Traffic Separation Study
for the
City of Goldsboro, North Carolina

Prepared for:
North Carolina Department of Transportation:

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Executive Summary

The Goldsboro Traffic Separation Study (TSS) was a joint effort between the North Carolina Department of Transportation (NCDOT) Rail Division, the City of Goldsboro, the North Carolina Railroad Company (NCRR), and Norfolk Southern Corporation. The NCDOT Rail Division has developed and entered into a Municipal Agreement with the City of Goldsboro to conduct a traffic separation study (TSS) of 13 public highway-rail at-grade crossings along the Norfolk Southern rail line in Goldsboro, Wayne County from Mulberry Street to Jefferson Street.

In order from west to east, the following crossings were studied:

Crossing No.	Street Name
735 305E	Mulberry Street
735 304X	Ash Street
735 302J	Virginia Street
735 301C	George Street
735 296H	James Street
722 879G	Holly Street
722 876L	William Street
722 875E	Bryant Street
722 874X	Bain Street
722 872J	Lionel Street/Clingman Street
722 870V	Wayne Memorial Drive/Herman Street
722 869B	Audubon Avenue
722 868U	Jefferson Street

The analysis of each crossing included several elements.

- Crash data was analyzed from January 1990 through September 2010. Five crashes involving train/vehicle collisions were reported at crossings in the study area: one at Bain Street (2010), two at Bryant Street (2005 and 2009), and two at Virginia Street (1991 and 1993, before gates and flashers were installed).
- All crossings were considered for potential closure. Three existing at-grade crossings were identified by the City of Goldsboro and the NCDOT Rail Division for potential closure prior to initiating this study (Mulberry Street, Bryant Street, and Bain Street), and an additional two were added later by the stakeholder group (Virginia Street and Lionel Street/Clingman Street). Capacity analyses were performed to determine the operating characteristics of the adjacent road network and the impacts of the potential closure of these crossings. None of the studied crossing closures would result in capacity issues at adjacent crossings.
- Safety and mobility issues were considered at each crossing based on roadway geometry, existing warning devices, and behavior of users across the tracks. The following conditions were observed:
  - Vehicles were observed queuing over the tracks, getting hit by the gates, and running into the gates on Herman Street south of the Royall Avenue intersection.
  - The Wayne Memorial Drive/Herman Street crossing was identified as needing an upgraded crossing surface.
  - Traffic signal preemption is currently provided at the intersections of Royall Avenue with William Street,

Wayne Memorial Drive/Herman Street, and Jefferson Street.

- Ten crossings have flashing signals, bells, and gate arms. The three remaining crossings—Mulberry Street, Bryant Street, and Bain Street—have crossbucks only. Replacement and/or installation of advanced warning signs and pavement markings is needed at several crossings.
- A median barrier is located on Herman Street south of the crossing to restrict a left turn movement from Atlantic Avenue to Herman Street. Although no vehicles were observed driving around the gates, the Ash Street crossing has a center turn lane whose additional width may encourage drivers to go around the gates to "beat the train."
- Two disconnected tracks cross Holly Street west of the active Norfolk Southern and CSX tracks.
- The Herman Place crossing was closed in 1995. However, there is a radius turnout on Royall Avenue to the old Herman Place, which may be confusing to drivers.

- An exposure analysis indicated that although six crossings exceeded the 30,000 threshold for consideration of closure, the majority of the trains that use this line do so at night when the vehicular crossing volumes are lower. Therefore, the exposure indices may overstate the conflict between rail and automobile traffic at these locations. Only Wayne Memorial Drive/Herman Street also had a notable exposure index if only daytime volumes (6 a.m. to 6 p.m.) were used in the calculation (30,780 daytime exposure index).
- A community impact analysis identified community features near the crossings, demographics of adjacent neighborhoods, and pedestrian, bicycle, and transit usage across the tracks.
  - Several community features were observed near the crossings, as shown on Figure 3, including churches, schools, recreation areas, and known historic sites.
  - The neighborhoods near the crossings are predominately minority, with several low-income areas.
  - Although there are no designated sidewalks or bike lanes across any of the railroad tracks, pedestrians and bicyclists were observed at most crossings.
  - The analysis concluded that the Mulberry Street crossing closure will have a minor impact to vehicles currently using that route, however there is adequate alternative access available. None of the other recommendations are expected to impact the community.

In addition, a group of stakeholders met to review recommendations during the course of the study. Stakeholders included:

- NCDOT Rail Division and NCDOT Division 4, District 3
- NC Railroad
- Norfolk Southern Corporation
- City of Goldsboro Planning and Transportation Departments
- Goldsboro Police and Fire Departments
- Wayne County EMS
- Goldsboro-Wayne Transportation Authority

- Goldsboro Housing Authority
- Wayne County Public Schools
- Wayne County Development Alliance
- Franklin Baking Company

A public involvement program was established as part of this study. It consisted of:

- Project committee meetings
- Stakeholder committee meetings
- Public workshop
- City Council meeting / public hearing
- Small group meetings
- Newsletters

Based on this evaluation and input from stakeholders and the public, this report will:

- Identify impacts of any proposed crossing closure on adjacent property and the roadway network.
- Include conclusions and recommendations necessary to accommodate any proposed crossing closure.
- Recommend action identified at the 13 railroad crossings, if any.
- Include a preliminary cost estimate for all proposed improvements.
- Discuss the proposed timeline for implementation.

Table ES-1 summarizes recommended improvements for each crossing studied.

Table ES-1. Summary of Recommendations

Crossing	Near Term (2-5 years)		Mid Term (5-7 years)	
	Recommendation	Cost	Recommendation	Cost
Mulberry St	Close crossing	$49,000		
Ash St	Install a raised median Restripe from 3 to 2 lanes	$70,000		
Virginia St	Replace advanced warning signs Install advanced pavement markings	$600		
George St	No Action			
James St	Replace advanced warning signs Install advanced pavement markings	$600		
Holly St	Install advanced warning signs on Holly Street Install advanced pavement markings on Holly Street Install crossbucks east of CSX tracks Install grade-crossing warning sign southbound on unnamed road	$1,100	Remove disconnected track Relocate stop bar	$15,250

Table ES-1. Summary of Recommendations				
Crossing	Near Term (2-5 years)		Mid Term (5-7 years)	
	Recommendation	Cost	Recommendation	Cost
William St	Install grade-crossing warning signs on Royall Avenue	$500		
Bryant St	Install gates, flashers, bells, and new crossbucks at crossing Install advanced warning signs on Bryant Street Install advanced pavement markings on Bryant Street Install a "Do not stop on tracks" sign on Bryant Street Install grade-crossing warning signs on Royall Avenue	$205,000		
Bain St	Install gates, flashers, bells, and new crossbucks at crossing Install advanced warning signs on Bain Street Install advanced pavement markings on Bain Street Install a "Do not stop on tracks" sign on Bain Street Install grade-crossing warning signs on Royall Avenue Install asphalt pavement and add curb and gutter south of the railroad track to improve the typical section	$360,000		
Lionel St/ Clingman St	Install advanced warning signs on Lionel Street/Clingman Street Install advanced pavement markings on Lionel Street/Clingman Street	$600		
Herman Pl	Remove the turnout on Royall Avenue to Herman Place Construct curb and gutter with a berm and drainage accommodations Install a "Dead End" sign on Herman Place at Herman Street Add landscaping on both sides of the closed crossing	$32,000		
Wayne Memorial Dr/ Herman St	Relocate advanced warning sign on Herman Street Install grade-crossing warning signs on Royall Avenue Add "No right turn on red 4-6 p.m." sign on Herman Street Replace the asphalt and timber flange with concrete	$131,000		
Audubon Ave	Install grade-crossing warning signs on Royall Avenue	$800		
Jefferson St	Install advanced pavement markings Install a second "Do not stop on tracks" sign on Jefferson Street Install grade-crossing warning signs on Royall Avenue	$850		

A. Introduction

1. Preamble

In the United States, several hundred people are killed each year in collisions at rail/highway crossings. Collisions between trains and highway vehicles are the second highest cause of death in the railroad industry. In 2010, there were 49 rail/highway incidents in North Carolina, resulting in 1 death and 37 injuries. As the number of freight and passenger trains increases and highway volumes grow, the need to identify and prioritize safety enhancements will become even more critical.

