Appendix 3. Study Corridors and Intersections.

The following “Opportunities and Constraints” Maps show assessments of selected study corridors and intersections from Section 4 of the Plan. These maps identify existing pedestrian-related features as well as issues that currently inhibit pedestrian travel and constraints that may be present to restrict future improvements. Finally, the maps also provide recommended treatments and proposed future areas of study.
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Section A. Connecting with the American Tobacco Trail on the south end, this section is recommended for a sidewalk connection from the AT&T to existing, new sidewalk on the west side of the street. The new sidewalk does not have a buffer between pedestrians and traffic. Much of the rest of this corridor has sidewalk, although in varying condition.

Section B. This section includes N.C. Central University. In sharp contrast to the Fayetteville Street corridor, Alston Avenue is wide and not dominated by pedestrians, nor does it include the amenities (trees, pedestrian-scale lighting, furniture) that characterize Fayetteville Street. However, numerous schools close to this section make it an important consideration for maintenance and reducing some curb radii of cross-streets.

Section C. Extending from NC 147 to Main Street, this long section is punctuated by parks and elementary schools (Eastway and South). An existing mid-block crossing connecting two sides of a park would benefit from a pedestrian signal. As with the Fayetteville Street corridor, the NC 147 interchange area presents a major barrier to north-south foot traffic. Installing crosswalks, tightening corner radii, raising the pedestrian island, and providing pedestrian signals may improve this area (see inset 1). Interchange areas pose particular problems balancing high through and turning vehicular traffic volumes with the needs of pedestrians. Better, consistent streetscaping could help send a message to pedestrians and motorists alike that this area also belongs to both kinds of traveler.
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Several streets south of Lawson have skewed angles, missing crosswalks, and wide curb return radii, making walking difficult.

This one-way section of Roxboro Street also encompasses the traditional downtown area of Durham. Several cross-streets should be considered for curb radii reductions, which seem overly large for the downtown area where traffic should be moving slowly. Pedestrians present in abundance in the downtown “loop” indicate a need for continuing to focus on streetscaping treatments to aid small businesses and promote walking.

Sporadic sidewalk is present on north end of this segment, as well as a deeply worn path north of Channing Street. The design of the existing sidewalk is obviously older, with single curb ramps in most locations and small or non-existent buffers between pedestrians and traffic on the predominantly four-lane roadway. Crosswalks are missing on Ellerbee, Lavender, Hammonds, and Club (all near Northgate Park), and many of the curb radii seem too wide for the predominant land use (residential and small businesses) and number of people walking. South of Knox Street, older-growth trees shade the street and quickly provide a remarkable change of visual pace from the I-85 interchange area.
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The west end of Holloway Street is a scenic gateway into the city core, with wide, nicely landscaped buffers facing standard 5' sidewalk. Large shade trees help provide a good comfort level on this stretch of the roadway, although fewer pedestrians were noted here than on the south end of the corridor. Some commercial and institutional uses are in place along this section.

Anchored by two elementary schools (Eastway on the south side and Smith on the north), this section is important to many children in nearby neighborhoods. Special attention needs to be paid to the intersection of Alston Avenue and Holloway Street, which lacks pedestrian signals and crosswalk on all four approaches. Residential and some commercial uses are found on the street, with residential neighborhoods further back.

The most pedestrians in this corridor are to be found in this section, many of whom are young adults, not children. Commercial properties help draw people from the adjacent neighborhoods. However, the lack of sidewalk facilities, particularly on the north side of Holloway Street, makes this a more treacherous environment for pedestrians although the presence of some large trees may make sidewalk construction problematic. Wide turning radii at Miami and the NC 147 on/off ramps contribute to less-than-desirable conditions at these locations; raising the channel island and installing crosswalks may help, but shortening the right-turn angle to slow cars from Miami Blvd. is also desirable.
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**Section A.** Notably, this section includes Hill Side High School and connects with the American Tobacco Trail near Riddle Road. Numerous small groups of pedestrians were observed at the south end of this section and frequently use Cook Road (no sidewalk). Unfortunately, this section exhibited some of the worst sidewalk maintenance in any of the studied corridors, including side streets in the residential neighborhoods. Some stretches had nicely landscaped, wide buffer areas between pedestrians and motor vehicles.

**Section B.** This section includes N.C. Central University, and the area in front of NCCU exhibited the most pedestrians of any area surveyed. Street furniture (garbage receptacles, benches), wide sidewalks and buffers between traffic and people, and pedestrian-scale lighting send the message that this area is great for walking - and it is used accordingly. The condition of the sidewalk on both sides is in need of some repair.

