

# TOWN OF KERNERSVILLE



## *Thoroughfare and Street Plan*

**2011**

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## ***Preface***

*Transportation has always been an important part of Kernersville. The community was established at the crossroads of two major stagecoach routes. That intersection was known as Dobson Crossroads. The inter-colonial stage line was the main road. On June 2<sup>nd</sup>, 1791 George Washington's own diary states that he had breakfast "at one Dobson's" as he traveled a stage line from Salem to Greensboro.*



*Today the roads of Kernersville are still a crucial part of Kernersville. They not only provide transportation, but impact our tax rates, election of Aldermen and relationships with neighbors. To maintain the roads in Kernersville as an efficient transportation system the Town of Kernersville must expend tax revenue on State and Town roads. Elected officials are faced with the difficult task of balancing the need for road improvements and maintaining a low tax rate. That struggle leads to policy decisions regarding annexation of property to share in road improvement costs. Another difficult decision making process is planning for the extension of roads through neighborhoods. With such complexity, a thorough planning process is crucial in assisting elected officials in their decision making.*

## Introduction

There are five clear phases of transportation development that have influenced the evolution and development pattern of Kernersville. The first phase grew out of the original stagecoach road pattern, which followed the ridgelines. The second phase was initiated by the railroads, which passed through Kernersville. The third phase began with the creation of the arterial highway system and ultimately the interstate system. The fourth phase was generated by the relocation of the Piedmont Triad Airport to its present site and the relocation of I-40. The fifth phase, which we are presently in, is the final build-out of the road system of Kernersville.



The *Thoroughfare and Street Plan* is a part of the transportation planning process in which the community decides on a street system. Once a street system is agreed upon, analysis of the system can take place to determine street improvements needs and cost estimates. The identification of needs and cost then allows the Board of Aldermen to adopt a *Transportation Capital Improvement Plan* that establishes the expenditure amount of tax dollars for specific road improvement projects.

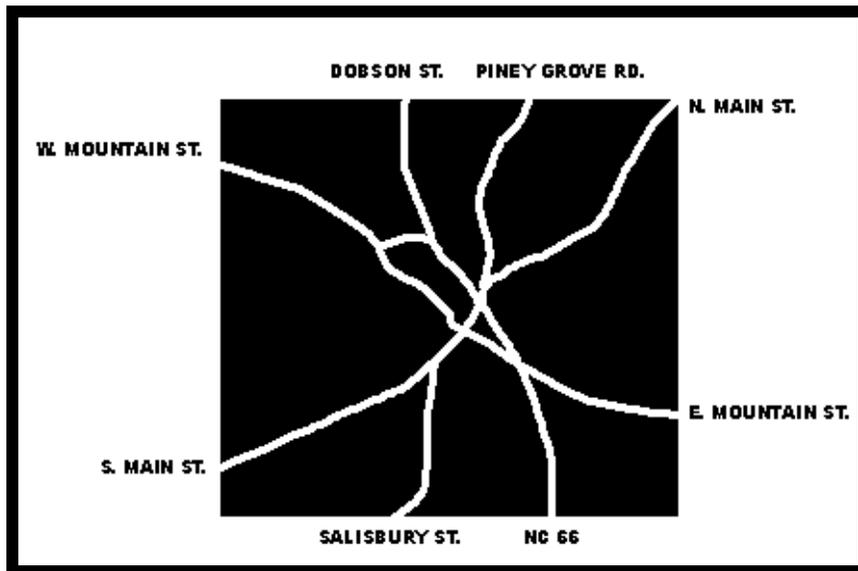
The *Thoroughfare and Street Plan Amendment* consists of this document and the *Thoroughfare and Street Plan* map. This document discusses the importance of connectivity and provides definitions on street classifications.

## Connectivity

During this final build-out phase of the street system, the major issue is “*connectivity*.” *Connectivity* is the practice of designing a street system that provides multiple street connections between designations. Multiple connections allows for the distribution of traffic rather than concentrating traffic.

Concentrating traffic causes traffic congestions and unnecessary expenditures of tax dollars for road improvements. The distributing of traffic allows for a more efficient use of existing roads thus improving traffic flow and saving tax dollars.

The development of our major roads from the early stagecoach routes, that followed the ridgelines, has contributed to poor connectivity within Kernersville. As the drawing below illustrates that the major road system is similar to spokes on a wheel.



In the past, the Town of Kernersville has approved rezoning and subdivision cases that went against the adopted *Thoroughfare and Street Plan*. Those decisions have contributed to the current traffic congestion.

The *Thoroughfare and Street Plan* maps that accompany this document identify many of the last remaining hopes for improving Kernersville the *connectivity* of Kernersville street system. It is crucial that the Town of Kernersville realize that their decision today will establish the street system of the future.

## **Street Classification Definitions**

### **Residential Cul-de-Sac**

A street which serves abutting residential land use and which terminates in a turnaround and originates at the intersection with another street. Other streets should not intersect onto this street classification segment.

### **Residential Street**

A street whose primary function is to serve the immediate adjoining residential land use. Primary design concerns are directed toward fostering a safe and pleasant environment to the residential community and convenience to the motoring public. Particular emphasis is placed on providing adequate stopping sight distance in order to protect pedestrians using the street.

### **Collector & Subcollector Street**

A street which collects traffic from intersecting streets and funnels it to a thoroughfare street. Collector streets are anticipated to carry 2,000 or more vehicles per day and sub-collectors are anticipated to carry 1,000-2,000 vehicles per day.

### **Marginal Access Street**

A street which serves traffic generated by land uses which is other than residential. Design should accommodate the vehicle type and quantity expected to use the facility. Marginal Access Streets are designed to provide primary or secondary access to properties in that other street classifications are deemed inappropriate. Marginal Access Streets may provide secondary access to commercial developments, multi-family developments, etc. Marginal Access Streets may also provide primary access to Light-Industrial and Commercial properties.

### **Commercial Street**

A street which serves traffic generated by land uses which is primarily commercial.

### **Industrial Cul-de-Sac Street**

A street which serves adjoining industrial land uses and terminates in a turnaround and originates at the intersection with another street. Other streets should not intersect onto this street segment. This street may require additional turn lanes at the street intersection.

### **Industrial Street**

A street which serves traffic generated by land uses which is primarily industrial.

### **Minor Thoroughfare**

A street which serves as a primary traffic artery of an urban area, serving the major centers of activity and carrying traffic between such centers at moderate speeds. The design shall not only include addressing the level of service and capacity of a road, but consider design in the context of the surrounding land uses and address the multi-modal transportation needs of all potential users. Access to abutting property may be provided; however, the primary function is to carry traffic versus providing property access. The thoroughfare classification also carries traffic between major

thoroughfares. Access is primarily provided by at-grade intersections which may be signal controlled.

### **Major Thoroughfare**

A thoroughfare that carries large volumes of traffic. The design shall not only include addressing the level of service and capacity of a road, but consider design in the context of the surrounding land uses and address the multi-modal transportation needs of all potential users. Access onto the facility is controlled. Access should only be at intersections with other streets. Such intersections should be spaced at intervals which promote traffic progression with the absolute minimal delays incurred.

### **Private Street**

Although not encouraged, private streets may be allowed in certain developments in accordance with the *Unified Development Ordinance*. Private streets should only be permitted in developments which are less than twenty (20) acres and serve land uses other than detached single-family residential dwellings.

### **Private Drive**

Private drives should be allowed in certain developments in accordance with the *Unified Development Ordinance*. Private drives should only be permitted in developments to provide access to parking lot(s) for two (2) or more principal buildings in a group housing (apartments, townhouses, condominiums, etc.) or other non single-family residential development.

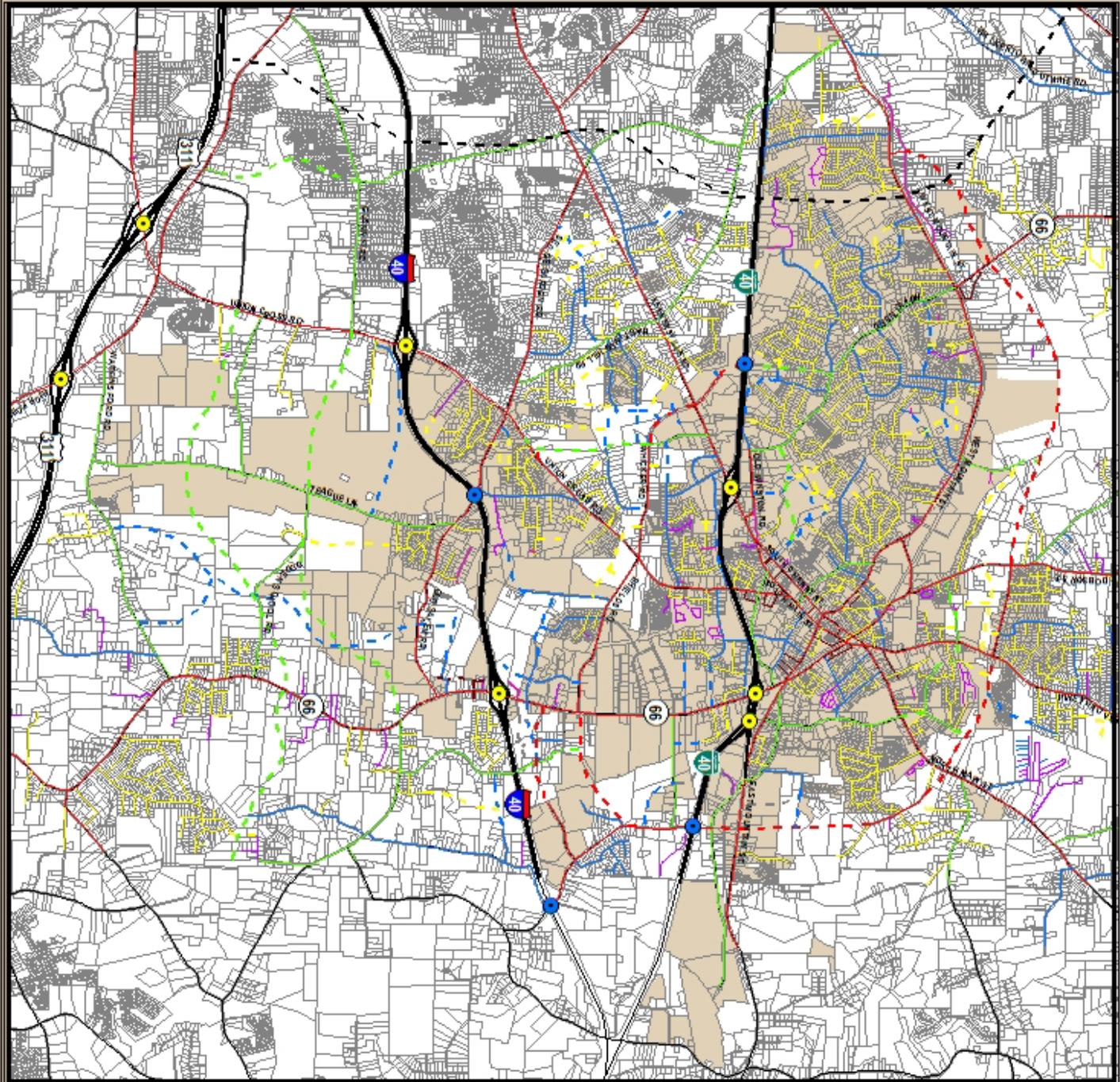
# KERNERSVILLE Thoroughfare & Street Plan

-  EXISTING INTERCHANGE
-  PROPOSED INTERCHANGE
-  FREEWAY
-  MAJOR THOROUGHFARE
-  MINOR THOROUGHFARE
-  COLLECTOR STREET
-  INDUSTRIAL STREET
-  MARGINAL ACCESS
-  RESIDENTIAL STREET
-  PRIVATE
-  UNCLASSIFIED
-  PROPOSED FREEWAY
-  PROPOSED MAJOR THOROUGHFARE
-  PROPOSED MINOR THOROUGHFARE
-  PROPOSED COLLECTOR STREET
-  PROPOSED INDUSTRIAL STREET
-  PROPOSED MARGINAL ACCESS
-  PROPOSED RESIDENTIAL STREET



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- KDP-100: 84-4-009



# 2011 Thoroughfare and Street Plan Study

## Adopted Recommendations

### Policy Recommendations

#### *Thoroughfare and Street Plan*

1. Develop a work program based on available resources to implement the recommendations of this study.
2. The recommendations of the Thoroughfare and Street Plan Study shall be adopted as amendments to the *Thoroughfare and Street Plan*.
3. The *Thoroughfare and Street Plan* shall be amended to reference the findings of the Thoroughfare and Street Plan Study.
4. Amend the *Thoroughfare and Street Plan* into the current comprehensive transportation plan (CTP) format required for all metropolitan planning organization's thoroughfare plans, by incorporating the *Pedestrian and Bicycle Plan* and work towards creating a transit section.
5. Amend the *Thoroughfare and Street Plan* definitions for major and minor thoroughfares to read:
  - a. **Minor Thoroughfare:** *A street which serves as a primary traffic artery of an urban area, serving the major centers of activity and carrying traffic between such centers at moderate speeds. The design shall not only include addressing the level of service and capacity of a road, but consider design in the context of the surrounding land uses and address the multi-modal transportation needs of all potential users. Access to abutting property may be provided; however, the primary function is to carry traffic versus providing property access. The thoroughfare classification also carries traffic between Major Thoroughfares. Access is primarily provided by at-grade intersections which may be signal controlled.*
  - b. **Major Thoroughfare:** *A thoroughfare that carries large volumes of traffic. The design shall not only include addressing the level of service and capacity of a road, but consider design in the context of the surrounding land uses and address the multi-modal transportation needs of all potential users. Access onto the facility is controlled. Access should only be at intersections with other streets. Such intersections should be spaced at intervals which promote traffic progression with the absolute minimal delays incurred.*
6. As NCDOT updates their road classifications and cross-sections to conform to the NCDOT Complete Streets Policy (*see Appendix B - NCDOT Preliminary Complete Streets Planning and Design Guideline Framework*), the Town shall consider amending

its *Thoroughfare and Street Plan* to incorporate language and road design that is compatible with the NCDOT Complete Streets Policy's road classifications, cross-sections, and context sensitive road design principles.