Since the 1970s, aggressive safety programs have led to steady reductions in deaths and injuries due to train/vehicle collisions. The NCDOT Rail Division administers a comprehensive program to improve rail-crossing safety. The Federal Railroad Administration, Federal Highway Administration, and affected railroad operators all support and participate in this program.

As part of a comprehensive evaluation of traffic patterns and road usage for an entire municipality or region, traffic separation studies determine the need for improvements to and/or elimination of public grade crossings to improve safety for motorists, rail passengers, and train crews. Examples of these improvements may include crossing closures or consolidations, improved warning devices, roadway improvements, and elimination of sight obstructions.

The North Carolina Department of Transportation Rail Division has developed and entered into a Municipal Agreement with the City of Goldsboro to conduct a traffic separation study (TSS) of 13 public at-grade crossings in Wayne County. Goals targeted specifically for this study include:

- Identify existing safety concerns
- Enhance railroad and vehicular safety
- Maintain citizen mobility

2. Study Objectives

A TSS is a comprehensive evaluation of traffic patterns and road usage at public rail/highway crossings to identify existing safety conditions within a specified area. The study determines the need for improvements, such as the following:

- Crossing consolidations
- Installation of new grade-separations or repair of existing grade separations
- Signage
- Pavement marking
- Illumination
- New or upgraded highway-railroad grade crossing signals, gates, and/or lights
- Improved crossing surfaces
- Traffic signal interconnection/preemption
- Sight distance or geometric improvements

The Goldsboro TSS was a joint effort between the North Carolina Department of Transportation (NCDOT) Rail Division, the City of

Goldsboro, the North Carolina Railroad Company (NCRR), and Norfolk Southern Corporation.

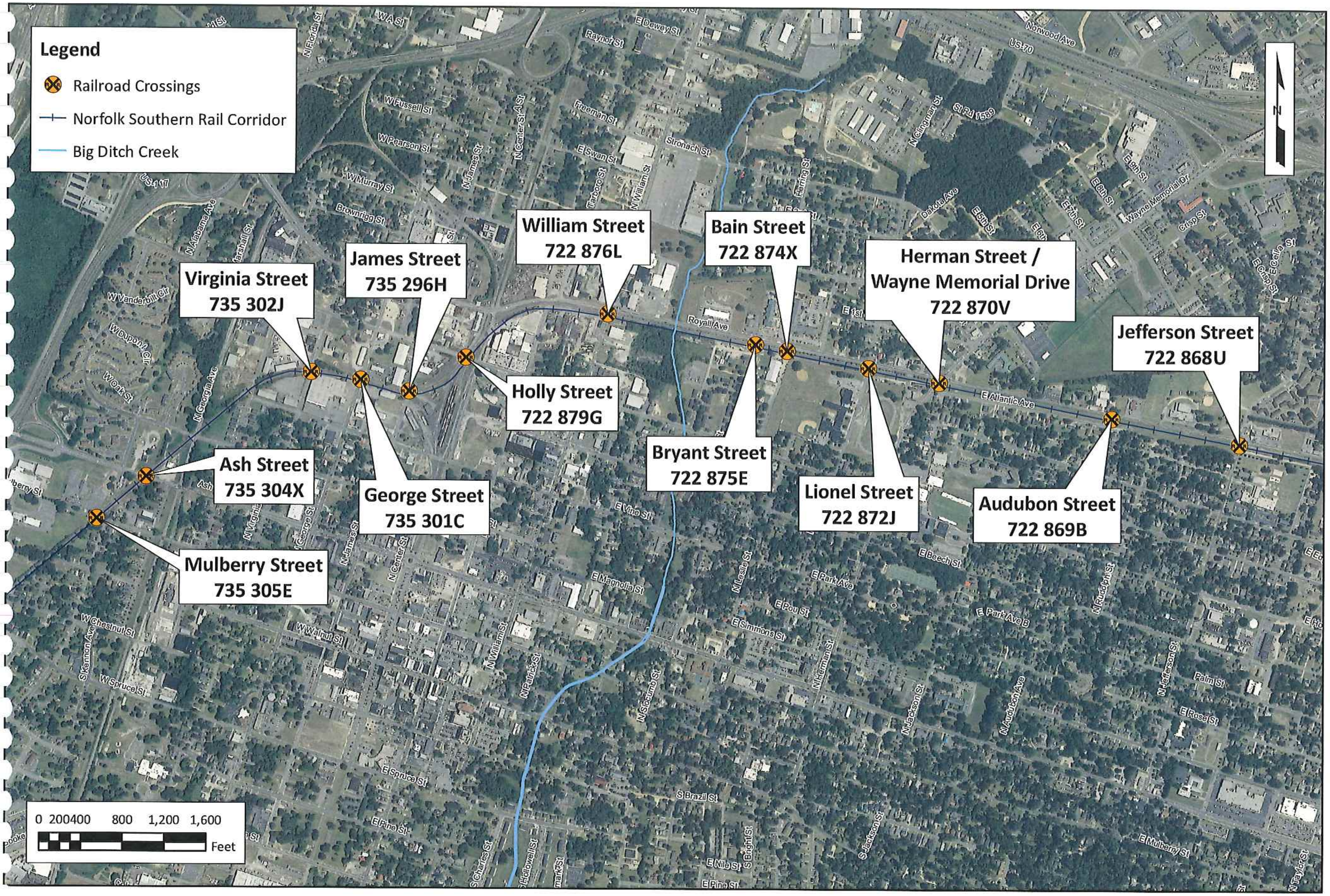
In addition, a group of stakeholders met to review recommendations during the course of the study. Stakeholders included:

- NCDOT Rail Division and NCDOT Division 4, District 3
- NC Railroad
- Norfolk Southern Corporation
- City of Goldsboro Planning and Transportation Departments
- Goldsboro Police and Fire Departments
- Wayne County EMS
- Goldsboro-Wayne Transportation Authority
- Goldsboro Housing Authority
- Wayne County Public Schools
- Wayne County Development Alliance
- Franklin Baking Company

All of the crossings studied as part of the Goldsboro TSS were at-grade crossings along the Norfolk Southern Railroad line. In order from west to east, this TSS included the following crossings:

Crossing No.	Street Name
735 305E	Mulberry Street
735 304X	Ash Street
735 302J	Virginia Street
735 301C	George Street
735 296H	James Street
722 879G	Holly Street
722 876L	William Street
722 875E	Bryant Street
722 874X	Bain Street
722 872J	Lionel Street/Clingman Street
722 870V	Wayne Memorial Drive/Herman Street
722 869B	Audubon Avenue
722 868U	Jefferson Street

This report details the findings from the TSS and lists all recommendations.



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Goldsboro Traffic Separation Study
At-Grade Crossings
Figure 1

NORTH CAROLINA RAILROAD COMPANY
NORFOLK SOUTHERN

B. Data Collection

1. Existing Conditions

The data required to evaluate the traffic and safety conditions was obtained for each crossing (listed in Table B-1). Photographs for each crossing are found on Figures 2.1A through 2.13A. Existing conditions and a data summary table for each crossing are shown with its corresponding photographs on Figures 2.1B through 2.13B.

Table B-1. Data Sources

Data Item	Source
Crossing Number	NCDOT Rail
Street/Route	NCDOT Rail
Railroad Company	NCDOT Rail
Railroad Milepost	NCDOT Rail
Existing Warning Devices	Site inspection
Daily Traffic Volumes	Pneumatic Tube Counts
Intersection Peak Hour Volumes	Turning Movement Counts
Daily Train Volumes	Norfolk Southern / NCDOT Rail
Crash History	NCDOT
Street Classification	NCDOT
Truck Routes	NCDOT
Transit Routes	Wayne County
School Bus Routes and Counts	Wayne County Public Schools
Crossing Surface and Condition	Site Inspection
Adjacent Land Use	Site Inspection
Redundant Crossing (Yes/No)	Site Inspection
Humped Crossing	Site Inspection
Crossing Geometry	Site Inspection

Traffic Counts

Twenty-four-hour pneumatic tube counts were performed at all study crossings between November 29 and December 7, 2010.

