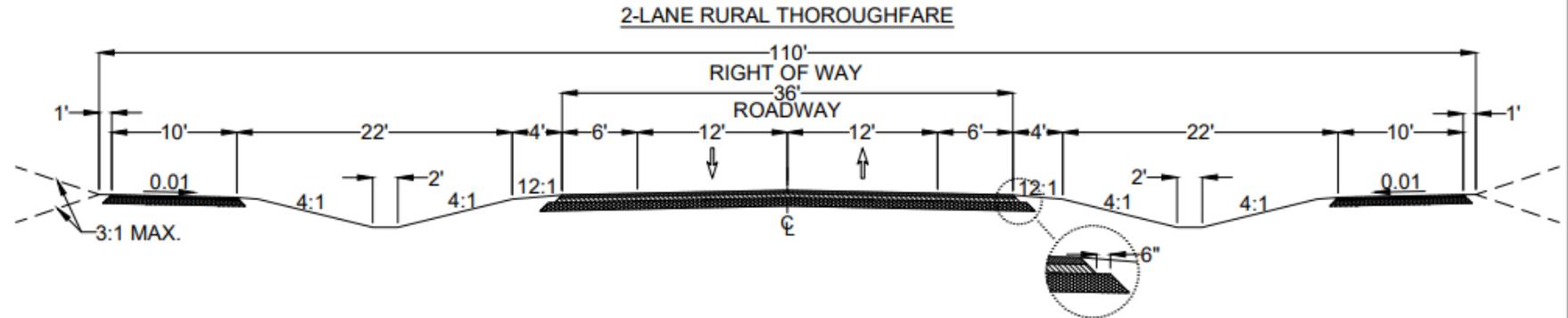
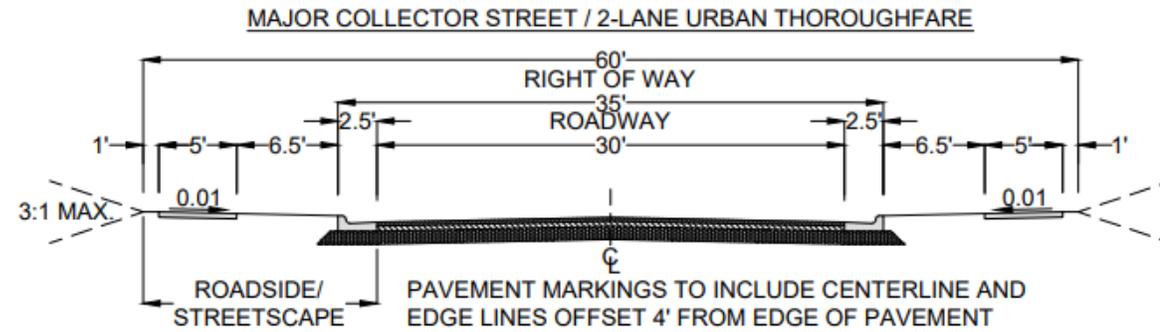
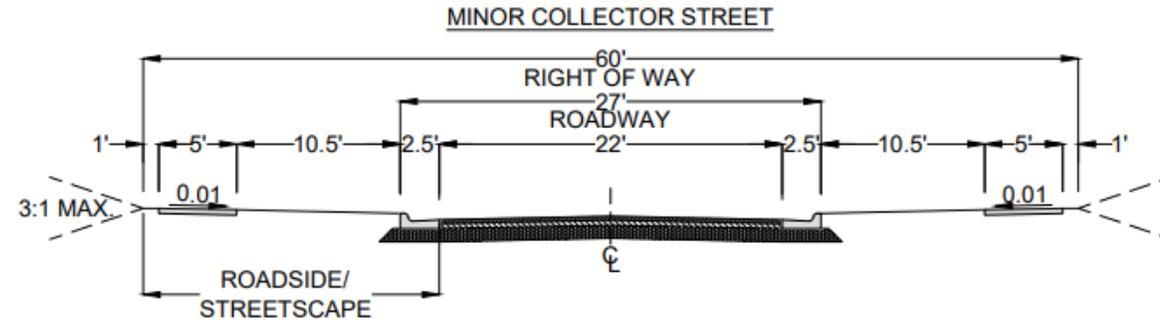
- Collector streets & residential/subdivision streets
- NCDOT encroachment agreements required for municipal utilities, sidewalk, special signs/beacons, etc. in state-maintained right-of-way

Roadway Design & Traffic Control

- Primary design guidelines & requirements
 - AASHTO Green Book & Roadside Design Guide
 - NCDOT Roadway Design Manual
 - FHWA Manual on Uniform Traffic Control Devices (MUTCD)
 - Many other specialized publications
- Apex [standard specifications & details](#)



Apex Street Typical Sections, Collector / 2- Lane Thoroughfare, Detail 300.01



NOTE:

1. PAVEMENT DESIGN SHOWN IS THE MINIMUM FOR THE RESPECTIVE TYPICAL SECTION. CALCULATED PAVEMENT DESIGN MAY DIFFER.
2. NORMAL CROWN OF 1/4 INCH PER FOOT SHALL BE USED UNLESS OTHERWISE DIRECTED BY TOWN ENGINEER.
3. ROADSIDE / STREETSCAPE TREATMENTS ARE CONTEXT SENSITIVE. REFER TO ADVANCE APEX: THE 2045 TRANSPORTATION PLAN FOR APPROPRIATE CONTEXT, AND BICYCLE AND PEDESTRIAN PLANNED FACILITIES MAP.

