

Rock Hill-York County-Charlotte Rapid Transit Study Locally Preferred Alternative (LPA) Summary Document -Charlotte June 2007





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1.0 Executive Summary

The Rock Hill-York County-Charlotte Rapid Transit Study has completed a comprehensive process of analyzing alternatives to provide rapid transit service connections between Rock Hill-York County and the greater Charlotte region. The study results have identified a Locally Preferred Alternative (LPA), including a broader system-wide transit concept plan as final recommendations. The LPA satisfies early planning steps required by the Federal Transit Administration (FTA) as part of a long list of requirements necessary to compete for federal transit funds. The LPA recommendations include short and long-term approaches for implementation of Bus Rapid Transit (BRT) service within the US 21 corridor connecting downtown Rock Hill to Charlotte.

The final recommendation of the study is to implement a BRT service in the US-21 corridor to connect to the CATS southern light rail line at I-485. This project is to be implemented over four phases which stretch from the short-term planning horizon of 2011-2012 to the longterm planning horizon of 2030 and beyond. This BRT service would be complemented by an extensive feeder network of local and express buses to the neighboring towns such as Fort Mill, Tega Cay, Pineville, Lancaster, and Chester.

Major Findings

The study researched transportation and land use conditions in the study area over the initial phases of the project and made a number of discoveries that ultimately led to the formulation of goals for the project and the purpose and need for transit. Early study findings identified several RYC issues and needs that transit could play a role in addressing. These include:

- Hill-York County commuters.

 - Hill–York County area

- crossings.

Public Involvement

An extensive public involvement effort was executed in tandem with the study process over the last two years. This included four rounds of public meetings and two sets of projects newsletters which were distributed to stakeholders and the general citizenry. In addition to these broad based outreach techniques, an exhaustive long-term effort was completed which ensured coordination with the local transportation partners through continuous interaction via interviews, meetings, and conference calls. During the two-year process, a project technical committee and an executive steering committee provided project oversight and direction to the consultant team. The committees were composed of staff from Rock Hill, Fort Mill, York County, Tega Cay, Charlotte, Pineville, SCDOT, NCDOT, Federal Highway Administration (FHWA), and Federal Transit Administration (FTA). The study was funded through a FTA grant with local funding support from RFATS, Rock Hill and York County.

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Congestion will continue to worsen and exceed efficient levels of service primarily in major radial north-south corridors (i.e., I-77 and US 21) connecting the study area to central Charlotte.

There are two "equally important" trip-making patterns for Rock

- Longer commute trips to Charlotte

- Shorter internal trips to destinations within the eastern Rock

Study area land use patterns are extremely suburban and low-density-- not very transit supportive.

However, future plans envision redevelopment as well as new population and employment centers (e.g., Textile Corridor, Gold Hill Commons, Celanese, and Regent Park).

Existing corridors offer relatively few environmental constraints, although sensitivity should be taken with regard to Catawba River

There is a lack of travel choices and mobility options for disadvantaged communities, as well as, the greater commuting public.

Major Deliverables

In the course of the study several technical documents were produced to accompany each major milestone in the project that led towards the LPA. These major study deliverables included:

Baseline Conditions/Purpose and Need Report **Evaluation Methodology Framework Report** Definition of Alternatives Report Full Screening Analysis Report LPA Refined Screening Analysis Report

January 2005 March 2005 May 2006 September 2006 February 2007

Throughout the study, various other documentation was developed as a part of the study process as well.

Study Goals

Part of the early work in the study was to identify transit goals for the study area that would ultimately guide the alternative selection process. Seven goals were articulated in the Baseline Conditions/Purpose and Need Report which then directly led to the creation of evaluation metrics based upon the goals. These metrics were grouped under broad category headings including congestion and mobility, land use and accessibility, impact to environmental and cultural resources, and cost effectiveness. These evaluation metrics ultimately guided the selection process during the analysis of the various alternatives and resulted in the determination that BRT in the US-21 corridor best served the overall study goals. These goals are:

- Goal 1: Improve mobility for existing & future commuters
- Goal 2: Increase modal travel options
- Goal 3: Increase employment opportunities with access to existing activity centers & future growth areas
- Goal 4: Increase opportunities for redevelopment
- Goal 5: Provide cost-effective transportation solutions
- Goal 6: Protect the environment & improve quality of life
- Goal 7: Improve access & mobility for under served populations



Evaluation of Alternatives

In developing the Locally Preferred Alternative, the study conducted an analysis of potential transit alternatives that involved investigating various corridor alignments (e.g., I-77, US 21, Norfolk Southern Railroad, etc.), coupled with various transit modal technologies. Transit technologies examined included Light Rail Transit (LRT), BRT, Commuter Rail, and Diesel Multiple Unit (DMU). Ten alternatives were evaluated using four evaluation categories: mobility/ridership, land use/accessibility, cost/cost-effectiveness, and environmental impact.