AM and PM peak hour turning movement counts were performed at the following intersections:

- Ash St. at US 13/117 NB Ramps — November 30, 2010
- Royall Ave. at N William St. — December 2, 2010
- Royall Ave. at Bryant St. — December 7, 2010
- Royall Ave. at Bain St. — December 7, 2010
- Royall Ave. at Wayne Mem. Dr./Herman St. — December 1, 2010

Historic turning movement counts were also obtained from NCDOT for the intersection of Grantham Street at Carolina Street, including a pedestrian count (counts taken September 22 and 23, 2009).

Redundant Crossings

If a low-volume crossing has alternate access across the tracks available within reasonable distance, it is often considered redundant. Table B-2 lists the distance between nearby crossings along the corridor.

Table B-2. Redundant Crossings	
Crossings within ¼- mile	**Distance**
Mulberry St & Ash St	0.12 miles
Virginia St & George St	0.09 miles
George St & James St	0.08 miles
Bryant St & Bain St	0.06 miles
Bain St & Lionel St/Clingman St	0.15 miles
Lionel/Clingman St & Wayne Memorial Dr/ Herman St	0.13 miles

Crash Data

Crash data reports were obtained from NCDOT for the period from January 1990 through September 2010. Crashes are summarized using the following classifications:

- Fatality
- Class A Injury – transported to hospital
- Class B Injury – treated at scene
- Class C Injury – complaints of pain, no visible injuries
- PDO – property damage only

Five crashes involving train/vehicle collisions were reported at crossings in the study area within the past 20 years as follows:

- One at Bain Street (2010)
- Two at Bryant Street (2005 and 2009)
- Two at Virginia Street (1991 and 1993)

None of the five reported train/vehicle collisions involved fatalities. All five collisions occurred at locations without flashers or gate arms—only railroad crossbucks were present. This includes the Virginia Street crossing, which has been upgraded to include flashers and gate arms since the two reported crashes. Table B-3 summarizes the train/vehicle collision data at each of the study area crossings that experienced train/vehicle collisions over the past 20 years.

Table B-3. Crash Data Summary (1990 through 2010)

Crossing No.	Railroad	Street Name	Total Reported Crashes	Fatalities	Class A Injuries	Class B Injuries	Class C Injuries	PDO	Warning Devices in Place at Time of Crashes
735 302J	NS	Virginia Street	2		1		1		Crossbucks only*
722 875E	NS	Bryant Street	2				1	1	Crossbucks only
722 874X	NS	Bain Street	1				1		Crossbucks only

* Crossing has since been upgraded to include gate arms and flashers

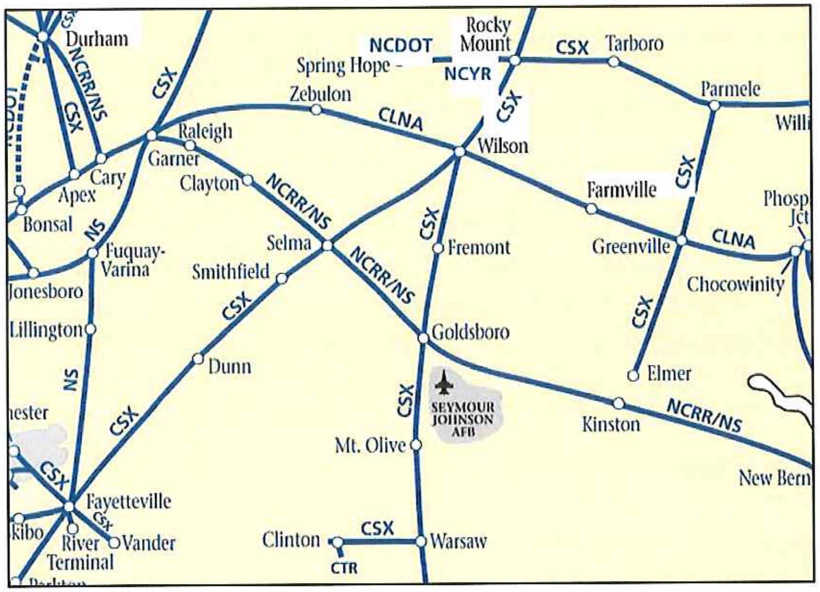
2. *Train Operations*

Goldsboro has a long history of dependency on the railroad for its growth, commerce, and economic stability. Starting in the 1830s when the Wilmington to Raleigh (Weldon) railroad was built, Goldsboro began to prosper from the benefits of rail. By 1856 when the first train passed from Goldsboro to Charlotte, the railroad had become a foundation for the City's continued growth.

In more recent history, the *Corridor Improvement Program* was implemented in 2001 and serves as the blueprint for upgrading the railroad. The first projects included $10 million of improvements along the corridor between Goldsboro and Morehead City.

In 2008, NCRR completed the *Shared Corridor Commuter Rail Capacity Study* to determine the cost and infrastructure requirements to introduce commuter rail on shared tracks on the NCRR rail line between Greensboro and Goldsboro. In 2010, NCRR completed the *Commuter Rail Ridership and Market Study* to determine potential demand for commuter rail along the NCRR corridor between Greensboro and Goldsboro.

Today, Rail continues to be a major component and backbone of the stability and commerce in Goldsboro. Norfolk Southern Corporation and CSX both maintain operations in and around Goldsboro. Norfolk Southern operates on tracks owned by NCRR under an exclusive trackage rights agreement. NCRR is a private company owned wholly by the state of North Carolina. Norfolk Southern primarily operates on tracks running east to west through Goldsboro. CSX also maintains operations through Goldsboro on tracks primarily running north and south.



Primary train routes through the region

Rail service in Goldsboro has been and will continue to be vital to the City's economic vitality. A large number of businesses in Goldsboro depend on the railroads for delivery of goods and materials needed for their continued operations. The Franklin Baking Co., Goldsboro Milling Co., Seymour Johnson AFB (where approximately 5,200 active duty and reserve personnel are stationed), Linde Products Manufacturing Co, and Goldsboro Iron and Metal Co. are some of the businesses that depend on the Norfolk Southern and CSX rail service through Goldsboro for the delivery of the raw materials needed for their production process or continued operations.

The North Carolina Global TransPark (GTP) is a 2,500-acre industrial/airport site located in Eastern North Carolina. The GTP advertises that it offers a business-friendly environment, including a highly-trained workforce, favorable tax structure, attractive utility rates, and an enviable cost of living.

Location of North Carolina Global TransPark (GTP)

The construction of the 5.8 mile Norfolk Southern operated rail spur to the GTP is scheduled to be complete in 2012. The spur will provide direct access to the Port of Morehead City. The GTP is currently home to several businesses, and with future growth comes the potential for both increased vehicular and rail traffic in Goldsboro.


GTP rail spur construction

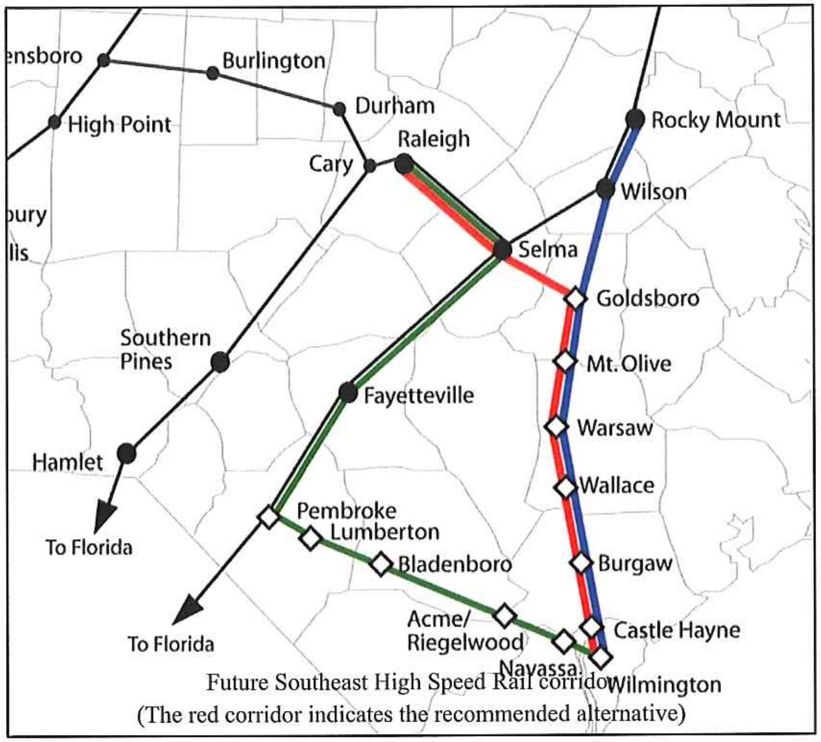
3. *Future Highway Projects*

Royall Avenue Relocation – The City of Goldsboro in cooperation with NCRR has investigated the feasibility of relocating or widening Royall Avenue to the north through downtown Goldsboro to provide more separation between the railroad and Royall Avenue. The City has also explored a plan to add sidewalks on the north side of Royall Avenue. While the City does not have the funding necessary to pursue these projects at this time, the projects have merit and will stay on the City's target list of long range improvements.