### **Community Input**

1. Develop a community transportation vision statement for the *Thoroughfare and Street Plan*. Subsequently develop associated guidelines that prioritize aspects of a comprehensive transportation system for the community.
2. Promote public participation during the "trigger points" for community input on major transportation projects for each of the major steps in the transportation planning process.
3. Assign staff to participate with NCDOT TIP staff on the planning, design, and construction of TIP projects to allow the Board of Aldermen to be up-to-date and consider enhancements to mitigate adverse impacts to the community and neighborhoods.
4. The public shall be encouraged to participate in the design of the new roads and road widening to assure "context sensitive" design elements are incorporated into the final design.

### **Population, Employment and Traffic Trends and Projections**

1. Town shall maintain past, current, and projected population and employment data generated at the federal, state, regional, county, and local level.
2. Town shall maintain past, current, and projected traffic counts generated at the state, regional, and local level on GIS. If staffing and resources are available, develop a specific local traffic count program to augment the state and regional.
3. All population, employment and traffic trends, and projections shall be made available to the public through the Town's website or in written form if requested.
4. A citizen group shall be formed by the Board of Aldermen to undertake an annual review of the Town's growth data and provide comments to the Planning Board and Board of Aldermen on data generated at the Town, county, regional, state, and federal levels. The citizen group shall be made up of residential, commercial, industrial, and institutional property owners.

### **Traffic Studies**

1. The Town shall work with NCDOT and the Metropolitan Planning Organizations on revising the regional traffic modeling for the Big Mill Farm Road Interchange by using the completed beltway, newest Census, traffic counts, and other demographic data available to update the traffic model.
2. The Town's transportation work program shall include a long range goal of building a traffic model that synchronizes the current and future traffic studies undertaken by private

and public entities. First steps shall consist of maintaining existing traffic simulation models in one centrally organized database with a long term goal of connecting the missing gaps. Developer's traffic impact analysis shall be required to use and follow the data standards of the model.

3. Town staff shall continue to participate with NCDOT and the metropolitan planning organizations on traffic modeling projects.
4. During the review of major development proposals, the traffic generation impacts shall be considered within a traffic impact analysis. "Major developments" shall be defined in a Town adopted traffic impact analysis policy.

### **Road Design Within the Road Network**

1. Design of future roads and improvements shall incorporate the NCDOT's Complete Street Policy strategies that incorporate "*transportation, quality of life, and economic development are all undeniably connected through well-planned, well-designed, and context sensitive transportation solutions*". Town staff shall work to develop a process that would bring together the MPO, NCDOT, and the public to determine what appropriate context sensitive solutions would be appropriate on the different classification of roads in different land use areas within the Town. See **Appendix B** – "NCDOT Preliminary Complete Streets Planning & Design Guidelines Framework" for further information on "complete streets".
2. A comprehensive list of context sensitive road design elements shall be developed to create a "tool box" of available design elements that can be applied to different road cross-sections.
3. Design of future roads and improvements shall not only include addressing the level of service and capacity of a road, but also consider design in the context of the surrounding existing and planned land uses.
4. In order to reduce the need to widen roads and create large intersections, connectivity of the road network shall continue to be pursued along with traffic calming principles and devices to control the speed of through traffic.
5. Town design standards in the *Design and Construction Specifications* manual shall be reviewed every 5 years to ensure community vision and goals are reflected.
6. Town staff shall work towards a long term goal of having cross-sections on all thoroughfare plan elements to provide further definition to concerned stakeholders. Future steps shall include coordination and meetings with NCDOT, MPO staff, as well as the public and businesses.
7. It is recommended that the NCDOT Complete Street "2-lane avenue" street type be the road design for thoroughfares through residential neighborhoods. See **Appendix B** –

“NCDOT Preliminary Complete Streets Planning & Design Guidelines Framework” for further information on “complete streets”.

## **South Main Street, Big Mill Farm Road, Old Winston Road, and Hopkins Road**

1. Complete the current traffic study for South Main Street/Old Winston Road improvements, which is being conducted for the Town by Ramey Kemp and Associates, in conjunction with the Winston-Salem Urban Area Metropolitan Planning Organization and NCDOT.
2. After the completion of the South Main Street/Old Winston Road Traffic Study, pursue funding for the construction of the recommended road and intersection improvements. These improvements should be considered as the #1 road improvement for next fiscal year’s Transportation Capital Improvement Program.
3. To determine if the South Main Street/Old Winston Road intersection improvements are adequate to address the traffic congestion on South Main Street, the Big Mill Farm Road Interchange shall not be built until after the South Main Street/Old Winston Road intersection improvements are completed.
4. The Town staff shall disseminate to the community that the Big Mill Farm Road Interchange is not a NCDOT TIP funded project and shall notify the community when NCDOT is considering funding the interchange.
5. Big Mill Farm Road and Hopkins Road shall be designated as a “Minor Thoroughfare” on the Thoroughfare and Street Plan.
6. The proposed Timberview Drive connection between Wexford Subdivision and Barrington Park Subdivision shall not be connected.
7. Work with the Winston-Salem Urban Area Metropolitan Planning Organization, and NCDOT to incorporate the recently adopted NCDOT Complete Street Policy to design the proposed Big Mill Farm Road and Hopkins Road north of Big Mill Farm Road in the context of the neighborhood. It is recommended that the NCDOT Complete Street “2-lane avenue” street type be the road design for Big Mill Farm Road and Hopkins Road. See **Appendix 5** – “NCDOT Preliminary Complete Streets Planning & Design Guidelines Framework” for further information on “complete streets.”
8. After the Town completes its comprehensive list of “context sensitive” road design elements and determines design elements that can be applied to the NCDOT’s Hopkins Road and Big Mill Farm road project, encourage public participation to recommend “context sensitive” design elements for the road project.

9. Continue to maintain the population and employment and traffic projections for the Western Road Network and planning schedule of the B-40/Big Mill Farm Road Interchange to keep the residents and businesses up-to-date on the status of the project.
10. Continue to obtain and protect the right-of-way needed for the ultimate improvements even as smaller incremental improvements are phased in. This is to assist in minimizing the impact on future property owners and lower the cost of future road widening.

### **Public Awareness**

1. Community Development staff shall develop a program and material to present to the local real estate firms that provide information on the *Thoroughfare and Street Plan*. At a minimum, annually staff shall distribute the material and offer to make presentations to the local offices.
2. Staff shall present an annual report to the Planning Board and Board of Aldermen on the status of implementing the *Thoroughfare and Street Plan* and *Transportation Capital Improvement Program* and shall include press releases regarding the report.
3. Public Services staff shall develop a signage program that identifies future road corridor and widening projects, similar to the “future interstate signage” used on the Federal Interstate system.
4. During the preliminary subdivisions and special use district rezoning, a condition of approval shall include the requirement that deeds shall contain language on future road corridors and widening projects in or adjacent to the development.
5. Community Development staff shall develop a homeowner’s association list to distribute information regarding future road corridor and widening projects.
6. The Town of Kernersville shall maintain data to assist residents and businesses in understanding if and when a potential road project is justified based on level of service, traffic counts, safety issues, and other related justification for road projects. The projected data associated with traffic studies and models shall be adjusted as actual populations and traffic data is received to reflect current base line conditions.
7. During the next revision of the Kernersville’s web-site home page, add a direct link to Town adopted plans that include the *Thoroughfare and Street Plan*.

### **Transportation Program**

1. The transportation program shall pursue the development of data and analysis to allow for the Town to have factual information on the capacity of the thoroughfares and their intersections; traffic counts and projections; and cost benefit analysis of potential road improvements to allow for prioritizing road improvements through the Transportation Capital Improvement Program.

2. Consideration shall be given to adequately fund road improvements through the Capital Improvement Program after the fiscal year 2013-14. Funding will need to be sufficient to adequately address infrastructure maintenance, staffing and transportation improvement goals established by the Board of Aldermen.
3. The Transportation Division shall continue to coordinate transportation planning and improvements with NCDOT and the local metropolitan planning organizations.

## Road Network Recommendations

### Interstates

**Issue:** The interstates of I-40 and B-40 are the primary thoroughfares carrying local and through traffic. When the Interstates reach capacity, the local traffic will begin to divert to the local road network and increasing local traffic congestion. The NCDOT Transportation Improvement Program (TIP) has a project to add an additional lane to I-40.

**Recommendations:**

- The Town shall begin to work with the Winston-Salem Urban Area Metropolitan Planning Organization and NCDOT to study the feasibility of adding an additional lane on B-40.

**Issue:** The Town’s primary access to the proposed Beltway will be via B-40/South Main Interchange. The additional traffic attracted to the Beltway via the B-40/South Main Interchange will only compound the traffic congestion on South Main Street. The Board of Aldermen in a 2005 Resolution to NCDOT, requested NCDOT to build the B-40/Big Mill Farm Road Interchange at the same time of the beltway to address the traffic issues that the Beltway will cause in Kernersville because there will be no direct access to the Beltway with the elimination of the possible West Mountain Street Interchange.

**Recommendation:**

- The Town shall continue to work with the Winston-Salem Urban Area Metropolitan Planning Organization, and NCDOT to address this Beltway access issue.

### Western Road Network

**Issue:** The NCDOT approved feasibility study for the proposed 4-lane road improvement for Big Mill Farm Road and Hopkins Road north of Big Mill Farm Road has the potential to adversely impact the adjacent residential neighborhoods.

**Recommendations:**

- The Town shall begin to work with the Winston-Salem Urban Area Metropolitan Planning Organization, and NCDOT to incorporate the recently adopted NCDOT Complete Street Policy to design the roadway in the context of the neighborhood. It is recommended that the NCDOT Complete Street “2-lane Avenue” street type be the road design for thoroughfares through residential neighborhoods. See **Appendix B** – “NCDOT Preliminary Complete Streets Planning & Design Guidelines Framework” for further information on “complete streets”.



**Issue:** Planned future road and road widening projects have the potential of negative and/or positive impacts on the surrounding area in such residential and commercial areas of Hopkins Road (*Kernersville Boulevard*), Big Mill Farm Road (*Kernersville Boulevard*), South Main Street, and West Mountain Street. Many times, the current property owners along the corridors are concerned about the unknowns of when a road project will take place and future phases of the project.

**Recommendations:**

- As property is developed along the corridors that will experience road widening or new projects, the Town shall pursue the required right-of-ways and easements for the ultimate potential road width to assist in minimizing the future impacts of the road improvements.
- The Town shall develop the data that can be provided to adjacent property owners with projections of when road improvement projects will be required, and what type of road improvement would potentially take place if funding was available.
- The Town shall develop enhancement standards that can be used to assist in minimizing the future adverse impacts of the road improvements, such as landscaping, lighting fixtures, sidewalks, bike lanes, etc. that offer the opportunity to enhance the area.

**Issue:** Even with the Big Mill Farm Road Extension and Interchange improvements, South Main Street is projected to have a Level of Service “E” or worse.

**Recommendations:**

- The Town shall continue to work with the Winston-Salem Urban Area Metropolitan Planning Organization and NCDOT to place the B-40/Big Mill Farm Road Interchange on the NCDOT Transportation Improvement Program, with the recommendation that context sensitive road design be used through the Big Mill Farm and Hopkins road residential neighborhoods. It is recommended that the NCDOT Complete Street “2-lane Avenue” street type be the road design for Big Mill Farm Road and Hopkins Road. See **Appendix B** – “NCDOT Preliminary Complete Streets Planning & Design Guidelines Framework” for further information on “complete streets”.
- The Town shall continue to work with the Winston Salem Urban Area Metropolitan Planning Organization and NCDOT to pursue road improvement to South Main Street that will enhance its capacity as recommended in the Ramey Kemp *South Main Street Area Traffic Study*, while incorporating citizen and business input.

**Issue:** The Airport Connector is currently a proposed road project that is a part of the Regional Traffic Model. When the Airport Connector is a part of the regional model, the traffic model tends to under estimate future traffic conditions in Kernersville, which would lessen the justification of MPO and NCDOT funding for road improvements in Kernersville. The Airport

Connector is not likely to be constructed, or if it is constructed, it will be in a location further north toward Walkertown.