PAVEMENT DESIGN:

- 3" ASPHALT CONCRETE SURFACE COURSE
- 4" ASPHALT CONCRETE INTERMEDIATE COURSE
- 10" AGGREGATE BASE COURSE

Apex Street Geometric Standards, Detail 300.14

CLASSIFICATION	DESIGN SPEED (MPH)	MAX. GRADE (%)	HORIZONTAL CURVE CONTROLS		VERTICAL CURVE CONTROLS	
			MAX. SUPER ELEVATION (%)	MIN. CL RADIUS (FT)	MIN. LENGTH CREST (FT)	MIN. LENGTH SAG (FT)
THOROUGHFARE	50	7	4	926	84A	96A
MAJOR COLLECTOR	35	10	4	371	29A	49A
MINOR COLLECTOR	30	10	NC	333	19A	37A
RESIDENTIAL STREET	25	10	NC	198	12A	26A
ALLEY	---	10	RC	50	12A	26A

NOTES:

1. A = ALGEBRAIC DIFFERENCE IN GRADES
2. NC / RC = NORMAL CROWN / REVERSE CROWN
3. THIS TABLE OUTLINES MINIMUMS FOR ROADWAY DESIGN. SOUND ENGINEERING JUDGEMENT SHOULD BE EXERCISED WHEN USING MINIMUM DESIGN STANDARDS FOR ROADS.
4. ALTERNATE DESIGNS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION PUBLISHED BY AASHTO: A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS.
5. GRADES SHALL NOT EXCEED 5% WITHIN 100 FEET OF STOP OR YIELD CONDITION.