Berkeley Boulevard – The City of Goldsboro is currently developing roadway improvement plans to widen Berkeley Boulevard to a five-lane typical section beginning east of Royall Avenue and ending at South Drive. Included with these designs is the option to remove the existing at-grade railroad crossing on Central Heights Road and build a new roadway that would connect Central Heights Road to N. Oak Forest Road. A new at-grade railroad crossing with a less skewed angle would be built over the Norfolk Southern line.

4. *Future Rail Service and Projects*

Part of this study was to investigate other past, present, and future rail projects in the area that might affect the rail crossings, or might be affected by changes made to the studied rail crossings. NCDOT, the City of Goldsboro, and NCRR provided information on other roadway and rail projects in Goldsboro.



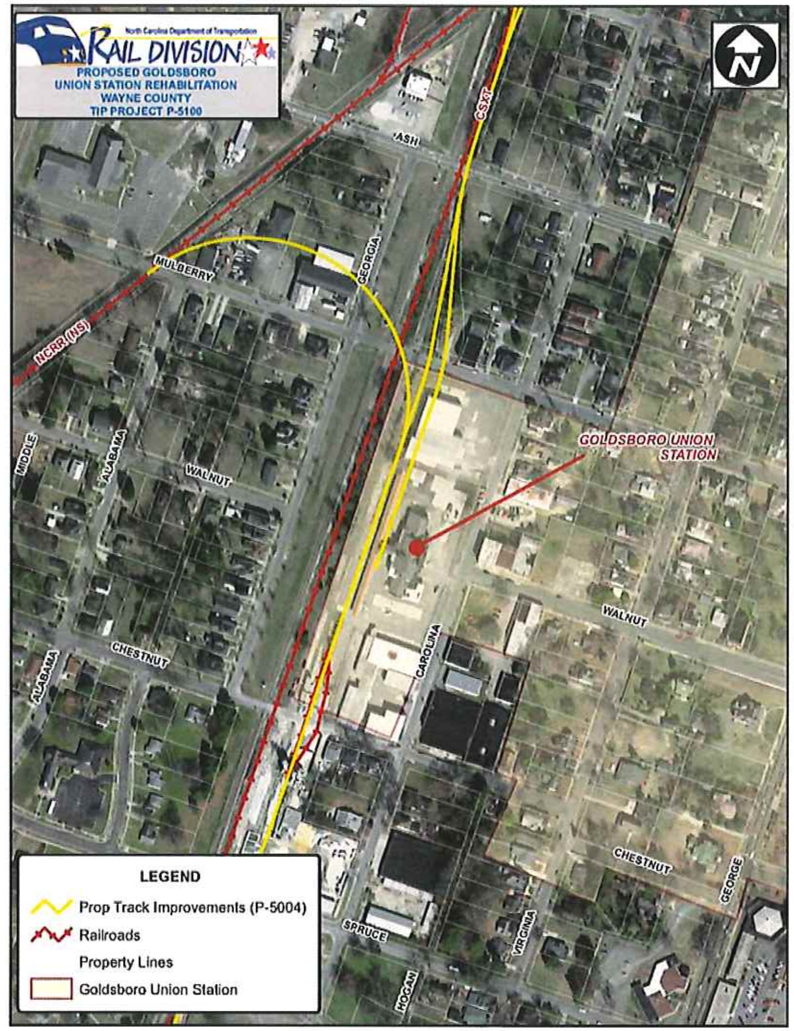
Future Southeast High Speed Rail corridor
(The red corridor indicates the recommended alternative)

The Southeast High Speed Rail Corridor is an NCDOT project to expand passenger service through North Carolina, South Carolina, Virginia, and Georgia. The *Southeastern North Carolina Passenger Rail Study* (July 2005) recommended extending passenger rail from Raleigh to Wilmington and adding a stop in Goldsboro (the red alternative on the map shown to the left). An environmental study is currently underway to determine the impacts of these recommendations and identify final track and station locations.

With assistance from NCDOT, the City of Goldsboro is in the process of restoring Union Station, a historic passenger rail station located at W. Walnut Street and North Carolina Street. After the restoration is complete, the City will use the new Multimodal Transportation Center (MMTC) for community functions and office space, and plans to add a bus transfer center to serve Gateway Transit and Greyhound. As detailed in the *Goldsboro Union Station Multimodal Transportation Center Study* (September 2009), the City's long-term vision for Union Station is to convert it back to a passenger rail station once the Southeast High Speed Rail line is completed through Goldsboro.

Historic postcard of Union Station (undated),
Courtesy of the Goldsboro Union Station Final Report

The NCDOT Rail Division has a project which will provide connection from the CSX track at the Goldsboro Union Station to the NCRR/Norfolk Southern track at Mulberry Street. The project is currently being evaluated for environmental impacts.



Crossing# 735 305E (Mulberry Street)

