North Carolina Department of Transportation
Transportation Planning Branch

Comprehensive Transportation Plan Study Report for Pitt County

Adopted by the Pitt County Board of Commissioners on
October 17, 2005
Adopted by the North Carolina Department of Transportation on
July 13, 2006

Comprehensive Transportation Plan
Study Report
for
Pitt County

Prepared by the: Transportation Planning Branch
N.C. Department of Transportation

In Cooperation with: Pitt County Planning Department
The Federal Highway Administration
U.S. Department of Transportation

September 21, 2005

Acknowledgments

Persons responsible for this report:

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Director, Transportation Planning Branch:	Mike Bruff, P.E.

Special thanks to:

Pitt County Planning Director	James F. Rhodes
Pitt County GIS Mapping	Eli Johnson
Pitt County Planner	Jonas N. Hill

Executive Summary

In June of 2003, the Transportation Planning Branch of the North Carolina Department of Transportation agreed to begin an update of the 1993 Pitt County Thoroughfare Plan with cooperation and partnership of Pitt County planning. The development of the Pitt County Comprehensive Transportation Plan was initiated in January of 2005. The Pitt County Comprehensive Transportation Plan, as shown in Sheets 1 through 4, resulted from the implementation of the transportation planning principles.

A Comprehensive Transportation Plan includes the following sheets:

Sheet 1 of 4:	Adoption sheet;
Sheet 2 of 4:	Highway Map;
Sheet 3 of 4:	Public Transportation and Rail Map; and
Sheet 4 of 4:	Bicycle Map

The Comprehensive Transportation Plan for Pitt currently includes recommendations for three planning elements: the Highway Map, Transportation and Rail Map, and the Bicycle Map. The highway element was determined by a Historic Annual Average Daily Traffic Trend analysis application and through discussions with the Pitt County planners and planning board concerning their overall goals for the area. The document also offers a recommendation for the County to pursue an access management policy.

The final report documents the findings of this study along with the resulting recommendations for improvements. In addition, the final report presents transportation cross-section recommendations, cost estimates for the recommended improvements, and environmental features found in the recommended for improvement area.

Implementation of the plan rests largely with the policy boards and citizens of the planning area. Transportation needs throughout the State exceed the available funding; therefore, local areas should aggressively pursue funding for the projects they desire.

It is important to realize that the recommended transportation plan is based upon anticipated growth and development of the planning area reflecting current zoning trends as provided by the planning area. Prior to the construction of specific projects, a more detailed study will be required to reconsider development trends and determine specific design requirements.

Table of Contents

Appendices

List of Figures

List of Tables

I. Introduction

An area's transportation system is its lifeline, contributing to its economic prosperity and social well being. The importance of a safe and efficient transportation infrastructure cannot be overstressed. This system provides a means of transporting people and goods from one place to another quickly, conveniently, and safely. A well-planned system will meet the existing travel demands, as well as keep pace with the growth of the region. Recognizing the importance of this process of planning for future transportation needs, Pitt County requested transportation planning assistance from the Transportation Planning Branch of the North Carolina Department of Transportation (NCDOT).

In June of 2003, the Transportation Planning Branch of the North Carolina Department of Transportation with cooperation of Pitt County Planning began an update of the 1993 Pitt County Thoroughfare Plan. The resulting Pitt County Comprehensive Transportation Plan, as shown in Sheets 1 through 4, resulted from the implementation of the transportation planning principles.

Pitt County (known throughout the document as the planning area) is located in the central coastal plain region of North Carolina and borders Edgecombe, Greene, Martin, Craven and Beaufort Counties. The planning area is approximately 90 miles east of Raleigh. The geographical location of the planning area is shown in Figure 1.

The purpose of this study is to examine present and future transportation needs of the planning area and develop a Comprehensive Transportation Plan to meet these needs. The plan recommends those improvements that are necessary to provide an efficient transportation system within the 2005-2030 planning period. The recommended cross-sections outlined in Appendix D for these improvements are based on existing conditions and projected traffic volumes.

This report documents the development of the 2005 Pitt County Comprehensive Transportation Plan shown in Sheets 1 through 4, which replaces the 1993 Pitt County Thoroughfare Plan shown in Figure 2. In addition, this report presents recommendations for each mode of transportation. A comprehensive transportation plan is developed to ensure that the transportation system will be progressively developed, meeting the needs of the planning area. It will serve as an official guide to providing a well-coordinated, efficient, and economical transportation system utilizing all modes of transportation. This document will be utilized by local officials to ensure that planned transportation facilities reflect the needs of the public, while minimizing the disruption to local residents, businesses, and the environment.

Initiative for the implementation of the Transportation Plan rests predominately with the policy boards and citizens of the planning area. Pitt County and the North Carolina Department of Transportation share the responsibility for proposals in this report.

The proposed Transportation Plan is based on the projected growth for the planning area as coordinated with the Greenville Metropolitan Planning Organization (MPO) and Pitt County planners. It is possible that actual growth patterns will differ from those logically anticipated. As a result, it may be necessary to accelerate or delay the development of some recommendations found in the plan. Some portions of the plan may require revisions in order to accommodate unexpected changes in urban development. The best use of this plan is to make sure that any changes made to one element of the transportation plan are consistent with the other elements.

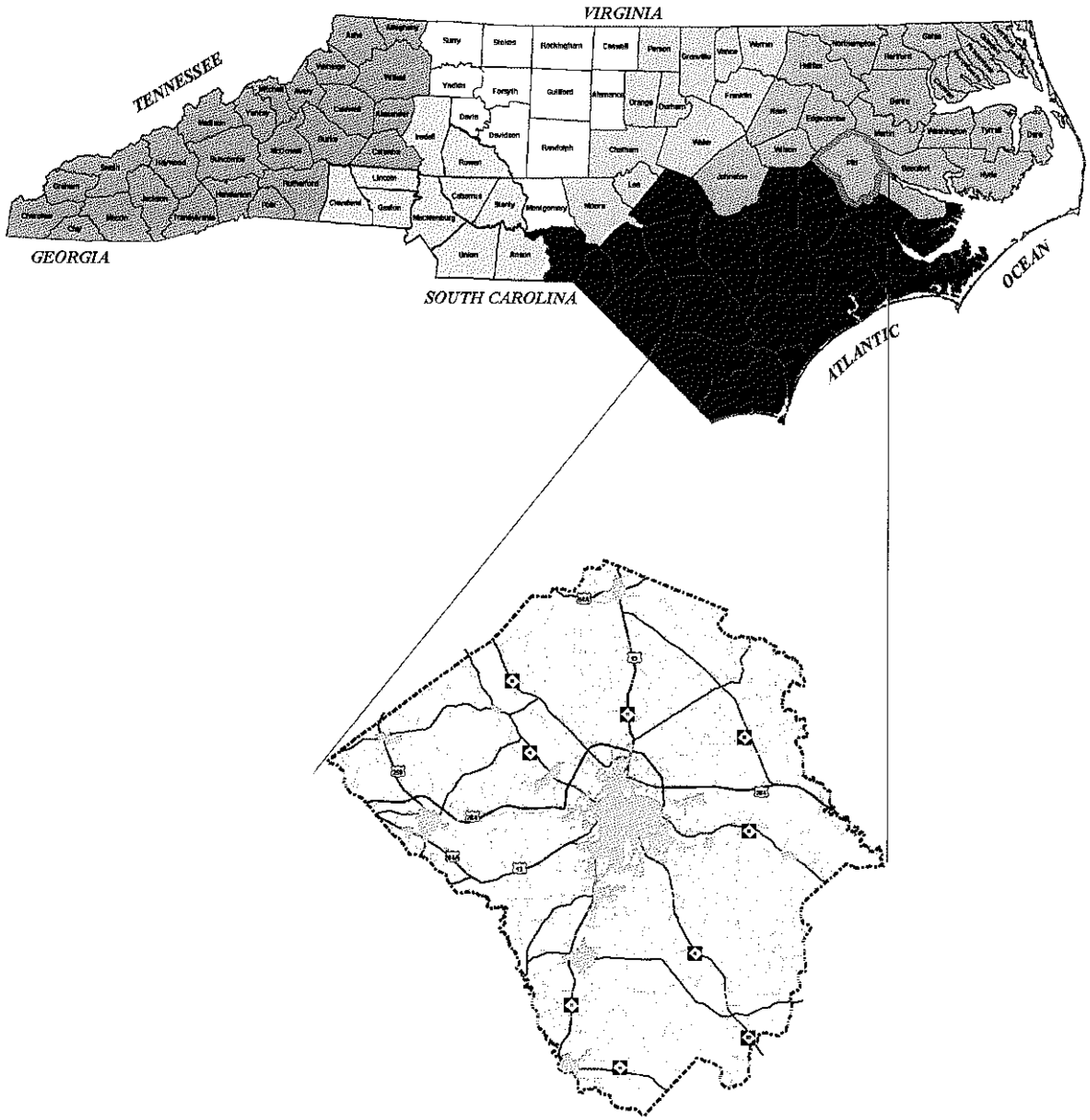


FIGURE 1

GEOGRAPHIC LOCATION MAP

N
W E
S

LEGEND

- METROLINA
- MOUNTAINS
- NORTHEAST
- SOUTHEAST
- TRIAD
- TRIANGLE

PITT COUNTY

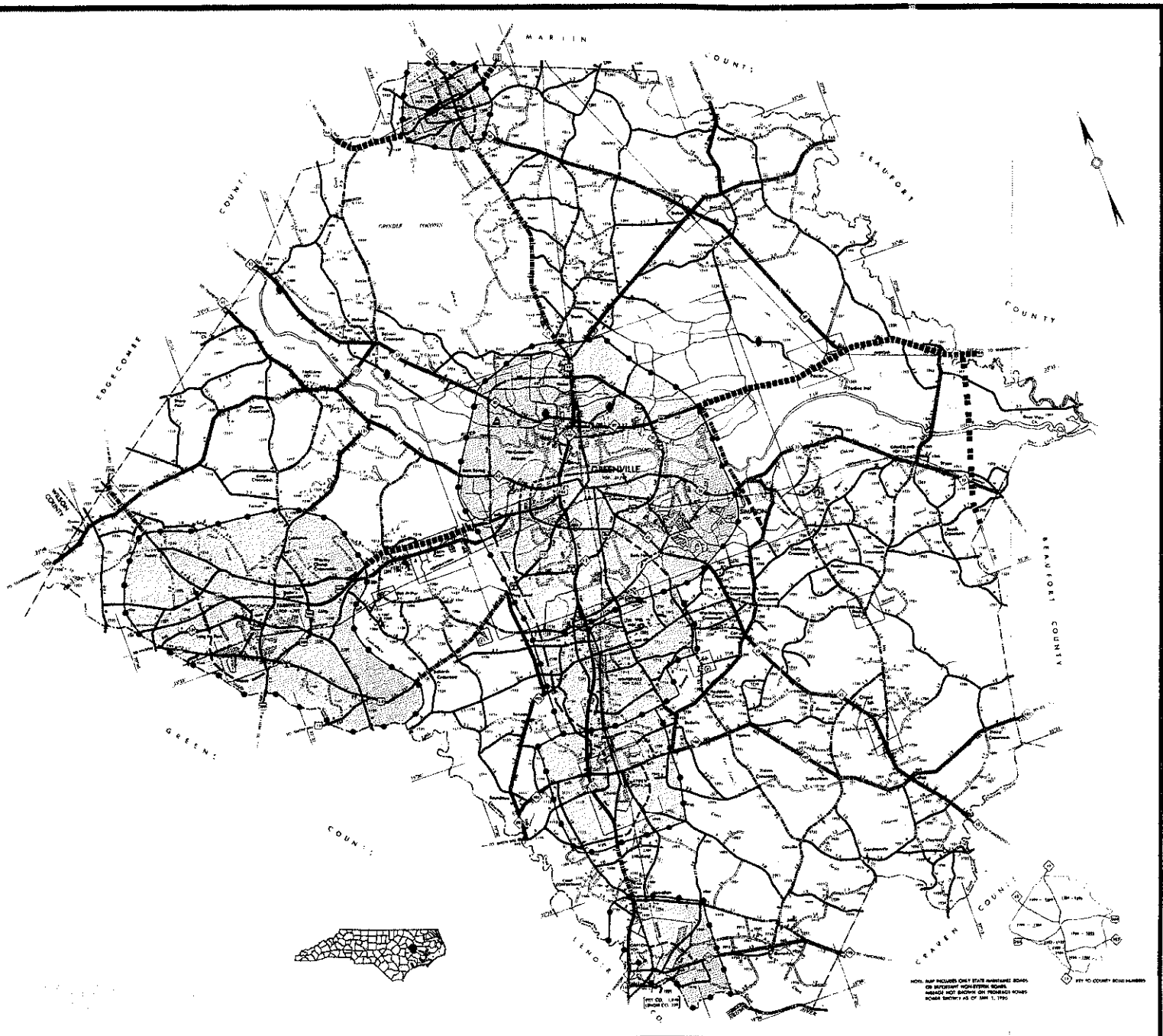
NORTH CAROLINA

PREPARED BY THE
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION PLANNING BRANCH

IN COOPERATION WITH THE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

BASE MAP DATE: NOVEMBER 2001



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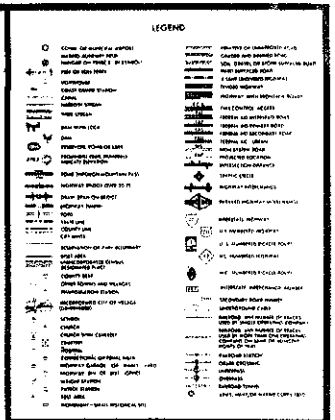


LEGEND

HIGHWAY CLASSIFICATION	EXISTING	PROPOSED
PRINCIPAL ARTERIALS		
INTERSTATE		
OTHERS		
MINOR ARTERIALS		
MAJOR COLLECTORS		
MINOR COLLECTORS		
[illegible]		
URBAN/COUNTY BOUNDARY		
[illegible]		

ADOPTED BY:
PITT COUNTY: February 1, 1993

RECOMMENDED FOR APPROVAL BY:
STATEWIDE PLANNING BRANCH: February 10, 1993

ADOPTED BY:
DEPT. OF TRANSPORTATION: March 5, 1993

PUBLIC HEARING: January 20, 1993

FIGURE 2

THOROUGHFARE PLAN
PITT COUNTY
NORTH CAROLINA

PREPARED BY THE
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS-STATEWIDE PLANNING BRANCH
IN COOPERATION WITH
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

BOARD OF COMMISSIONERS

January 4, 1993

II. Recommendation

Highway Map

The recommended highway plan for the planning area is presented in Sheet 2 of the Pitt **County Highway Plan.** This plan includes roadways within the planning area that fall into five categories: Freeways, Expressways, Boulevards, other Major thoroughfares, and Minor thoroughfares. See **Appendix B** for a more detailed description of each category , and **Appendix C** for an inventory of the highway recommendations.

The process of determining and evaluating recommendations for those roads in the Comprehensive Transportation Plan involves many considerations including the goals and objectives of the public in the area, existing roadway properties, identified roadway deficiencies, environmental impacts and existing and anticipated land development. Consideration of these factors leads to the cooperative development of several recommended improvements. The problem statements for each recommendation are given below.

US 264 East

- **Summary of Need**

  US 264 is an existing expressway. It is recommended for US 264 to be upgraded from an Expressway to a Freeway in the Comprehensive Transportation Plan. This road is classified as a Freeway in the Strategic Highway Corridor concept adopted by NC Board of Transportation.
- **Summary of Purpose**

  This road is a Freeway in the Strategic Highway Corridor concept adopted by NC Board of Transportation and will improve intrastate travel and access from the central part of state to coastal area.