In terms of alignments five different major north-south corridors which connect Rock Hill to downtown Charlotte were evaluated and screened against the evaluation metric derived from the study goals. The corridors included I-77, US-21, Sutton Road/I-77, Sutton Road/Highway 51, and the Norfolk Southern railroad. The five alignments and ten alternatives are listed below and are depicted on the map.

- Alignment A 1) I-77 BRT
- Alignment B 2) US 21 BRT
- Alignment C
- Alignment D
 - Alignment E

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3) US-21 LRT Extension 4) Hybrid Sutton Road/I-77 BRT 5) Hybrid Sutton Road/I-77 LRT Branch 6) Hybrid Sutton Road/Highway 51 BRT 7) Hybrid Sutton Road/Highway 51 LRT 8) Norfolk Southern RR LRT Extension 9) Norfolk Southern RR DMU

10) Norfolk Southern RR Commuter Rail



Evaluation of Results

After screening the alternatives through the evaluation metric categories the study found that BRT in the US-21 corridor scored best overall. It is important to keep in mind that all alternatives performed within a close range of each other in all categories but, Alternative 2 was slightly ahead of the rest. All alternatives had low ridership (600 to 3,500 passengers per day). A general rule-of-thumb for rapid transit feasibility is 1,500 to 2,000 riders per mile.

The US-21 corridor ranked best in land uses & accessibility due to the several development/redevelopment initiatives currently underway there and the access to cultural, educational & recreational facilities it offers. However, overall US-21 land use patterns are still relatively suburban and low-density. All alternatives had low impacts to community/environmental features and all alternatives were cost intensive ranging from \$400 million to over \$1 billion. BRT technology ranked most cost effective due to its flexibility in implementation. US-21 has relatively low impacts to community and environmental features (assuming the already programmed project for the Catawba Bridge crossing).

The primary elements of the LPA include:

- Phased approach to US-21 BRT
- Local/Feeder Buses
- Conceptual Station Locations and Design
- Corridor Land Use Recommendations

There are several complementary transit system elements that also belong to the LPA. These include:

- Continuation of I-77 Express Bus
- Lake Wylie Express
- Chester & Lancaster Express
- Textile Corridor Trolley

In terms of service characteristics, the BRT alternative in the US-21 corridor would operate from 5:30 AM to 2:00 AM at build out. The BRT would operate with headways of every 15 minutes in peak periods and every 30 minutes in off-peak periods. Running times would be 45 minutes to I-485 from Downtown Rock Hill and another 25 Minutes to Downtown Charlotte from I-485. There would be a total of nine feeder routes at build out which would operate from 6 AM to 6 PM with 30-45 minute headways and a \$1.00 fare. A map of the final service design is shown on the left.

INTRODUCTION







Bus Rapid Transit (BRT)

What is BRT? The technology proposed for the US-21 is not very well known in the United States but has been employed all over the world as an economical alternative to more expensive rail transit technologies such as heavy rail, light rail and commuter rail. The differences between BRT and these rail technologies are less important than their similarities. BRT is a high quality bus service that operates like light rail in terms of speed, flexibility, capacity and passenger experience. It costs significantly less than the rail technologies because it does not require as much separated guideway. Its costs range from \$10 to \$40 million per mile which is significantly less than rail. BRT can operate in mixed traffic or on a fixed guideway. Because of this it has the flexibility of local bus service in terms of implementation and cost control but the capacity of rail for reduced delay and higher speeds. It is particularly useful in areas which have wide fluctuations in employment and population densities because it can efficiently serve both low and high density developments.







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Refined LPA Analysis

In light of the evaluation results for the ten alternatives, it was determined by the study committees that the focus for the later tasks of the study further examine the US-21/BRT Alternative. This final phase of work involved refinement of the alignment, station area/corridor master planning, refined cost estimates, and implementation strategy. With low ridership results, high implementation cost, and need for transit supportive land use changes, key findings for this phase of work include:

Alignment

- US-21 alignment would include both exclusive BRT right-of-way as well as operations in mixed traffic corresponding to corridor conditions.
- For example, Cherry Road BRT operations would occur in mixed traffic to avoid disruption to recent streetscape investments
- Northern portions of the alignment would utilize exclusive right-ofway opportunities (e.g., adjacent to Norfolk Southern Railroad)
- Two possible alignment connections to downtown Rock Hill (i.e., Cherry Road or Anderson/Dave Lyle Boulevard) were analyzed.
- Cherry Road was identified as the preferred alignment option offering better connections to existing activity centers, more transit supportive land use, and lower capital costs
- Although several underutilized tracts of land are located along Rock Hill's Anderson Road/Dave Lyle Boulevard, the greenway/parkway character for the Dave Lyle portion of the corridor preclude higher intensity development and limit transit potential

Land Use/Corridor Master Planning

- competitive for FTA funds.