**Section C.** This section centers on the interchange area of NC 147. Like the Alston Corridor, the interchange off-ramps entering Fayetteville Street impede safe pedestrian travel due to high-speed right turning movements. Pedestrian signals at Pettigrew crossing Fayetteville Street are recommended (see Inset 1, below).
Section A. The west end of the corridor is notable for a number of apartment complexes walking distance of South Square. Areas with no pedestrian buffer east of Ivey Creek, plus a 150’ break in the sidewalk (easily constructed) south of Shannon Road could be targeted to improve access. While most of Sections A and B are five-lane (center turn lane) cross-sections, the west end of this section has a landscaped median for a portion of its length. This section generally has the best intersection treatments.

Section B. This section encompasses the South Square Mall area. Crosswalks on Shannon Road; signaling a mid-block crossing and adding curb ramps; adding buffers to sidewalks (north side of street), and removing various obstructions to pedestrians would be beneficial to increasing pedestrian activity to the major retail generator. MLK, Jr. Boulevard is remarkable for its complete crosswalks, full-circle pedestrian signals, and dual curb ramps on every approach.

Section C. With fewer pedestrian generators nearby, this section has fewer traffic signals than section B and less potential for foot traffic. Nevertheless, a middle school and park are located within walking distance. Ditching close to the curb line between Hope Valley Rd. and W. Cornwallis Rd. will make sidewalk installation difficult in this area (north side of street). See Inset 1 for issues regarding Durham Chapel Hill Blvd.

Section D. Anchored by Forest Hills Park, this northermost section also eventually "underpasses" NC 147 to reach the Durham Bulls Athletic Park and downtown. West Forest Hills (especially) and Forest Hills Blvd. have large, sweeping curb radii, making high-speed right turns possible and pedestrian crossings hazardous at these locations. Trees and steep slopes make sidewalk installation on the east side of the section problematic and will make a continuous path to section C east of W. Cornwallis Road difficult.
OPPORTUNITIES & CONSTRAINTS

No pedestrian-related crashes reported within the past three years.

The posted speed limits are 35mph on Alston Avenue and 35 mph on Lawson Street.

Discontinuous sidewalk.

Worn footpath from pedestrian use.

Large radii on all corners encourages motorists to speed around the corner.

Discontinuous sidewalks.

University students travel through the intersection.

RECOMMENDATIONS

- Construct sidewalks: on the north side of the western leg of Lawson Street and on the south side of the eastern leg.
- Install: curb extensions on the northeast, northwest and southwest corners; curb ramps on all corners; pedestrian countdown signals on all corners; and high visibility crosswalks across each leg of the intersection.
- On Lawson Street in the eastbound direction, install a white strip delineating the thru movement, including straight arrow.

The posted speed limits are 35mph on Alston Avenue and 35 mph on Lawson Street.

Discontinuous sidewalk.

Worn footpath from pedestrian use.

Large radii on all corners encourages motorists to speed around the corner.

Discontinuous sidewalks.

University students travel through the intersection.

RECOMMENDATIONS:

- Construct sidewalks: on the north side of the western leg of Lawson Street and on the south side of the eastern leg.
- Install: curb extensions on the northeast, northwest and southwest corners; curb ramps on all corners; pedestrian countdown signals on all corners; and high visibility crosswalks across each leg of the intersection.
- On Lawson Street in the eastbound direction, install a white strip delineating the thru movement, including straight arrow.
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No pedestrian related crashes reported at this intersection within the past 3 years.
The posted speed limits are 35 mph on Broad Street and 25 mph on Perry Street.

Pedestrian corridor due to the shopping center and the 9th Street commercial area located to the west.

Large diameter street trees create sight line issues.

No sidewalk.

Mature trees and stone wall run parallel to Broad Street.

Campus path is heavily used by students.

Wide existing shoulder.

Existing pedestrian crossing sign should be relocated to the crosswalk.

OPPORTUNITIES & CONSTRAINTS

RECOMMENDATIONS:

- Due to the environmental constraints on the west side of Broad Street, further evaluate the for the construction of a sidewalk is warranted.
- Relocate the existing pedestrian crossing sign to the crosswalk.
- Extend the curb approximately 8 feet on the east side of the intersection to reduce the pedestrian crossing distance. An additional option includes:
  1. Install a concrete median with a pedestrian refuge area on the northern leg of Broad Street including a high visibility crosswalk.
  2. Realign the travel lanes by removing the shoulder strip and installing a concrete median island with pedestrian refuge area. (NOT SHOWN)
  3. In the event a bicycle lane or route is implemented along Broad Street the curb extension design should be reconsidered.
- Install a stop bar on Perry Street, including a 50-foot long double yellow strip median.