Looking North

Looking East

Looking South

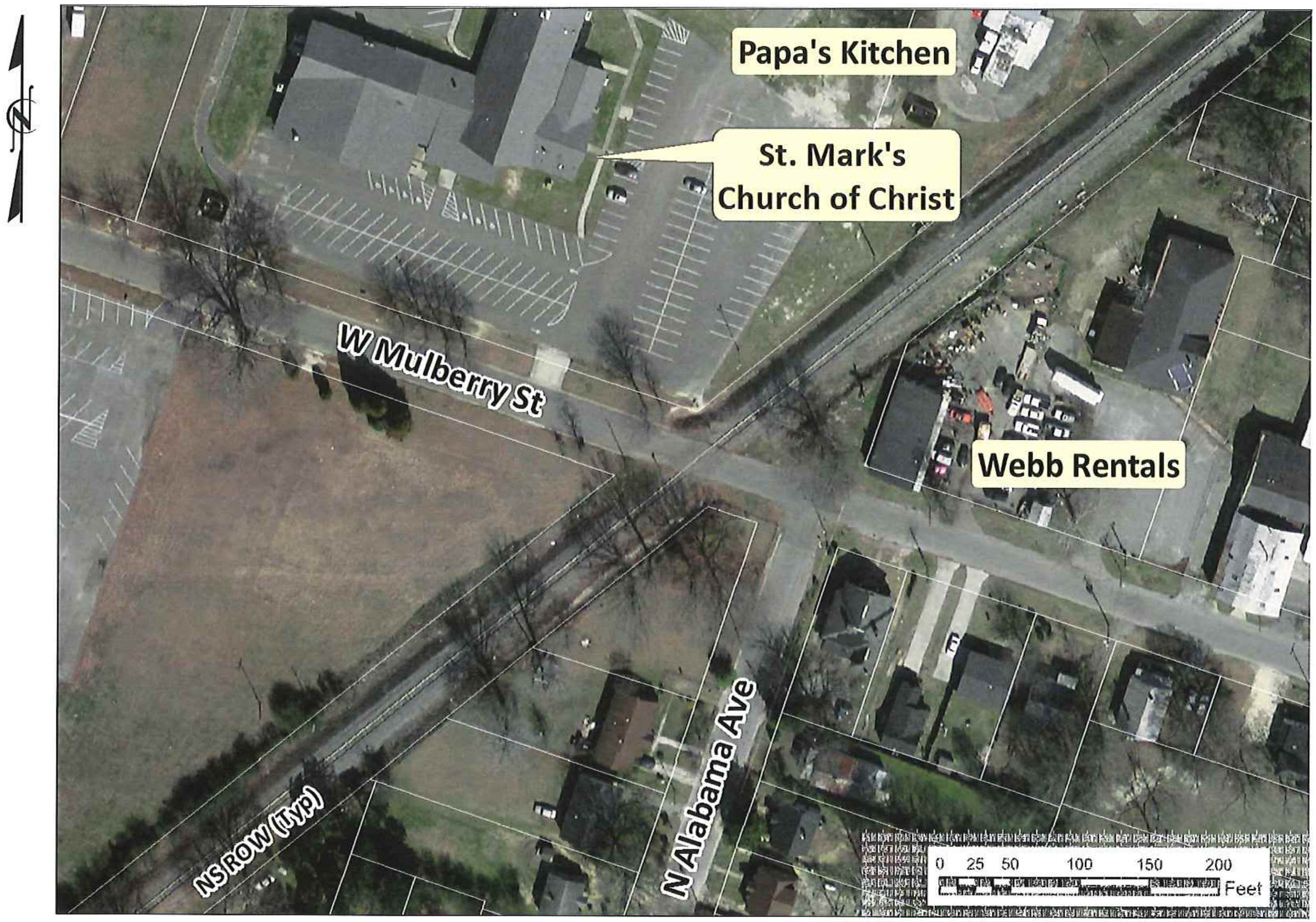
Looking West

Figure 2.1A

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device
735 305E	128.51	NS	Mulberry Street	Minor	Crossbucks

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Buses	School Buses	Truck Route
111	14	-	0	2	No

Preemption	Humped Crossing	Geometry	Crossing Surface Condition	Crossing Sight Distance	Redundant Crossing
N/A	No	57° Skew	Fair	Poor (vertical)/OK (horiz)	Yes - Ash St



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Goldsboro Traffic Separation Study
Existing Conditions
Norfolk Southern / Mulberry Street Crossing
Figure 2.1B

NORFOLK SOUTHERN

Crossing# 735 304X (Ash Street)

Looking North

Looking East

Looking South

Looking West

Figure 2.2A

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device
735 304X	128.6	NS	Ash Street	Major	Gates/Lights/Flashers/Crossbucks

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Buses	School Buses	Truck Route
6,653	14	-	13	66	No

Preemption	Humped Crossing	Geometry	Crossing Surface Condition	Crossing Sight Distance	Redundant Crossing
N/A	No	57° Skew	Fair	NA / Lights and Gates	Yes - Mulberry St

Goldsboro Traffic Separation Study
Existing Conditions
Norfolk Southern / Ash Street Crossing
Figure 2.2B

Crossing# 735 302J (Virginia Street)

Looking North

Looking East

Looking South

Looking West

Figure 2.3A

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device
735 302J	129.02	NS	Virginia Street	Minor	Gates/Lights/Flashers/Crossbucks

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Buses	School Buses	Truck Route
412	14	2 - Occurred before gates installed	0	2	No

Preemption	Humped Crossing	Geometry	Crossing Surface Condition	Crossing Sight Distance	Redundant Crossing
N/A	No	Good	Good	NA / Lights and Gates	Yes - George St

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Goldsboro Traffic Separation Study
Existing Conditions
Norfolk Southern / Virginia Street Crossing
Figure 2.3B

NORTH CAROLINA RAILROAD COMPANY
NORFOLK SOUTHERN

Crossing# 735 301C (George Street)

Looking North

Looking East

Looking South

Looking West

Figure 2.4A

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device
735 301C	129.5	NS	George Street	Major	Gates/Lights/Flashers/Crossbucks

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Buses	School Buses	Truck Route
7,873	14	-	0	24	No

Preemption	Humped Crossing	Geometry	Crossing Surface Condition	Crossing Sight Distance	Redundant Crossing
N/A	No	Good	Fair	NA / Lights and Gates	Yes - Virginia St/James St

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Goldsboro Traffic Separation Study
Existing Conditions
Norfolk Southern / George Street Crossing
Figure 2.4B

NORFOLK SOUTHERN

Crossing# 735 296H (James Street)

Looking North

Looking East

Looking South

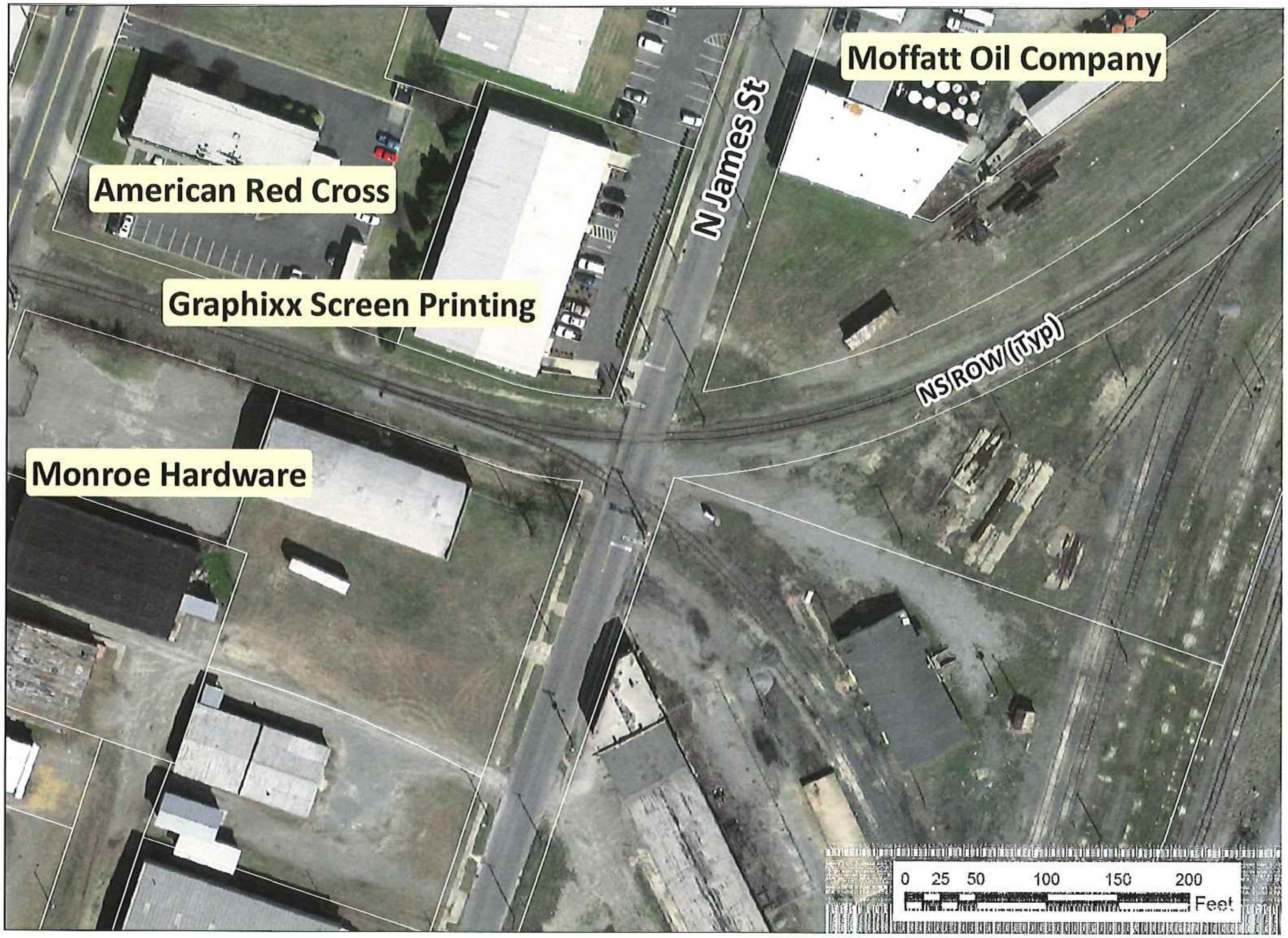
Looking West

Figure 2.5A

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device
735 296I	129.97	NS	James Street	Major	Gates/Lights/Flashers/Crossbucks

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Buses	School Buses	Truck Route
2,273	14	-	0	12	No