US 13/ NC 11

- **Summary of Need**

  US 13/ NC 11 is an existing Boulevard, it is recommended for US13/ NC 11 to be upgraded from a Boulevard to a Freeway in the Comprehensive Transportation Plan. This road is a Freeway in Strategic Highway Corridor adopted by NC Board of Transportation.
- **Summary of Purpose**

  This road is a Freeway in Strategic Highway Corridor concept adopted by NC Board of Transportation and will improve intrastate travel and access from I-40 to Virginia.

NC 33 (TIP Project No.R3407)

- **Summary of Need**

  NC 33 is a Major Thoroughfare in the Comprehensive Transportation Plan. Widening of this road to a 4-lane facility is recommended. There is a need to improve NC 33 to provide access to the planning area and relieve growing congestion.

- **Summary of Purpose**

  The primary purpose of this recommendation is to improve NC 33 to provide the following: relief from the future congestion, a safer and more efficient roadway and connection to US 17.

NC 43

- **Summary of Need**

  NC 43 is a Major Thoroughfare in the Comprehensive Transportation Plan. There is a need to improve NC 43 to provide provide better access to the planning area and relieve growing congestion. Southern and Northern sections of this road are recommended for widening to a 4-lane facility.

- **Summary of Purpose**

  The primary purpose of this recommendation is to improve NC 43 to the current roadway standards and provide a safer and more efficient roadway.

NC 903 EAST

- **Summary of Need**

  NC 903 is a Major Thoroughfare in the Comprehensive Transportation Plan. There is a need to improve NC 903 to provide access to the planning area and relieve growing congestion.

- **Summary of Purpose**

  The primary purpose of this recommendation is to improve NC 903 to current roadway standards and to provide a connection from Greenville to northeast part of the planning area. The improvement would also provide a safer and more efficient roadway by realigning the existing left turn lane on the eastern side of NC 30.

Other Recommendations

Widening Projects

The following facilities have been identified as having travel lanes less than 12-feet wide. As travel volume on this roadway increases, it may be necessary to widen the lanes to12-feet.

NC 30
NC 118
NC 222
NC 102
NC 121
SR 1565

Access Management

Given the rate of growth in Pitt County and the limited amount of funding available to improve existing roadways, Pitt County should consider adopting an access management policy. This policy, at a minimum, should promote development design that adequately manages accesses and reduces congestion levels on roads. A sample of access management guidelines is included in Appendix F.

Adopted by:
Planning Area Name:Pitt County
Date:

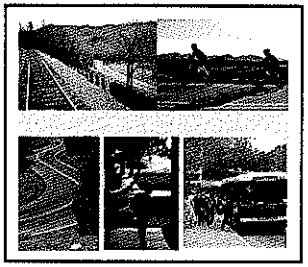
NCDOT
Date:

Endorsed by:
RPO Name
Date:

Recommended by
Transportation Planning Branch
Date:

NOTES:

Format for Sheet 5 Pedestrian map is pending.
Plan date:



Planning Area

Pitt County
North Carolina
DRAFT

Comprehensive Transportation Plan

Plan date: 00/00/2005

Legend

Railroads
County Boundary
RailRoads
City Boundry
dotRoads
dotRoads

0 1.25 2.5 5 7.5 Miles

Sheet 1 of 4

Base map date:

Refer to CTP document for more details

Highway Map

PITT COUNTY
Noth Carolina

Comprehensive Transportation Plan

Plan date: 9/21/2005

Freeways
- Existing
- Needs Improvement
- Recommended

Expressways
- Existing
- Needs Improvement
- Recommended

Boulevards
- Existing
- Needs Improvement
- Recommended

Other Major Thoroughfares
- Existing
- Needs Improvement
- Recommended

Minor Thoroughfares
- Existing
- Needs Improvement
- Recommended

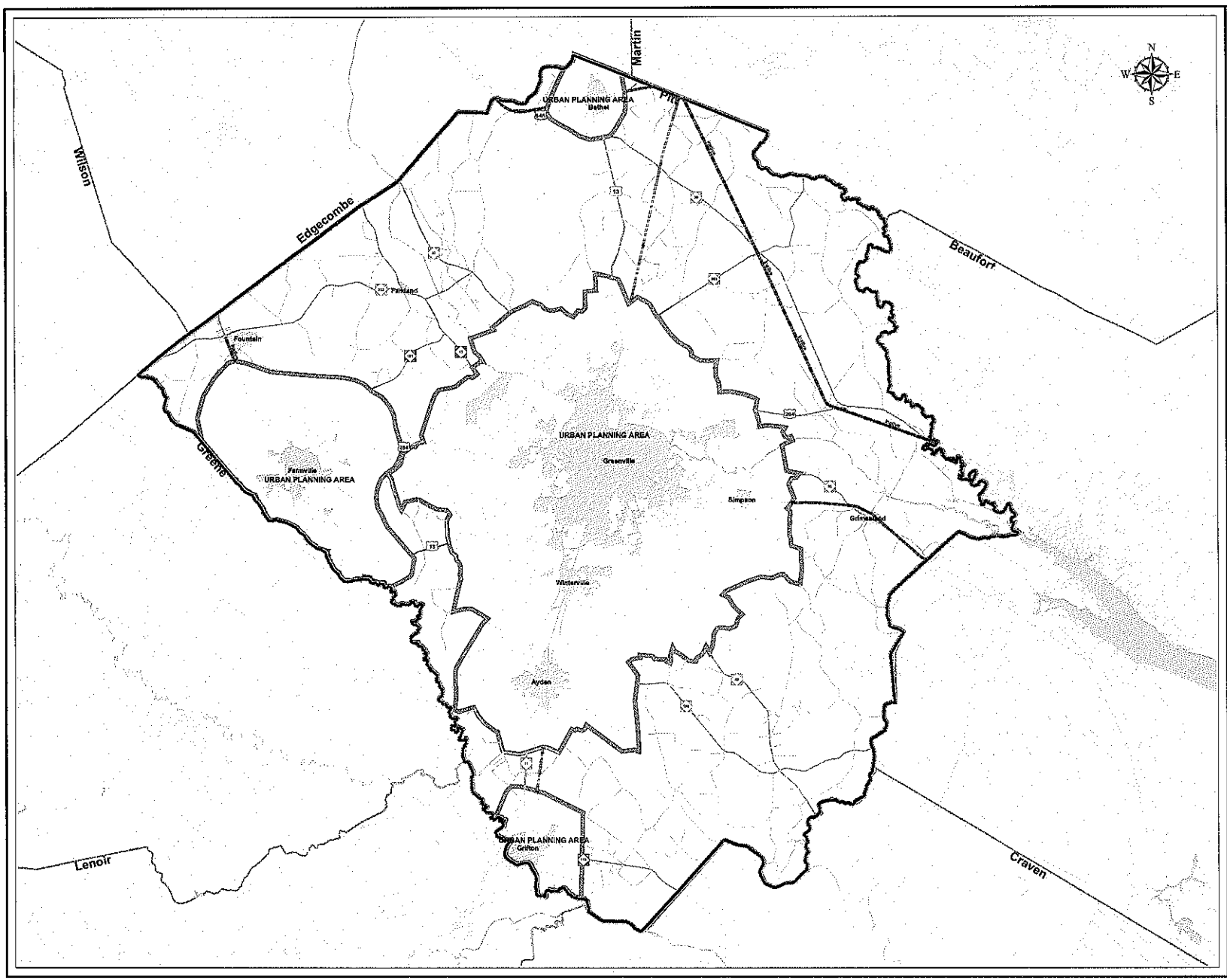
- Existing Interchange
- Proposed Interchange
- Existing Grade Separation
- Proposed Grade Separation
- Pitt County Planning Boundry
- Urban Planning Area

0 1 2 4 6 8 Miles

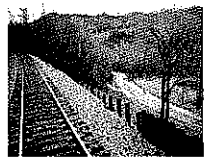
Sheet 2 of 4

Base map date: 3/01/05

Refer to CTP document for more details



Public Transportation and Rail Map



PITT COUNTY
North Carolina

Comprehensive Transportation Plan

Plan date: 9/21/2005

Bus Routes
- Existing
- Needs Improvement
- Recommended

Fixed Guideway
- Existing
- Needs Improvement
- Recommended

Operational Strategies
- Existing
- Needs Improvement
- Recommended

Rail Corridor
- Active
- Inactive
- Recommended

High Speed Rail Corridor
- Existing
- Recommended

Rail Stops
- Existing
- Recommended

Intermodal Connector
- Existing
- Recommended

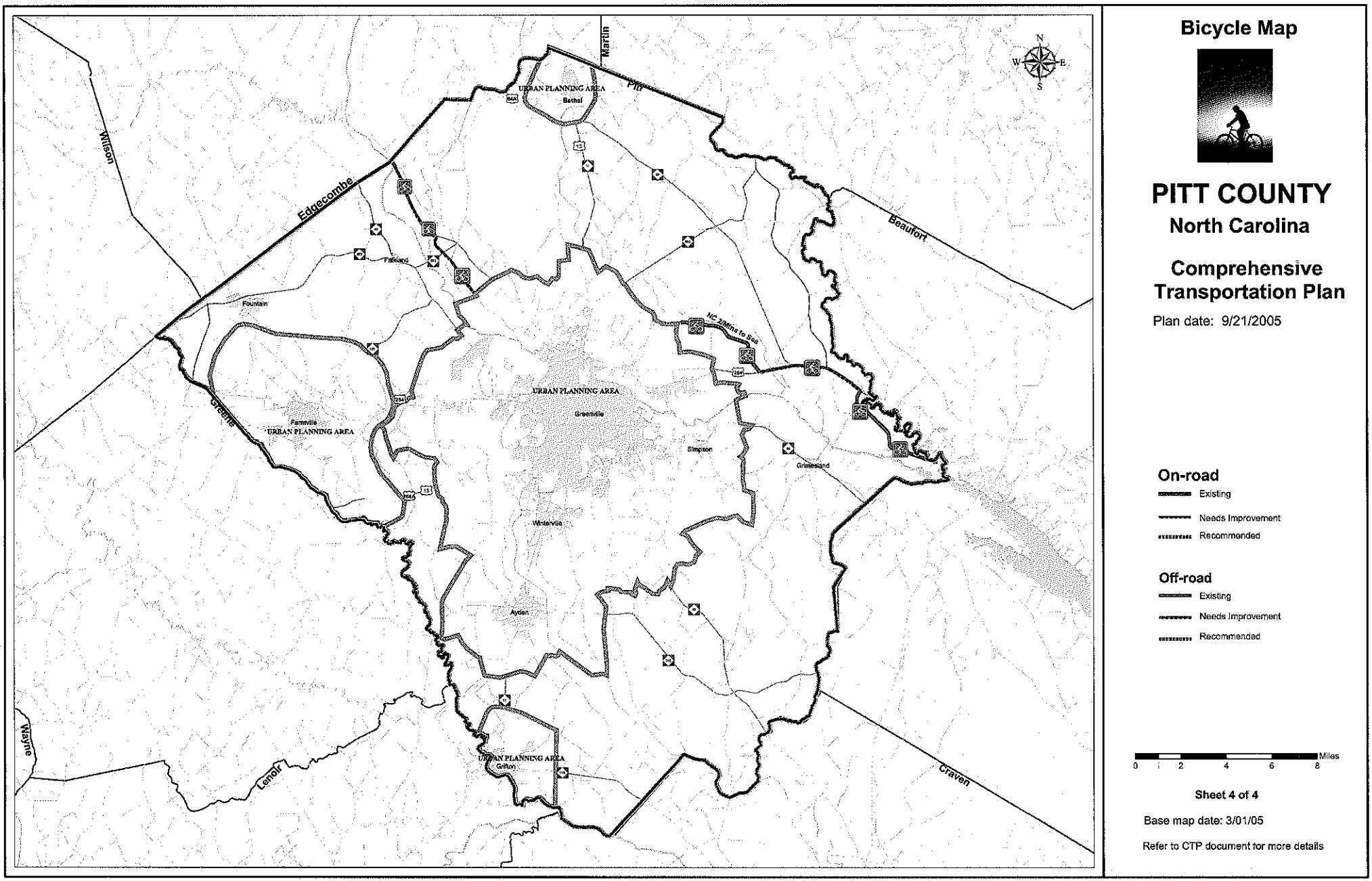
Park and Ride Lot
- Existing
- Recommended

0 1 2 4 6 8 Miles

Sheet 3 of 4

Base map date: 3/01/05

Refer to CTP document for more details


Bicycle Map
PITT COUNTY
North Carolina
Comprehensive Transportation Plan
Plan date: 9/21/2005
On-road
Existing
Needs Improvement
Recommended
Off-road
Existing
Needs Improvement
Recommended
Miles
0 1 2 4 6 8
Sheet 4 of 4
Base map date: 3/01/05
Refer to CTP document for more details
N
W
E
S
Wilson
Edgecombe
Martin
Pitt
Beaufort
Greene
Wayne
Lenoir
Craven
URBAN PLANNING AREA
Bethel
Farmville
URBAN PLANNING AREA
Greenville
URBAN PLANNING AREA
Grifton
Fountain
Parkland
Simpson
Grimesland
Winterville
Ayden
NC 33 Mile to Sea

III. Population, Land Use, and Traffic

In order to fulfill the objectives of an adequate thirty-year transportation plan, reliable forecasts of future travel patterns must be achieved. Such forecasts depend on careful analysis of the following items: historic and potential population changes; significant economic trends, character and intensity of land development; and the ability of the existing transportation system to meet existing and future travel demand. Secondary items that influence forecasts include the effects of legal controls such as zoning ordinances and subdivision regulations, availability of public utilities and transportation facilities, and topographic and other physical features of the Planning area.

Population

Since the volume of traffic on a roadway is related to the size and distribution of the population that it serves, population data used to aid the development of the transportation plan. Future population estimates typically rely on the observance of past population trends and counts. While statistics show that the population within the planning area has been increasing at a steady rate, the County has suggested that the population will have a significant increase in the next ten to fifteen years. The Pitt County population will be growing at a slower rate than the Greenville area, but the southeastern part of the county should see an increase in population. Table 1 presents the population trends for Pitt County, and North Carolina.

Table 1 Population Growth

Location	1970	1980	1990	2000	2030
North Carolina	5,082,059	5,881,766	6,628,637	8,046,485	12,447,597
Pitt County	73,900	90,149	108,950	134,090	242,889

The projected population is based on average growth rates that were stronger in the first twenty years and decreased for the last ten years. The typical range for growth is between 2 – 3 %. Because of the population growth in the southeastern part of the county and after discussion with the County Planning Department, a 4% growth rate was used for southeastern part of the county.

Land Use

Land use refers to the physical patterns of activities and functions within an area. The generation and attraction of a particular road and other modes of transportation is related to the land uses adjacent to that facility and the intensity of land use affects the traffic patterns for multi-modal facilities. For example, a shopping center generates larger traffic volumes than a residential area. The spatial distribution of varying land uses is the predominant determinant of when,

where, and why congestion occurs. The attraction between different land uses and their association with travel varies with the size, type, intensity, and spatial separation of each land use. When dealing with transportation planning, land use is divided into the following classifications:

- Residential – All land is devoted to the housing of people, with the exception of hotels and motels.
- Commercial – All land is devoted to retail trade including consumer and business services and their offices; this may be further stratified into retail and special retail classifications. Special retail would include high-traffic establishments, such as fast-food restaurants and service stations; all other commercial establishments would be considered retail.
- Industrial – All land is devoted to the manufacturing, storage, warehousing, and transportation of products.
- Public – All land is devoted to social, religious, educational, cultural, and political activities; this would include the office and service employment establishments.