INTRODUCTION

· Emphasis should be placed on encouraging appropriate transit supportive land use and development regulations, connecting major corridor destinations, and preserving rights-of-way for the transit alignment where appropriate through new development areas.

RYC's land use recommendations mirror Charlotte's initiatives to make land use and zoning policy changes early in the transit development process in order to make transit projects more viable and

RYC's corridor master planning activities identified station concepts which vary to complement redevelopment and new development opportunities, maximize ridership, and protect existing community features along the US-21 corridor.

Phasing and Costs

The final component of the LPA Report was a cost and implementation strategy. The full LPA project is estimated to cost \$511-516 million in capital costs. The recommended implementation approach involves four phases of project deployment.

- Phase 1 (2008 to 2010) Initial start-up phase would involve all day limited stop services connecting Rock Hill – York County to the CATS end-of-line light rail station at I-485
 - Estimated to cost \$10 \$15 million in capital and \$500 thousand in annual operating cost
- Phase 2 (2010 to 2015) Addition of local bus service to Tega Cay and Fort Mill and new connections to Gold Hill Commons
 - Estimated to cost \$38 million in capital and \$1.3 million in additional annual operating cost
- Phase 3 (2015 to 2020) Implement first stage of exclusive BRT right-of-way segments
 - Estimated to cost \$200 million in capital and \$1.8 million in additional annual operating cost
- Phase 4 (2020 to 2035) Completion of entire exclusive BRT rightof-way segments
 - Estimated to cost \$263 million in capital and \$1.5 million in additional annual operating cost

In order to cover these large costs it was necessary to develop a list of potential funding sources. Federal, state and local funds which could be potentially tapped to implement this project were identified. It should be noted that some of these funds are available only once certain land use densities increase to transit supportive levels. The list of potential funding sources includes the following:

- Section 5303 (FTA Planning)
- Section 5307 (FTA Planning/Capital/O&M)
- Section 5309 (FTA New Starts for equipment, etc.)
- Flex Funds (between FHWA FTA grant programs)
- State Mass Transit Funds (match to federal funds)
- York County Capital Project Sales Tax (long-term)
- Tax Increment Financing Districts (public/private)
- Right-of-Way Donations (public/private)
- Transit Station Area Land Leases (public/private)
- SC Transportation Infrastructure Bank

The overall total capital cost range for all four phases of the project is in the range of \$511 to \$516 million. Initial start-up costs for phase one are anticipated to be \$10 to \$15 million. Annual operating costs range from \$500 thousand to \$2 million. These cost estimates do not include cost associated with complementary paratransit services.

Advancing Study Recommendations

A phased approach will allow Rock Hill-York County flexibility in building a stable transit service, securing funds incrementally, and keeping resources in line with demand. Ultimately, long-term BRT service could be converted to rail transit once appropriate demand warrants. However, to continue advancing study recommendations in the nearterm, a number of activities should occur. The LPA must be endorsed by the RFATS Policy Committee, and officially adopted into the cost constrained Long Range Transportation Plan. Early actions should be to advance RYC land use and zoning recommendations such as updating local Comprehensive Plans and development regulations addressing the corridor. A solid financial program including a stable local funding source and organizational/governance structure also must be finalized to competitively seek federal funds. Thus, in recognition of the aforementioned activities it will be most important that the RYC committees, local governments, and RFATS continue to pursue early action RYC work items over the remainder of 2007. These include:

- Build public awareness and support for transit service and investment.
- Adopt land use/zoning changes supportive of transit implementation in the US-21 corridor.
- Identify and pursue a stable long-term local funding source.
- Explore options to address transit governance and organizational structure.
- Seek to implement Phase 1 bus service in coordination with CATS and the operation of the South Corridor Light Rail line.
- Continue coordination with FTA to secure federal funds as project viability increases over time.

INTRODUCTION



2.0 Corridor Context

The context analysis of the corridor illustrates the land use and development patterns that guided the corridor alignment and station locations. This analysis includes identifying major activity centers, planned development projects, residential and employment density, future land use and built form. This analysis concludes with the identification of station typology and location, leading to the Corridor Master Plan.