**Recommendation:**

- The Town shall work closely with the Metropolitan Planning Organizations (MPO) and NCDOT in taking the Airport Connector off the LRTP and preventing the current proposed Airport Connector to be a part of the regional traffic model until such time as the Beltway is in the foreseeable future and the need for a Beltway connector is needed.
- Each time the Regional Traffic Model is run to evaluate traffic conditions in the Kernersville area, the model should include runs with and without the Airport Connector. The traffic modeling with and without the Airport Connector would allow for a better understanding of potential future traffic conditions.

### **Northern Road Network**

**Issue:** Funding is a major challenge on facilitating the construction of the Kernersville Boulevard. Without the improvements, the northern road network will far exceed its capacity to carry the traffic demands, and the Downtown traffic congestion will continue to escalate.

**Recommendations:**

- The Town shall begin to work with the Winston Salem Urban Area Metropolitan Planning Organization, and NCDOT to obtain construction funding for the Macy Grove Interchange and the Macy Grove Road extension to North Main Street.
- The Town shall determine if the funding within the Capital Improvement Program is available in the future for construction of the Macy Grove extension from North Main Street to Piney Grove Road.
- Since the ultimate traffic flow benefits of the Kernersville Boulevard are not reached until the connection is made to Linville Springs Road, the Town shall begin to investigate the funding of the Linville Springs Extension through NCDOT funds as well.

**Issue:** The proposed 4-lane road improvement for the Macy Grove extensions and Linville Springs Road widening has the potential to adversely impact the adjacent residential neighborhoods.

**Recommendation:**

- The Town shall begin to work with the Winston-Salem Urban Area Metropolitan Planning Organization and NCDOT to incorporate the recently adopted NCDOT Complete Street Policy to design the roadway in the context of the neighborhood, which shall consider all available NCDOT cross sections. It is recommended that the NCDOT Complete Street “2-lane Avenue” street type be the road design for thoroughfares through residential neighborhoods. See **Appendix B** – “NCDOT Preliminary Complete Streets Planning & Design Guidelines Framework” for further information on “complete streets”.

**Issue:** Planned future road and road widening projects have the potential of negative and/or positive impacts on the surrounding area in such residential and commercial areas of Linville Springs Road and Extensions (*Kernersville Boulevard*), Smith Edwards Road (*Kernersville Boulevard*), and Piney Grove Road. Many times, the current property owners along the corridors are concerned about the unknowns of when a road project will take place and future phases of the project.

**Recommendations:**

- As property is developed along the corridors that will experience road widening or new projects, the Town shall pursue the required right-of-ways and easement for the ultimate potential road width to assist in minimizing the future impacts of the road improvements.
- The Town shall develop the data that can be provided to adjacent property owners with projections of when road improvement projects will be required and what type of road improvement would potentially take place if funding was available.
- The Town shall develop enhancement standards that can be used to assist in minimizing the future adverse impacts of the road improvements, such as landscaping, lighting fixtures, sidewalks, bike lanes, etc. that offer the opportunity to enhance the area.

**Central Road Network (Downtown)**

**Issue:** In the downtown area, road improvement options are limited due to existing businesses and homes in close proximity to the street. Even with the completion of the proposed Kernersville Boulevard, the level of service of the downtown section of North Main Street, residential sections of South Main Street and South Cherry Street, and East Bodenhamer Street are projected to be at a Level of Service “E” or worse in 2035. South and North Cherry Street has the most potential for road improvements that will enhance traffic flow, while being designed in the context of the downtown and residential area it travels through.

**Recommendation:**

- Undertake a study to begin the process of expanding the downtown streetscape improvements, similar to North Main, to North Cherry, South Cherry, South Main, East Mountain and West Mountain and study alternative road improvements which would include one-way pairs; 2-lane divided “complete street design” (*see to the right for example in downtown New Bern*); and other types of alternatives.



**Issue:** Planned future road and road widening projects have the potential of negative and/or positive impacts on the surrounding area in such residential, commercial and downtown areas of South Cherry Street, North Cherry Street, West Mountain Street, East Mountain Street, and South Main Street. Many times, the current property owners along the corridors are concerned about the unknowns of when a road project will take place and future phases of the project.

**Recommendations:**

- As property is developed along the corridors that will experience road widening or new projects, the Town shall pursue the required right-of-ways and easement for the ultimate potential road width to assist in minimizing the future impacts of the road improvements.
- The Town shall develop the data that can be provided to adjacent property owners with projections of when road improvement projects will be required and what type of road improvement would potentially take place if funding was available.
- The Town shall develop enhancement standards that can be used to assist in minimizing the future adverse impacts of the road improvements, such as landscaping, lighting fixtures, sidewalks, bike lanes, etc. that offer the opportunity to enhance the area.
- It is recommended that the NCDOT Complete Street “2-lane Avenue” street type be the road design for thoroughfares through residential neighborhoods. See **Appendix B** –

“NCDOT Preliminary Complete Streets Planning & Design Guidelines Framework” for further information on “complete streets”.

### **Eastern Road Network**

**Issue:** With the anticipated, relatively rapid growth in the area south of B-40 and east of NC66, the Town will need to pursue road improvements and additions to the existing road network. Funding will remain a major challenge on facilitating the improvements to NC 66 South intersections and the I-40 interchange. Without improvements, NC 66 South, I-40, and B-40 interchanges will far exceed the capacity to carry future traffic demands.

**Recommendations:**

- The Town shall begin to work with the Winston-Salem Urban Area Metropolitan Planning Organization for planning funds to determine what type of improvements could take place and their cost.
- The Town shall begin work with the High Point MPO to coordinate land use and necessary transportation improvements between NC 66 and Bunker Hill Road around I-40, including a potential I-40 interchange at Macy Grove Road.

**Issue:** With the anticipated, relatively rapid growth in the area surrounding the airport (*Aerotropolis*) the Town will need to pursue road improvements and additions to the existing road network. Funding will remain a major challenge. With only 1 major east-west freeway connection east of B-40, higher priority will need to be given to local road network.

**Recommendations:**

- The Town shall begin to work with the Greensboro MPO to coordinate land use and necessary transportation improvements between the two municipalities north of I-40.

**Issue:** Planned future road and road widening projects have the potential of negative and/or positive impacts on the surrounding area in such residential, Commercial, and industrial areas of Macy Grove Road and Shields Road Extension (*Kernersville Boulevard*). Many times, the current property owners along the corridors are concerned about the unknowns of when a road project will take place and future phases of the project.

**Recommendations:**

- As property is developed along the corridors that will experience road widening or new projects, the Town shall pursue the required right-of-ways and easement for the ultimate potential road width to assist in minimizing the future impacts of the road improvements.
- The Town shall develop the data that can be provided to adjacent property owners with projections of when road improvement projects will be required, and what type of road improvements would potentially take place if funding was available.
- The Town shall develop enhancement standards that can be used to assist in minimizing the future adverse impacts of the road improvements, such as landscaping, lighting fixtures, sidewalks, bike lanes, etc. that offer the opportunity to enhance the area.
- The Town shall continue to develop a process of coordinating the planning for the major thoroughfares, minor thoroughfares, and collector streets with the Greensboro Urban Area Metropolitan Planning Organization, High Point Urban Area Metropolitan Planning Organization, and residents. Based on the determination of required cross-sections, staff will complete functional “context sensitive” road designs.

- It is recommended that the NCDOT Complete Street “2-lane Avenue” street type be the road design for thoroughfares through residential neighborhoods. See **Appendix B** – “NCDOT Preliminary Complete Streets Planning & Design Guidelines Framework” for further information on “complete streets”.

### **Southern Road Network**

**Issue:** With the anticipated relatively rapid growth in the area, south of I-40, the Town will need to pursue road improvements and additions to the existing road network. Funding will remain a major challenge to facilitate those improvements. The Town has a planned thoroughfare network that is projected to meet traffic demands. Without the implementation of that thoroughfare plan the road network south of I-40 will far exceed the capacity to carry future traffic demands:

#### **Recommendations:**

- The Town shall continue to work with the Forsyth County Commission, Winston-Salem Urban Area Metropolitan Planning Organization, and developers in implementing the thoroughfare plan south of I-40.
- With the major roads and interchanges seemingly adequately planned for the future, the County and Town will need to work towards reserving the rights-of-ways for these improvements and ensure connectivity between the thoroughfares.

**Issue:** Planned future road and road widening projects have the potential of negative and/or positive impacts on the surrounding area in such residential, commercial and industrial areas of NC 66, Union Cross Road, Whicker Road and Extension (*Kernersville Boulevard*), Shields Road (*Kernersville Boulevard*), Old Salem Road, Glenwood Drive, Teague Lane, Glen Hi/Bunker Hill Extension, and Temple School Road Extension. Many times, the current property owners along the corridors are concerned about the unknowns of when a road project will take place and future phases of the project.

#### **Recommendations:**

- As property is developed along the corridors that will experience road widening or new projects, the Town shall pursue the required right-of-ways and easements for the ultimate potential road width to assist in minimizing the future impacts of the road improvements.
- The Town shall develop the data that can be provided to adjacent property owners with projections of when road improvement projects will be required and what type of road improvements would potentially take place if funding was available.
- The Town shall develop enhancement standards that can be used to assist in minimizing the future adverse impacts of the road improvements, such as landscaping, lighting fixtures, sidewalks, bike lanes, etc. that offer the opportunity to enhance the area.
- It is recommended that the NCDOT Complete Street “2-lane Avenue” street type be the road design for thoroughfares through residential neighborhoods. See **Appendix B** – “NCDOT Preliminary Complete Streets Planning & Design Guidelines Framework” for further information on “complete streets”.

# Appendices

## Appendix A - 2011 Thoroughfare and Street Plan Study Findings

### Findings: Chapter 1 - Study's Purpose and Goals

This document and its associated information begins the process of implementing the Thoroughfare and Street Plan Study's goals, which are:

1. **Goal:** Allow the community to understand its *Thoroughfare and Street Plan* based upon available data of current and future conditions and reviewing current and potential new road designs.
2. **Goal:** Determine the current strengths and weaknesses of available data of current and future conditions of demographic traffic flows and future road improvements.
3. **Goal:** Determine if modifications need to take place on the current traffic modeling and if additional data needs to be obtained.
4. **Goal:** Determine current and future road improvements to address traffic congestion, along with if "complete street" designs can be used.
5. **Goal:** Develop a public education and awareness program on allowing the existing and potential buyers of properties to be aware of future road improvements.

### Findings: Chapter 2 - Current *Thoroughfare and Street Plan*

The original *Thoroughfare Plan* was adopted in 1979. In 2000, the Town added collector and secondary streets to the plan and named it the *Thoroughfare and Street Plan*. The plan consists of a map illustrating existing and future roads. It also includes a document that provides definitions of different road types and emphasizes "connectivity". The *Thoroughfare and Street Plan* does not provide policies or recommendations on the issues of road design, traffic calming, or funding of future road improvements. The document also does not provide documentation on existing and future conditions.

### Findings: Chapter 3 - Population, Employment and Traffic Trends, and Projections

Analysis of data on population, employment, and traffic indicate all those segments are growing. The most interesting finding is that the population growth rate is lower than employment and traffic growth rates. The highest growth rate is traffic, followed by employment.

1. Traffic Growth Rate           **3.57%**
2. Employment Growth Rate   **2.93%**
3. Population Growth Rate      **1.92%**

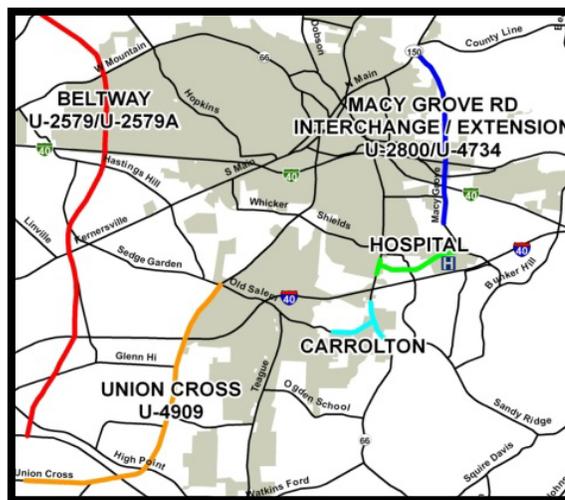
The growth rate of traffic and employment being higher than population growth illustrates that Kernersville is a growing job center in the middle of a metropolitan region. People are traveling to Kernersville's destinations to work, shop, and obtain services such as medical and are traveling through Kernersville to other destinations.

It is projected that employment will continue to grow **2.31%** and population **1.92%** per year, respectively. Those growth rates will continue to be major contributors to Kernersville’s traffic growth in the future. There are no indications growth will stop. If growth rates decline, it only prolongs the time period for traffic congestion to become an issue that requires solutions. Current population projections for Forsyth County show an increase of “120,000 people in the next two decades”. Coupled with projected increases in employment and population, traffic congestion will continue to get worse, and will be required to be addressed if citizens of Kernersville are to experience an acceptable quality of life.