Figure 3 shows the existing zoned areas for the Pitt County. Figure 4 shows the 2002 land use plan for the Pitt County prepared by the Wooten Company and Pitt County Planning staff. The anticipated land use development for the planning area is predominantly residential, with limited industrial and commercial. Noticeable residential growth is expected in the planning area with the highest growth in the southeastern portion of the planning area. The areas of highest employment growth are expected along the major roadway corridors throughout the planning area.

Existing Transportation System

An important stage in the development of a transportation plan is the analysis of the existing roadway system and its ability to serve the area's travel desires. Emphasis is placed not only on detecting the existing deficiencies, but also on understanding the causes of these deficiencies. Travel deficiencies may be localized, resulting from problems with inadequate pavement width, intersection geometry, or intersection controls. Travel deficiencies may also result from system problems, such as the need to construct missing travel links, bypass routes, loop facilities, or additional radial routes.

An analysis of the roadway system looks at both current and future travel patterns and identifies existing and anticipated deficiencies. This is usually accomplished through a traffic collision analysis, roadway capacity deficiency analysis, and a system deficiency analysis. This information is used to analyze

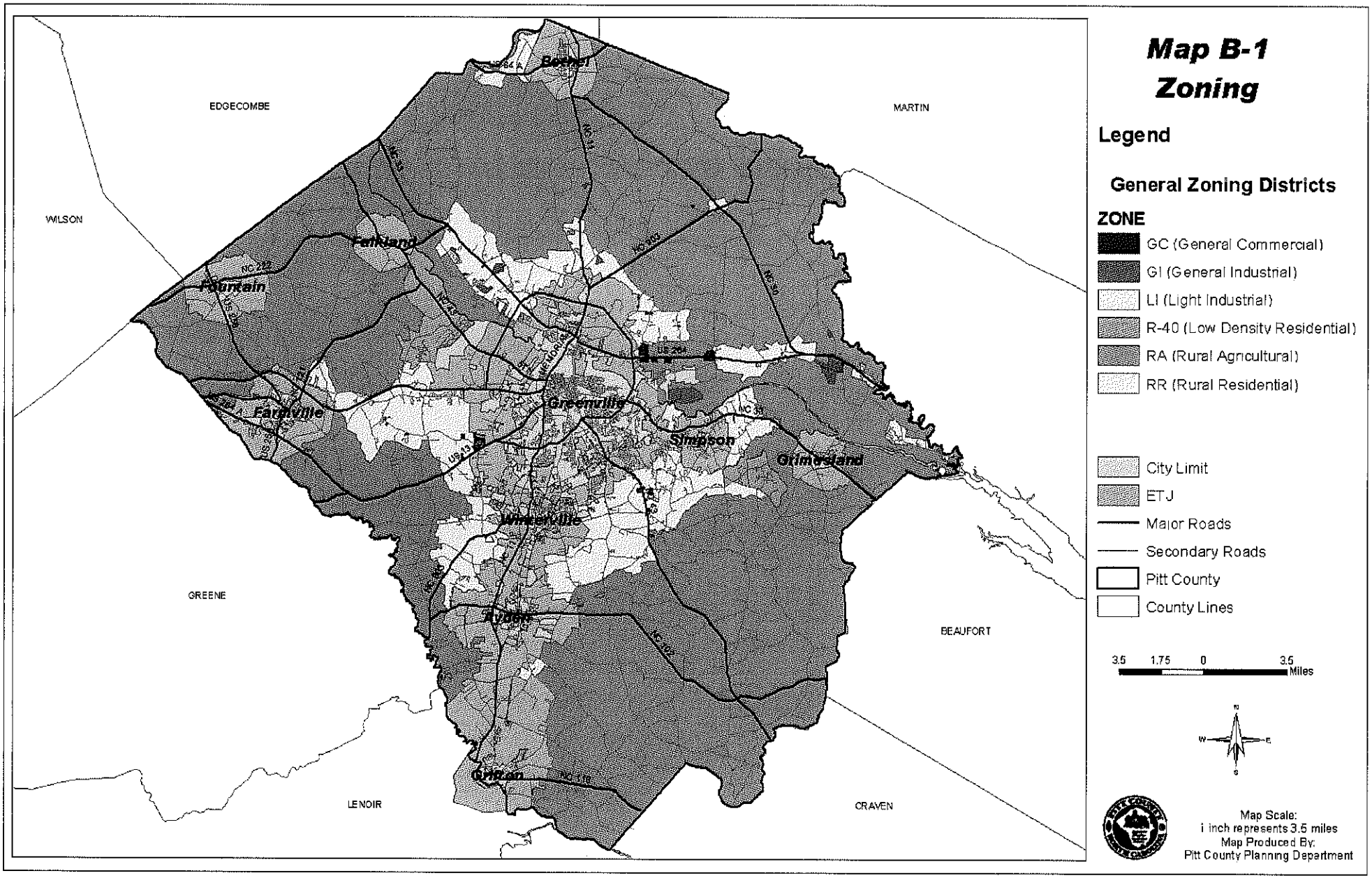
factors that will impact the future system, including population growth, economic development potential, and land use trends.

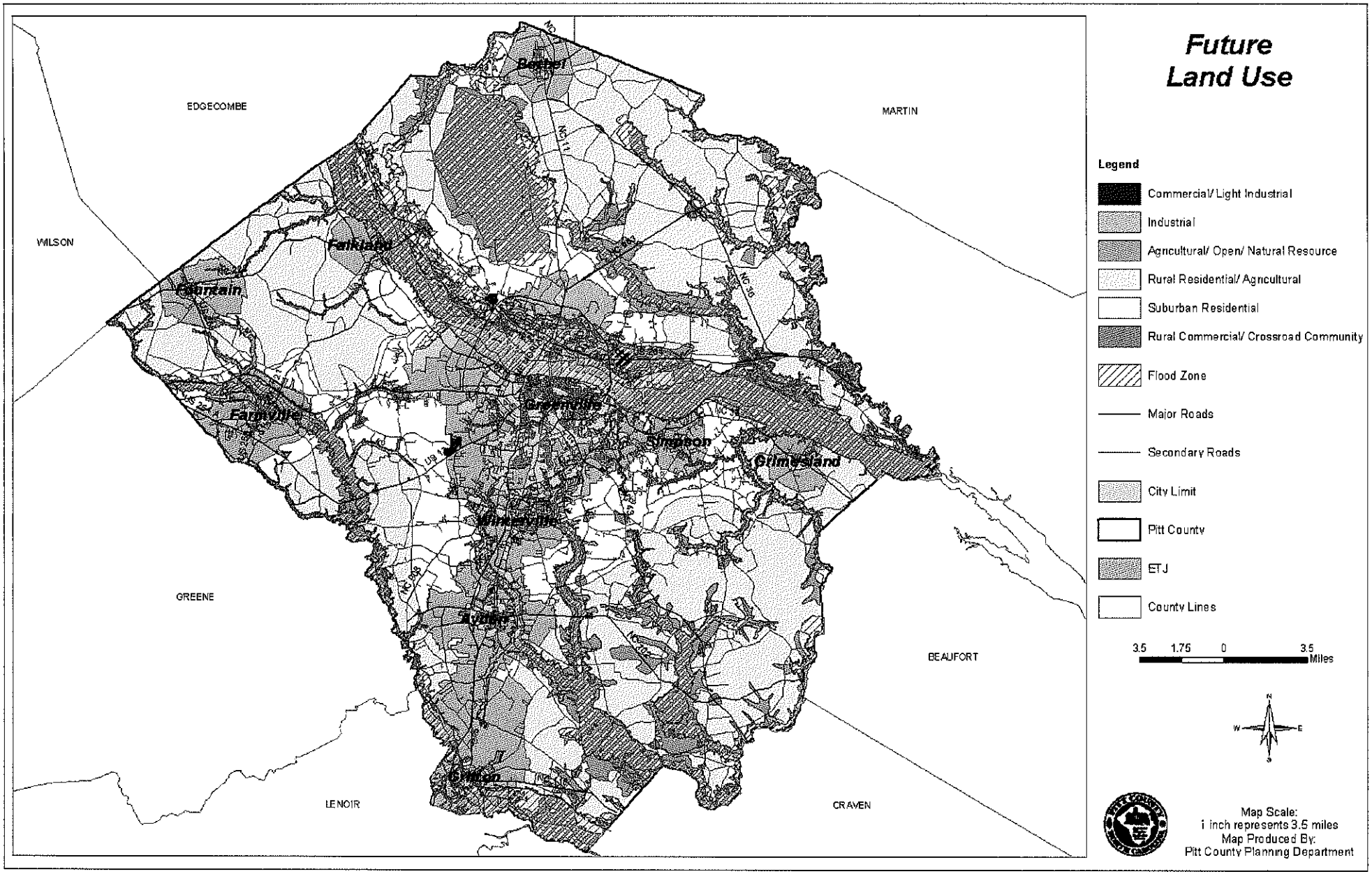
Traffic Collision Analysis

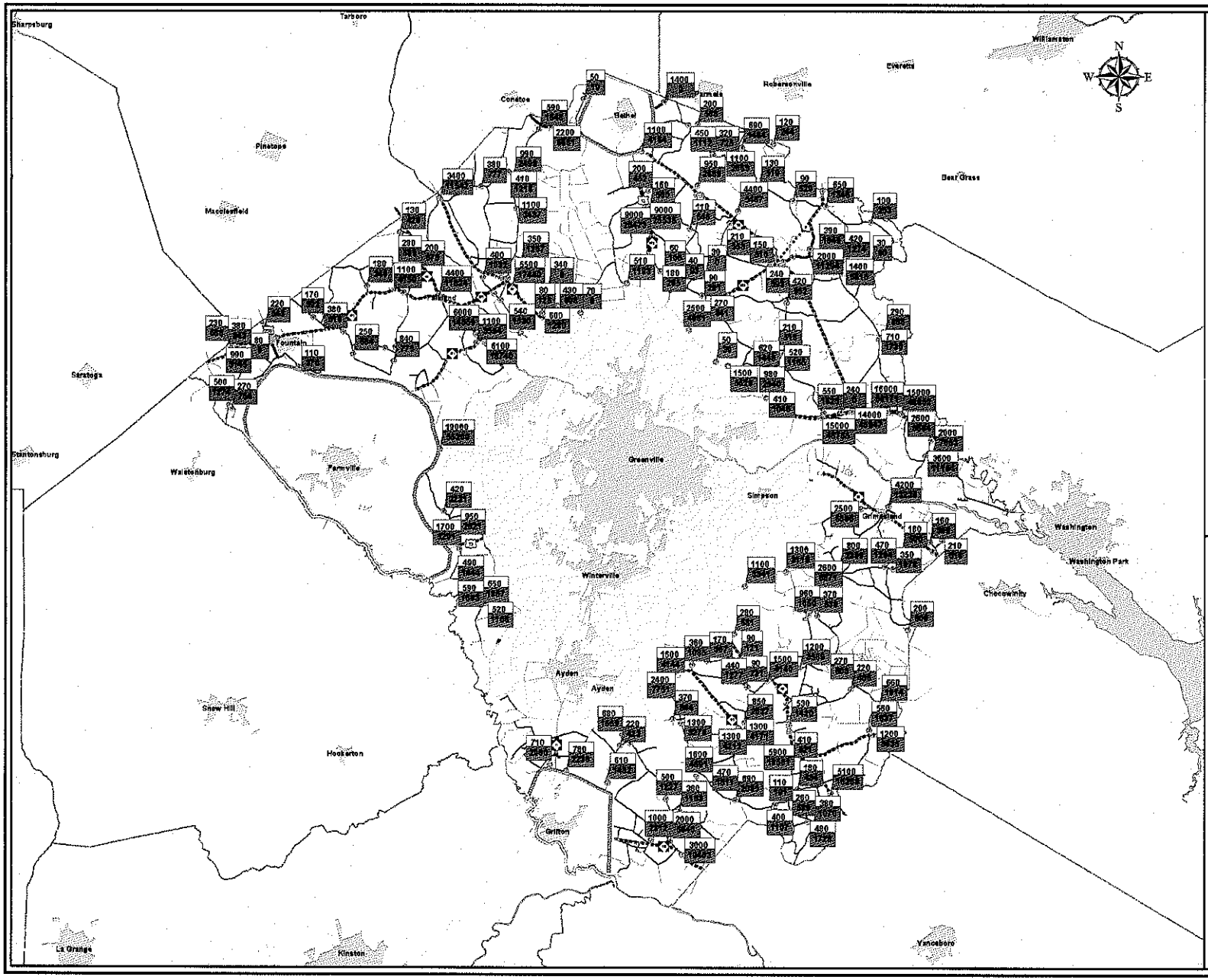
Traffic collisions or "crashes" are often used as an indicator for locating congestion problems. While often the result of drivers or vehicle performance, crashes may also be a result of the physical characteristics of the roadway. Roadway conditions and obstructions, traffic conditions, and weather may all lead to a crash. While some crashes are the fault of the driver, others may be prevented with physical design changes or traffic control changes such as the installations of stop signs or traffic signals.

Crash data for the period from March 2000 to May 2003 were studied as part of the development for this report. The collision analysis considered both collision frequency and severity. Crash frequency is the total number of reported collisions, while crash severity is the crash rate based upon injuries and property damage incurred. These two factors helped to determine the worst intersections throughout Pitt County that are summarized in Table 3 and shown in Figure 5.

NCDOT is actively involved with investigating and improving many of these locations. To request a more detailed analysis for any of the locations listed in Table 3, or other intersections of concern, the planning area should contact the Division Traffic Engineer. Contact information for the Division Traffic Engineer is included in Appendix A.


Map B-1
Zoning
Legend
General Zoning Districts
ZONE
GC (General Commercial)
GI (General Industrial)
LI (Light Industrial)
R-40 (Low Density Residential)
RA (Rural Agricultural)
RR (Rural Residential)
City Limit
ETJ
Major Roads
Secondary Roads
Pitt County
County Lines
3.5 1.75 0 3.5
Miles
N
W
E
S
Map Scale:
1 inch represents 3.5 miles
Map Produced By:
Pitt County Planning Department
EDGECOMBE
MARTIN
WILSON
GREENE
BEAUFORT
LENOIR
CRAVEN
Bethel
Falkland
Hunkain
Farmville
Greenville
Simpson
Grimesland
Winterville
Ayden
Grifton


Future
Land Use
Legend
Commercial/ Light Industrial
Industrial
Agricultural/ Open/ Natural Resource
Rural Residential/ Agricultural
Suburban Residential
Rural Commercial/ Crossroad Community
Flood Zone
Major Roads
Secondary Roads
City Limit
Pitt County
ETJ
County Lines
3.5 1.75 0 3.5
Miles
Bethel
Farmville
Greenville
Simpson
Grimesland
Winterville
Ayden
Grifton
EDGECOMBE
MARTIN
WILSON
GREENE
LENOIR
CRAVEN
BEAUFORT
Map Scale:
1 inch represents 3.5 miles
Map Produced By:
Pitt County Planning Department



TRAFFIC COUNT LOCATIONS 2003/ 2030

FIGURE 6

LEGEND

- Traffic Count Location
- STUDY AREA
- MUNICIPAL BOUNDARIES

PITT COUNTY

NORTH CAROLINA

PREPARED BY THE
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION PLANNING BRANCH

IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

0
FEET

BASE MAP DATE: NOVEMBER 2001

IV. Public Involvement

Overview

Since the passage of the Federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), the emphasis on public involvement in transportation has taken on a new role. Although public participation has been an element of long range transportation planning in the past, these regulations call for a much more proactive approach. The NCDOT's Transportation Planning Branch has a long history of making public involvement a key element in the development of any long-range transportation plan, no matter the size of the city and/or planning area. This chapter is designed to provide an overview of the public involvement elements implemented into the development of the transportation plan for the planning area (see attached project schedule).