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Station Typology

When a regional transit system such as this one is planned and designed, its role and impact on urban form should be considered. Establishing station typologies is a critical part of creating a framework to guide each station's development within its surrounding context and urban form. With the number of potential stations currently anticipated, there is a tremendous potential for transit to influence the development of the corridor at a variety of scales. Guiding the role and function of the corridor's transit stations is the first step.

Transit stations must perform three responsibilities: 1) provide mobility and access, 2) create placemaking opportunities, 3) support transit oriented land development.

The way a station performs these responsibilities is informed by it surrounding context. Defining station types is a way to recognize the corridor's varying context by establishing station specific guidelines that respect its context.

Four basic station types have been defined based on this corridor's urban form and land use context; Urban, Neighborhood, Community, and Regional.



Urban Station

Urban Stations are walk-up stations which serve existing transit supportive destinations within 1/2 mile, or smaller radius from the station. They have limited supporting bus connections, and no park-and-ride facilities. Urban stations are designed to fit within the existing physical community fabric. In many cases, the finishes and materials are high-quality to match with the character of Downtown Rock Hill and similar communities.

Neighborhood Stations

Neighborhood Stations serve established communities up to a 1mile radius from the station. These stations are primarily walk-up stations with supporting bus connections onstreet and an occasional small parkand-ride. Their design needs to fit within the existing community fabric. Station finishes and materials need to match the finishes and material of the surrounding community.

Community Stations

Community Stations serve multiple destinations within a 3-mile service area. Bus transit and park-and-ride facilities play a prominent role along with walk-up facilities. Community stations are often located in areas that are not transit supportive. As a result, these stations have a larger responsibility in how they are designed to incent adjacent Transit-Oriented Development (TOD). Stations may need to have their finishes and materials exceed those of the surrounding community. The Community Station may also need a public space incorporated into its design and have its parking areas designed so that it can evolve into joint land development projects in the future.

CORRIDOR CONTEXT



Regional Stations

Regional Stations are located at the end of the transit line, or near regional roadways. The service area of these stations are greater than 5-miles. Large park-and-ride and bus transfer facilities dominate the station's design.

They are located in, or near, greenfield locations that are not typically transit supportive. Yet, because of their access and location, these stations are in relatively strong TOD markets and should be considered land banks for future development. Station finishes and materials need to establish the theme for the community. Station site arrangement should be designed to include a public space and evolve into a future TOD.



CORRIDOR CONTEXT

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2.0 Station Area **Planning Principles**

This section highlights the planning and design approach for the future transit stations. Theses principles include increasing land use intensity, encouraging mixed-use, maximizing accessibility, and guiding an overall approach to station area planning that maximizes the station's long-term potential to support development and regional accessibility.

STATION AREA PLANNING PRINCIPLES

STATION AREA PLANNING PRINCIPLES

The Transit and Land Use Connection

Building an integrated land use and transit system is key to managing the rapid growth occurring in the Rock Hill-York County-Charlotte area and to invigorating existing communities and making them better places to live and work.

For an integrated Transit/Land Use Plan vision, future higher density residential and employment growth in transit station areas and major activity centers/hubs should occur where it can be best accommodated by transportation services and other public facilities.

In addition to focusing development in areas that can be well-served by transit, it is important to ensure that the new development takes advantage of access to transit and helps promote transit use in the community.

The following policy and station area planning principles are referenced from the City of Charlotte's GDP document. In Charlotte, this document provides guidance for future development and redevelopment at transit station areas. Density standards could vary depending on the local context and the City of Rock Hill and York County and other municipalities could modify these.

Definition: What is Transit-Supportive Development?

Transit-supportive development focuses on creating compact neighborhoods with housing, jobs, shopping, community services, and recreational opportunities all within easy walking distance (i.e., within 1/2 mile) of a transit station. The intent is to create well-designed, very livable communities where people can get from home to such places as the office, grocery store, day care center, restaurant, dry cleaner, library or park without using a car.

Transit-supportive development policies provide direction for developing and redeveloping property around rapid transit stations in a way that makes it convenient for many people to use transit. Such policies focus on land uses, mobility and community design.



Policies

Land Use And Development: Concentrate a mix of complementary, well-integrated land uses within walking distance of the transit station.