Preemption	Humped Crossing	Geometry	Crossing Surface Condition	Crossing Sight Distance	Redundant Crossing
N/A	No	Good	Good	NA / Lights and Gates	Yes - George St



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Goldsboro Traffic Separation Study
Existing Conditions
Norfolk Southern / James Street Crossing
Figure 2.5B

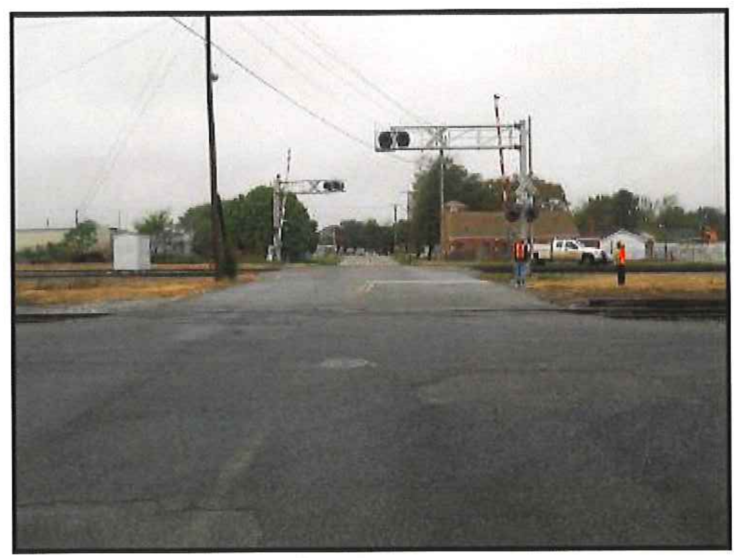
NORTH CAROLINA RAILROAD COMPANY
NORFOLK SOUTHERN

Crossing# 722 879G & 642 009J(CSX) (Holly Street)

Looking North

Looking East

Looking South



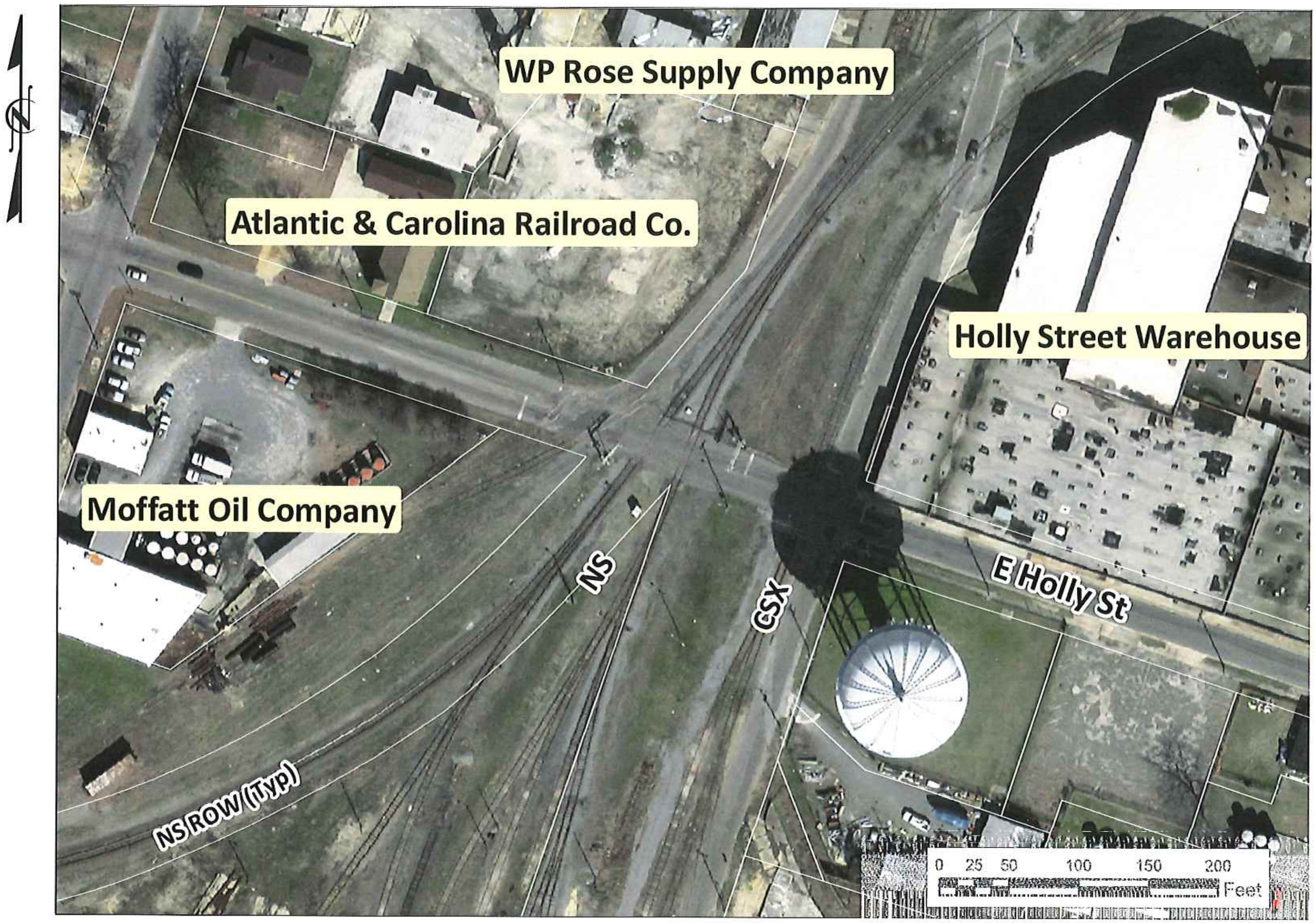
Looking West

Figure 2.6A

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device
722 879G	0.4	NS	Holly Street	Minor	Gates/Lights/Flashers/Crossbucks

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Buses	School Buses	Truck Route
1,471	14	-	0	11	No

Preemption	Humped Crossing	Geometry	Crossing Surface Condition	Crossing Sight Distance	Redundant Crossing
N/A	No	Good	Fair	NA / Lights and Gates	No



Goldsboro Traffic Separation Study

Existing Conditions

Norfolk Southern / Holly Street Crossing

Figure 2.6B

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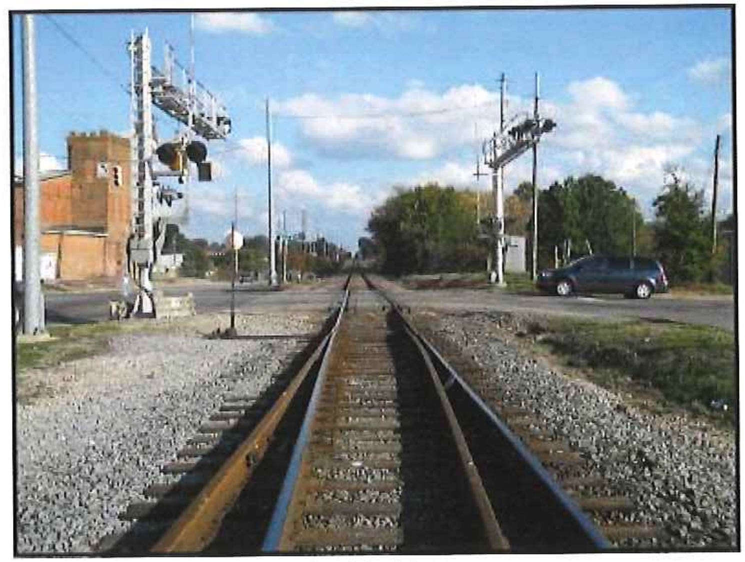
Crossing# 722 876L (William Street)