OPPORTUNITIES & CONSTRAINTS and RECOMMENDATIONS

Duke Administration Building
Duke University Campus
Bull City Shopping Center

RECOMMENDATIONS:

- Due to the environmental constraints on the west side of Broad Street, further evaluate the for the construction of a sidewalk is warranted.
- Relocate the existing pedestrian crossing sign to the crosswalk.
- Extend the curb approximately 8 feet on the east side of the intersection to reduce the pedestrian crossing distance. An additional option includes:
  1. Install a concrete median with a pedestrian refuge area on the northern leg of Broad Street including a high visibility crosswalk.
  2. Realign the travel lanes by removing the shoulder strip and installing a concrete median island with pedestrian refuge area. (NOT SHOWN)
  3. In the event a bicycle lane or route is implemented along Broad Street the curb extension design should be reconsidered.
- Install a stop bar on Perry Street, including a 50-foot long double yellow strip median.

Map Source/Age: City of Durham/2005

Legend:
- Opportunities
- Constraints
- Existing Conditions
- Sidewalk
- Crosswalk
- Curb Ramp
- Traffic Signal

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People walk to Northgate Mall from surrounding residential communities such as Walltown.

- One pedestrian-related crash reported at the intersection within the past 3 years.
- The posted speed limits are 35 mph for West Club Road and 35 mph for North Buchanan Blvd.
- Large radii at each corner encourage motorists to speed around the corner.
- No crosswalk.
- No curb ramp.

**RECOMMENDATIONS:**
- Install curb extensions on all corners including a curb ramps and pedestrian countdown signals.
- **LONG TERM:** Consolidate or relocate driveways away from the intersection.
OPPORTUNITIES & CONSTRAINTS

- No pedestrian-related crashes were reported at this intersection within the past 3 years.
- The posted speed limit for Academy Rd/Cameron Rd is 35 mph.
- No sidewalks on both Cranford Road & Academy Road.
- The roadway curve near the intersection, including vegetation creates poor sight-lines.
- The sloping topography of the roadway creates speeding issues.
- Large radii encourages motorists to speed around the corner.
- Pedestrian signal and sign, including flashing light with push button (motorists are not required to stop).
- No crosswalks.

RECOMMENDATIONS:

- Install sidewalks on both sides of Cranford Road.
- Install a high visibility crosswalk across the southern leg of Academy Road due to the poor sight lines for southbound traveling motorists.
- Install a crosswalk across Cranford Road, which will require the relocation of the stop sign and stop bar.
- Install pedestrian crossing signs at and in advance of the proposed crosswalk across Academy Road.
- Evaluate reducing the corner radii with a physical or painted curb extension.
- Evaluate the feasibility of constructing a sidewalk on the westside of Academy Road/Cameron Road within the shoulder lane while taking into account the environmental sensitivity of the area; this may require the realignment of the roadway lanes to accommodate a new sidewalk.
- A pedestrian refuge island may be constructed to improve the safety of pedestrians crossing Academy Road/Cameron Road. However, roadway alignments would have to be investigated further to ensure safe roadway design.
- Install an overhanging pedestrian crossing sign over the roadway for better visibility of the crossing.

LEGEND

- Opportunities
- Constraints
- Existing Conditions
- Sidewalk
- Crosswalk
- Curb Ramp

Cranford Road and Cameron Rd/Academy Rd Intersection

City of Durham Comprehensive Pedestrian Plan

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No pedestrian-related crashes were reported at this intersection within the past 3 years.

The posted speed limits are 35 mph on Colgate Avenue, 35 mph on Washington Street, and 35 mph on Glendale Avenue.

No sidewalks on both sides all roadways.

No curb ramps on all corners.

Pedestrians travel through the intersection some pushing baby strollers.

The roundabout was constructed without pedestrian amenities.

No crosswalks across all roadways.

Existing shoulder area.

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City of Durham
Comprehensive Pedestrian Plan

EXISTING CONDITIONS, OPPORTUNITIES & CONSTRAINTS, and RECOMMENDATIONS MAP
Glendale Av & Washington St & Colgate Av Intersection

Recommended:
- Construct sidewalks along both sides of Washington Street, Colgate Avenue and Glendale Avenue.
- Install curb ramps at each corner.
- Redesign the concrete splinter islands on all approaches to the roundabout, including pedestrian crossing with refuge areas. On Washington Street realign the shoulder to accommodate the travel lane.
- Install a curb extension on the northern leg of Washington Street within the shoulder area to provide a pedestrian refuge area.
- The redesign of this intersection should include the potential for a future bicycle lanes.
OPPORTUNITIES & CONSTRAINTS

Two pedestrian-related crashes were reported within the past 3 years.