Mixture of Complementary Transit-Supportive Uses

- Provide a range of higher intensity uses including residential, office, service-oriented retail and civic uses that are transit supportive. Such a mix of land uses increases the attractiveness of the area and increases trip options for transit uses.
- Disallow automobile-oriented uses.
- Provide uses that attract/generate pedestrian activity, particularly at ground floor level.
- Consider special traffic generators such as cultural, educational, entertainment, and recreational uses - to locate either within or adjacent to station areas.
- Encourage multi-use developments, which include a mixture of uses on the same site. Mixed-use developments, with a mixture of uses within same buildings, are also encouraged.
- Encourage a mixture of housing types.
- Preserve and protect existing stable neighborhoods.
- Encourage development of workforce/affordable housing.



Increased Land Use Intensity

- ees per acre.
- mitigate traffic impacts.

Encourage higher densities for new development, concentrating the highest densities closest to the transit station and transitioning to lower densities adjacent to existing single-family neighborhoods. Not only will this allow the most people to have walking access to transit, it also helps to create a focal point around the station and provides an appropriate transition to the adjacent neighborhoods.

In most cases, minimum densities for new residential development within 1/4 mile walking distance from a transit station will be 20 dwelling units per acre (net) or greater. Between the $\frac{1}{4}$ mile and $\frac{1}{2}$ mile walking distance, the typical minimum density will be 15 dwelling units per acre (net) or greater.

In most cases, non-residential or mixed-use intensities within 1/4 mile walking distance from a transit station will be, at a minimum, 0.75 (net) FAR (floor area ratio) and should yield at least 65 employees per acre. Between $\frac{1}{4}$ and $\frac{1}{2}$ mile walking distance from a transit station, the non-residential or mixed-use intensities will be, at a minimum, 0.50 FAR (net) and should yield at least 50 employ-

In some cases, station area plans will recommend lesser intensities or densities for new development. These lesser intensities might be necessary to preserve existing structures, to insure that new development is consistent with the character of existing transit supportive development, to protect existing neighborhoods, or to



Same Lane-Mile **Greater Capacity Sparse Hierarchy Dense Network**



Parking

- tablish parking maximums.
- •

Mobility: Enhance the existing transportation network to promote good walking, bicycle and transit connections.

Pedestrian and Bicycle System

- · Provide an extensive pedestrian system throughout the station area that will minimize walking distances for pedestrians.
- Eliminate gaps in the station area pedestrian networks. ٠
- Establish pedestrian and bicycle connections between station ar-٠ eas and surrounding neighborhoods.
- Design the pedestrian system to be accessible, safe, and attractive • for all users.
- Insure that the pedestrian network will accommodate large groups ٠ of pedestrians.
- Utilize planting strips/street trees, on street parking, and/or bicycle • lanes to separate pedestrians from vehicles.
- Encourage the provision of bicycle amenities, especially bicycle • parking facilities.

Street Network

- · Within station areas, design streets to be multi-modal, with an emphasis on pedestrian and bicycle circulation and set vehicular levels of service to reflect an emphasis on pedestrians and bicyclists.
- When necessary, redesign existing street intersections with a greater emphasis on safe and comfortable pedestrian and bicycle crossings.
- Develop an interconnected street network designed around a block system, with blocks a maximum length of 400 feet.
- Insure that the pedestrian network will accommodate large groups of pedestrians comfortably, especially within 1/4 mile of the station.
- · Consider new mid-block street crosswalks in congested areas where there are long distances between signalized crossings.
- Incorporate traffic calming into the design of new streets.

STATION AREA PLANNING PRINCIPLES

Reduce regulatory parking requirements in station areas and es-

Minimize large surface parking lots (greater than two acres) for private development, especially within 1/4 mile of the station. Instead of surface lots, well-designed parking decks are preferred.

Encourage shared parking facilities.



Community Design: Use urban design to enhance the community identity of station areas and to make them attractive, safe and convenient places.

Building and Site Design

- Design buildings to front on public streets or on open spaces, with ٠ minimal setbacks and with windows and doors at street level instead of expansive blank walls.
- Locate building entrances to minimize the walking distance be-٠ tween the transit station and the building.
- Locate surface parking, with the exception of on-street parking, • to the rear of buildings and where necessary, provide pedestrian paths through surface parking to station.
- Design parking structures to include active uses on the ground floor • street frontage.
- Typically limit building heights to 120 feet, with the tallest and most ٠ intensely developed structures located near the transit stations and buildings adjacent to established neighborhoods limited to low-rise structures.
- Screen unsightly elements, such as dumpsters, loading docks, ser-٠ vice entrances, and outdoor storage, from the transitway.
- Take safety and security concerns into account during design. •



Streetscape

- Design the streetscape to encourage pedestrian activity. •
- · Include elements such as street trees, pedestrian scale lighting, and benches in streetscape design.
- · Place utilities underground whenever possible.