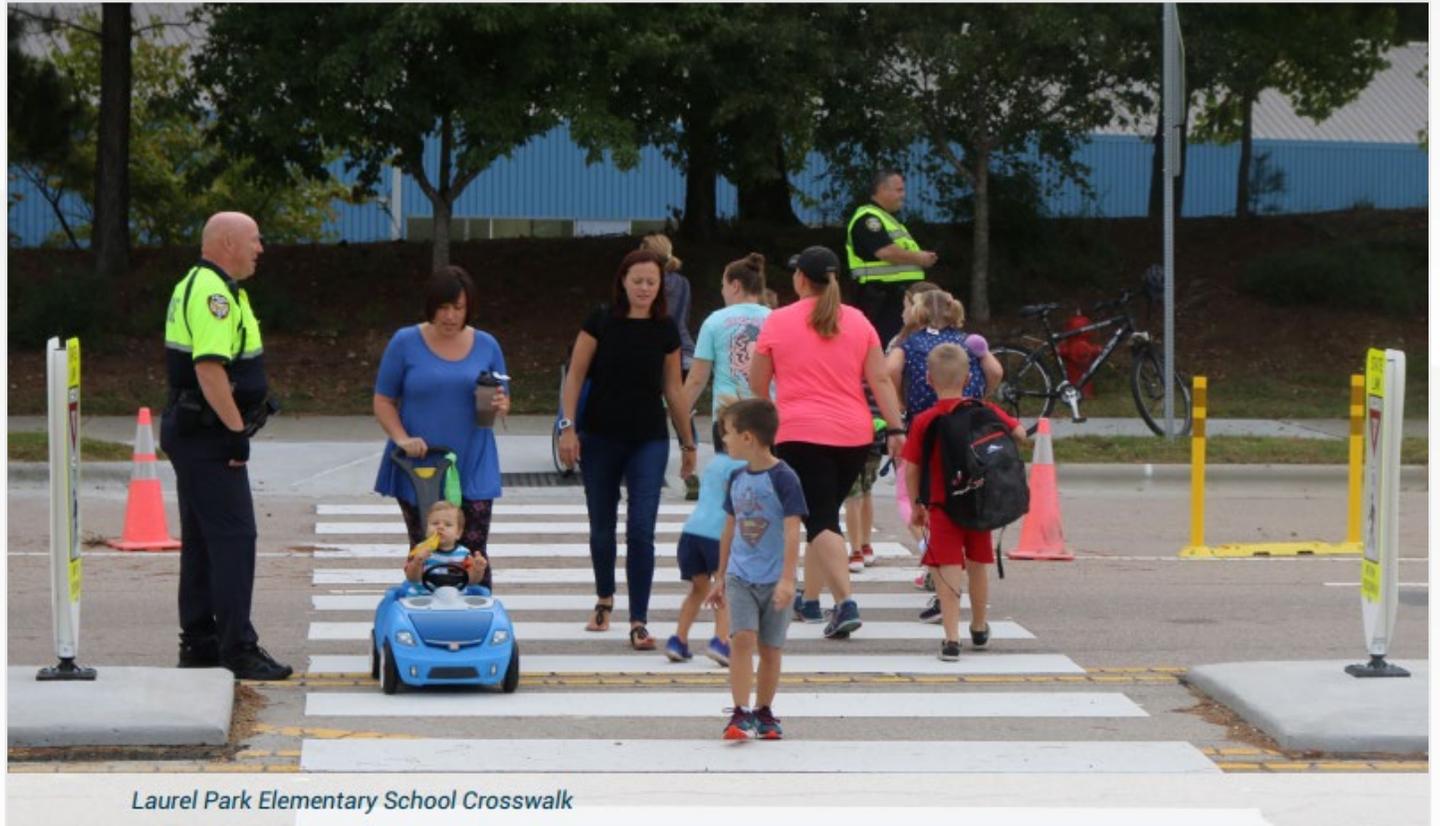


Speed Limits

- Various factors: 85th-percentile speed, design, function, & environment
- Statutory speed or specific ordinance for named street segment
- NCDOT online GIS: search “NCDOT speed limit map”
- Apex [Code of Ordinances](#), Chapter 20
- How to request a study – [online form](#) or [NCDOT: Contact Us](#) page