Study Initiation

The Pitt County Transportation Plan update study was requested in August 2002 by way of an official letter from Pitt County. In this letter, the County outlined some specific needs and concerns related to the 1993 Thoroughfare Plan. The Transportation Planning Branch met with the County on September 14, 2004 to identify the primary transportation concerns and to define the scope of the study. The planning effort was initiated in January of 2005.

Public Meetings

March 16, 2005, and
July 20, 2005

Two public meetings were held during the development of the Pitt County Transportation Plan on March 16, 2005 and July 20, 2005 in the Pitt County Commissioners Auditorium prior to the Planning Board meetings. Twenty six citizens attended the meeting in March and twenty citizens attended the meeting in July. The purpose of these meetings was to discuss the findings from the study including deficiencies, improvements, and recommendations, and to solicit public input. Comments received included the following:

- There was concern with community and environmental preservation of the study area.
- Building additional traffic lanes on major county roads.
- Needs for controlled access roads
- Widening of NC 33

Schedule for Pitt County Comprehensive Transportation Plan

January 2005	**Planning Board Presentation** • Discuss Process • Discuss what a plan is and why you need one • Area that Board wants to be studied
March 2005	**Public drop-in session # 1** • Present deficiencies • Solicit possible solutions and ideas • Analyze ideas and provide recommendations or alternatives
April 2005	**Develop recommendations**
June 15, 2005	**Preliminary Transportation Plan**
July 20, 2005	**Public Drop-in Session #2**
Sep 21, 2005	**Presentation of the recommended plan to the Planning Board**
October 2005	**Public Hearing** • Evaluation of Comments
November 2005	**Present plans to County Commissioners**
December 2005	**RPO endorsement**
January 2006	**NCDOT Approval**

V. Conclusion

Pitt County is a growing community that will require improvements to its transportation systems over the next 25 years. It is the responsibility of the County to take the initiative for the implementation of the Comprehensive Transportation Plan. It is imperative that the local areas aggressively pursue funding for desired projects. Questions regarding funding, projects, planning, and modes of transportation should be addressed to the appropriate branch within NCDOT. **Appendix A** includes contact information for many of these branches. If changes are required for any element of the Comprehensive Transportation Plan, then all other elements must be reviewed for resulting impacts.

High Frequency Roadway Segments in Pitt County with 20 or More Reported Crashes

For the Reporting Period of May 1, 2000 to May 31, 2003

Table 2

Roadway Segment	*Fatal Crashes*	*Injury Crashes*	*Property Damage Only Crashes*	*Total Crashes*
GREENVILLE BLVD	0	412	691	*1,103*
MEMORIAL DR	2	280	473	*755*
US 264	3	241	335	*579*
ARLINGTON BLVD	0	190	336	*526*
NC 11	3	177	282	*462*
NC 43	3	174	243	*420*
10TH ST	0	151	250	*401*
EVAN ST	0	152	228	*380*
NC 33	6	176	191	*373*
FIRETOWER RD	1	125	221	*347*
CHARLES BLVD	0	80	207	*287*
14TH ST	0	92	160	*252*
5TH ST	0	93	146	*239*
US 13	2	98	120	*220*
NC 903	4	73	128	*205*
STANTONSBURG RD	0	77	109	*186*
DICKINSON AVE	0	63	93	*156*
REDBANKS RD	0	45	82	*127*
US 264A	1	51	60	*112*
SR 1200	3	48	58	*109*
GREEN ST	0	42	65	*107*
SR 1725	1	49	51	*101*
ELM ST	1	25	74	*100*
MLK JR BLVD	0	33	55	*88*
US 258	0	43	44	*87*
FARMVILLE	0	39	47	*86*
NC 102	0	32	49	*81*
SR 1401	0	53	27	*80*
NC 121	3	25	42	*70*
4TH ST	0	23	47	*70*
HOOKER RD	0	42	28	*70*
SR 1565	1	28	39	*68*
PITT ST	0	16	46	*62*
SR 1774	0	30	29	*59*
SR 1711	0	25	31	*56*
1ST ST	0	24	31	*55*
SR 1203	0	21	31	*52*
SR 1755	0	24	28	*52*
COTANCHE ST	0	12	40	*52*
SR 1753	0	18	33	*51*
SR 1110	2	22	26	*50*
MAIN ST	0	21	29	*50*
OLD TAR RD	0	12	34	*46*

SR 1514	0	11	34	*45*
NC 222	0	13	27	*40*
SR 1760	0	14	26	*40*
SR 1127	0	19	20	*39*
MILL ST	0	13	24	*37*
SR 1567	1	18	17	*36*
PORTERTOWN RD	0	15	21	*36*
READE	0	9	27	*36*
3RD ST	0	9	27	*36*
SR 1128	0	14	20	*34*
SR 1415	1	13	20	*34*
SR 1726	0	15	19	*34*
SR 1400	0	10	23	*33*
SR 1126	0	17	15	*32*
NC 30	0	8	23	*31*
SR 1529	0	20	10	*30*
WILSON ST	0	9	21	*30*
SR 1131	0	11	17	*28*
REEDY BRANCH RD	0	12	15	*27*
NC 118	0	11	15	*26*
SR 1221	1	10	15	*26*
SR 1517	0	11	15	*26*
SR 1523	0	10	16	*26*
SR 2241	0	12	14	*26*
SR 1206	0	13	12	*25*
SR 1551	0	7	18	*25*
CHESTNUT	0	11	14	*25*
SR 1534	0	5	19	*24*
SR 1708	0	8	15	*23*
SR 1139	0	8	14	*22*
SR 1550	0	8	14	*22*
SR 1700	1	7	14	*22*
SR 1723	0	12	10	*22*
HOWELL ST	0	8	13	*21*
Total Crashes	***40***	***3,848***	***5,963***	***9,851***

Table 3

Pitt County Bridge Deficiencies

County	Number	Type	Route	Across	ADT	Structurally Deficient	Functionally Obsolete	Suff Rtg
PITT	730001	0	NC903	BR.LITTLE CONTENTNEA CR.	4500	N	FO	69.8
PITT	730005	0	SR1777	CHICOD CREEK	1500	SD	N	47.1
PITT	730007	0	NC33	CREEK	3700	SD	N	9
PITT	730009	0	NC903	SWIFT CREEK	4500	N	FO	49
PITT	730012	0	SR1755	CLAYROOT CREEK	480	SD	N	39.5
PITT	730013	0	SR1753	INDIAN WELLS SWAMP	1500	SD	N	40.8
PITT	730014	0	US258	LITTLE CONTENTNEA CREEK	3300	N	FO	68
PITT	730015	0	SR1565	CHICOD CREEK	1500	SD	N	49.2
PITT	730016	0	US13	LITTLE CONTENTNEA CREEK	10000	N	FO	60.7
PITT	730017	0	SR1780	CHICOD CREEK	490	SD	N	46.5
PITT	730023	0	NC43	CLAYROOT SWAMP	5100	SD	N	7
PITT	730024	0	NC222	TAR RIVER	5700	N	FO	47.3
PITT	730025	0	SR1723	FORK SWAMP	2700	N	FO	46.5
PITT	730028	0	SR1711	FORK SWAMP	6800	N	FO	50.7
PITT	730029	0	SR1715	FORK SWAMP	560	SD	N	29.6
PITT	730030	0	SR1703	GREEN MILL RUN	9300	N	FO	60.6
PITT	730038	0	US13	TAR RIVER	12000	SD	N	11.1
PITT	730043	0	SR1923	SWIFT CREEK	470	SD	N	26.2
PITT	730053	0	NC102	SWIFT CREEK	4600	SD	N	7
PITT	730056	0	US13	TAR RIVER OVERFLOW	12000	N	FO	65.8
PITT	730061	0	NC903	TRANTERS CREEK	4000	SD	N	29.8
PITT	730063	0	NC102	FORK SWAMP	2600	N	FO	63.3
PITT	730064	0	SR1214	PINELOG CREEK	500	SD	N	21.1
PITT	730065	0	SR1200	PINELOG BRANCH	1900	SD	N	18.6
PITT	730066	0	US13	TAR RIVER OVERFLOW	12000	N	FO	65.8
PITT	730067	0	SR1217	FK. LITTLE CONTENTNEA CK	480	SD	N	52.6
PITT	730084	0	SR1233	LITTLE CONTENTNEA CREEK	120	N	FO	45.2
PITT	730087	0	NC33	NORFOLK SOUTHERN RR	4700	N	FO	56.6
PITT	730089	0	US13	GRINDLE CREEK	8600	SD	N	44.4
PITT	730093	0	SR1255	LAWRENCE RUN OVERFLOW	60	SD	N	22.3
PITT	730095	0	SR1401	JOHNSON'S MILL RUN	6500	SD	N	36
PITT	730097	City	ARLINGTON BLVD	GREEN MILL RUN	3000	N	FO	81.7
PITT	730098	0	SR1407	CONETOE CREEK	60	SD	N	49.1
PITT	730118	0	SR1538	GRINDLE CREEK	440	SD	N	28.2
PITT	730121	0	SR1541	GRINDLE CREEK	300	SD	N	42.1
PITT	730125	0	SR1565	HUNTING RUN	3200	N	FO	63.2
PITT	730127	0	SR1565	TAR RIVER OVERFLOW	3700	N	FO	28.2
PITT	730129	0	SR1565	TAR RIVER	4500	N	FO	42.3
PITT	730156	0	SR1240	BLACK SWAMP	120	SD	N	36.6
PITT	730157	0	SR1255	LAWRENCE RUN	60	SD	N	24.3
PITT	730164	0	SR1424	GRINDLE CREEK	120	SD	N	35.5
PITT	730171	0	SR1418	JOHNSON MILL RUN	2500	SD	N	15.2
PITT	730179	0	SR1755	STREAM	470	N	FO	46.2
PITT	730211	0	SR1753	BUCKLEBERRY CREEK	1100	SD	N	21.7
PITT	730219	0	SR1726	HARDEE CREEK	7000	SD	N	30.1
PITT	730411	0	SR1531	TAR RIVER	15000	N	FO	73.8
PITT	730421	City	KING GEORGE RD.	MEETING HOUSE BRANCH	2900	N	FO	63.3
PITT	730435	City	ELM STREET	GREEN MILL RUN	2500	N	FO	80.8
PITT	730470	0	SR1611	TAR RIVER	2000	N	FO	91.1

Appendix A

Resources & Contacts

North Carolina Department of Transportation

Customer Service Office
1-877-DOT4YOU
(1-877-368-4968)

Secretary of Transportation
1501 Mail Service Center
Raleigh, NC 27699-1501
(919) 733-2520

Board of Transportation Member
Contact information for the current Board of Transportation Member may be accessed from the NCDOT homepage on the worldwide web *(http://www.ncdot.org/board/)* or by calling 1-877-DOT4YOU.

LOCHNER
(Greenville southwest Bypass)
2840 Plaza Place, Suite 202
Raleigh, NC 27612
(919) 571-7111

Highway Division 2

- **Division Engineer**
  *Contact the Division Engineer **C.E.(Neil) Lassiter, Jr., PE** with general questions concerning NCDOT activities within Division 2 or information on Small Urban Funds.*
  105 Pactolus Hwy.
  Greenville, NC 27835
  (252)830-3490

- **Division Construction Engineer**
  *Contact the Division Construction Engineer **Ed Eatmon, PE** for information concerning major roadway improvements under construction.*
  105 Pactolus Hwy.
  Greenville, NC 27835
  (252)830-3490

- **Division Traffic Engineer**
  *Contact the Division Traffic Engineer **P. Haywood Daughtry, III, PE** for information concerning high-collision locations.*
  509 SW Ward Blvd.
  Wilson, NC 27895
  (252)830-3490

- **District Engineer**
  Contact the District Engineer for information regarding Driveway Permits, Right of Way Encroachments, and Development Reviews.
  105 Pactolus Hwy.
  Greenville, NC 27835
  (252)237-6164

- **Division Maintenance Engineer**
  *Contact the County Maintenance Engineer **Dwayne Alligood, PE** regarding any maintenance activities, such as drainage.*
  105 Pactolus Hwy.
  Greenville, NC 27835
  (522)830-3490

- **Transportation Planning Branch**
  Contact the Transportation Planning Branch with long-range planning questions.
  1554 Mail Service Center
  Raleigh, NC 27699-1554
  (919) 715-5737

- **Secondary Roads Office**
  Contact the Secondary Roads Officer for information regarding the Industrial Access Funds Program.
  1535 Mail Service Center
  Raleigh, NC 27699-1535
  (919) 733-3250

- **Program Development Branch**
  Contact the Program Development Branch for information concerning Roadway Official Corridor Maps and the Transportation Improvement Program (TIP).
  1542 Mail Service Center
  Raleigh, NC 27699-1542
  (919) 733-2031

- **Project Development & Environmental Analysis Branch**
  Contact PDEA for information on environmental studies for projects that are included in the TIP
  1548 Mail Service Center
  Raleigh, NC 27699-1548
  (919) 733-3141

- **Traffic Engineering & Safety Systems Branch**
  Contact the Traffic Engineering & Safety Systems Branch for information regarding Development Reviews
  1561 Mail Service Center
  Raleigh, 27699-1561
  (919) 733-3915

- **Highway Design Branch**
  Contact the Highway Design Branch for information regarding alignments for projects that are included in the TIP
  1584 Mail Service Center
  Raleigh, 27699-1584
  (919) 250-4001

- **Bicycle and Pedestrian Division**
  Contact the Bicycle and Pedestrian Division for information regarding projects in the TIP, funding, and events.
  1552 Mail Service Center
  Raleigh, 27699-1552
  (919) 733-2804

- **Public Transportation Division**
  Contact the Public Transportation Division for information regarding planning and funding for public transportation projects
  1550 Mail Service Center
  Raleigh, 27699-1550
  (919) 733-4713

- **Railroad Division**
  Contact the Railroad Division for information regarding engineering and safety, operations, and planning
  1553 Mail Service Center
  Raleigh, 27699-1553
  (919) 733-7245

- **Other departments**

  Contact information for other departments within the NCDOT not listed here are available at the NCDOT homepage on the worldwide web (http://www.ncdot.org/board/) or by calling 1-877-DOT4YOU