Looking North



Looking East

Looking South

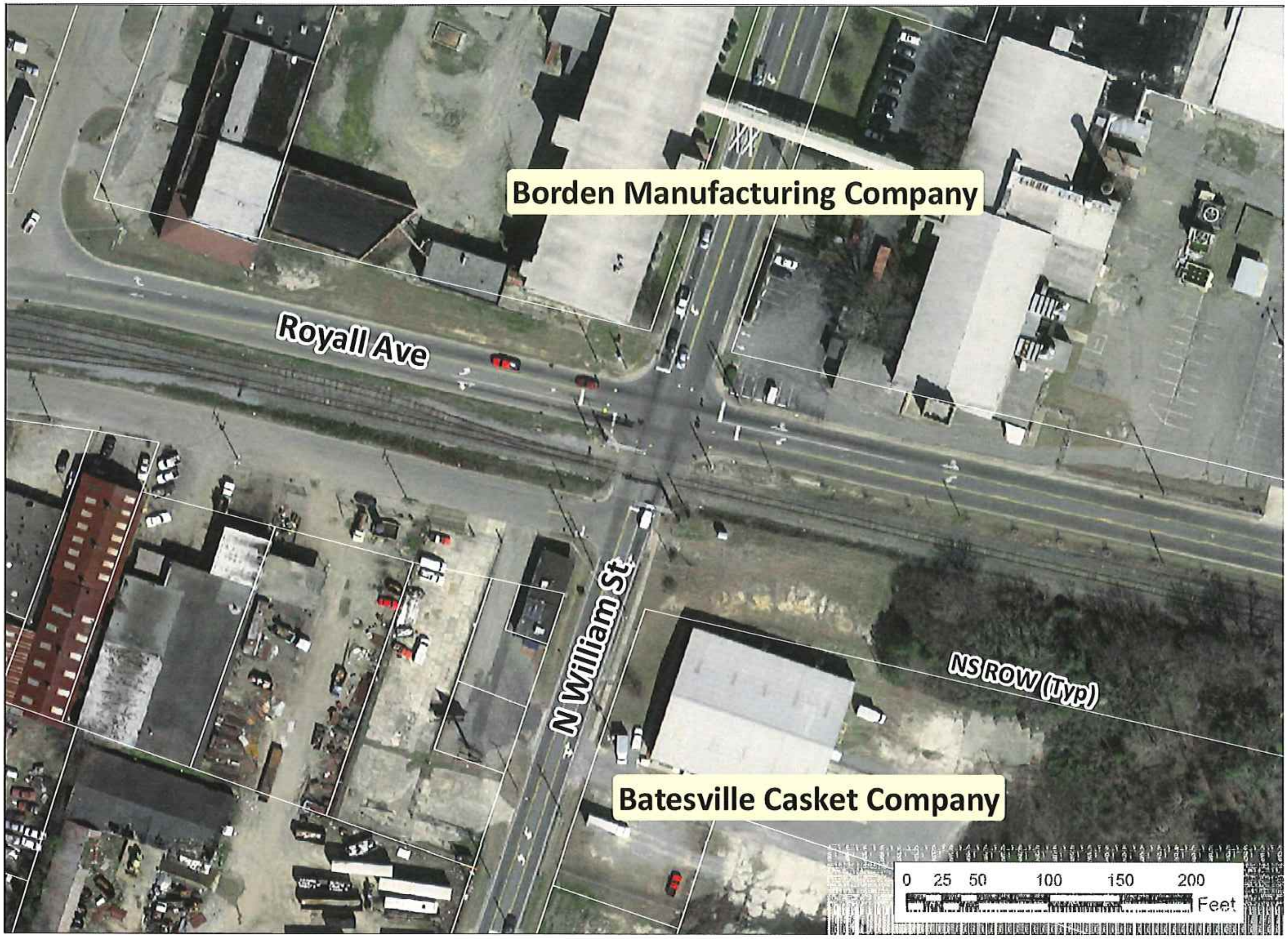
Looking West

Figure 2.7A

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device
722 876L	0.9	NS	William Street	Major	Gates/Lights/Flashers/Crossbucks

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Buses	School Buses	Truck Route
7,999	14	-	0	5	No

Preemption	Humped Crossing	Geometry	Crossing Surface Condition	Crossing Sight Distance	Redundant Crossing
Simultaneous	No	Good	Good	NA / Lights and Gates	No



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Goldsboro Traffic Separation Study
Existing Conditions
Norfolk Southern / William Street Crossing
Figure 2.7B

Crossing# 722 875E (Bryant Street)

Looking North

Looking East

Looking South

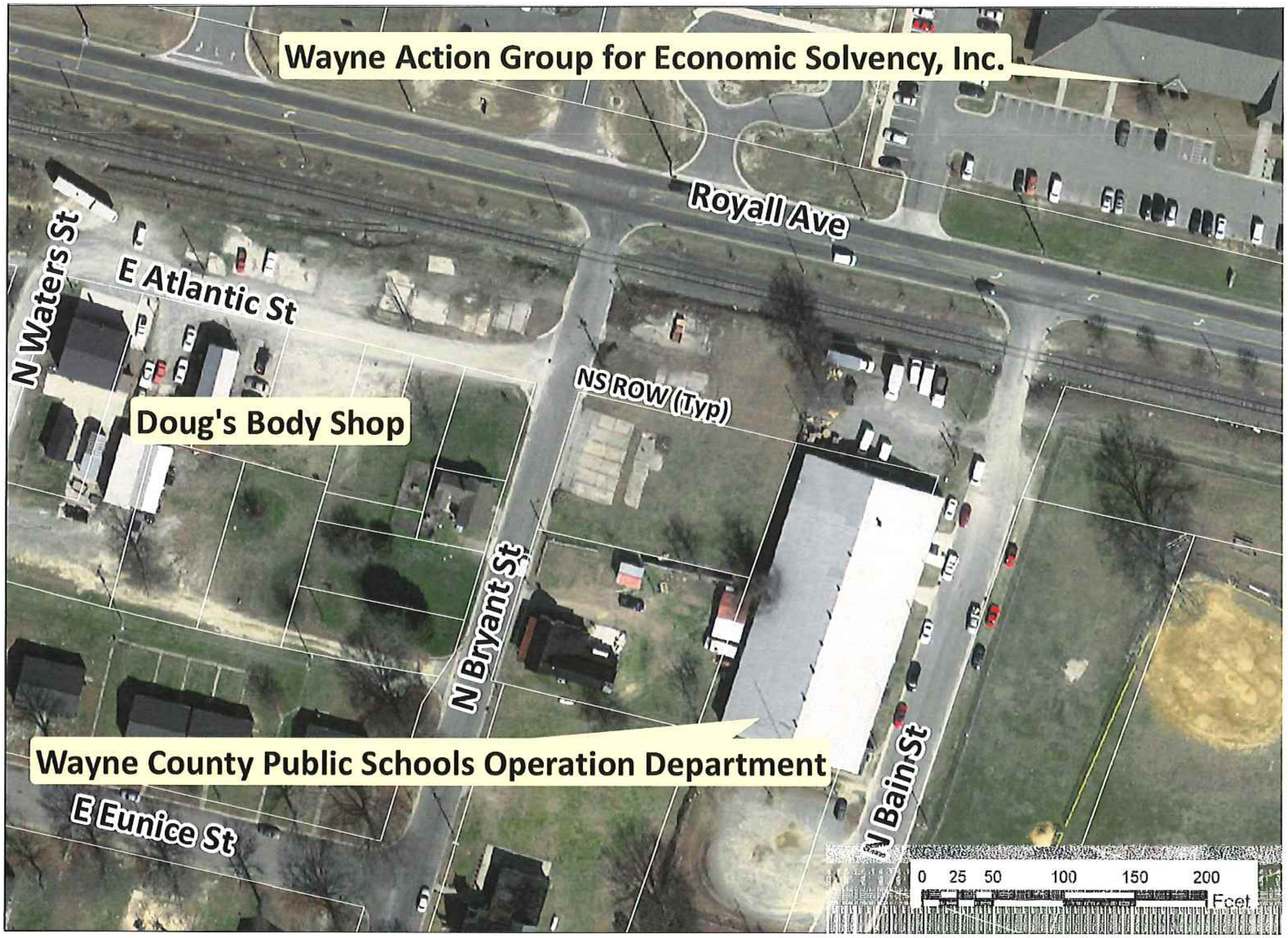
Looking West

Figure 2.8A

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device
722 785E	1.1	NS	Bryant Street	Minor	Crossbucks

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Buses	School Buses	Truck Route
551	14	2	0	2	No

Preemption	Humped Crossing	Geometry	Crossing Surface Condition	Crossing Sight Distance	Redundant Crossing
N/A	No	Good	Good	OK (20 MPH Vehicle)	Yes - Bain St