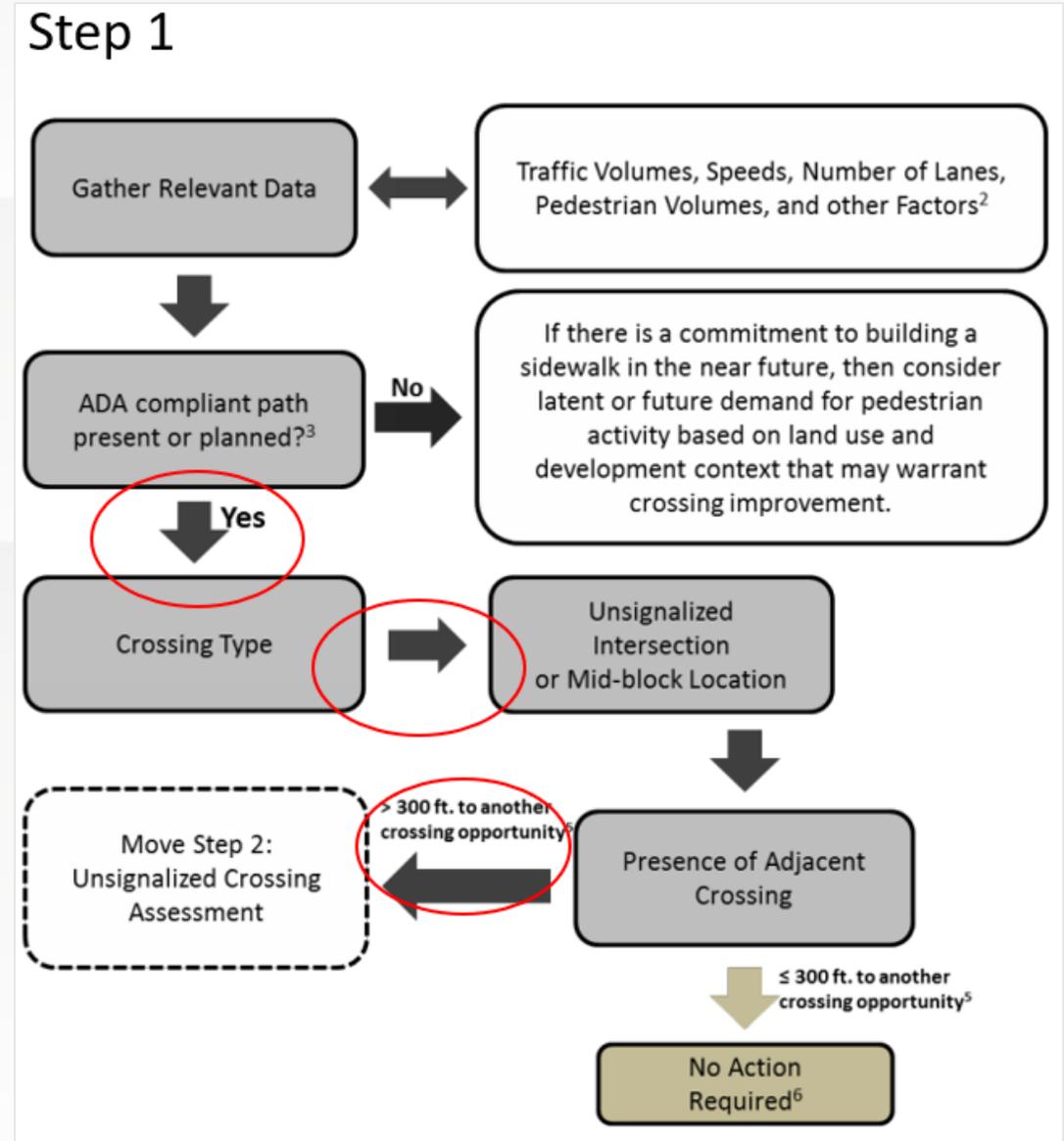
Crosswalks

- How to request a study – [online form](#)
- Pedestrian data collection process & considerations
 - Investigate site
 - Gather pedestrian crossing data (trail cams & visual processing)
 - Evaluate using NCDOT methodology

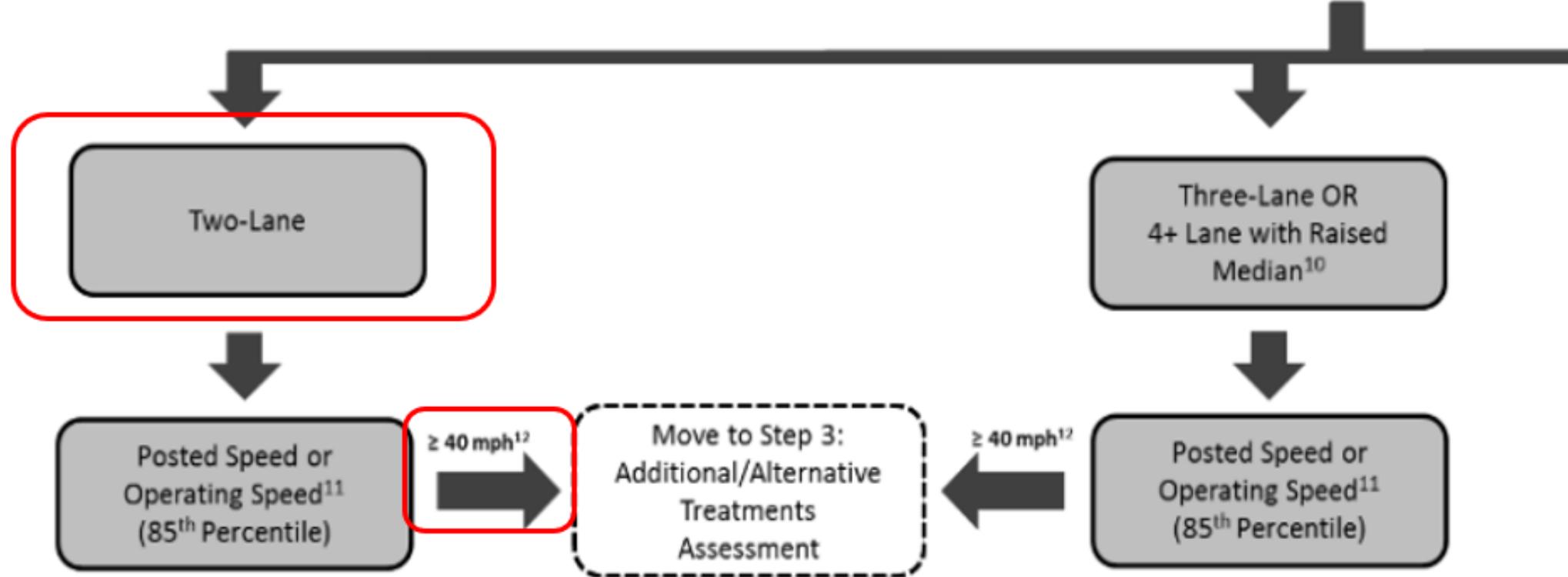


Example of using NCDOT flowchart:

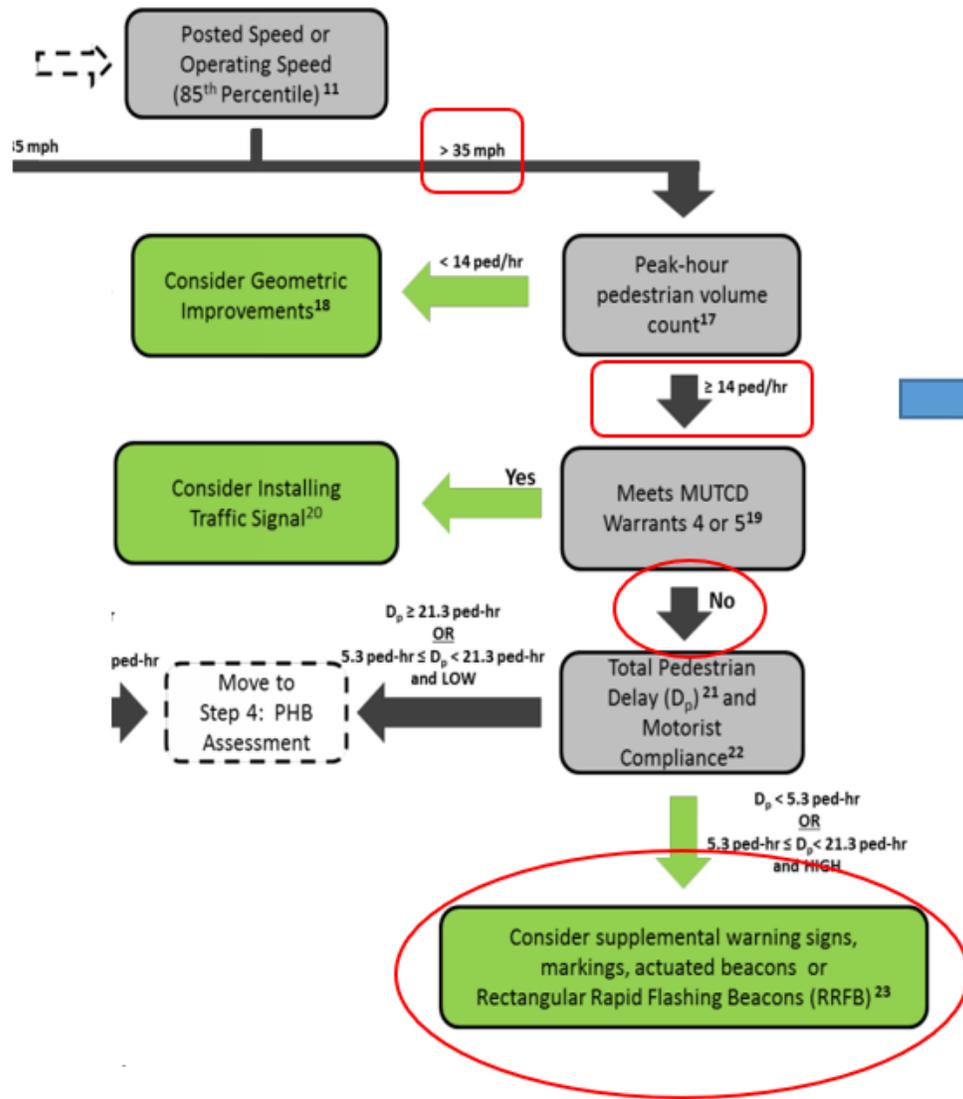
Jenks Rd at Castleburg Drive / Greenway study (July 2021)



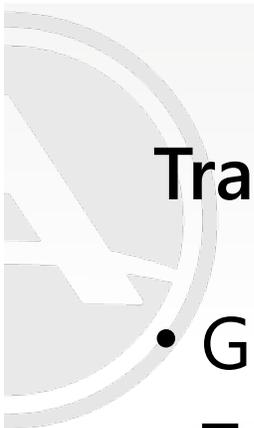
Step 2



Step 3



Peak hour pedestrian volumes were met or surpassed at this location for 5 of the 6 days (including Sunday) for which data was available.