Open Space

- •

STATION AREA PLANNING PRINCIPLES

• Establish public open spaces that act as development catalysts and serve as focal points around transit stations.

Design open spaces to be centers of activity that include items such as benches, fountains, and public art.

Orient surrounding buildings onto the open spaces.



4.0 Station Area Urban Design Plans

This section applies the station area planning principles to four station areas on the corridor (Gold Hill, Piedmont Medical Center, Celriver, and Anderson). These stations represent significant development opportunities in both greenfield development and brownfield redevelopment sites. The urban design plans illustrate the planning principles on these sites, providing both a generalized approach, as well as, site specific recommendations about station location and development form for these areas of significant development potential.

CORRIDOR MASTER PLAN

STATION AREA URBAN DESIGN PLANS

Areas

- sity
- on the other
- hoods
- race









Celriver & Anderson Road Station

• Build new development to the street to create a pedestrian transit supportive edge to the proposed development with a mix of uses in close proximity to the station area.

2 Develop a well connected street network with block patterns that support higher density development.

6 Multi-family residential development helps to achieve transit supportive residential densities and creates a transition from Cherry Road into the new single family development

4 Develop office and employment uses along the I-77 edge to take advantage of the good visibility from the freeway

5 Catawba River Park forms the northern edge of this development with trails, greenspace and public access to the river. This could be developed as a major regional park attraction.

6 Eden Terrace forms a key connection across the interstate and provides direct connection from the Catawba River to Winthrop Univer-

Extend a river road along the Catawba River Park to form a "parkway" with new residential development on one side and green space

8 Develop new parks and open spaces as a part of the new development to provide civic spaces and identity to newly formed neighbor-

9 Develop block sizes between 400' and 600' to provide enhanced connectivity between Cherry Road, Anderson Road and Eden Ter-

10 Encourage transit supportive residential/retail mixed use development near the station and along Anderson Road

 Build neighborhood retail "to the street" along Cherry Road and Anderson Road to create a pedestrian transit supportive edge.

2 Revitalize neighborhood edges with townhome and new higher density single family residential development along Cherry Road

Future Medical Center & Gold Hill Stations

- Highway 160

- to the new "spine" Road.

- the interstate
- ect.







STATION AREA URBAN DESIGN PLANS

1 Create a new "spine" road that takes the transit away from the Greenway and allows it to directly serve new development. This road also provides an important new connection from Gold Hill Road to

2 Proposed Piedmont Medical Center facility.

8 Proposed transit supportive retail development that fronts Highway 160 and the new "spine" Road.

• Proposed higher intensity multi-family development defines an edge

6 Potential single family residential should have a variety of densities and a well connected block pattern.

6 Potential neighborhood center along US 21 could include parks and open space, neighborhood retail and a school.

Proposed office development provides an edge to the development along Interstate 77 and capitalizes on the excellent visibility along

8 Proposed flex office space as a part of the Gold Hill Commons proj-

9 Proposed town center with adjacent multi-family development as a part of the Gold Hill Commons project

Proposed new bridge across existing creek system is critical to making the connection and the transit alignment happen.

Phased Development of Station Area - Illustration



Streets and Blocks Pattern

- Develop a structure of streets and blocks ٠
- Develop major streets (A streets) to form 600' to 800' blocks ٠
- The minor streets (B streets) cut through this block structure to pro-• vide access to the rear of buildings and parking
- Transit runs along the main spine of this structure with the station ٠ located at the intersection of two major streets





Initial Development

- Develop buildings along major streets to reinforce the block structure established by major streets
- Buildings built to street help establish a street character for the • major streets
- Low intensity of development with surface parking accommodated • within the major block structure
- Built density and public or civic space around the transit station • helps reinforce the identity of the station area

Build - Out

•

STATION AREA URBAN DESIGN PLANS

The block structure allows for future flexibility in intensifying development with structured parking and a mix of land uses



5.0 Station Area Concept Plans

This section documents "station area concept plans" for each of the stations on the corridor. They highlight potential land use and development opportunities including recommended new roads and land uses. The land use recommendations focus on transit supportive development (TSD) designations divided into "employment", "mixeduse", and "residential" categories that describe a range of use and density. These TSD designations follow Charlotte's land use planning policies but are only used here as a guide. Each jurisdiction will ultimately need to assess their applicability based on local land use policies and their future vision for station areas. These concept plans provide just the initial step of what will need to be a future, more formal station area plan.