Appendix B
Definitions of Categories

- **Freeways**[1]
  - Functional purpose – high mobility, high volume, high speed
  - Posted speed – 55 mph or greater
  - Cross-section – minimum four lanes with continuous median
  - Multi-modal elements – high occupancy vehicle (HOV)/high occupancy toll (HOT) lanes, busways, truck lanes, park-and-ride facilities at or near interchanges, adjacent shared use paths (separate from roadway and outside ROW)
  - Type of access control – full control of access
  - Access management – interchange spacing (urban – one mile; non-urban – three miles); at interchanges on the intersecting roadway, full control of access for 1,000' or for 350' plus 650' island or median; use of frontage roads, rear service roads
  - Intersecting facilities – interchange or grade separation (no signals or at-grade intersections)
  - Driveways – not allowed
- **Expressways**[1]
  - Functional purpose – high mobility, high volume, medium-high speed
  - Posted speed – 45 to 60 mph
  - Cross-section – minimum four lanes with median
  - Multi-modal elements – HOV lanes, busways, very wide paved shoulders (rural), shared use paths (separate from roadway but within ROW)
  - Type of access control – limited or partial control of access
  - Access management – minimum interchange/intersection spacing 2,000 feet; median breaks only at intersections with minor roadways or to permit U-turns; use of frontage roads, rear service roads; driveways limited in location and number; use of acceleration/deceleration or right turning lanes
  - Intersecting facilities – interchange; at-grade intersection for minor roadways; right-in/right-out and/or left-over or grade separation (no signalization for through traffic)
  - Driveways – right-in/right-out only; direct driveway access via service roads or other alternate connections
- **Boulevards**
  - Functional purpose – moderate mobility; moderate access, moderate volume, medium speed
  - Posted speed – 30 to 55 mph
  - Cross-section – two or more lanes with median (median breaks allowed for U-turns per current *NCDOT Driveway Manual*
  - Multi-modal elements – bus stops, bike lanes (urban) or wide paved shoulders (rural), sidewalks (urban - local government option)
  - Type of access control – limited control of access, partial control of access, or no control of access
  - Access management – two lane facilities may have medians with crossovers, medians with turning pockets or turning lanes; use of

acceleration/deceleration or right turning lanes is optional; for abutting properties, use of shared driveways, internal out parcel access and cross-connectivity between adjacent properties is strongly encouraged
    - Intersecting facilities – at grade intersections and driveways; interchanges at special locations with high volumes
    - Driveways – primarily right-in/right-out, some right-in/right-out in combination with median leftovers; major driveways may be full movement when access is not possible using an alternate roadway
- **Other Major Thoroughfares –**
    - Functional purpose – balanced mobility and access, moderate volume, low to medium speed; will include all US and NC routes not designated as freeway, expressway, or boulevard
    - Posted speed – 25 to 55 mph
    - Cross-section – four or more lanes without median (US and NC routes may have less than four lanes)
    - Multi-modal elements – bus stops, bike lanes/wide outer lane (urban) or wide paved shoulder (rural), sidewalks (urban)
    - Type of access control – no control of access
    - Access management – continuous left turn lanes; for abutting properties, use of shared driveways, internal out parcel access and cross-connectivity between adjacent properties is strongly encouraged
    - Intersecting facilities – intersections and driveways
    - Driveways – full movement on two lane with center turn lane as permitted by the current *NCDOT Driveway Manual*
- **Minor Thoroughfares –**
    - Functional purpose – balanced mobility and access, moderate volume, low to medium speed
    - Posted speed – 25 to 45 mph
    - Cross-section – ultimately three lanes (no more than one lane per direction) or less without median
    - Multi-modal elements – bus stops, bike lanes/wide outer lane (urban) or wide paved shoulder (rural), sidewalks (urban)
    - ROW – no control of access
    - Access management – continuous left turn lanes; for abutting properties, use of shared driveways, internal out parcel access and cross-connectivity between adjacent properties is strongly encouraged
    - Intersecting facilities – intersections and driveways
    - Driveways – full movement on two lane roadway with center turn lane as permitted by the current *NCDOT Driveway Manual*

APPENDIX C

PITT COUNTY CTP

Street Tabulation and Recommendation

Facility & Section		Current Conditions					Recommended Improvement				
		AADT	No. of Travel lanes	ROWDY ft	Current Capacity (VPD)	Existing Thoroughfare	ADDT	Recom. Travel lanes	Proposed RDWY FT	Proposed Capacity (VPD)	Thoroughfare Class
ROUTE NUMBER	DESCRIPTION	2003					2030				
NC 102											
102	W OF SR 1725	2400	2	20	12000	Major Collector	5092	2	24	12000	Major Thor
102	W OF SR 1753	1300	2	20	12000	Major Collector	2173	2	24	12000	Major Thor
102	E OF SR 1800	1200	2	20	12000	Major Collector	1863	2	24	12000	Major Thor
102	E OF SR 1753	2000	2	20	12000	Major Collector	3838	2	24	12000	Major Thor
102	E OF NC 43	1800	2	22	12000	Major Collector	2617	2	24	12000	Major Thor
NC 11											
11	N OF US 13-64	3200	4	48	33500	Minor Arterial	13948	4	48	60,000	Freeway
11	S OF SR 1501	6000	4	48	33500	Minor Arterial	16414	4	48	60,000	Freeway
11	S OF SR 1429	9100	4	48	33500	Minor Arterial	20116	4	48	60,000	Freeway
11	S OF SR 1515	9000	4	48	33500	Minor Arterial	13934	4	48	60,000	Freeway
11	S OF SR 1108	16000	4	48	33500	Minor Arterial	24290	4	48	60,000	Freeway
11	S OF SR 1110	15000	4	48	33500	Minor Arterial	22000	4	48	60,000	Freeway
11	N OF NC 30	9000	4	48	33500	Minor Arterial	14570	4	48	60,000	Freeway
11	N OF SR 1426	9000	4	48	33500	Minor Arterial	12066	4	48	60,000	Freeway
NC 118											
118	E OF SR 1910	3100	2	20	12000	Major Collector	6657	2	24	12000	Major Thor
118	E OF SR 1914	2300	2	20	12000	Major Collector	2538	2	24	12000	Major Thor
118	W OF SR 1910	3900	2	20	12000	Major Collector	7522	2	24	12000	Major Thor
118	E OF SR 1753	1200	2	20	12000	Major Collector	2835	2	24	12000	Major Thor
118	E OF SR 1916	3000	2	20	12000	Major Collector	5485	2	24	12000	Major Thor
118	W OF SR 1939	5000	2	20	12000	Major Collector	10823	2	24	12000	Major Thor
118	E OF SR 1939	5600	2	20	12000	Major Collector	11731	2	24	12000	Major Thor
NC 121											
121	S OF NC 43	1100	2	20	12000	Major Collector	1068	2	24	12000	Major Thor
121	N OF SR 1200	2000	2	20	12000	Major Collector	4407	2	24	12000	Major Thor
121	W OF SR 1226	1200	2	24	12000	Major Collector	2467	2	24	12000	Major Thor
121	W OF US 258	1400	2	24	12000	Major Collector	3589	2	24	12000	Major Thor
121	N OF US 258	4700	2	24	12000	Major Collector	7793	2	24	12000	Major Thor
US 13/ NC 11											
13	S OF US 264 A	4300	2	24	12000	Minor Arterial	7556	4	48	60000	Freeway
13/NC 11	N OF SR 1500	8600	4	48	33500	Minor Arterial	27770	4	48	60000	Freeway
US 13-264A											
13-264 A	E OF SR 1138	11000	2	24	12000	Minor Arterial	31897	4	48	33,500	Major Thor
13-264 A	E OF US 13	10000	2	24	12000	Minor Arterial	25127	4	48	33,500	Major Thor
NC 222											
222	E OF NC 43	6100	2	20	12000	Major Collector	16701	2	24	12000	Major Thor
222	W OF SR 1245	1100	2	20	12000	Major Collector	4159	2	24	12000	Major Thor
222	N OF SR 1246	940	2	20	12000	Major Collector	2232	2	24	12000	Major Thor
222	W OF SR 1248	800	2	20	12000	Major Collector	2839	2	24	12000	Major Thor
222	E OF US 258	1100	2	20	12000	Major Collector	3253	2	24	12000	Major Thor
222	E OF SR 1231	1100	2	20	12000	Major Collector	3462	2	24	12000	Major Thor
222	S OF SR 1231	990	2	20	12000	Major Collector	2259	2	24	12000	Major Thor
222	W OF NC 43	1500	2	20	12000	Major Collector	3800	2	24	12000	Major Thor
222	W OF US 258	1100	2	20	12000	Major Collector	4393	2	24	12000	Major Thor
US 258											
258	N OF SR 1241	3800	2	24	12000	Minor Arterial	6793	4	48	33,500	Major Thor
258	N OF NC 222	2900	3	36	12000	Minor Arterial	9340	4	48	33,500	Major Thor
258	S OF NC 222	3100	3	36	12000	Minor Arterial	10086	4	48	33,500	Major Thor
258	N OF SR 1200	3500	2	22	12000	Minor Arterial	6128	4	48	33,500	Major Thor
258	N OF US 264	4900	2	22	12000	Minor Arterial	10365	4	48	33,500	Major Thor
258	S OF US 264	4100	4	48	33500	Minor Arterial	12763	4	48	33,500	Major Thor
258	S OF US 264	4600	3	30	12000	Minor Arterial	14704	4	48	33,500	Major Thor
258	S of US 258/NC 121	5500	3	38	12000	Minor Arterial	18303	4	48	33,500	Major Thor
258	S of US 258/NC 121	5800	3	38	12000	Minor Arterial	20687	4	48	33,500	Major Thor
258	N OF US 264 A	7000	3	38	12000	Minor Arterial	23828	4	48	33,500	Major Thor
258/NC 121	S OF SR 1304	2900	2	22	12000	Minor Arterial	9591	4	48	33,500	Major Thor
258/NC 121	W OF NC 121	4200	2	22	12000	Minor Arterial	12617	4	48	33,500	Major Thor

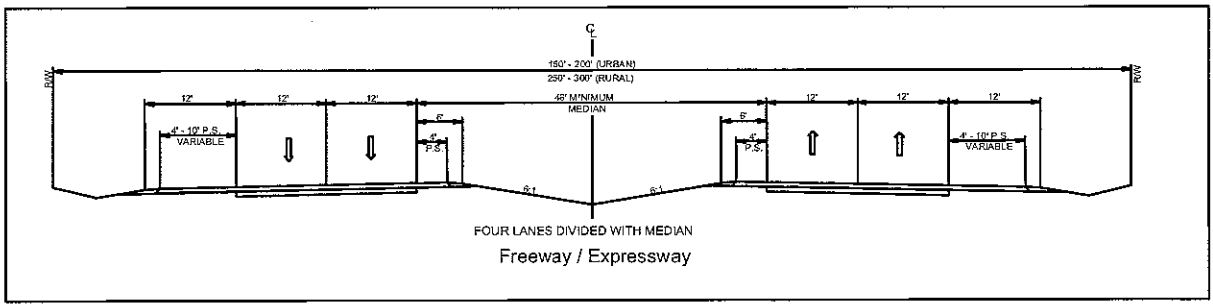
PITT COUNTY CTP
Street Tabulation and Recommendation

Facility & Section		Current Conditions					Recommended Improvement				
		AADT	No. of Travel lanes	ROWDY ft	Current Capacity (VPD)	Existing Thoroughfare	ADDT	Recom. Travel lanes	Proposed RDWY FT	Proposed Capacity (VPD)	Thoroughfare Class
ROUTE NUMBER	DESCRIPTION	2003					2030				
US 264											
264	E OF NC 30	16000	4	48		Principal Arterial	50171	4	48	60,000	Freeway
264	W OF SR 1563	15000	4	48		Principal Arterial	48602	4	48	60,000	Freeway
264	W OF SR 1529	15000	4	48		Principal Arterial	46755	4	48	60,000	Freeway
264	W OF US 258	14000	4	48		Principal Arterial	36622	4	48	60,000	Freeway
264	W OF SR 1214	19000	4	48		Principal Arterial	55269	4	48	60,000	Freeway
264	E OF NC 121	15000	4	48		Principal Arterial	35690	4	48	60,000	Freeway
264	E OF SR 1221	19000	4	48		Principal Arterial	53124	4	48	60,000	Freeway
264	W OF NC 30	14000	4	48		Principal Arterial	45847	4	48	60,000	Freeway
264	S OF US 264 A	5800	4	48		Principal Arterial	16947	4	48	60,000	Freeway
264	E OF SR 1564	16000	4	48		Principal Arterial	51651	4	48	60,000	Freeway
US 264A											
264 A	W OF US 258	8700	2	24		Major Collector	28178	4	48	33,500	Major Thor
264 A	W of SR 1143	4600	2	24		Major Collector	14613	4	48	33,500	Major Thor
264 A	E OF US 258	8800	2	24		Major Collector	26453	4	48	33,500	Major Thor
264 A	E of SR 1141	4400	2	24		Major Collector	10574	4	48	33,500	Major Thor
264 A	E OF SR 1139	5700	2	24		Major Collector	19076	4	48	33,500	Major Thor
NC30											
30	E OF NC 11	1100	2	22		Major Collector	4164	2	24	12000	Major Thor
30	S OF SR 1543	1300	2	22		Major Collector	5179	2	24	12000	Major Thor
30	N OF US 264	1400	2	22		Major Collector	4891	2	24	12000	Major Thor
30	E OF SR 1514	1100	2	22		Major Collector	4033	2	24	12000	Major Thor
30	N OF SR 1545	4400	2	22		Major Collector	7888	2	24	12000	Major Thor
30	S OF SR 1545	4600	2	22		Major Collector	8542	2	24	12000	Major Thor
30	E OF NC 903	2700	2	22		Major Collector	6557	2	24	12000	Major Thor
NC 33											
33	N OF SR 1409	3400	2	24		Major Collector	10065	4	48	30,000	Major Thor
33	E OF SR 1565	5500	2	22		Major Collector	13945	4	48	30,000	Major Thor
33	W OF SR 1760	6700	2	22		Major Collector	16220	4	48	30,000	Major Thor
33	W OF SR 1569	4900	2	20		Major Collector	12964	4	48	30,000	Major Thor
33	W OF NC 222	5000	2	24		Major Collector	14229	4	48	30,000	Major Thor
33	E OF NC 222	5500	2	24		Major Collector	17449	4	48	30,000	Major Thor
33	W OF SR 1565	7600	2	22		Major Collector	20507	4	48	30,000	Major Thor
NC 43											
43	S OF NC 121	6100	2	22		Major Collector	18740	4	48	30,000	Major Thor
43	N OF SR 1253	4000	2	24		Major Collector	13101	4	48	30,000	Major Thor
43	S OF SR 1801	5100	2	22		Major Collector	16281	4	48	30,000	Major Thor
43	S OF SR 1755	5800	2	22		Major Collector	18348	4	48	30,000	Major Thor
43	E OF SR 1800	5100	2	22		Major Collector	13997	4	48	30,000	Major Thor
43	N OF NC 222	4400	2	22		Major Collector	11824	4	48	30,000	Major Thor
43	W OF NC 121	6000	2	22		Major Collector	10053	4	48	30,000	Major Thor
43	E OF SR 1750	7000	2	22		Major Collector	17324	4	48	30,000	Major Thor
43	N OF SR 1793	5700	2	22		Major Collector	16089	4	48	30,000	Major Thor
43	N OF NC 102	5900	2	22		Major Collector	15393		48	30,000	Major Thor
US 64A											
64	W OF NC 11	1900	4	48		Major Collector	8085	4	48	60,000	Freeway
64	E OF SR 1429	1800	4	48		Major Collector	9117	4	48	60,000	Freeway
64 A	E OF SR 1400	2200	4	48		Major Collector	2164	4	48	60,000	Freeway
13-64A	N OF NC 11	1400	2	48	12000	Major Collector	3378	4	48	60000	Freeway
NC 903											
903	N OF SR 1550	4700	2	20		Major Collector	14115	4	48	30,000	Major Thor
903	E OF SR 1546	5200	2	20		Major Collector	20983	4	48	30,000	Major Thor
903	S OF SR 1544	5200	2	22		Major Collector	20421	4	48	30,000	Major Thor
903	E OF SR 1543	6900	2	22		Major Collector	19867	4	48	30,000	Major Thor
903	N OF NC 30	1300	2	20		Major Collector	17057	4	48	30,000	Major Thor
903	N OF SR 1551	2000	2	20		Major Collector	11294	4	48	30,000	Major Thor