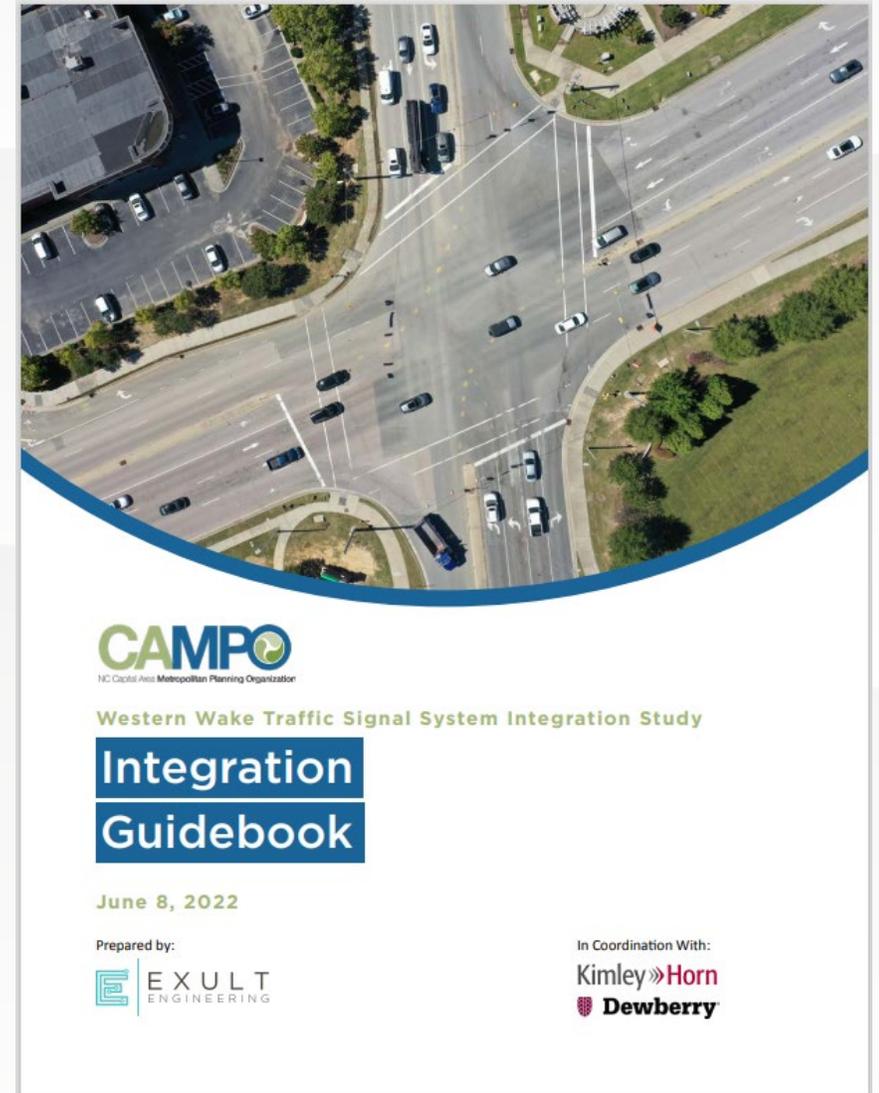


Traffic Signals, All-Way Stops & Geometric Improvements

- Guidance for warranting signals & all-way stops: MUTCD
- Traffic Impact Analysis (TIA) required for PD rezoning cases and sites/subdivisions when trips exceed 1,000 daily or 100 peak hour
- TIA may identify a need for future signals, all-way stops and/or additional lanes
 - Fee in lieu
 - Install when warranted
 - Install with development
- NCDOT or Apex may identify a potential need & funding source
 - Crash history and/or congestion
 - Project planning process

Traffic Signal Operation & Maintenance

- NCDOT maintains signals in Apex through “closed-loop” systems and isolated timing
- Cary’s system includes some signals in Apex
- Western Wake Traffic Signal System Integration Study (2022)



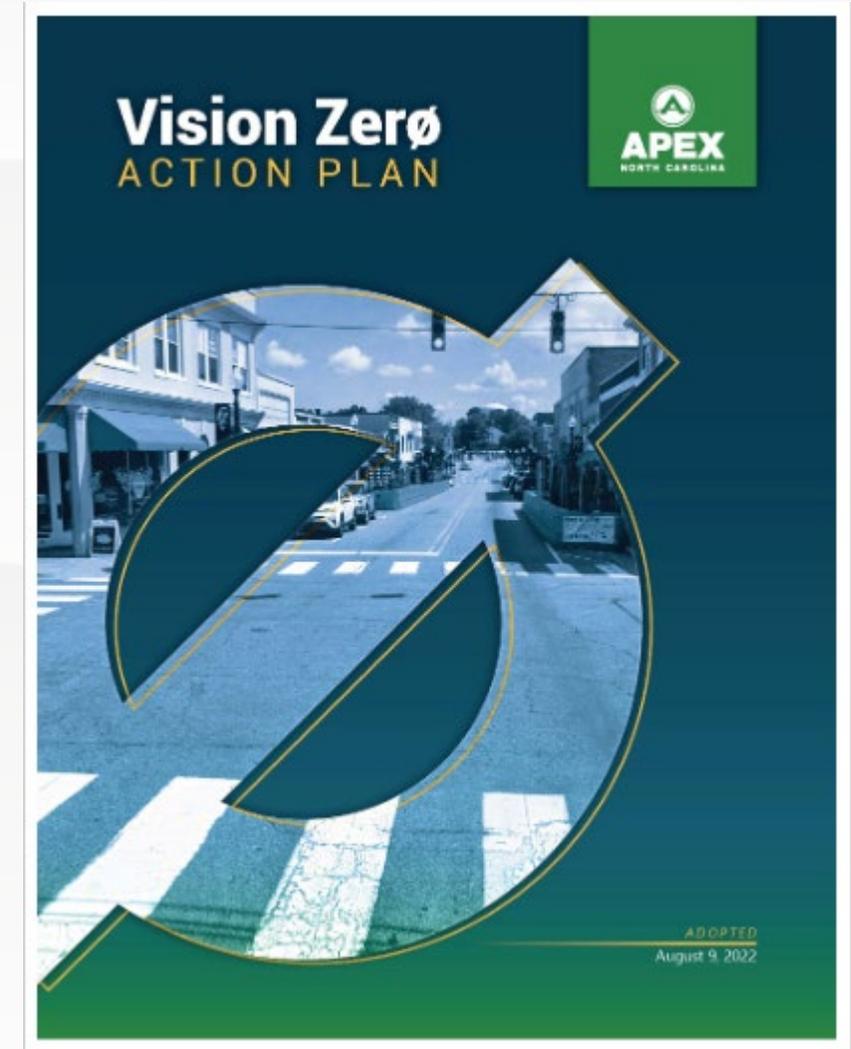


Traffic Signal System Funding

- Apex may eventually need/want a municipal signal system
- Expenses
 - Design fees
 - Controller upgrades, cameras/ITS, & communication lines
 - Staffing, facilities, and equipment
 - Regional partnership cost share
- NCDOT reimburses a portion of annual maintenance & staffing
- State TIP funding is not yet programmed