STATION AREA URBAN DESIGN PLANS



Downtown Zoning District

Textile Corridor

STATION AREA CONCEPTS



Downtown **Rock Hill** Station

- 1 The Textile Corridor envisions significant redevelopment and intensification. The White Street transit alignment services the heart of this future mixeduse district.
- 2 The new Downtown Rock Hill zoning district allows and encourages the highest intensity and mix of land uses in the city of Rock Hill.



Legend - Zoning - Rock Hill

- Downtown (DTWN) Community Commercial (CC) General Commercial (GC) Industry General (IG) Industry Heavy (IH) Limited Commercial (LC) – Multi-Family 15 (MF-15) Multi-Family 8 (MF-8) Mobile Home Park (MHP) Mixed Use Corridor (MUC) Neighborhood Commercial (NC) Neighborhood Mixed Use (NMU) Neighborhood Office (NO) Office and Institutional (OI) Network Planned Development Commercial (PD-C) N PD Major Employment (PD-ME) Not the second s District (PD-PED) **PD** Residential (PD-R)
- Not the second s Development (PD-TND) 7 Planned Residential Development (PRD) Planned Unit Development (PUD) PUD Commercial (PUD-C) PUD General Commercial (PUD-GC) PUD Institutional (PUD-I) PUD Manufacturing (PUD-M) Z PUD Mobile Home (PUD-MH) 💋 PUD Office (PUD-O) PUD Residential (PUD-R) Rural Holdings (RH) Single Family 2 (SF-2) Single Family 3 (SF-3) Single Family 4 (SF-4) Single Family 5 (SF-5) Single Family 8 (SF-8)

TSD-M: Transit Supportive Mixed Use Development

- 20% Retail (0.2 FAR)
- 10 20% Office (0.5 .65 FAR) 60 - 70% Residential (18 - 25 units/acre)

TSD-R: Transit Supportive Residential Development

15 - 20% Retail (0.15 - 0.2 FAR) 0 to 10% Office (0.15 - 0.2 FAR) 70% to 80% Residential (18 - 25 units/acre)

TSD-E: Transit Supportive Employment

- 10 20% Retail (0.1 0.2 FAR)
- 60 80% Office (0.65 0.8 FAR)
- 15 30% Residential (15 20 units/acre



STATION AREA CONCEPTS

Winthrop University Station **1** Extension of White Street to Cherry

- Road through the Winthrop University campus provides new access to developable land within the campus.
- 2 New street connection between Main Street and Constitution Boulevard allows for a new road network and the formation of a regular block structure that facilitates a direct connection between Main Street and the Winthrop University Campus.
- 8 Encourage transit supportive employment intensities as the university's expansion occurs in this area.
- 4 Encourage mixed-use redevelopment built "to the street" along Cherry Road to create a pedestrian oriented transit supportive edge.
- 6 Alternative station location if White street is extended to Cherry Road.
- Extension of White Street to Constitution Boulevard.

1200 Feet

Wir



STATION AREA CONCEPTS

Richmond Station

- Develop new street connections parallel to Cherry road to form a regular block pattern and enhance local access.
- Encourage transit supportive mixed use redevelopment of properties fronting Cherry Road to build to the street and provide a legible edge to existing neighborhoods.
- OProtect existing neighborhoods that are well-connected and accessible.
- Extend College Lake Drive to connect with Cherry Road and new transit station, making a strong connection for Winthrop University recreational area and Winthrop Coliseum.
- Optimized Potential mixed-use development opportunities on Winthrop property fronting Cherry Road.



Legend - Zoning - Rock Hill

- Downtown (DTWN) Community Commercial (CC) General Commercial (GC) Industry General (IG) Industry Heavy (IH) Limited Commercial (LC) Multi-Family 15 (MF-15) Multi-Family 8 (MF-8) Mobile Home Park (MHP) Mixed Use Corridor (MUC) Neighborhood Commercial (NC) Neighborhood Mixed Use (NMU) Neighborhood Office (NO) Office and Institutional (OI) Nanned Development Commercial (PD-C) N PD Major Employment (PD-ME) Not the second s District (PD-PED) **PD** Residential (PD-R)
- Not the second s Development (PD-TND) Z Planned Residential Development (PRD) Planned Unit Development (PUD) **PUD** Commercial (PUD-C) PUD General Commercial (PUD-GC) **PUD** Institutional (PUD-I) PUD Manufacturing (PUD-M) Z PUD Mobile Home (PUD-MH) 💋 PUD Office (PUD-O) PUD Residential (PUD-R) Rural Holdings (RH) Single Family 2 (SF-2) Single Family 3 (SF-3) Single Family 4 (SF-4) Single Family 5 (SF-5) Single Family 8 (SF-8)

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STATION AREA CONCEPTS

Anderson Station

- Develop new street connections to facilitate movement and access for local traffic and accessing new growth areas.
- Extend Mallard Terrace Lane to connect with Riverview Road.
- One way of the street connection to relieve pressure on Anderson Road and access transit supportive development blocks.
- Encourage transit supportive development through mixed uses and small block structure.
- Redevelopment and new connections to ensure transit supportive residential areas within walking distance to the transit station.