**Findings: Chapter 4 - Current Traffic Studies**

Several traffic studies have been completed recently. The studies include:

- **North Carolina Department of Transportation, Transportation Improvement Projects (TIP):**
  - Macy Grove Road Interchange and Extension (U-2800/U-4734)
  - Union Cross Road (U-4909)
  - Eastern Section of the Northern Winston-Salem Beltway (U-2579/U-2579A)
- **Private Development , Traffic Impact Analysis (TIA)**
  - Carrollton
  - Hospital
- **Piedmont Authority for Regional Transportation (PART), Traffic Modeling for selected Town streets for either “Build” or “No Build” alternatives of the Eastern Beltway, Airport Connector, and Big Mill Farm Interchange.**



**Findings - Macy Grove Road Interchange and Extension (U-2800/U-4734)**

The B-40/Macy Grove Road and extension to North Main Street is a two phase project. The first, which is currently funded, is the interchange with B-40. The second phase, which is not funded, would extend Macy Grove Road north from the interchange to North Main Street. These road segments are a part of the Kernersville Boulevard. The traffic study’s primary findings include:

- The Macy Grove Interchange and Extension will assist in addressing the future road capacity needs for the projected increase in traffic associated with a major job center that includes the industrial areas off East Mountain Street, Industrial Park Drive, and the undeveloped area between the B-40 and I-40 east of Macy Grove Road.
- Once completed, the Macy Grove Interchange and Extension will divert traffic away from North Main Street; Gralin Street; Bodenhamer; and the B-40/NC66 interchange.
- If in phase 2 the extension from East Mountain Street to North Main Street is not completed, Gralin Street and the northern portion of North Main Street traffic growth rate will increase at a higher rate.
- The Downtown street segments are not a part of the traffic study, but the Interchange and Extension would provide an alternate traffic route to help reduce traffic growth rates for the through-traffic in the downtown area.
- The traffic study projects out to 2030. Even with the improvements, the Bodenhamer/East Mountain intersection will remain at a Level of Service E or worse.

*A major weakness of the traffic study is that it assumes the Kernersville Boulevard (loop road), Eastern Beltway, and Airport Connector are all built by 2030. If those roads are not completed, which is a probable outcome, future traffic volumes on existing roadways in the study area will be substantially greater.*

**Finding - Union Cross Road (U-4909)**

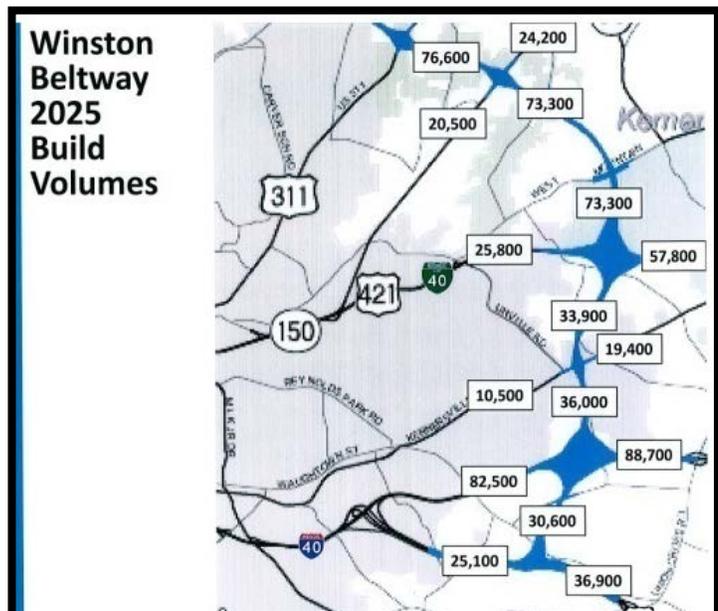
The proposed NCDOT Union Cross Road improvement project will widen Union Cross Road from Old Salem Road/Sedge Garden Road to I-40 to a six lane divided road and from I-40 to Wallburg Road to a four lane divided road. The proposed completion date is 2015. The traffic study’s primary findings include:

- The traffic volumes between 2005-2030 are projected to approximately double on Union Cross Road and slightly less than double, on average, for the roads that access Union Cross Road.
- The traffic study projected traffic out ‘til 2030. With the proposed improvements, road and intersection level of service will be improved beyond 2030.

**Findings - Eastern Section of the Northern Winston-Salem Beltway**

**(U-2579/U-2579A)**

The proposed Beltway (U-2579/U-2579A) would run from US 52 north of Winston-Salem to US 311. Kernersville will have no direct access to the Beltway. NCDOT has recently announced in their draft revised TIP that funding is currently unavailable for construction of the Beltway.

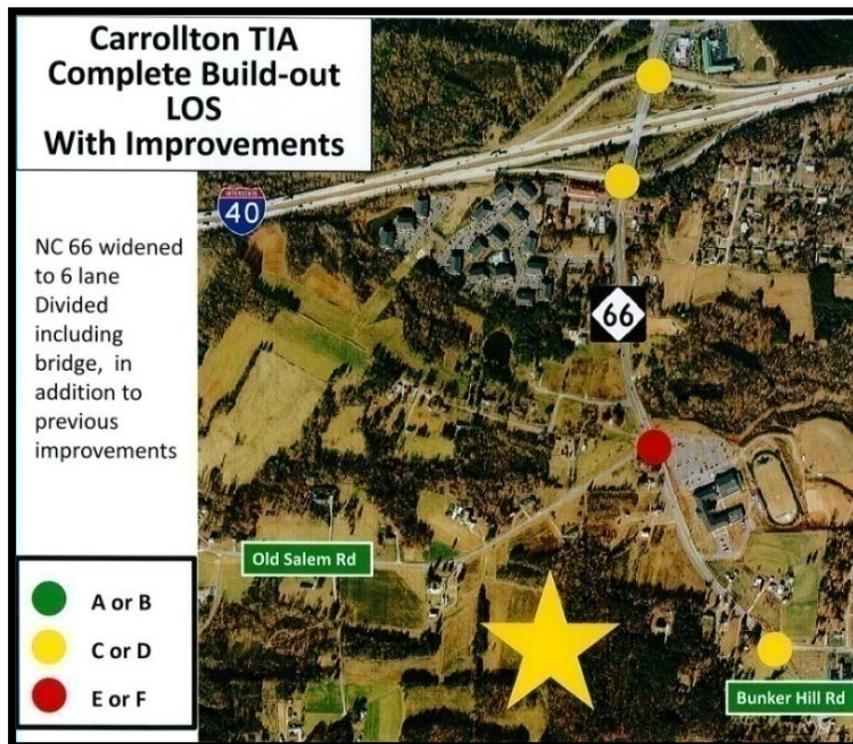


The traffic study's primary findings include:

- If built, significant amounts of traffic would travel on the beltway. Without the beltway, a significant portion of the Beltway traffic will use the existing road network.
- If built, and with Kernersville having no direct access, the primary access to the Beltway would be via the South Main interchange on B-40. Such a traffic pattern would increase traffic on South Main Street and at the B-40/South Main Interchange.
- If built, it is projected that the Level of Service of the Beltway by 2025 would be a "D".

### Findings - Carrollton Traffic Impact Analysis (TIA)

Carrollton is a 500 acre, mixed-use development. Their Traffic Impact Study included the traffic volumes that Carrollton will generate and the traffic from the surrounding future developments, including Caleb's Creek. Carrollton is a part of the NC66/Old Salem Road Metro Activity Center. The Metro Activity Center has been designated as the primary future regional commercial and institutional center for western Guilford County and eastern Forsyth County.



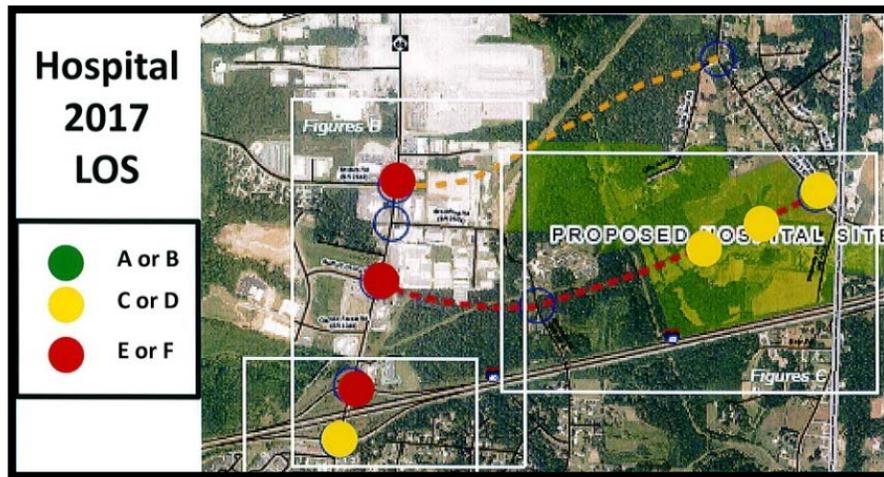
The traffic study's primary findings include:

- The projected traffic volumes for southeast Forsyth and northwest High Point are substantial. At build-out of the area, the current highways will function more like city streets than highways.
- Road widening and intersection improvements will allow the Level of Service for this future urban area of NC 66 to be maintained primarily at a Level of Service "C" to "D" with the exception of Level of Service "E" to "F" at the NC 66/Old Salem Road intersection.

- Carrollton will be undertaking their portion of the road improvements that their development will generate in traffic. The remaining portion of improvements will need to be addressed through future developments contributing funds, NCDOT funds, and Town of Kernersville funds.
- Without road improvements, the Level of Service will be “F” at the I-40 interchange and south along NC 66.
- New traffic corridor(s) and roadway improvements will be needed in southeastern Kernersville so that projected unacceptable LOS’s can be avoided.

**Findings - Hospital Traffic Impact Analysis (TIA)**

Novant Health chose a hospital site that required the construction of a new “minor thoroughfare”, the Kernersville Medical Parkway. The Kernersville Medical Parkway will be constructed between NC 66 and Macy Grove Road.



The traffic study’s primary findings include:

- The projected traffic volumes for southeast Forsyth and northwest High Point are substantial.
- The additional traffic generated from the Hospital and surrounding area will create a Level of Service north of I-40 on NC 66 to a Level of Service “E” to “F”.
- The Hospital is responsible to build the Kernersville Medical Parkway. Traffic demands for additional road improvements on NC 66 will need to be addressed through future developments contributing funds, NCDOT funds, and Town of Kernersville funds.
- The projected 2017 build-out periods will change with economic changes, but the projected traffic generated by the future land uses will remain the same.
- The current *Thoroughfare and Street Plan* proposed roads for undeveloped lands west of NC 66 and east of Beeson Road will have to be revised to compliment the alignment of the Medical Parkway and anticipated improvements on NC 66.



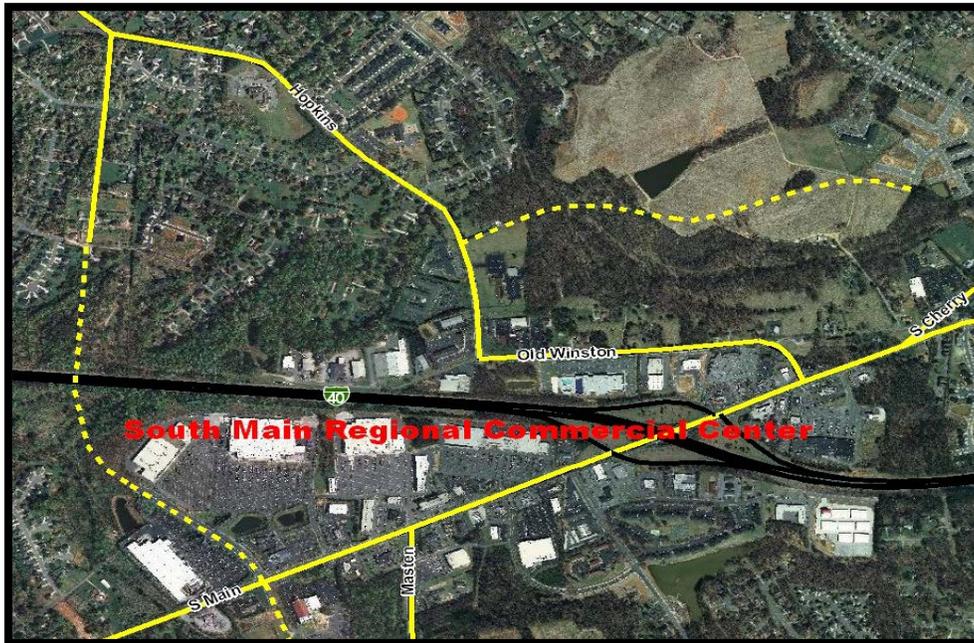
- will not grow as fast on Old Hollow Road, West Mountain Street, Dobson Street, Piney Grove Road, and North Main Street heading north to the Airport Connector, but would continue to increase on Linville Springs Road (*part of the Kernersville Boulevard*), Hopkins Road, South Main Street, East Mountain Street, Bodenhamer Street, and Gralin Street because traffic would continue to travel on those roads to access B-40, and
- Without the Airport Connector, B-40 will become over capacity at an earlier date.
- With the Winston-Salem Beltway, “traffic count growth trends” on B-40 will increase substantially east of the Beltway in Kernersville and would not grow as fast west of Kernersville.
- Without the Winston-Salem Beltway,
  - “traffic count growth trends” on B-40 will continue to increase though not quite as fast as with the Beltway due to the fact that it will be harder for larger numbers of traffic to quickly access B-40, and
  - as B-40 capacity is reached, traffic will elect to use the local road network more thus increasing the “traffic count growth trends” on Old Hollow Road, Hopkins Road, Big Mill Farm Road, West Mountain Street, and Bodenhamer Street.
- Without the Winston-Salem Beltway, but with Big Mill Farm Road Interchange in place, South Main Street “traffic count growth trend” would not increase as fast because less traffic would be using the B-40/South Main Interchange to access the Beltway.
- With the Big Mill Farm Road Interchange,
  - “traffic count growth trends” on West Mountain Street, the southern section of Hopkins Road, and Old Winston would increase much slower as a new and better access to B-40 and the Beltway was available, and
  - “traffic count growth trends” on the northern section of Hopkins Road would increase more quickly as a new and better access to the B-40 and the Beltway was available.
- Without the Big Mill Farm Road Interchange, Beltway or Airport Connector:
  - B-40 “traffic count growth trends” would increase more slowly than with Big Mill Farm Road Interchange because the local streets of the southern section of Hopkins Road (*south of Big Mill Farm Road*), Old Winston Road, and South Main Street capacity will be reached; thus, limiting the amount of traffic that could access B-40,
  - West Mountain Street, Bodenhamer, and other downtown streets will see an increase in the “traffic count growth trends” with traffic finding alternative routes to access B-40 and the job centers in Kernersville, and