Vision Zero

- 28 Actionable Strategies
- 5-year crash data (2017-2022)
- High Crash & High Injury Network
- Quarterly [progress reports](#)



Vision Zero Public Outreach & Education



Education Actionable Strategies

Opportunity to produce videos or other presentation media to relay safety information on various platforms and in-person

1. Create a social media campaign with appropriate traffic messages that targets the following 5 most relevant concerns identified through public input: (1) Speeding and Traffic Calming, (2) Pedestrian and Bicycle Safety, (3) Distracted Driver / Behavior Programs, (4) Safe Routes to School, (5) Young Driver / Passenger Safety.



3. Create a safety education team that will engage in traffic safety outreach and education to community groups (schools, churches, HOAs, and Town staff), and will be supported by the social media campaign and safe traffic messaging.



Quarterly Projects Report and Web Updates

APEX
NORTH CAROLINA

GOVERNMENT | SERVICES | DOING BUSINESS | OUR COMMUNITY | HOW DO I... | I'm looking for...

Home > Our Community > Around Town > Current Projects

Current Projects

Take a look at some of the current projects happening here in Apex, North Carolina. If you would like to see a list of all private development projects, check out the [Interactive Development Map](#).

Downtown Design Projects

The town is currently working on 3 of the top ten projects identified in the Downtown Plan.

Parks & Recreation Projects

Current projects underway for the Parks and Recreation Department.

Transportation Projects

Take a look at the many road, bridge, sidewalk, transit and other transportation projects happening in Apex.

CHAT NOW

Select Language

[Current Projects | Apex, NC - Official Website \(apexnc.org\)](https://www.apexnc.org)