Appendix D

TYPICAL HIGHWAY CROSS SECTIONS

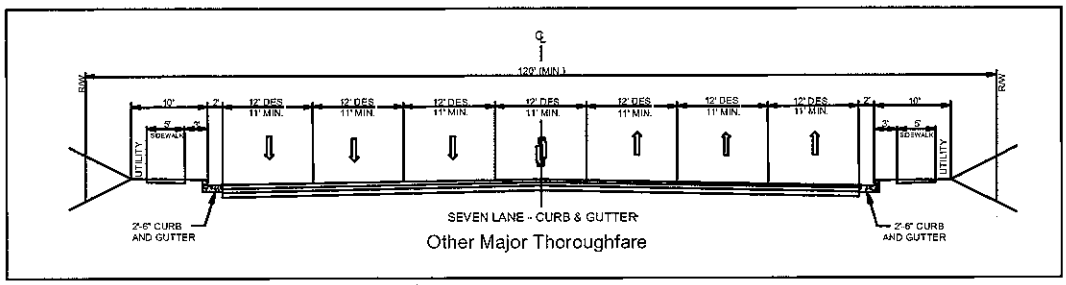
A



FOUR LANES DIVIDED WITH MEDIAN

Freeway / Expressway

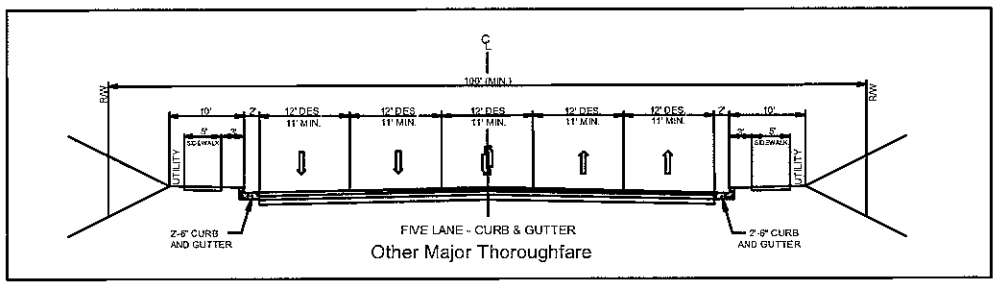
B



SEVEN LANE - CURB & GUTTER

Other Major Thoroughfare

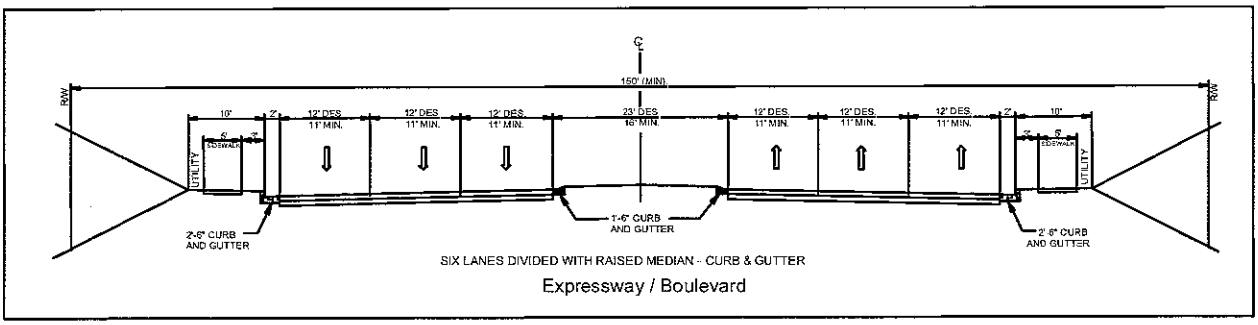
C



FIVE LANE - CURB & GUTTER

Other Major Thoroughfare

D



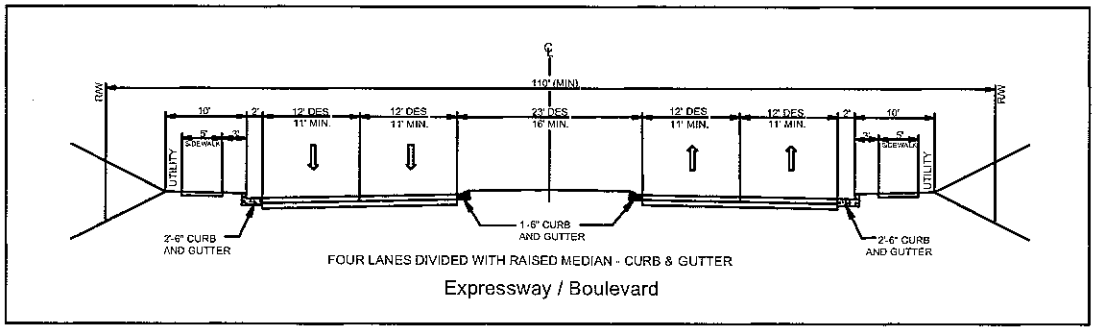
SIX LANES DIVIDED WITH RAISED MEDIAN - CURB & GUTTER

Expressway / Boulevard

revised 04-01-05

TYPICAL HIGHWAY CROSS SECTIONS

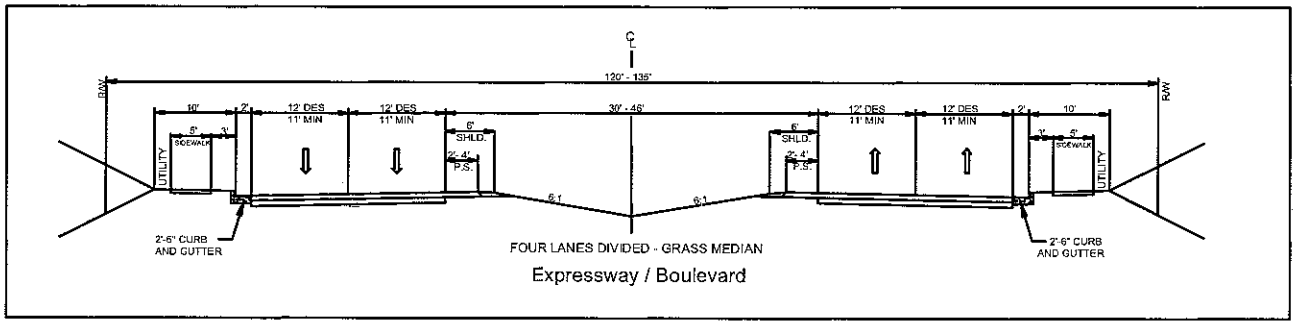
E



FOUR LANES DIVIDED WITH RAISED MEDIAN - CURB & GUTTER

Expressway / Boulevard

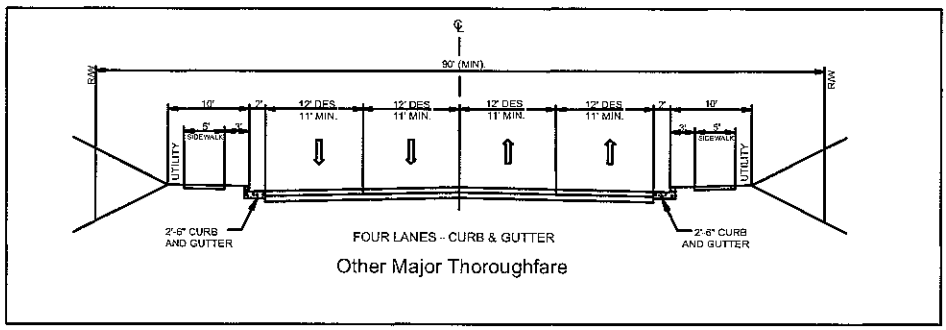
F



FOUR LANES DIVIDED - GRASS MEDIAN

Expressway / Boulevard

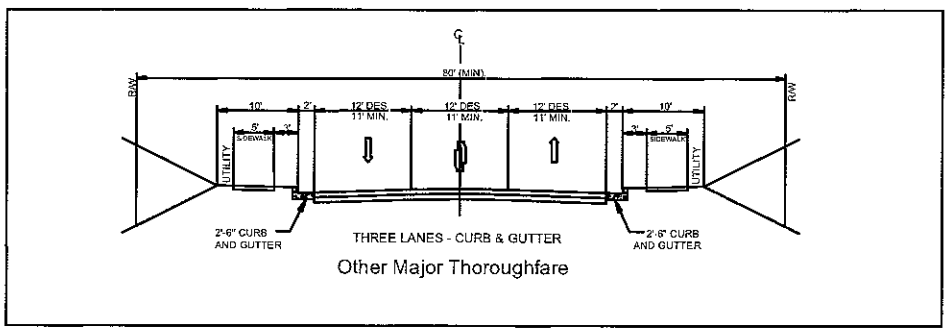
G



FOUR LANES - CURB & GUTTER

Other Major Thoroughfare

H

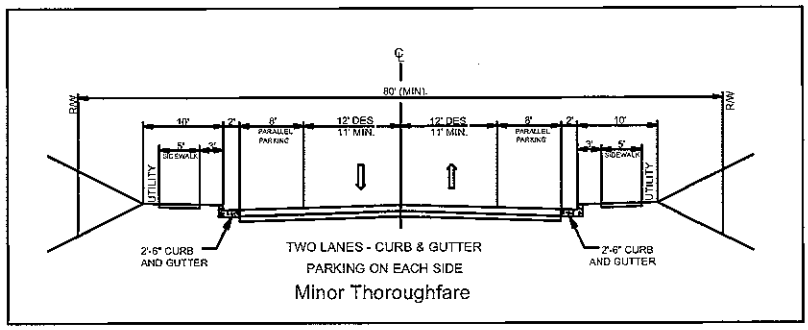


THREE LANES - CURB & GUTTER

Other Major Thoroughfare

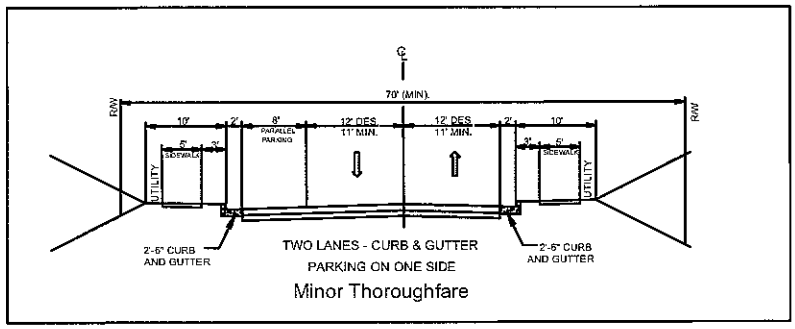
TYPICAL HIGHWAY CROSS SECTIONS

I



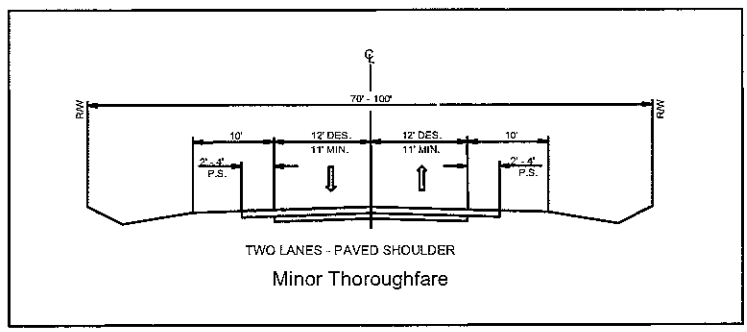
TWO LANES - CURB & GUTTER
PARKING ON EACH SIDE
Minor Thoroughfare

J



TWO LANES - CURB & GUTTER
PARKING ON ONE SIDE
Minor Thoroughfare

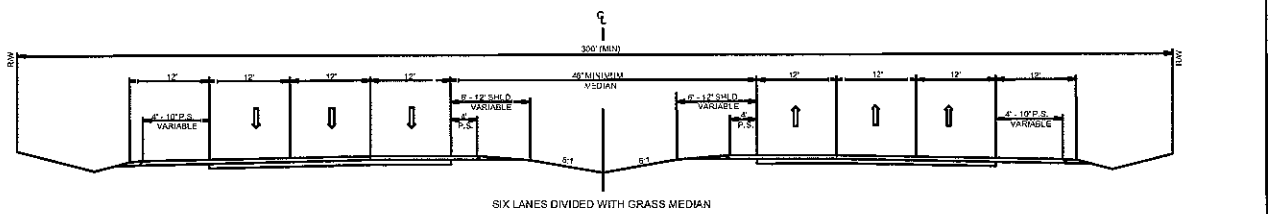
K



TWO LANES - PAVED SHOULDER
Minor Thoroughfare

TYPICAL HIGHWAY CROSS SECTIONS

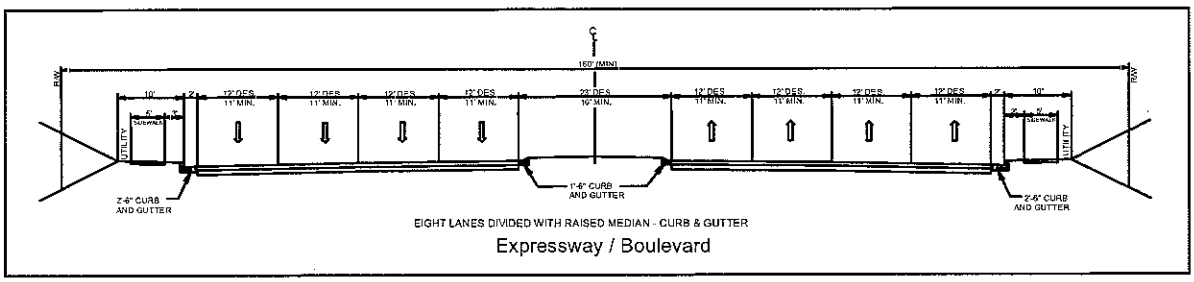
L



SIX LANES DIVIDED WITH GRASS MEDIAN

Freeway / Expressway

M



EIGHT LANES DIVIDED WITH RAISED MEDIAN - CURB & GUTTER

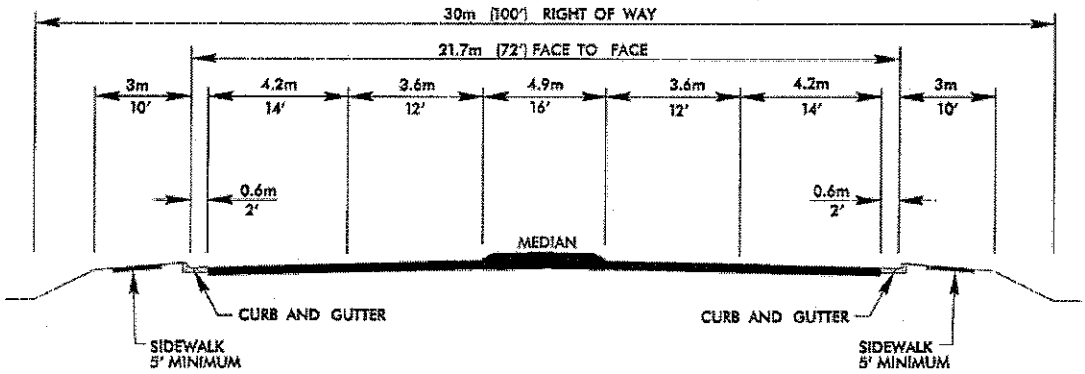
Expressway / Boulevard

Typical Bicycle Cross Sections

WIDE CURB LANES

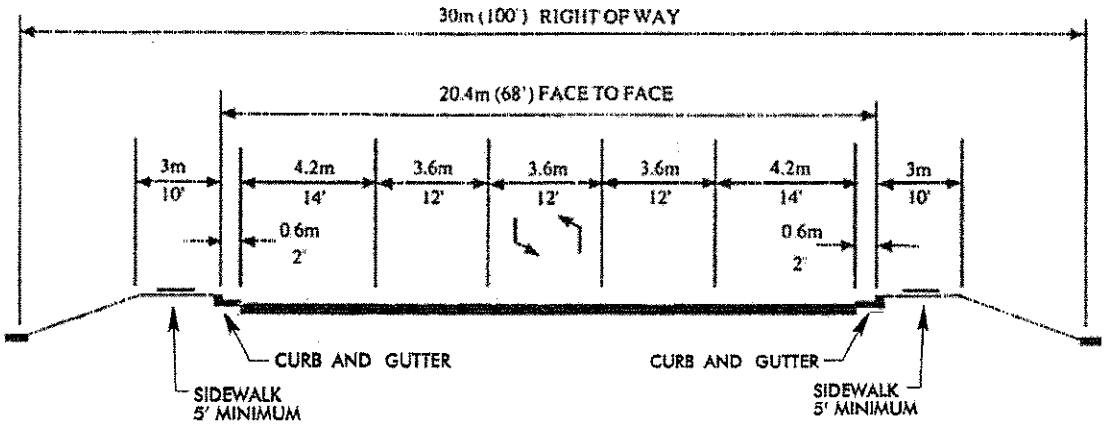
B –1 4-LANE MEDIAN DIVIDED TYPICAL SECTION