- the Big Mill Farm Road and the northern section of Hopkins Road (*north of Big Mill Farm Road*) would see a less rapid “traffic count growth trend”, because it would not be a link to B-40 and South Main Street.
- With only a bridge on Big Mill Farm Road over B-40 instead of a full interchange, traffic would be reduced on Old Winston Road. But, just a bridge at Bill Mill Farm Road would not address the major traffic problems on South Main Street at B-40.

## Findings: Chapter 5 - South Main Street, Big Mill Farm Road, Old Winston Road, and Hopkins Road Traffic Study

### South Main Street and Old Winston Road

The existing and planned road network of South Main Street, B-40/South Main Interchange, B-40/Big Mill Farm Interchange, Hopkins Road, and Old Winston Road is a crucial portion of the Kernersville’s road network. The “Level of Service” of South Main Street impacts nearly all residents of the Town of Kernersville, due to the fact it is the primary commerce center and access to the interstate system. South Main Street is the primary indicator in determining when B-40/Big Mill Farm Interchange will be required to be constructed.



The Town of Kernersville is currently studying options of road improvements on South Main Street north of B-40, with the primary focus being redesigning the South Main Street intersection with Old Winston. One option studied by NCDOT shows the Level of Service would be improved for approximately 13 years before the intersection would begin to fail. The B-40/Big Mill Farm interchange would then be required to be completed to address the future traffic congestion. Due to the long life cycle of planning, funding and constructing the proposed NCDOT interchange, the Town will need to continue its efforts to obtain funding for the interchange to address current and projected traffic congestions, even with South Main Street

Road Improvements. With the planned B-40/Bill Farm Interchange relieving traffic, Old Winston Road and the southern section of Hopkins Road will only need to be 3-lanes.

**Big Mill Farm Road and Hopkins Road**

The “Hopkins Road/Big Farm Road Traffic Demand Forecast” completed May of 2008 as part of the NCDOT approved Feasibility Study for the B-40/Big Mill Farm Road Interchange and road improvement to Big Mill Farm Road and Hopkins Road had the following traffic count forecasts, with B-40/Big Mill Farm Road Interchange completed and the beltway constructed prior to 2035 (see table below).

<b>Year</b>	<b>Road</b>	<b>Average Annual Daily Traffic</b>
2007	Big Mill Farm Road	<b>14,400</b>
	Hopkins Road	<b>15,600</b>
2035	Big Mill Farm Road	<b>22,200</b>
	Hopkins Road	<b>24,200</b>

The traffic study being completed for the Town of Kernersville by Ramey Kemp and Associates has found, through a general road capacity analysis, that the existing 2-lane cross-section of Hopkins Road can be expected to accommodate up to **12,160-13,200** vehicles per day (vpd) without exclusive left turn lanes being provided at key intersections. The following is a summary from the consultant, regarding alternative cross-sections and corresponding capacity as compared to the existing 2-lane facility.

- If **exclusive left turn lanes** were constructed at key intersections, the 2-lane facility could be expected to accommodate up to:  
**15,200 - 16,500** vpd [*an increase of 25%*] at LOS of “D”.
- A **2-lane divided or 3-lane cross-section** could be expected to accommodate up to:  
**15,960 - 17,325** vpd [*an increase of over 30%*] at LOS of “D”.
- A **4-lane undivided facility [without left turn lanes]** could be expected to accommodate up to:  
**25,350 - 27,525** vpd [*an increase of over 105%*]at LOS of “D”.
- A **4-lane undivided facility [with left turn lanes]** could be expected to accommodate up to:  
**32,110 - 34,865** vpd[*an increase of over 160%*]at LOS of “D”.

The consultant found that the projected 2035 traffic would be at or just above the capacity of a LOS “F” with a 2-lane divided or 3-lane section. A more detailed study would be required by NCDOT to determine what the specific capacities of alternative road designs would be and what the acceptable level of services at the peak traffic would be.

Along with studying potential road designs of Big Mill Farm Road and Hopkins Road, the Study Committee looked at alternatives routes to the B-40/Big Mill Farm Interchange and the options of a bridge overpass only. The alternative routes studied considered eliminating the Big Mill

Farm Road extension and divert the traffic down the southern portion of Hopkins Road with one alternative connecting to Old Winston Road, and the other alternative going behind the buildings along Old Winston Road. The alternative routes would be over \$8,000,000 more expensive than the Big Mill Farm Road routes (*see chart to the below*).

<b>BIG MILL FARM INTERCHANGE ROUGH COST ESTIMATES</b>			
	<b>ROW takings ***</b>	<b>Construction</b>	<b>Total</b>
<b>BIG MILL FARM ROUTE</b>			
Section 1-Big Mill Farm Improvements	\$ 326,800	\$ 2,329,545	\$ 2,656,345
Section 2-Widen Hopkins to 3-lane	\$ -	\$ 942,803	\$ 942,803
Section 3-Interchange to Harmon Creek	\$ -	\$ 9,000,000	\$ 9,000,000
		<b>TOTAL</b>	<b>\$ 12,599,148</b>
<b>OLD WINSTON ROUTE</b>			
Section 1-Old Winston Improvements	\$ 4,979,500	\$ 2,469,697	\$ 7,449,197
Section 2-Widen Hopkins to 4-lane	\$ 1,190,400	\$ 3,181,818	\$ 4,372,218
Section 3-Interchange to Harmon Creek	\$ -	\$ 9,000,000	\$ 9,000,000
		<b>TOTAL</b>	<b>\$ 20,821,415</b>
<b>NEW LOCATION ROUTE</b>			
Section 1-New Location	\$ 6,468,400	\$ 2,640,152	\$ 9,108,552
Section 2-Widen Hopkins to 4-lane	\$ 1,190,400	\$ 2,651,515	\$ 3,841,915
Section 3-Interchange to Harmon Creek	\$ -	\$ 9,000,000	\$ 9,000,000
		<b>TOTAL</b>	<b>\$ 21,950,467</b>

\*\*\* *Not a total estimate of ROW needed, only of complete takings of buildings*

*Estimate does not include improvements to Hopkins Road north to Talley's Crossing which may be needed. Costs would be the same for each alternative.*

The Big Mill Farm Road “bridge only” alternative would be the cheapest option in total dollars, \$5.8 million dollars, but no NCDOT funds would be available. The traffic impacts on the residential area would be similar to the interchange, though less severe in the amount of traffic. The bridge would shift the traffic problem from Old Winston and South Main Street north of B-40 to South Main Street/B-40 ramps and South Main south of B-40. The \$5.8 million dollar cost to the Town of Kernersville would provide limited cost benefits for long term traffic relief.

### **Findings: Chapter 6 - Road Design Within the Road Network**

The current *Thoroughfare and Street Plan* contains no goals or policies on road design. The North Carolina Department of Transportation (NCDOT) controls many of the design standards of the State and Federal roads. NCDOT’s recently adopted “Complete Street Policy” (*see Appendix B - NCDOT Preliminary Complete Streets Planning and Design Guideline Framework*) has shifted emphasis for roadway design to a community vision. Thoughtful road design can play a major role in accomplishing the Town of Kernersville’s development goals of “enhancing Kernersville’s small town atmosphere” and “establishing Kernersville as a unique high quality community in the Triad”.

NCDOT defines a complete street as “*an approach to interdependent, multi-modal*



*transportation networks that safely accommodate access and travel for all users”.*

The complete street movement recognizes that roads need to be designed to contribute to sustainable development practices that minimize impacts on residents, businesses, environment, and the community values. Road design in the context of its surroundings has a significant potential to contribute to the quality of life and economic development goals of a community. A large portion of the Town’s major and minor thoroughfares are located adjacent to or within residential neighborhoods. Without thoughtful design of our thoroughfares, roads can become barriers in residential and commercial areas.

There are competing interests when designing the capacity of roads to address the desired level of service. Traditionally, traffic issues were the overriding concern for roadway design, which called for a focus on reducing vehicle delays and improving safety. To address those areas, roads were designed for higher speeds, reduced access, and additional lanes. Focusing roadway design criteria on those type issues only has often created conflicts with the interests in many residential and downtown areas. The Town of Kernersville’s current *Thoroughfare and Street Plan* emphasizes the design for speed and safety, without giving any stated consideration for surrounding land uses. The *Plan* states a “major thoroughfare” shall be a:

*“Thoroughfare whose sole function is to carry large volumes of traffic safely and expediently through the urban area. Access onto the facility is controlled. Access should only be at intersections with other streets. Such intersections should be spaced at intervals which promote traffic progression with the absolute minimal delays incurred. The highest practical level of design should be incorporated into facilities of this classification.”*

The current *Thoroughfare and Street Plan* emphasizes a need for “connectivity”. The *Plan* states:

*“During this final build-out phase of the street system, the major issue is “connectivity”. Connectivity is the practice of designing a street system that provides multiple street connections between designations. Multiple connections allows for the distribution of traffic rather than concentrating traffic. Concentrating traffic causes traffic congestions and unnecessary expenditures of tax dollars for road improvements. The distributing of traffic allows for a more*

*efficient use of existing roads thus improving traffic flow and saving tax dollars.”*

Connectivity provides direct routing through a road network with multiple ways to get to one place with few dead ends. A connected network of small roads has been demonstrated to have greater capacity than a disconnected hierarchy of large roads through better distribution of traffic.

It is difficult for communities to implement a strong connectivity policy because it is more difficult, politically, to open up existing neighborhoods to new traffic. “Traffic calming” is an engineering road design practice of slowing down and reducing vehicle traffic. It is typically used to address some of the negative impacts of “connectivity” in residential and in downtowns. Traffic calming devices can be used in new construction or placed in existing streets to modify streets that were originally designed for higher speeds.



## **Findings: Chapter 7 - Public Awareness**

The *Thoroughfare and Street Plan* has the potential to impact existing and future residents by proposing new roads, road widening, and road designs. Strategies of public awareness are a key in disseminating information regarding the *Thoroughfare and Street Plan*. To promote public awareness the following strategies were identified:

- **Real Estate Industry:** Staff develops a program and materials to present to the real estate firms that provide information on the *Thoroughfare and Street Plan*. The program would include presentations and documents (*maps, plans, and an information flyer*) that would assist real estate agents in understanding the Plan and its relationship to potential sellers and buyers.
- **Thoroughfare & Street Plan Updates:** Staff makes an annual presentation on the status of the Thoroughfare and Street Plan, which would include press releases of the update.\
- **Signage:** Future road corridor and widening projects marked with signage, similar to the “future interstate signage” used on the Federal Interstate system. The signage would help future home buyers and current residents gain a better understanding of future road improvements. Along NCDOT roads such signage may not be allowed.
- **Deeds:** Add a condition to Preliminary Subdivisions and Special Use Districts that requires deeds to contain language on future road corridors and widening projects in or adjacent to the development.
- **Homeowners Associations:** If available, distribute future road corridor and widening projects to homeowners associations and develop an electronic distribution list.
- **Public Information and Input:** An important part of public awareness is dissemination of information to the public, and the ability for the public to provide input into a process. NCDOT’s Transportation Improvement Program (TIP) has “trigger” points of when a project moves on and public input points. The Town of Kernersville maintains data to assist residents and businesses understanding if and when a potential road project is justified based on level of service, traffic counts, safety issues, and other related justification for road projects.

## **Findings: Chapter 8 - Transportation Program**

The Town of Kernersville has a transportation program which involves several agencies. The primary agencies that address transportation issues in the Town of Kernersville, which includes funding, are:

- Town of Kernersville - Transportation Division
- Town of Kernersville - Planning Division
- Metropolitan Planning Organizations (MPO), and
- North Carolina Department of Transportation (NCDOT).