1200 Feet



STATION AREA CONCEPTS

Celriver Station (Celanese Site)

- Develop a well connected street network with a regular block pattern that enhances connectivity and supports higher intensity development.
- 2 Encourage new transit supportive mixed use development with multi-family residential around the station.
- **3** Extend Riverside Dr. across Cherry Road to form a parkway along the river with development on one side overlooking the river and the green space.
- 4 Encourage transit supportive employment intensities to capitalize on this site's good visibility from the freeway.
- **6** Encourage new transit supportive residential development which can be developed as a mix of multi-family and single family residential within a 10 minute walk of the station. Civic amenities, parks and open spaces should be an integrated within this development.
- 6 Opportunity for public space at transit station.

1200 Feet



US 21 & Sutton Road Station

DE

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3

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New connection between Sutton Road and Spratt Street provides direct access to US 21 corridor.

- **2** Develop new street connections to form a regular block pattern which will enhance connectivity within the station area.
- 3 Transit supportive mixed use development with multi-family residential around the station will help provide neighborhood edges and aid "place making" around the station.

4 Encourage transit supportive employment intensities to capitalize on this site's good visibility from the freeway. Encourage the development of public and civic spaces as a part of this development.

5 Encourage the development of new transit supportive residential development which can be developed as a mix of multi-family ad single family residential within a 10 minute walk of the future station.

1200 Feet



Legend - Zoning - York County

AGC	RC-I
AGC-I	RC-II
BD-I	RD-I
BD-II	RD-I
BD-III	RUD
D	RUD-I
LI	TND
PD	UD
Legend R-10 R-15 R-25 GR-A GR LC HC	Zoning - Ft. Mili

PND GI



60 - 70% Residential (18 - 25 units/acre)

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STATION AREA CONCEPTS

Future Medical Center Campus (US 21 & 160)

1 Future Medical Center Campus.

Abundance of transit supportive mixed
2 use areas also serve employment centers with adjacent retail and residential development.

 New North-South road parallel to US
 21 provides connection to Gold Hill Commons and location for future transit alignment in the center of future development opportunities.

Future employment uses with I-77visibility and well connected to transit station.





STATION AREA CONCEPTS

Gold Hill Commons

Station **1** New "spine" road and transit alignment through middle of the site to spur new growth and development along properly scaled new road, avoiding typical Interstate oriented development. **2** Office development offers support for new transit station. 11 ¹⁰11 **3** Proposed Town Center is planned to be transit oriented and incorporates the nearby Charlotte Knights Stadium. Multi-family residential and mixed use development with direct access to new Town Center retail and services, employment, recreation, and transit. **5** Future Springfield Parkway alignment.



Gold Hill Commons Master Plan



Legend - Zoning - York County

-	-
AGC	📃 RC-I
🔁 AGC-I	📃 RC-II
BD-I	📒 RD-I
📕 BD-II	RD-II
BD-III	🔲 RUD
ID ID	📃 RUD-I
LI	TND
PD	UD 📃

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Regent Park Station

- Transit supportive mixed use development with retail and multi-family residential components around the station will help provide neighborhood edges and aid "place making" around the station.
- 2 Encourage the development of transit supportive employment intensities to capitalize on the improved connectivity from transit investments.
- Encourage the development of new transit supportive residential development which can be developed as a mix of multi-family and single family residential within a 10 minute walk of the future station.



STATION AREA CONCEPTS

Pineville Station

- Encourage urban redevelopment along Polk Street of currently underutilized properties to improve the gateway into downtown Pineville. New development could be comprised of residential units and flex office/retail space.
- Encourage redevelopment of the Cone Mill-Parkdale Plant site to make way for an urban residential infill neighborhood with a fine-grained street grid and boutique office space or limited neighborhood retail.
- Transit supportive Mill Village based on extending the existing street network, providing urban infill residential uses and small green spaces within close proximity to transit and elementary school.
- 4 Redevelopment of the Miller Tract as residential development with limited mixed-use.
- Extension of Main Street to the West providing opportunities for transit supportive mixed uses directly adjacent to the station.

Note: These concepts are taken from the Pineville Downtown Master Plan.

1200 Feet