With Wide Outside Lanes



B-2 5-LANE TYPICAL SECTION

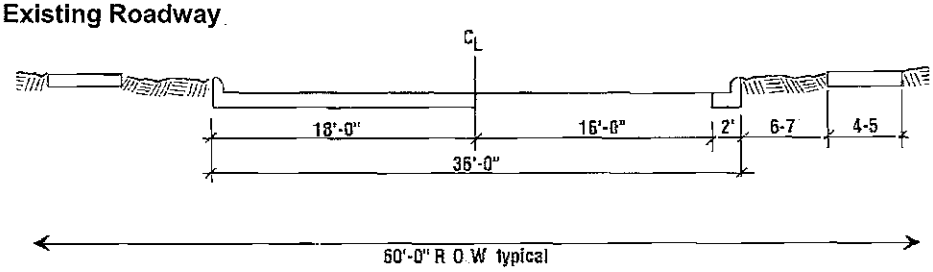
With Wide Outside Lanes



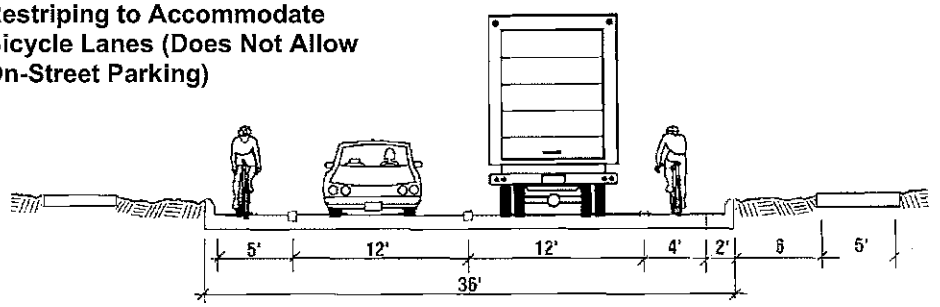
Typical Bicycle Cross Sections

B-3 BICYCLE LANES ON COLLECTOR STREETS

Existing Roadway



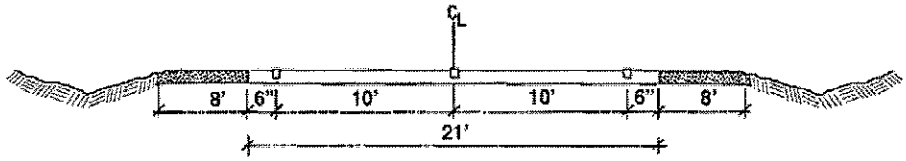
Restriping to Accommodate Bicycle Lanes (Does Not Allow On-Street Parking)



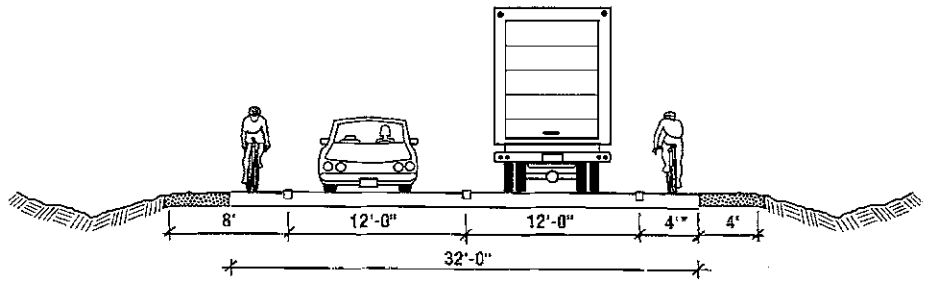
Typical Bicycle Cross Sections

B-4 WIDE PAVED SHOULDERS

Existing Roadway



Roadway Retrofitted with 4-Ft Paved Shoulders

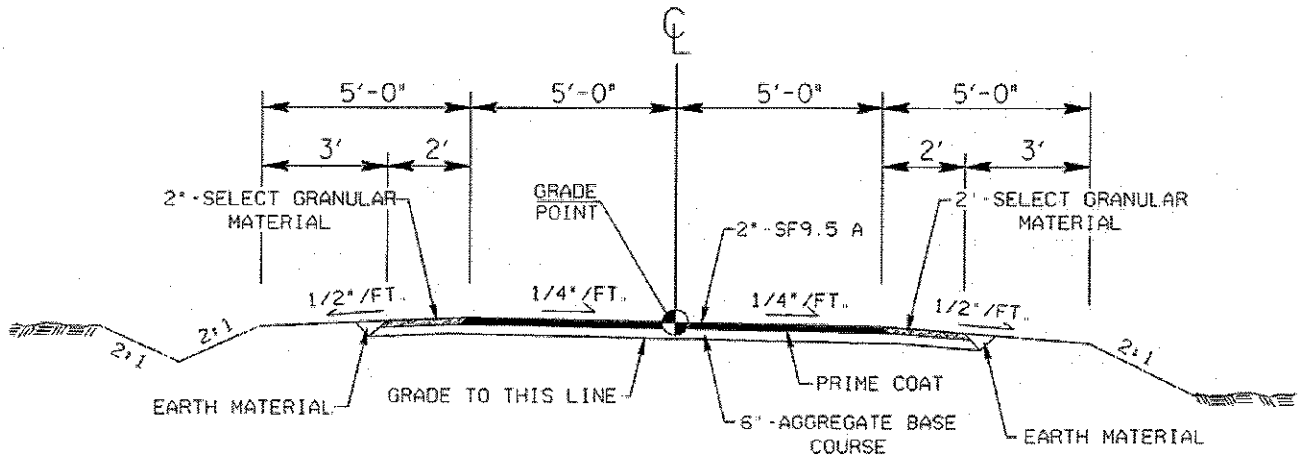


* If speeds are higher than 40 mph, shoulder widths greater than 4' are recommended.

Typical Bicycle Cross Sections

B-5 RECOMMENDED TYPICAL SECTION OF 10-FT ASPHALT PATHWAY

With 2-Ft Select Material Shoulder



Definitions Of Environmental Status Codes: Natural Heritage Program List

North Carolina Status		Descriptions of Plants*
E	**Endangered**	"Any species or higher taxon of plant whose continued existence as a viable component of the States flora is determined to be in jeopardy" (GS 19B 106: 202.12). (Endangered species may not be removed from the wild except when a permit is obtained for research, propagation, or rescue which will enhance the survival of the species).
T	**Threatened**	"Any resident species of plant which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (GS 19B 106: 202.12). (Regulations are the same as for Endangered Species).
SC	**Special Concern**	"Any species of plant in North Carolina which requires monitoring but which may be collected and sold under regulations adopted under the provisions of [the Plant Protection and Conservation Act]" (GS 19B 106:202.12). (Special Concern species which are not also listed as Endangered or Threatened may be collected from the wild and sold under specific regulations. Propagated material only of Special Concern species which are also listed as Endangered or Threatened may be traded or sold under specific regulations.)
C	**Candidate**	Species which are very rare in North Carolina, generally with 1-20 populations in the state, generally substantially reduced in numbers by habitat destruction (and sometimes also by direct exploitation or disease). These species are also either rare throughout their ranges (fewer than 100 populations total) or disjunct in North Carolina from a main range in a different part of the country or world. Also included are species which may have 20-50 populations in North Carolina, but fewer than 50 populations worldwide. These are species which have the preponderance of their distribution in North Carolina and whose fate depends largely on their conservation here. Also included are many species known to have once occurred in North Carolina but

* **Plant statuses** are determined by the Plant Conservation Program (NC Department of Agriculture) and the Natural Heritage Program (NC Department of Environment and Natural Resources). Endangered, Threatened, and Special Concern species are protected by state law (Plant Protection and Conservation Act, 1979). Candidate and Significantly Rare designations indicate rarity and the need for population monitoring and conservation action. Note that plants can have a double status, e g , E-SC, indicates that while the plant is endangered, it is collected or sold under regulation

		with no known extant occurrences in the state (historical or extirpated species); if these species are relocated in the state, they are likely to be listed as Endangered or Threatened. If present land use trends continue, candidate species are likely to merit listing as Endangered or Threatened.
SR	**Significantly Rare**	Species which are very rare in North Carolina, generally substantially reduced in numbers by habitat destruction (and sometimes also by direct exploitation or disease). These species are generally more common somewhere else in their ranges, occurring in North Carolina peripherally to their main ranges, mostly in habitats which are unusual in North Carolina. Also included are some species with 20-100 populations in North Carolina, if they also have only 50-100 populations rangewide and are declining.
-L	**Limited**	The range of the species is limited to North Carolina and adjacent states (endemic or near endemic). These are species which may have 20-50 populations in North Carolina, but fewer than 50 populations rangewide. The preponderance of their distribution is in North Carolina and their fate depends largely on conservation here. Also included are some species with 20-100 populations in North Carolina, if they also have only 50-100 populations rangewide and declining.
-T	**Throughout**	These species are rare throughout their ranges (fewer than 100 populations total)
-D	**Disjunct**	The species is disjunct to NC from a main range in a different part of the country or world.
-P	**Peripheral**	The species is at the periphery of its range in NC. These species are generally more common somewhere else in their ranges, occurring in North Carolina peripherally to their main ranges, mostly in habitats which are unusual in North Carolina.
-O	**Other**	The range of the species is sporadic or cannot be described by the other Significantly Rare categories
P_	**Proposed**	A species which has been formally proposed for listing as Endangered, Threatened, or Special Concern, but has not yet completed the legally mandated listing process.

North Carolina Status		Description of Animals[2]
E	**Endangered**	"Any native or once-native species of wild animal whose continued existence as a viable component of the State's fauna is determined by the Wildlife Resources Commission to be in jeopardy or any species of wild animal determined to be an 'endangered species' pursuant to the Endangered Species Act." (Article 25 of Chapter 113 of the General Statutes; 1987).
T	**Threatened**	"Any native or once-native species of wild animal which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, or one that is designated as a threatened species pursuant to the Endangered Species Act." (Article 25 of Chapter 113 of the General Statutes; 1987).
SC	**Special Concern**	"Any species of wild animal native or once-native to North Carolina which is determined by the Wildlife Resources Commission to require monitoring but which may be taken under regulations adopted under the provisions of this Article." (Article 25 of Chapter 113 of the General Statutes; 1987).
SR	**Significantly Rare**	Any species which has not been listed by the N.C. Wildlife Resources Commission as an Endangered, Threatened, or Special Concern species, but which exists in the state in small numbers and has been determined by the N.C. Natural Heritage Program to need monitoring. (This is a N.C. Natural Heritage Program designation.) Significantly Rare species include "peripheral" species, whereby North Carolina lies at the periphery of the species' range (such as Hermit Thrush). The designation also includes marine and estuarine fishes identified as "Vulnerable" by the N.C. State Museum of Biological Sciences (Ross et al., 1988, Endangered, Threatened, and Rare Fauna of North Carolina. Part II. A Reevaluation of the Marine and Estuarine Fishes).
EX	**Extirpated**	A species which is no longer believed to occur in the state.
P_	**Proposed**	Species has been proposed by a Scientific Council as a status (Endangered, Threatened, Special Concern, Watch

[2] Animal statuses are determined by the Wildlife Resources Commission and the Natural Heritage Program. Endangered, Threatened, and Special Concern species of mammals, birds, reptiles, amphibians, freshwater fishes, and freshwater and terrestrial mollusks have legal protection status in North Carolina (Wildlife Resources Commission). The Significantly Rare designation indicates rarity and the need for population monitoring and conservation action

List, or for De-listing) that is different from the current status, but the status has not yet been adopted by the Wildlife Resources Commission and by the General Assembly as law. In the lists of rare species in this book, these proposed statuses are listed in parentheses below the current status. Only those proposed statuses that are different from the current statuses are listed.

Federal Status		Description[3]
E	**Endangered**	A taxon "which is in danger of extinction throughout all or a significant portion of its range" (Endangered Species Act, Section 3).
T	**Threatened**	A taxon "which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (Endangered Species Act, Section 3).
EXN	**Endangered, nonessential experimental population.**	The Endangered Species Act permits the reintroduction of endangered animals as "nonessential experimental" populations. Such populations, considered nonessential to the survival of the species, are managed with fewer restrictions than populations listed as endangered.
T (S/A)	**Threatened due to Similarity of Appearance.**	The Endangered Species Act authorizes the treatment of a species (subspecies or population segment) as threatened even though it is not otherwise listed as threatened if: (a) The species so closely resembles in appearance a threatened species that enforcement personnel would have substantial difficulty in differentiating between the listed and unlisted species; (b) the effect of this substantial difficulty is an additional threat to a threatened species; and (c) such treatment of an unlisted species will substantially facilitate the enforcement and further the policy of the Act. The American Alligator has this designation due to similarity of appearance to other rare crocodilians. The Bog Turtle (southern population) has this designation due to similarity of appearance to Bog Turtles in the threatened northern population.
C	**Candidate**	A taxon under consideration for which there is sufficient information to support listing. This category was formerly designated as a Candidate 1 (C1) species.

[3] These statuses are designated by the US Fish and Wildlife Service. Federally listed Endangered and Threatened species are protected under the provisions of the Endangered Species Act of 1973, as amended through the 100th Congress. Unless otherwise noted, definitions are taken from the *Federal Register*, Vol 56, No. 225, November 21, 1991 (50 CFR Part 17).

FSC	**Federal "Species of Concern"**	Formerly defined as a taxon under consideration for which there is insufficient information to support listing; formerly designated as a Candidate 2 (C2) species.
PE	**Proposed Endangered**	Species has been proposed for listing as endangered.
PD	**Proposed De-listed**	Species has been proposed for de-listing.

State Ranks	**Description**
S1	Critically imperiled in North Carolina because of extreme rarity or otherwise very vulnerable to extirpation in the state.
S2	Imperiled in North Carolina because of rarity or otherwise vulnerable to extirpation in the state.
S3	Rare or uncommon in North Carolina
S4	Apparently secure in North Carolina, with many occurrences.
S5	Demonstrably secure in North Carolina and essentially ineradicable under present conditions.
SA	Accidental or casual; one to several records for North Carolina, but the state is outside the normal range of the species.
SH	Of historical occurrence in North Carolina, perhaps not having been verified in the past 25 years, and suspected to be still extant in the state.
SR	Reported from North Carolina, but without persuasive documentation for either accepting or rejecting the report.
SX	Believed to be extirpated from North Carolina.
SU	Possibly in peril in North Carolina, but status uncertain; more information is needed.
S?	Unranked, or rank uncertain.
S_B	Rank of breeding population in the state. Used for migratory species only.
S_N	Rank of non-breeding population in the state. Used for

migratory species only.