The posted speed limits are 35 mph on North Hyde Park Street and 35 mph on Juniper Street.

Motorist speed along the roadway.

Discontinuous or no sidewalks on both sides of each roadway.

No crosswalks across each roadway.

On Sunday pedestrian volume crossing the roadway from the parking lot is high.

No curb ramps on all four corners.

Dip in the roadway may create poor sight lines.

No pedestrian signalheads to indicate when a pedestrian should cross the street.

RECOMMENDATIONS

- Install sidewalks: on both sides of the northern and southern legs of North Hyde Park Street; and both sides of the western leg of Juniper Street and on the north side of the eastern leg.
- Install a high visibility crosswalk across the eastern and western leg of Juniper Street.
- Install crosswalks across all roadway legs.
- Install pedestrian countdown signalheads.
- Install double yellow pavement marking median.

OPPORTUNITIES & CONSTRAINTS and RECOMMENDATIONS MAP

City of Durham Comprehensive Pedestrian Plan

North Hyde Park Street & Juniper Street Intersection
OPPORTUNITIES & CONSTRAINTS

- No pedestrian-related crashes were reported at this intersection with the past 3 years.
- The posted speed limit for Roxboro Street is 35 mph.
- Duke Park has active recreation facilities.
- Worn path created by pedestrians travelling along the roadway.
- Due to heavy vehicular volume, pedestrians have difficult crossing safely.
- Pedestrians walk from the residential neighborhood to Duke Park.
- No sidewalks on both sides of the roadway.
- No stop bars and double yellow striped median on both legs of Knox Street.
- No curb ramp.
- Roxboro Street is a connector to I-185 and therefore traffic volume is heavy.
- Street trees near intersection create poor sight lines.
- No crosswalks.

RECOMMENDATIONS:

- Install crosswalks across each leg of the intersection; stop bars on Roxboro Street will have to be setback, as a result.
- Construct sidewalks on both sides of the eastern leg of Knox Street and on the south side of the western leg; and on both sides of the northern leg of Roxboro Street.
- Install pedestrian crossing and warning signs at and in advance of the crosswalk on Roxboro Street.
- Install stop bar on both the western and eastern legs of Knox Street.
- Install double yellow striped pavement marking median on both the western and eastern legs of Knox Street.
- Realign existing curb ramp on the south west corner to accommodate both directions of pedestrian travel.
- Evaluate the need to conduct a signal warrant analysis for the intersection.

Map Source/Age: City of Durham 2005

OPPORTUNITIES & CONSTRAINTS and RECOMMENDATIONS MAP
Knox Street & Roxboro Street Intersection

The Louis Berger Group, Inc.
RECOMMENDATIONS:

- Install sidewalks on North LaSalle Street on the west side of the northern leg and on the east side of the southern leg, and on the south side of the eastern leg of Hillsborough Street.
- Install curb ramps on the northwest, southeast, and southwest corners.
- Install a crosswalk across the northern leg of North LaSalle Street and the western leg of Hillsborough Street.
- Install curb extensions on the northwest and southeast corners.
- Install pedestrian countdown signalheads with sufficient pedestrian crossing time.
- Close the exit lane by the southwest corner of Hillsborough Street to establish the pedestrian crossing and improve vehicular circulation at the intersection.
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OPPORTUNITIES & CONSTRAINTS

- Two pedestrian-related crashes at the intersection within the past 3 years.
- Large radii permits motorist to speed around the corner.
- Crosswalks are askew increasing the crossing distance for pedestrians.
- Intersection was recently reconstructed.
- Bus routes travel along both roadways.

The posted speed limits are 40 mph for Old Chapel Hill Road/University Road and 40 mph for Garret Road.

Pedestrian crossing signal timing is too short to walk across the roadway safely.

Within the vicinity of the intersection is Githens Middle School and residential buildings.

OPPORTUNITIES & CONSTRAINTS

- Increase the traffic signal's pedestrian walk time.
- Install pedestrian countdown signalheads for all crossings.

NOTE: Due to the recent reconstruction of the intersection, and unless there is significant pedestrian safety issues, these recommendations are long term.

RECOMMENDATIONS:

- Realign crosswalks across University Road and both legs of Garret Road to reduce the pedestrian crossing distance; install curb ramps to link with the realigned crosswalks. The realignment of the crosswalks will require vehicular travel lanes to be setback on all three legs, except Old Chapel Hill Road.
- Increase the traffic signal's pedestrian walk time.
- Install pedestrian countdown signalheads for all crossings.

NOTE: Due to the recent reconstruction of the intersection, and unless there is significant pedestrian safety issues, these recommendations are long term.

M A P S O U R C E / A G E: City of Durham/2005