School Zone Traffic & Pedestrian Safety



High Performing
Government



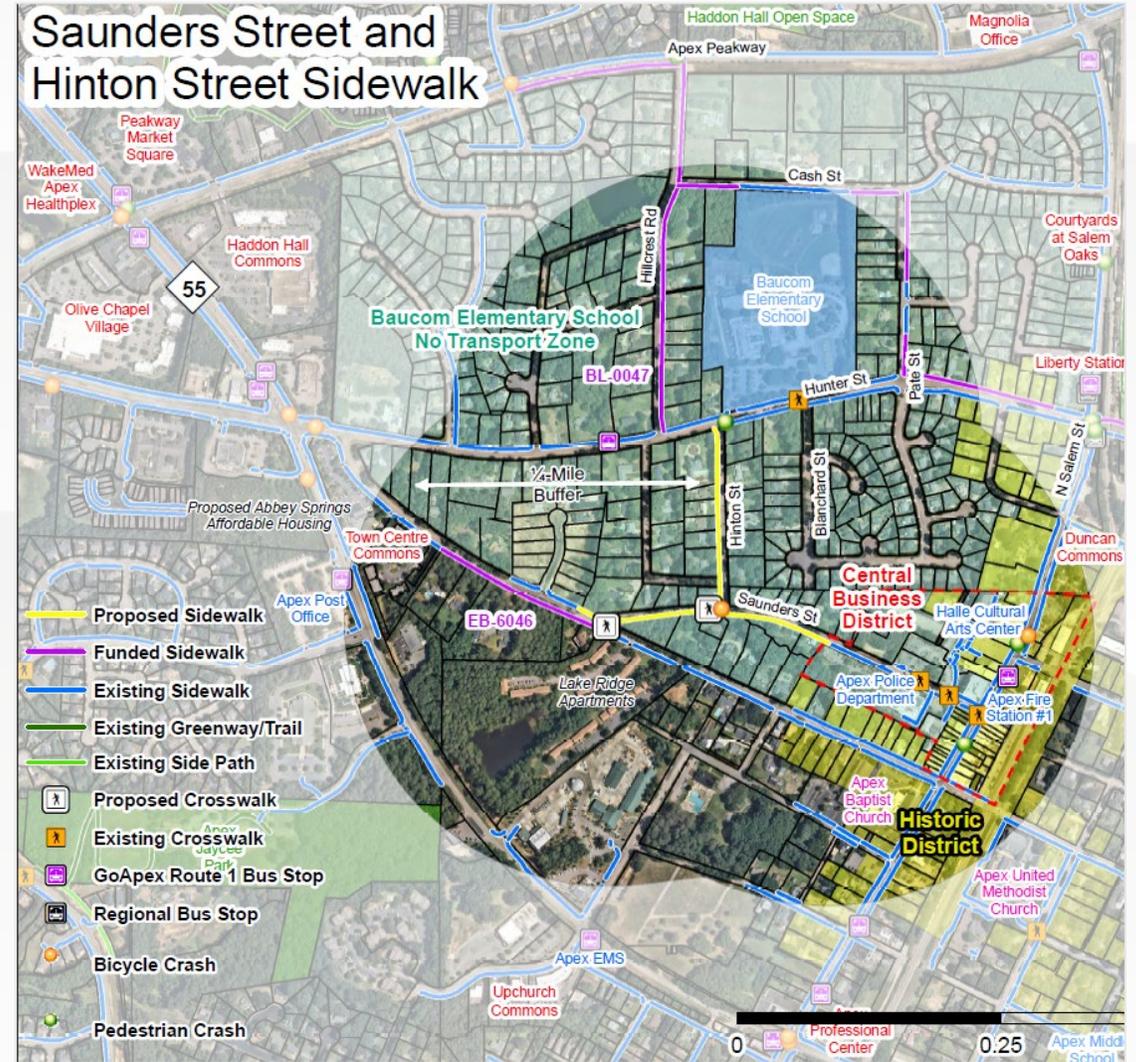
Responsible
Development



A Welcoming
Community

Safe Routes to School

- Identification of needs
 - Principal meetings ~ two years
 - Apex PD insights
 - Resident requests
 - Prioritization database
- Funding
 - ~ \$500,000/year in local funds
 - LAPP applications
 - Streets & Sidewalk Bond
- Projects underway serving:
 - Apex High, Baucom, Thales K-5, & Thales JH/HS



Apex Schools

- 3 Public High Schools
- 4 Public Middle Schools
- 7 Public Elementary Schools
- 2 Charter Schools
- 3 Private Schools

Total enrollment = 18,731 students



Engagement & Education

- **Community Engagement**

- Education and Awareness
- Email address (asktsu@apexnc.org)
- Social Media
- Traffic Safety Video
- Equipment
- Resources/Partnerships



Engagement & Education

- **Watch for Me NC Program**

- Partnership
- Focus – Drivers, Pedestrians, Bicyclists
- Community Presentations

- **Bike Helmet Initiative**

- Grant Opportunity
- Low-income Families

Bicyclist Safety



Looks for cars as you ride

Anticipate that cars do not see you

Ride on the sidewalk or as close to the right side curb as you can

Bicyclists are not covered like a pedestrian in a crosswalk



They're going back to school!

Remember to stay alert in and around school zones



School Zone Enforcement

- Crash Reduction/Safe and Efficient Flow of Traffic
 - All Roadway Users
- School Zone Initiatives:
 - Patrol Operations
 - Traffic Safety Unit (TSU)



School Crossing Guards

- **Crossing Guards - Allocated (6) / (2) Vacancies:**

- **Locations:**

- Apex Elementary - 2
- Baucom Elementary - 1
- Olive Chapel Elementary - 1
- Scotts Ridge Elementary - 1
- Laurel Park Elementary - 1

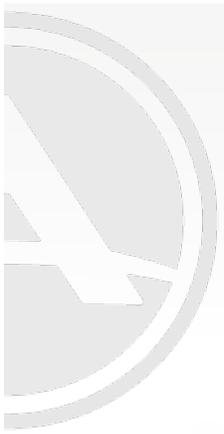
- Apex Friendship Elementary
 - Crossing Guard - Not Assigned
 - Crosswalk/Traffic Signal



Carpool - Concerns and Complaints

- Backups and Congestion
- Citizen Based Traffic Complaints
- Traffic Assessment/Recommendations
- School Bus System
- APD/School Resource Officers (SRO)





Questions?

Humie Olive Road at Apex Friendship Campus

- A traffic signal with crosswalks is planned for Blazing Trail Drive ('24)
- Existing traffic signal with crosswalks at Evans Road
- Existing Rapid Flashing Beacon crosswalk at Whistling Quail Run (upgrade '23)



Apex Friendship Bike/Ped Bridge or Tunnel

- Potential location on west side of Whistling Quail Run (pending a feasibility study if funded)
- Requires approximately 0.3-acre on NW corner and 0.3-acre on high school site
- Likely would exceed \$5M (survey, design, ROW, construction)
- 4 years to plan & construct
- Pros & Cons...(next slide)





Apex Friendship Bike/Ped Bridge or Tunnel

Pros

- Opportunity for crossing Humie Olive Road without potential vehicular conflicts

Cons

- Much longer walk than crossing at-grade
- Walkers and bikers much more likely to use the traffic signals to the east and west to cross even with a bridge/tunnel in place
- Bridge/tunnel to replace flashing crosswalk but students may still attempt at-grade crossings there
- Property acquisition required from private owner and Wake County Schools



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