SZ_ Population is not of significant conservation concern; applies to transitory, migratory species.

APPENDIX F

LAND USE/ ACCESS MANAGEMENT POLICY GUIDELINES FOR MOBILITY PROTECTION

Policy Guidelines

In order to address the issues outlined with existing development patterns and begin achieving the characteristics identified as beneficial in the previous section, appropriate land use policies should be adopted throughout the corridor. The following land use policy guidelines address conditions associated with the many facets of the land use/mobility issue. Each policy statement is followed by a series of recommended actions for putting it into practice, which target various audiences from local planning staffs to the state's Department of Transportation. Some of these recommendations are followed by associated sub-recommendations or specific tools that may be used to carry them out. *These policies are not intended to be assigned to specific communities. The application and prioritization of the policies will vary in each, depending on the particular challenges a community faces.*

The policies and accompanying recommendations on the following pages outline ways to achieve a balance between land use and transportation along the highway and at interchanges.

Policy #1: Promote adherence to land development principles that minimize the need for local trips on the highway.

As stated previously, no particular land use can be described as suitable or unsuitable for areas adjacent to highways. Instead, it is the mixture of uses, the relationship between them, and the way each use is accessed that determines whether development will have a positive or negative impact on the highway. Thus, development should follow design principles that reduce numbers and lengths of local trips and provide alternatives to the new highway for those trips. Efficient travel behavior is positively associated with such land-use characteristics as density of development and a mix of complementary land uses within walkable distances. These land-use characteristics are in turn associated with transportation infrastructure and facilities that support efficient travel behavior, such as frequent transit service and complete sidewalk and bike lane networks. Development design must incorporate these elements effectively.

Recommended actions for putting this policy into practice:

- Encourage the concentration of a mixture of uses to minimize the number and length of local trips.
    - Locate auto-oriented businesses in a manner that does not conflict with the compact form of mixed-use development and can be accessed via the local street network.

  - Allow vertical mixing of uses (such as residential above commercial/retail) by right in zoning. Cities such as Seattle, Orlando, and Washington, DC, use density bonuses to encourage mixed uses.
  - Vary the intensity of development along a highway corridor by encouraging commercial/mixed-use activity centers near intersections of through streets that are well linked to the surrounding area.

- Establish site design standards to promote development patterns that make feasible a variety of transportation options for pedestrians, bicyclists, transit users, and automobile drivers. Not accommodating this variety of transportation choices encourages vehicular travel, thereby increasing local trips on a nearby highway.
  - Support human-scaled design and streetscape features that help enclose and define a more pedestrian-friendly environment by orienting buildings to the street and requiring building entrances to be placed close to the street. Also promote the incorporation of ground-floor windows, articulated facades, appropriately scaled signs and lighting, awnings and other weather protection, and landscaping, including buffering where appropriate.
  - Locate parking and vehicle drives away from building entrances and not between building entrances and streets with pedestrian activity. Orient surface parking behind or to the side of buildings.
  - Provide access from shared driveways or alleys to minimize the number of driveways pedestrians must cross. Driveways separate buildings; minimizing them tends to shorten the walk between uses.
  - Provide pedestrian walkways through sites, connecting building entrances and the public sidewalk with safe crossings of streets, drives, and parking lots.
  - One way to do this is to create an overlay zoning district that applies design principles across multiple zoning districts without rewriting entire zoning categories. Parcels affected by an overlay zone are subject to the standards of the underlying zone in addition to the standards of the overlay zone.

- Manage parking design, location, supply, and demand to help create more balanced auto and pedestrian environments. Surface lots should be small, on-street parking should be offered, and structured parking should be incorporated in order to avoid substantially separating uses and impeding pedestrian movement. Oversupply of parking should be avoided since it not only induces auto travel (including travel on the highway), but can discourage travel by foot or bicycle.
  - Reduce or waive minimum off-street parking standards.
  - Establish a maximum parking ratio based on land use.
  - Provide shared parking requirements in areas of mixed retail and commercial uses.
  - Allow "in-lieu" parking fees to be paid by a developer to forego providing on-site parking. These funds would combine in a fund for constructing off-site municipal parking facilities.

Policy #2: Support efforts to increase connectivity within and between developments.

Travel patterns within a road network are dynamic; they shift with each network improvement as motorists search for and find the optimal route: one that is the shortest in terms of travel time and distance between destinations. Many local roads are created through the subdivision of private property, but as developers strive to minimize costs, money spent on infrastructure is kept to a minimum. As a result, few streets, particularly through streets that could contribute to the local road network, are built; developers build only what is necessary to provide access *within* each development, leading to deficiencies in the transportation network. When the local street network is not sufficient, a highway or expressway can become the quickest route, reducing mobility for through traffic. Connectivity between and within developments not only encourages drivers to use the local street network for local trips without traveling on the highway, but also provides options for people to walk or bike to their local destinations instead of driving, further reducing the number of local trips made by vehicle.

Recommended actions for putting this policy into practice:

- Foster the creation of a dense and highly connected street system, including the development a collector street plan.
    - Require a continuous network of streets at the local level. While local transportation plans recommend critical connections, implementation occurs primarily through the development process.
    - Designate future street extensions to plan for connectivity. Stub-out connections to neighboring parcels may be constructed if cross-access is not feasible at time of permit approval.
    - Require the formation of blocks with a minimum street spacing standard. Local governments can plan ahead by stipulating maximum block lengths and perimeters in their zoning codes.
    - Limit closed street systems and cul-de-sac designs to situations where topography, environmental impacts, or existing development patterns prevent full street connections.

- Encourage connectivity for pedestrian and bicycle travel by requiring a continuous network of pedestrian and bicycle pathways that link to roadways and adjacent developments. These pathways need not coincide with street and driveway locations, making their creation more feasible and, often, their use more convenient than taking a vehicular route.

- Require multiple points of ingress and egress for new developments (such as planned urban developments or subdivisions), locating them on secondary roads in addition to or instead of the highway when possible. Encourage, require, or provide a density bonus for providing access points along more than one roadway, where appropriate, to distribute the trips to and from the development and reduce the burden on the main roadway.

Policy #3: Promote development design that adequately manages access and reduces congestion levels on roads.

Achieving transportation efficiency requires addressing potential conflicts between mobility on the highway and accessibility to the highway. As access to a highway is increased, mobility may be reduced. For example, when a highway has an excessive number of curb cuts, access is increased allowing multiple turning movements which slow traffic. Also, easy access facilitated by the many curb cuts encourages local trips on the highway. Access management is key to maintaining the mobility of the highway.

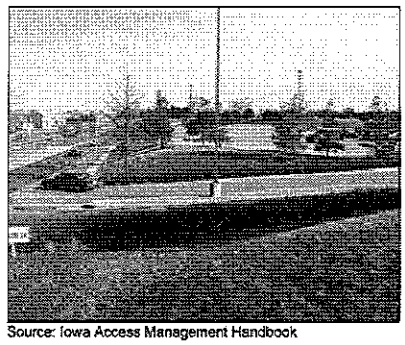
Recommended actions for putting this policy into practice:

The following access management recommendations should be applied to the highway, but may also be considered for intersecting roadways when access management could help reduce congestion on those roads. They may be applied by incorporating the techniques into the zoning code, creating an access management ordinance, or requiring the techniques' application during the subdivision and site plan review process.

- Minimize the number of driveways/curb cuts on the highway. Fewer driveways, appropriate driveway location, and design standards will allow for vehicular movement that will help minimize congestion.
  - Adopt minimum spacing requirements and maximum driveways per development.
  - Encourage shared driveway access through regulations and incentives.
  - Encourage cross-access agreements that allow one or more parcels to gain secondary access across the property of another, reducing the reliance on driveways onto the highway.
  - Because the width of lot frontage affects the spacing between driveways, set minimum lot frontage requirements high enough to prevent land along thoroughfares from being subdivided into small lot frontages. On major highways, minimum lot frontage requirements could be tied to minimum driveway spacing standards. Where there are alternatives to direct access onto the highway (such as access to a cross street or shared driveway), smaller lot frontages could be permitted[1].
  - At the intersection of arterial and local roads, require corner lot access from local roads in order to minimize access points on the highway.

- Encourage smooth traffic flow on the highway by regulating the nature of driveways and other access points.
  - Encourage driveway turn-around areas to improve the safety of vehicles that would otherwise be backing out on the highway.
  - Implement adequate sight distance policies based on posted speed limits to allow traffic to enter the

Landscaped Driveway



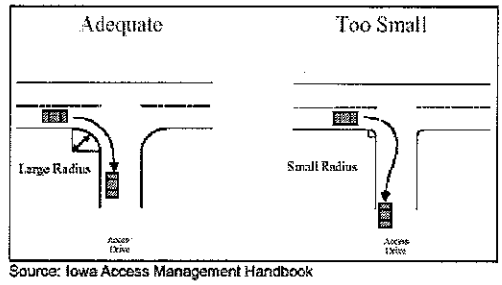
Source: Iowa Access Management Handbook

[1] *Williams K. & Marshall, M. (1996) Managing Corridor Development: A Municipal Handbook. Tampa: Center for Urban Transportation Research.*

highway safely and efficiently and to improve visibility of driveways.

- Establish guidelines for a minimum turn radius, minimum driveway width, and maximum driveway slope because they help slower, turning traffic move off the arterial more quickly, and help the traffic leaving a driveway turn and enter the stream of traffic more efficiently[2].

Adequate Turn Radius



Source: Iowa Access Management Handbook

- Require new developments to conduct traffic impact analyses to determine the need for turn lanes to allow entering and exiting traffic to move smoothly.
- Require bus pullout bays along transit routes.
- Establish a minimum offset between a local road intersection and the highway in order to give enough stacking distance for traffic to exit the highway and turn onto the local road without causing congestion on the highway.

- When access must be provided to small lot frontages, build a back road that can be integrated into the local street system more easily than a frontage road.

- Encourage or require a traffic impact study for all projects that would generate traffic above a certain level in order to lay the groundwork for effective access management.

Policy #4: Maintain the viability of existing development when new highways are constructed.

When a new highway is built parallel to an existing roadway, whether immediately adjacent or as a bypass around a town or city, the danger exists that the development along the original roadway can migrate toward the highway, drawing local trips onto the highway and leaving the original roadway to lose vitality and users. This can have a negative impact on the existing land uses, provided these uses remain. Fully utilizing an existing roadway as a parallel connection after the new highway is built advances connectivity goals and helps reduce congestion on the highway. A main factor in ensuring that the existing development thrives is a roadway that continues to be used for local trips. The treatment of the existing roadway (i.e. investment that enhances the appearance and function of the roadway as a local street and front door to the existing uses) and the distance between it and the highway are critical.

Recommended actions for putting this policy into practice:

- Provide adequate space between the existing road and the new parallel highway for development to occur on both sides of the original roadway. The appropriate distance will vary depending on the municipality's size, type, and development pattern.

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[2] *Access Management Handbook (2000). Ames: Center for Transportation Research and Education, Iowa State University Research Park.*

- Invest in streetscape and pedestrian amenities along the existing roadway to attract private investment and help convert it into a vibrant street with the look, feel, and function of a local street instead of a highway or commercial corridor.

- Encourage continuous local streets as development and redevelopment occurs, particularly those that may provide an alternative route paralleling the new highway.

Policy #5: Encourage redevelopment in the urban core to reduce pressure for greenfield development, which is likely to occur along the highway and attract local trips to it.

Development is often attracted to areas where construction is easiest and access is most convenient, such as greenfield sites along new and existing highways. However, development of these greenfield sites often has negative effects on the highway, attracting local trips and resulting congestion. If new development can be concentrated in areas that have already been developed, especially areas within the inner city and urban core of a municipality, there will be less pressure for the growth to occur in greenfield locations, and the increased number of local trips on the highway can be avoided.

Recommended actions for putting this policy into practice:

- Use brownfield redevelopment incentives as a catalyst to promote growth in inner city and urban areas. Give tax incentives to municipalities (ultimately passed on to the developer) for site assessment, clean-up, and redevelopment. In order to encourage reuse of brownfield sites, Department of Environment and Natural Resources (DENR) enters a "brownfields agreement" with a prospective developer that defines the clean-up and land management actions that are necessary for a particular brownfield site. With this agreement in place, the developer receives liability protection that opens the door to obtaining loans that would previously not have been offered for the project.

Policy #6: Manage development around highways, particularly the interchanges that pass through relatively undeveloped areas (greenfields) in order to minimize negative effects of highway-oriented development on mobility.

Introducing unfavorable development patterns around highways and highway interchanges often attracts development patterns that are highway-oriented. Such patterns are not desirable from a transportation standpoint. For example, interchanges can attract the development of large land parcels that are typically commercial or industrial, are destinations for local trips, and are typically not connected in any way to neighboring parcels, which are often vacant. Because of its isolation, this type of development encourages local vehicular trips, as travelers must drive between the parcel and almost any other destination. In addition, the nature and the isolation of these developments often combine to create a lack of both pedestrian connections to neighboring parcels and transit links to more distant destinations, further promoting the number of local trips made by automobile. Thus, managing development in these high-impact areas is key to

controlling the effects of land use on a new highway or expressway. The following recommendations show how this development may be managed.

Recommended actions for putting this policy into practice:

- Prepare small area plans at the local level prior to new highway construction. Interchange and other capacity expansions along the corridor should not take place until adequate land use preservation and facility access restrictions are put in place.

- Establish an additional layer of regulation for corridors and interchange areas to control the nature of this development.
  - Implement Interchange Zoning districts.
  - Implement Corridor Overlay Districts.
  - Establish conditional uses.
  - Require Planned Unit Developments (PUDs).

- Purchase land within a specified distance of such access points to prevent development in those locations.

- Provide incentives to stimulate development in target areas and to achieve desired design, intensity, and other characteristics.
  - Allow the transfer of development rights, when permitted in North Carolina.
  - Provide density bonuses.

- Establish easements (e.g. scenic easements) or employ other preservation tools that can be put in place around interchanges.
- Create multi-governmental interchange access agreements, which could ensure that development around interchanges is managed to meet the criteria agreed upon by the interested municipalities, counties, and state department of transportation. This type of agreement is allowed under North Carolina law section 160A-461 – Inter-local cooperation authorized.

- Utilize new technology to predict and understand the impact of different land use policies on growth around interchanges. The Interchange Development Model (IDM) is a computerized, multivariate regression model that helps in identifying the overall impact of current development and how an interchange may help or fall below development expectations. It also helps determine steps that can be taken to enhance or limit development and provide future alternative scenarios.

Policy #7: Encourage growth management initiatives that would manage the rate and direction of growth community-wide.

The pace and direction of growth directly affects road mobility and therefore congestion. If the rate of growth in a region outstrips the road mobility serving and connecting it, then any new improvements, including the new or improved highway, will immediately feel negative impacts

such as congestion. One way to handle this problem is by assessing existing and future transportation improvements in light of the rate of growth. If it is determined that the transportation infrastructure planned, especially the highway, is not compatible with the growth rate, growth management efforts will be even more vital to protecting the mobility of the highway.

Recommended actions for putting this policy into practice:

- Restrict extension of services in areas where development should be limited.
- Conduct planning studies such as small area plans to guide development in areas in which growth should be directed.
- Adopt adequate public facility ordinances to make the connection between road mobility and the rate of growth.
- Create a program for protecting corridor mobility, incorporating an educational component that addresses land use policies.
- To reduce the number of workers driving on the highway to commute long distances to employment, reward communities that create a balance between jobs and housing. The state may do this by offering grants, tax incentives, or other advantages to communities that meet certain criteria.