The principal funding sources for road improvements in Kernersville include:

- **NCDOT Transportation Improvement Program (TIP):** The TIP funds major road improvements. Current projects that have been allocated funds for construction include:
  - U-4909 Union Cross Road Widening
  - U-2800 B-40 / Macy Grove Interchange – Funding currently being considered for construction
  - B-4510 Salisbury St Bridge Replacement.
- **NCDOT Small Urban Funds:** The Small Urban Funds are grants of up to \$300,000 given to local government for construction only on NCDOT system roads.
- **MPO Funds:** The MPO funds transportation facilities and studies providing an 80% match. Major categories of projects eligible include intersection improvements, sidewalks, and greenways.
- **Town of Kernersville Funds:** The annual budget for the Town of Kernersville will typically have funds allocated for transportation projects. In 1998, the voters in the Town of Kernersville approved a \$7,000,000 bond for transportation improvements. The \$7,000,000 bond funds, along with other funds have been successfully used to undertake over \$22,138,718 of road improvement related expenses since 2000. Of that expenditure, the Town has been able to obtain matching revenue of \$6,667,172 from other funding sources.

The Town of Kernersville has a Transportation Capital Improvement Program. It is the primary funding tool in completing road improvements. The Transportation Capital Improvement Program is the Board of Aldermen adopted plan that includes funded projects and proposed projects in which funding is being pursued.

**Due to current budgetary constraints, the Transportation Capital Improvement Program is not anticipating any road improvements starting in Fiscal Year 2013-14.**

The past Town of Kernersville's transportation program lacked a comprehensive understanding of prioritized road improvement needs based on capacity and other issues. The Town many times had to react to addressing road improvement opportunities brought about by proposed developments, or current traffic problems. Future selection of the Town's transportation projects

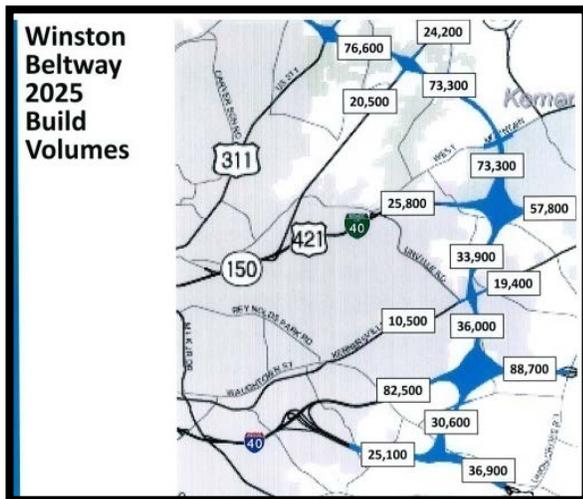
will benefit greatly from more thorough evaluations of capacity issues and route selection. Prioritizing and funding decisions for transportation projects will have to focus on maximizing the benefits of limited funding resources.

## Findings: Road Network

### Interstates Network

#### Traffic Characteristics:

- **Interstate 40 (I-40):** I-40 is the 3<sup>rd</sup> longest east-west interstate highway in the United States. Currently, I-40 is the primary interstate through Kernersville, and carries a large percentage of traffic traveling through the metropolitan region.
- **Business 40 (B-40):** B-40 is the primary commuter route for commuters traveling to Kernersville’s job centers, and Kernersville commuters traveling to Winston-Salem and Greensboro’s job centers.



- **Beltway:** The Beltway is the proposed eastern portion of the Winston-Salem Loop Road and is the proposed future I-74. It will provide an alternative to US-52 and B-40 through Winston-Salem, and act as a major thoroughfare for traffic traveling north-south through the metropolitan region. Currently, NCDOT has not made funds available for the project and the current indication is that it would be quite some time before the project would rank high enough for funding under the current system.

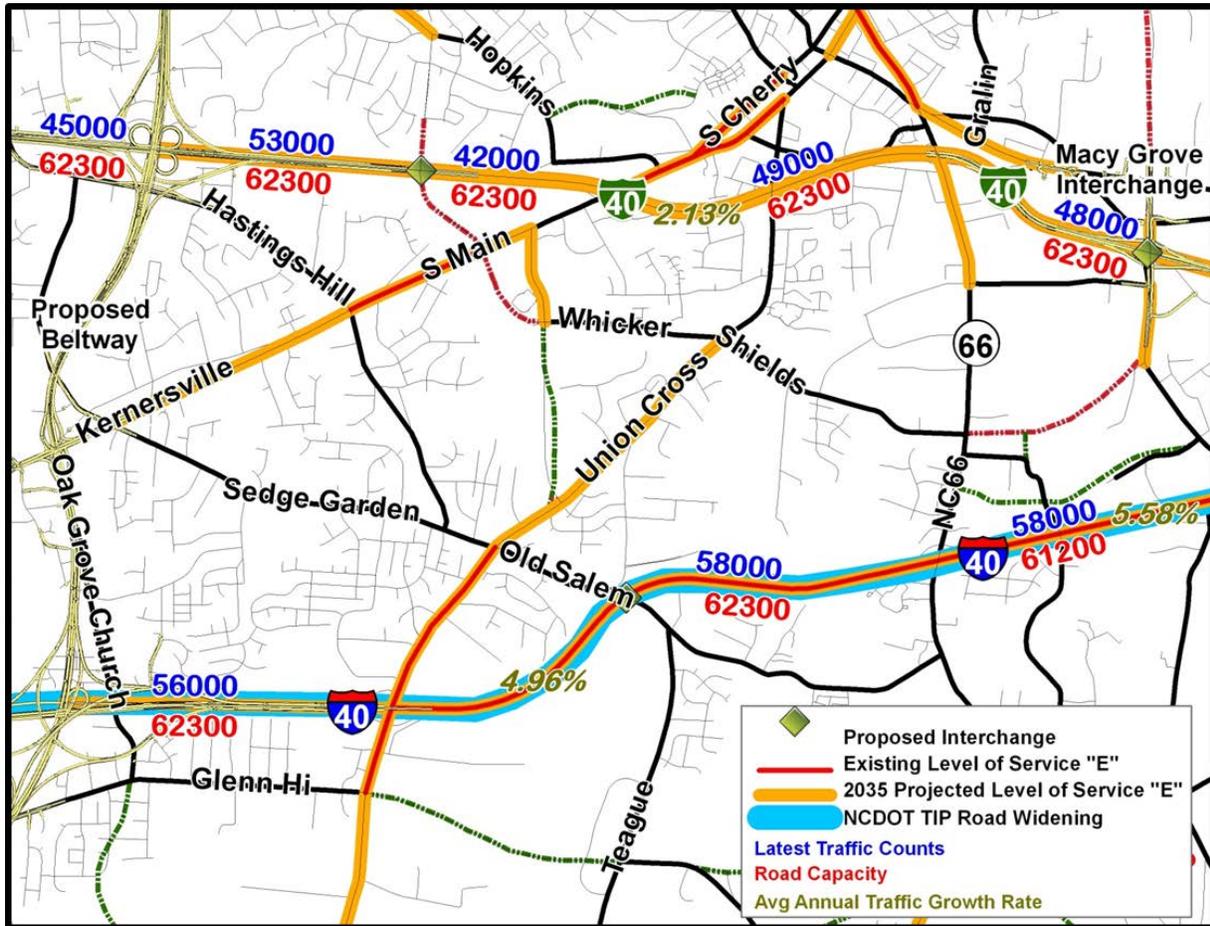
**Traffic Growth:** I-40’s annual growth is nearly double that of B-40. However, if the Beltway is completed, B-40 growth will have a much higher growth rate and by 2035 the traffic count of B-40 will equal I-40.

**Level of Service (LOS):** I-40 has reached Level Service “E”. NCDOT plans to widen I-40 through Kernersville as a six-lane cross-section, but even after the improvements it will have a Level of Service “E” or worse by 2035. B-40 will also reach a Level Service “E” or worse by 2035.

#### Future Challenges and Opportunities

- I-40 is and will continue to experience a high annual traffic growth rate.
- The proposed NCDOT I-40 road widening will address the Level of Service issue on I-40 for a period of time, but by 2035 the Level of Service will be back to “E” or worse, even with the improvements.
- The Beltway will greatly increase the traffic on B-40 and by 2035 it will be at Level of Service “E” or worse.

- If built, the Airport Connector would tend to reduce traffic on B-40.
- As the Level of Service declines on I-40 and B-40, local traffic will be diverted to the local road network, thus adversely impacting the level of service of local roads.
- The regional model will need to continue to be refined to include current growth data and road network scenarios.
- Funding will remain a major issue to facilitate the construction of the Beltway and the Airport Connector.



## Western Road Network

### Traffic Characteristics:

- **South Main Street:** South Main Street is the major thoroughfare that serves the regional shopping center of eastern Forsyth and western Guilford. It also acts as Kernersville's primary access to B-40.
- **Hopkins Road & Old Winston Road:** Hopkins Road and Old Winston Roads are major thoroughfares for traffic traveling north-south through, and to Kernersville. It also provides roadway access to residential areas east and west of Hopkins Road.
- **Big Mill Farm Road:** Big Mill Farm Road is the planned future major thoroughfare that will provide traffic relief for the southern portion of Hopkins Road, Old Winston Road, and South Main Street.
- **West Mountain Street:** West Mountain Street is the primary parallel major thoroughfare to B-40, carrying east-west bound traffic. West Mountain Street also serves several major industrial businesses and four schools.
- **Lambeth Farm Road Extension:** Lambeth Farm Road Extension is the primary parallel minor thoroughfare to Old Winston Road and South Cherry Street. It will lessen the traffic on those roads by providing an alternative east-west route.
- **Airport Connector:** The Airport Connector is proposed to be an interstate design road, which connects the beltways of Winston-Salem and Greensboro. It acts as a parallel major thoroughfare to B-40 and I-40. The Town of Kernersville removed the Airport Connector from its *Thoroughfare and Street Plan* because they do not foresee it being constructed in the current location, especially since construction of the Winston-Salem Beltway has been delayed. The MPO still has it listed.

**Traffic Growth:** Traffic growth rate has ranged from 2.58% to 9.08% on the western side of Kernersville. The highest growth rate is associated with the residential housing development that occurred in the Hopkins Road neighborhoods. The future traffic growth rate on Hopkins Road should be similar to the Old Hollow Road growth rate of 3.44% and South Main Street growth rate of 4.28%. The West Mountain Street growth rate, west of the Hopkins Road intersection, should also decline to those rates.

The Big Mill Farm Extension and Interchange with B-40 will have the greatest impact on traffic growth rates in the western road network. It will provide traffic relief to the southern portion of Hopkins Road, Old Winston Road, and South Main Street. The northern portion of Hopkins Road would see an increase in traffic due to traffic being attracted to the B-40 interchange.

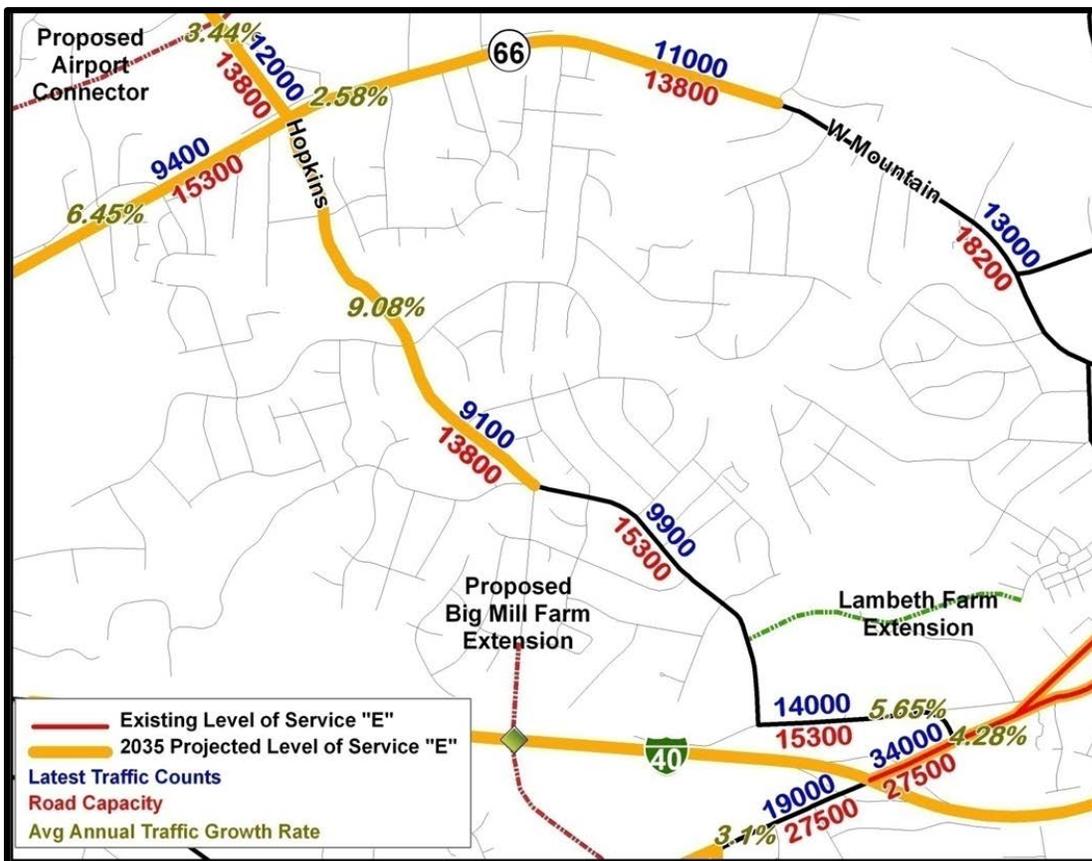
### Level of Service (LOS), without significant roadway improvements:

- South Main Street, north of B-40, is currently the only road segment with a Level of Service "E" or worse.

- It is projected that West Mountain Street, Old Hollow Road, and South Main Street will be a Level of Service “E” or worse by 2035.

### Future Challenges and Opportunities

- Even with the Big Mill Farm Road Extension and Interchange improvement, South Main Street will continue to have a Level of Service “E” or worse.
- Funding will remain a major issue to facilitate the construction of the Big Mill Farm Interchange. Without the improvement, South Main Street, the southern section of Hopkins Road, and Old Winston Road will far exceed its capacity to carry the traffic demands.
- The required road improvements on Hopkins Road, Big Mill Farm Road, West Mountain Street, and the Lambeth Farm Road extension will need to be designed in the context of the neighborhoods.
- With the Airport Connector likely not being constructed or constructed in a different location, the Town will need to work closely with the Metropolitan Planning Organizations (MPO) and NCDOT in preventing the current proposed Airport Connector to be a part of the regional traffic model. If the Airport Connector is a part of the regional model, the traffic model will under estimate future traffic in Kernersville, which would lessen the justification of MPO and NCDOT funding for road improvements in Kernersville.



## Northern Road Network

### Traffic Characteristics:

- **West Mountain Street:** West Mountain Street is the primary parallel major thoroughfare to B-40, carrying east-west bound traffic. West Mountain Street also serves several major industrial businesses and four schools.
- **Bodenhamer Street:** Bodenhamer Street is the primary major thoroughfare for north-south bound traffic through Kernersville. It also serves the surrounding commercial areas.
- **Northern section of the Kernersville Boulevard including Linville Springs Road:** Linville Springs Road is the west-east link between Dobson Street and Piney Grove Road. The primary traffic generation is from the residential areas on the northern side of Kernersville. The proposed Kernersville Boulevard will provide a complete west-east traffic circulation to allow traffic to loop around Kernersville.
- **Kerner Road and Dobson Street:** Kerner Road and Dobson Street is a major thoroughfare for north-south bound traffic. It serves the residential areas on the northern side of Kernersville and allows access to Kernersville commercial centers, job centers, and interstates.
- **Piney Grove Road:** Piney Grove is a major thoroughfare for north-south bound traffic. It serves the residential areas on the northeast side of Kernersville and allows access to Kernersville commercial centers, job centers, and interstates.
- **North Main Street:** North Main Street is a major thoroughfare for west-east bound traffic. It serves the residential areas on the eastern side of Kernersville and allows access to Kernersville commercial centers, job centers, and interstates. It also serves the neighborhood commercial center along North Main Street.
- **Gralin Street:** Gralin Street is a recently constructed minor thoroughfare that is a north-south connection for North Main Street traffic to connect to B-40 and East Mountain Street.
- **Airport Connector:** The Airport Connector is proposed to be an interstate design road, which connects the beltways of Winston-Salem and Greensboro. It acts as a parallel major thoroughfare to B-40 and I-40. The Town of Kernersville removed the Airport Connector from its *Thoroughfare and Street Plan* because they do not foresee it being constructed in the current location, especially since construction of the Winston-Salem Beltway has been delayed. The MPO still has it listed.

**Traffic Growth:** Traffic growth on the Major Thoroughfares ranges from 1.94% to 5.36%. Gralin Street has and will continue to contribute to the low growth rate of 1.94% on North Main Street south of Gralin Street. The higher growth rates of 5.36% on Kerner Road and 3.12% growth rate on Piney Grove Road are attributed to the residential growth to the north of Kernersville. The large amount of undeveloped land to the north will continue to contribute growth of traffic to those road segments. The proposed Kernersville Boulevard would provide traffic relief to the congested Bodenhamer Street, NC 66 at B-40 and North Main Street.

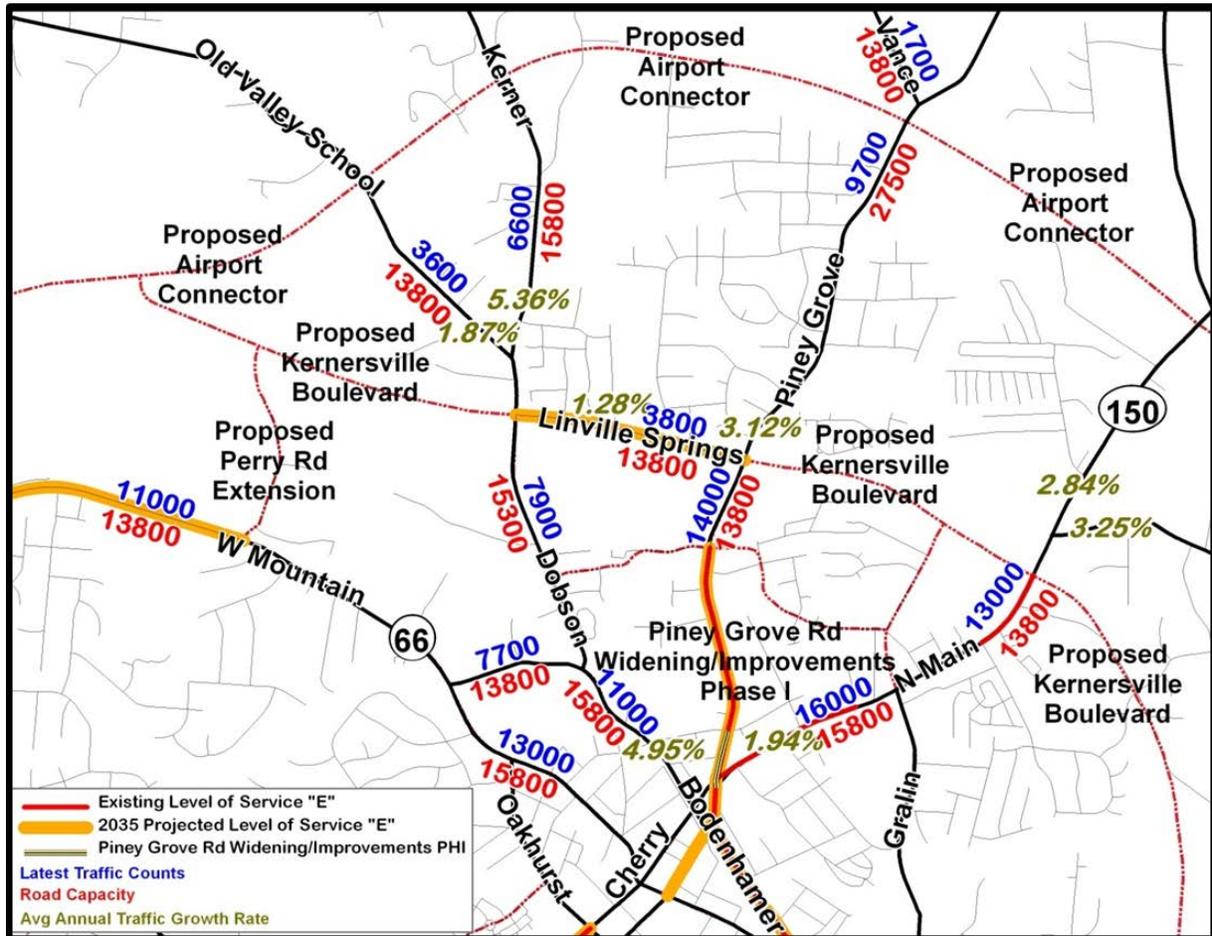
### Level of Service (LOS):

- Currently, East Bodenhamer Street, North Main Street, and Piney Grove Road are a Level of Service "E" or worse.

- It is projected that West Mountain Street, Linville Springs Road, Piney Grove Road, and North Main Street will be a Level of Service “E” or worse by 2035.
- The increased traffic generated by the proposed Kernersville Boulevard will cause Linville Springs Road to be a Level of Service “E” or worse by 2035.

**Future Challenges and Opportunities**

- Even with the completion of the proposed Kernersville Boulevard, the level of service of the downtown section of North Main Street, East Bodenhamer Street, and Piney Grove Road will remain at a Level of Service “E” or worse.
- The required road improvements on Linville Springs Road, Piney Grove Road, and the proposed Kernersville Boulevard will need to be designed in the context of the neighborhoods.
- Funding will remain a major challenge on facilitating the construction of the Kernersville Boulevard. Without the improvements, the northern road network will far exceed its capacity to carry the traffic demands.



## **Central Road Network (Downtown)**

### **Traffic Characteristics:**

- **South Main and North Main Street:** South and North Main Street is a major thoroughfare for north-south and west-east through traffic. It is also the “main” corridor for downtown Kernersville.
- **West and East Mountain Street:** West and East Mountain Street is a major thoroughfare for north-south and west-east through traffic. As the downtown core grows it will expand along West and East Mountain Street.
- **North and South Cherry Street:** North and South Cherry Street is a major thoroughfare for north-south and west-east through traffic. As the downtown core grows it will expand along North and South Cherry Street.
- **East Bodenhamer Street:** Bodenhamer is the primary major thoroughfare for north-south bound traffic through Kernersville. As the downtown core grows it will expand along East Bodenhamer Street
- **Salisbury Street:** Salisbury Street is a major thoroughfare for north-south through traffic and serves several residential neighborhoods.
- **Oakhurst Street:** Oakhurst Street is a minor thoroughfare that provides a link between South Cherry and South Main to West Mountain Street that primarily consists of local traffic.
- **Pineview Drive:** Pineview Drive is a minor thoroughfare that provides a link between NC 66 to Salisbury Street and South Main. Traffic is a mix of Kernersville traffic and customer traffic to the medical offices and commercial areas.

**Traffic Growth:** The lowest traffic growth rate exists in the downtown area. That is due to the fact it had a high traffic count when counts started over 30 years ago.

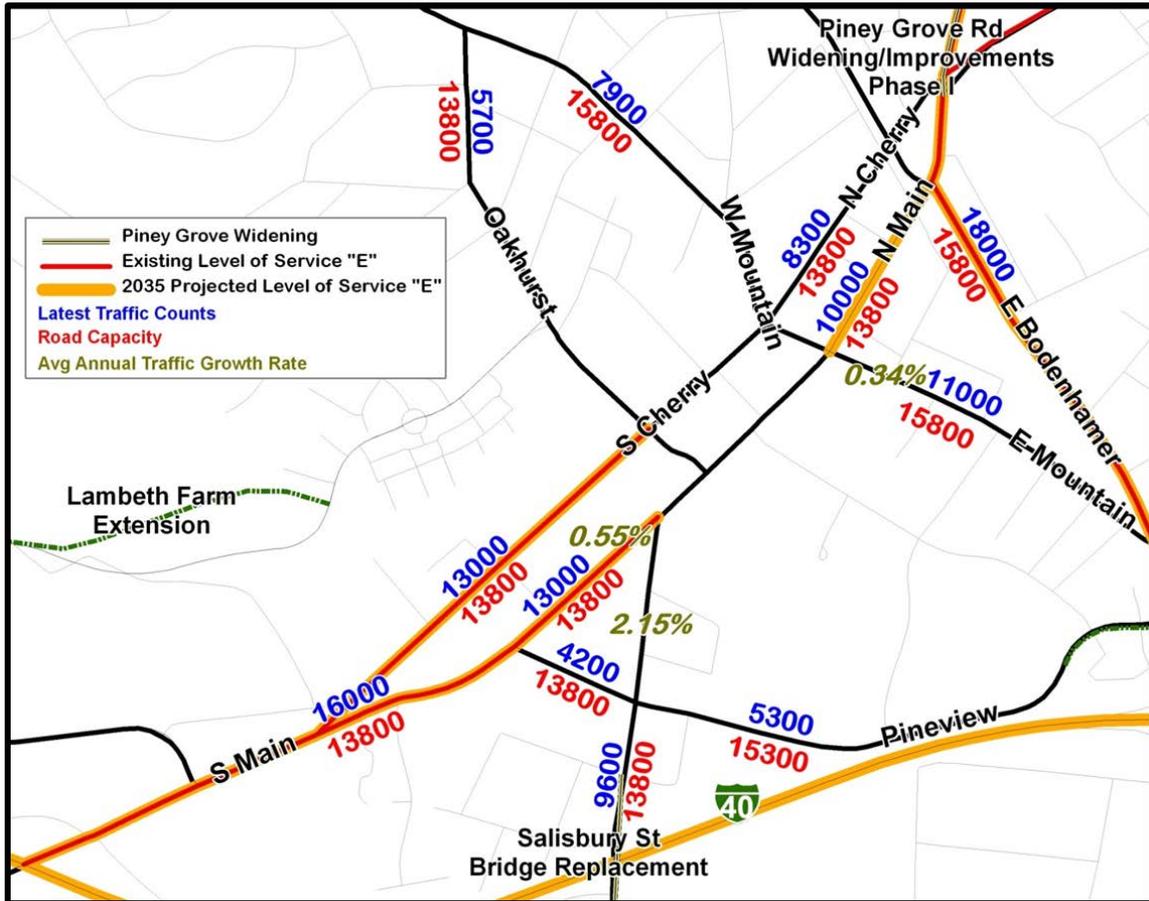
**Level of Service (LOS):** With numerous downtown roads being 3-lane cross sections, the road segments have a good Level of Service. The intersections are the points causing traffic congestion. South Main Street and South Cherry Street through the residential areas is and will remain at a Level of Service “E” or worse. East Bodenhamer will also remain at a Level of Service “E” or worse. North Main Street is projected to have a Level of Service “E” or worse by 2035.

### **Future Challenges and Opportunities:**

- In the downtown area, road improvement options are limited due to existing businesses and homes close proximity to the street. South and North Cherry Street has the most potential for road improvements that will enhance traffic flow, while being designed in the context of the downtown and residential area it travels through.
- Even with the completion of the proposed Kernersville Boulevard, the level of service of the downtown section of North Main Street, residential sections of South Main Street

and South Cherry Street, and East Bodenhamer Street are projected to be at a Level of Service “E” or worse in 2035.

- Funding will remain a major challenge on facilitating the construction of the Kernersville Boulevard. Without improvements, the downtown road network will far exceed its capacity to carry future traffic demands.



### Eastern Road Network

#### Traffic Characteristics:

- **East Mountain:** East Mountain Street is the primary parallel major thoroughfare to B-40, carrying east-west bound traffic. East Mountain Street also serves the industrial areas on the eastern side of Kernersville.
- **B-40/ Macy Grove Interchange:** The B-40/Macy Grove Interchange has been proposed for over 20 years to serve the industrial areas on the eastern side of Kernersville. NCDOT is currently completing the preliminary design and construction is proposed to begin 2013.
- **Eastern Section of the Kernersville Boulevard (North Main to NC 66):** The Eastern Section of the Kernersville Boulevard will serve the eastern and southern industrial areas

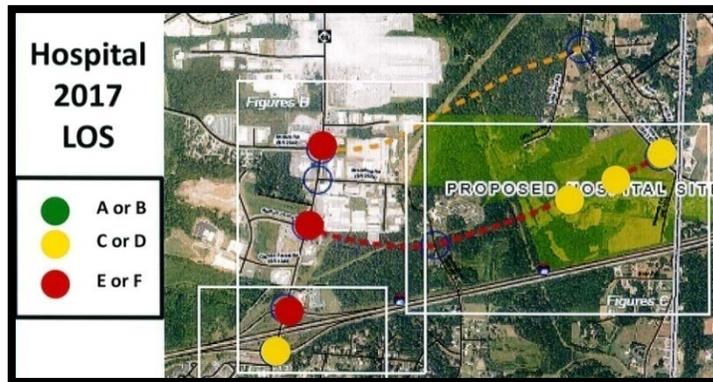
of Kernersville. It will also provide an important linkage for area residents to travel east-west through the central area of Kernersville and access B-40.

- **NC 66 South:** NC 66 South is the primary north-south route through central Kernersville. It also serves the NC 66 industrial job center.
- **Kernersville Medical Parkway:** The proposed Kernersville Medical Parkway is presently being proposed to be completed by the fall of 2013. It will be the primary access to the Medical Business Park area. It will also be a thoroughfare link between NC 66 and north High Point.

**Traffic Growth:** Traffic growth has been below average when compared to the NCDOT 3% traffic growth rate they use for most urban area planning. However, it is projected that FedEx Ground and the Kernersville Medical Center will increase the future traffic growth rate of the eastern road network.

**Level of Service (LOS):**

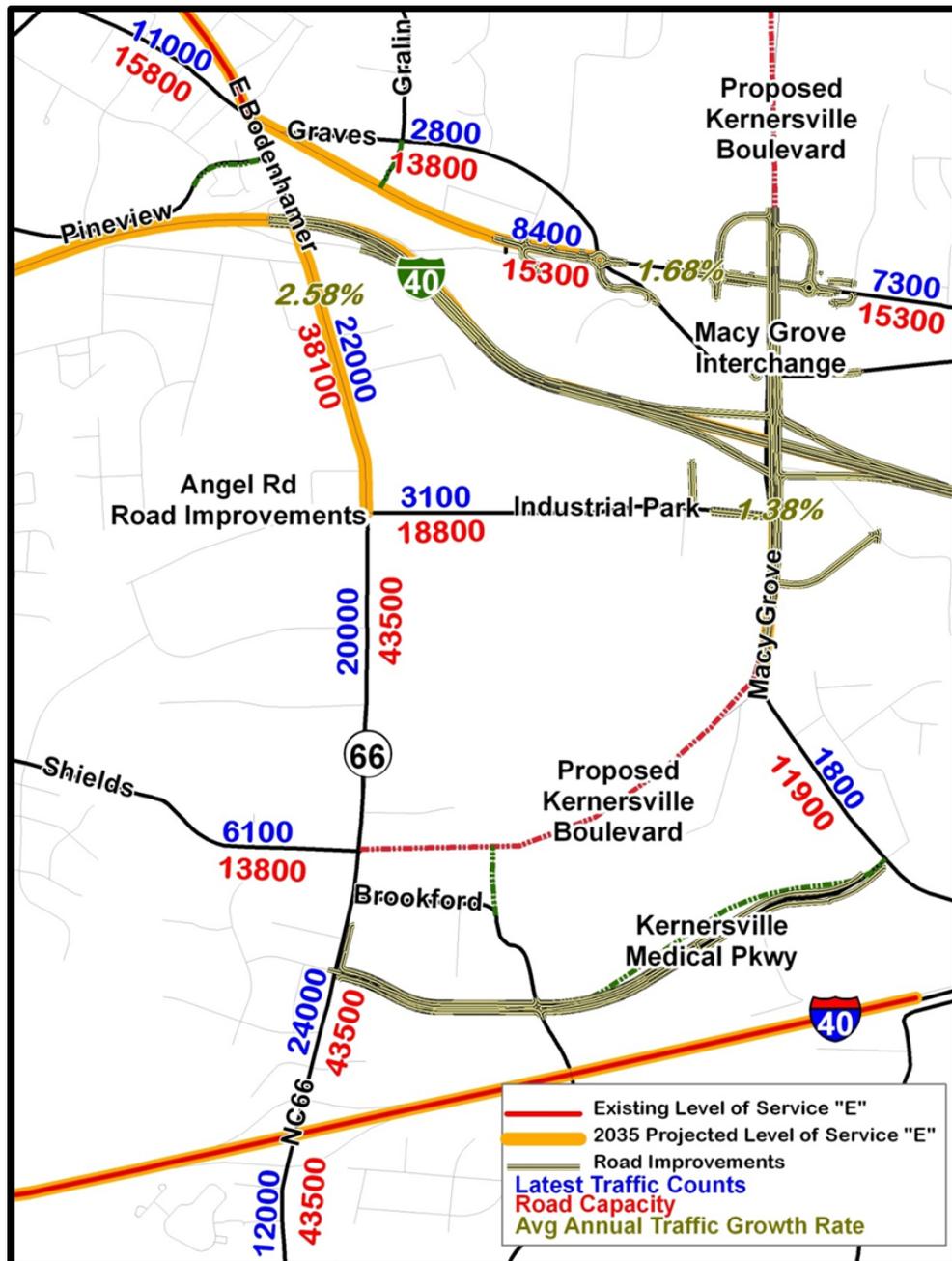
- Currently there are no capacity issues in the eastern road network.
- East Mountain Street and the commercial area of NC 66 South show a Level of Service “E” or worse by 2035.
- The Hospital traffic study shows NC 66 South intersections having a Level of Service at “E” or worse at build-out of the Medical Business Park, undeveloped land along the Kernersville Medical Parkway, and north High Point.



**Future Challenges and Opportunities:**

- The proposed Macy Grove Interchange and Kernersville Medical Parkway enhance the eastern road network.
- The proposed Macy Grove Interchange and Kernersville Medical Parkway will promote economic development projects that will attract additional traffic to the NC 66 South and East Mountain Street industrial areas. The future required road improvements on Macy Grove Road will need to be designed in the context of the residential neighborhood.
- Traffic modeling and data will need to be maintained to determine when intersections and the I-40/NC 66 interchange will reach capacity.

- Funding will remain a major challenge on facilitating the improvements at NC 66 South intersection and I-40 interchange. Without improvements, NC 66 South and the I-40 interchange will far exceed the capacity to carry future traffic demands.
- The current *Thoroughfare and Street Plan* proposed roads for undeveloped lands west of NC 66 and east of Beeson Road will have to be revised so as to compliment the alignment of the Medical Parkway and anticipated improvements along NC 66.
- With the anticipated, relatively rapid growth in the area south of B-40 and east of NC 66 the Town will need improvements and additions to the existing road network. Detailed planning will need to be completed soon in order to guide development as it occurs.



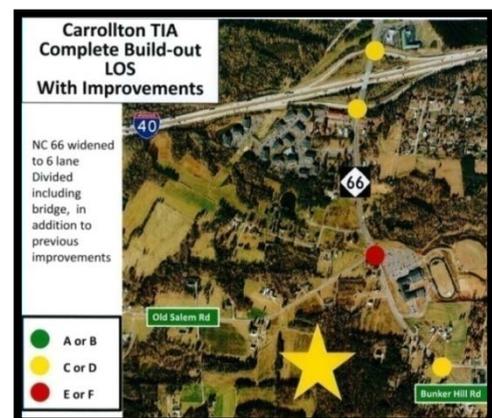
## Southern Road Network

### Traffic Characteristics:

- **NC 66 South:** NC 66 South is the primary north-south route through central Kernersville. The NC 66 South, south of I-40, has historically been primarily a thoroughfare serving the southern residential areas whose residents travel to the job centers and commercial centers of Kernersville. The recent construction of a school and medical offices is increasing the non-residential traffic.
- **Old Salem Road:** Old Salem Road is the primary parallel major thoroughfare to I-40, carrying traffic east-west bound traffic. It currently serves the surrounding residential areas.
- **I-40/ Old Salem Road Interchange:** The I-40 / Old Salem Road interchange is proposed to allow traffic relief to the I-40/NC 66 and I-40/Union Cross interchanges.
- **Union Cross Road:** Union Cross Road is a north-south major thoroughfare serving the surrounding residential neighborhoods and providing a southern link to job centers and commercial centers of Kernersville. Construction is scheduled to begin in 2012 for the road widening of Union Cross Road.
- **Shields Road and Whicker Road:** Shields Road and Whicker Road is the southern portion of the Kernersville Boulevard. It will provide a major link to the eastern and southern industrial areas of Kernersville and the South Main Street regional shopping center. It will also provide an important linkage for area residents to travel east-west through the central area of Kernersville and access B-40 at Macy Grove or South Main Street.
- **Bunker Hill/Glen Hi Extension and Temple School Road Extension:** The proposed major thoroughfare extensions of Bunker Hill/Glen Hi and Temple School Road will take place as development occurs along the proposed corridors.
- **Traffic Growth:** The southern road network has the highest average growth rate in Kernersville. The completion of I-40 in 1994 greatly contributed to attracting growth and traffic to the area. It is anticipated that the proposed road improvements of the Union Cross Road widening and the current available traffic capacity of NC 66 will attract future growth. The southern area also contains several large proposed development sites that include Carrollton, Caleb's Creek, and Union Cross Town Center.

### Level of Service (LOS):

- Only Union Cross Road south of Old Salem Road currently has a Level of Service "E" or worse. It is projected Union Cross Road north of Old Salem Road and NC 66 south of Old Salem Road will have a Level of Service "E" or worse by 2035.



- The Carrollton traffic study shows the intersection of NC 66 South and Old Salem Road at a Level of Service at “E” or worse at build-out even with major road improvements. The traffic study did not include the proposed I-40/Old Salem Road interchange improvement in its analysis.

**Future Challenges and Opportunities:**

- Due to a large amount of undeveloped land in southern Kernersville and northwestern High Point, the traffic growth rate will continue to be high in the southern road network.
- The NCDOT Union Cross Road widening will greatly assist in addressing the long term traffic demands of that area.
- The proposed I-40/ Old Salem Road Interchange will provide a long term solution for congestion in the area.
- The future required road improvements on Old Salem Road and NC 66 South through the residential areas will need to be designed in the context of the residential neighborhoods.
- Traffic modeling and data will need to be maintained to determine when NC 66/Old Salem Road intersections and the I-40/NC 66 interchange will reach capacity.
- Funding will remain a major challenge on facilitating the improvements on NC 66 South and the I-40 interchange. Without improvements, NC 66 South and the I-40 interchange will far exceed the capacity to carry future traffic demands.
- As the southern area continues to develop, the Town and County development review process will need to assure a sufficient road system is properly planned, designed and constructed, and that adequate funding is available.



**Appendix B - “NCDOT Preliminary Complete Streets Planning & Design Guidelines Framework”**