Goldsboro Traffic Separation Study
Existing Conditions
Norfolk Southern / Bryant Street Crossing
Figure 2.8B

Crossing# 722 874X (Bain Street)

Looking North

Looking East

Looking South

Looking West

Figure 2.9A

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device
722 874X	1.15	NS	Bain Street	Minor	Crossbucks

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Buses	School Buses	Truck Route
451	14	1	0	2	No

Preemption	Humped Crossing	Geometry	Crossing Surface Condition	Crossing Sight Distance	Redundant Crossing
N/A	No	Good	Poor	Obstructed by Parked Veh.	Yes - Bryant St

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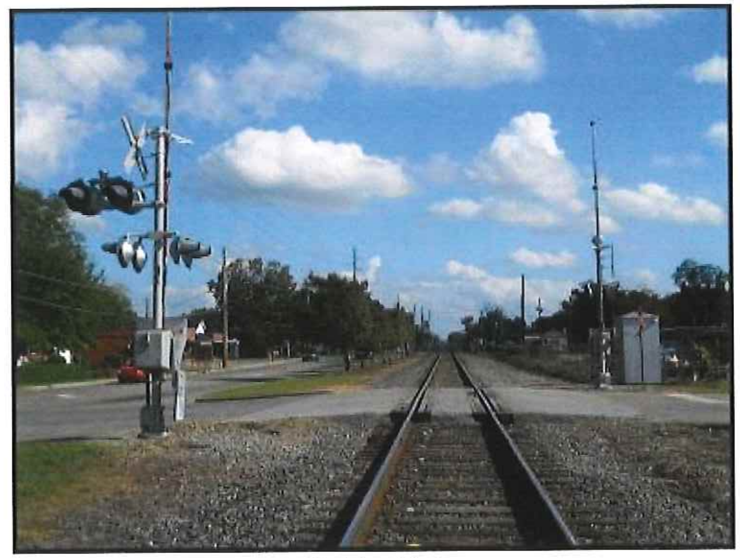
Goldsboro Traffic Separation Study
Existing Conditions
Norfolk Southern / Bain Street Crossing
Figure 2.9B

NORFOLK SOUTHERN

Crossing# 722 872J (Clingman Street/Lionel Street)

Looking North



Looking East

Looking South

Looking West

Figure 2.10A

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device
722 872J	1.28	NS	Lionel/Clingman Street	Minor	Gates/Lights/Flashers/Crossbucks

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Buses	School Buses	Truck Route
568	14	-	0	0	No

Preemption	Humped Crossing	Geometry	Crossing Surface Condition	Crossing Sight Distance	Redundant Crossing
N/A	No	Good	Fair	NA / Lights and Gates	Yes - Bain St/Wayne Mem. Dr

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Goldsboro Traffic Separation Study
Existing Conditions
Norfolk Southern / Lionel St / Clingman St Crossing
Figure 2.10B

NORFOLK SOUTHERN

Crossing# 722 870V (Wayne Memorial Drive/Herman Street)

Looking North

Looking East

Looking South

Looking West

Figure 2.11A

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device
722 870V	1.5	NS	Wayne Memorial Dr/Herman Street	Major	Gates/Lights/Flashers/Crossbucks

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Buses	School Buses	Truck Route
14,054	14	-	0	108	No

Preemption	Humped Crossing	Geometry	Crossing Surface Condition	Crossing Sight Distance	Redundant Crossing
Simultaneous	No	58° Skew	Fair	NA / Lights and Gates	Yes - Lionel St

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Goldsboro Traffic Separation Study
Existing Conditions
Norfolk Southern / Wayne Memorial Dr / Herman St Crossing
Figure 2.11B

NORFOLK SOUTHERN

Crossing# 722 869B (Audubon Street)

Looking North

Looking East

Looking South

Looking West

Figure 2.12A

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device
722 869E	1.79	NS	Audubon Avenue	Minor	Gates/Lights/Flashers/Crossbucks

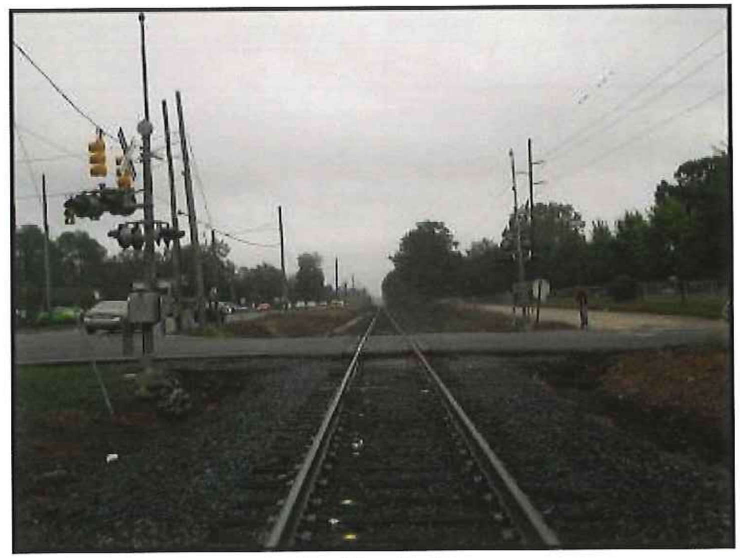
24 Hour ADT	24 Hour Train Volume	Accident History	Transit Buses	School Buses	Truck Route
1,619	14	-	0	36	No

Preemption	Humped Crossing	Geometry	Crossing Surface Condition	Crossing Sight Distance	Redundant Crossing
N/A	No	Good	Good	NA / Lights and Gates	No

Goldsboro Traffic Separation Study
Existing Conditions
Norfolk Southern / Audubon Avenue Crossing
Figure 2.12B

Crossing# 722 868U (Jefferson Street)

Looking North



Looking East

Looking South

Looking West

Figure 2.13A

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device
722 868U	2.02	NS	Jefferson Street	Minor	Gates/Lights/Flashers/Crossbucks

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Buses	School Buses	Truck Route
6,683	14	-	38	42	No

Preemption	Humped Crossing	Geometry	Crossing Surface Condition	Crossing Sight Distance	Redundant Crossing
Simultaneous	No	Good	Fair	NA / Lights and Gates	No

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Goldsboro Traffic Separation Study
Existing Conditions
Norfolk Southern / Jefferson Street Crossing
Figure 2.13B

NORFOLK SOUTHERN

C. Crossing Analysis

1. Crossing Closure and Intersection Analysis

All crossings were considered for potential closure. Three existing at-grade crossings were identified by the City of Goldsboro and the NCDOT Rail Division as potential candidates for closure prior to initiating this study, and an additional two were added later by the stakeholder group. These include:

- Mulberry Street
- Virginia Street
- Bryant Street
- Bain Street
- Lionel Street/Clingman Street

Capacity analyses were performed to determine the operating characteristics of the adjacent road network and the impacts of the potential closure of these crossings.

Intersection capacity analyses were performed for the AM and PM peak hours for the existing and projected post-closure traffic conditions for each closure location using Synchro Version 7 software. Capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a set time duration. Capacity is combined with level of service (LOS) to describe the operating characteristics of a road segment or intersection. LOS is a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream. Synchro Version 7 defines six levels of service, LOS A through LOS F, with A representing the shortest average delays and F representing the longest average delays. LOS D is the typically accepted standard for signalized intersections in urbanized areas.

For signalized intersections, LOS is defined for the overall intersection operation.

For unsignalized intersections, only the movements that must yield right-of-way experience control delay. Therefore, LOS criteria for the overall intersection is not reported by Synchro Version 7 or computable using methodology published in the *Highway Capacity Manual.* Accordingly, minor street approach delays are reported herein for unsignalized conditions. It is typical for stop sign controlled side streets and driveways intersecting major streets to experience long delays during peak hours, while the majority of the traffic moving through the intersection on the major street experiences little or no delay. Table C-1 lists the LOS control delay thresholds published in the *Highway Capacity Manual* for signalized and unsignalized intersections.

Table C-1. Level-of-Service Control Delay Thresholds

Level-of-Service	Signalized Intersections – Control Delay Per Vehicle [sec/veh]	Unsignalized Intersections – Average Control Delay [sec/veh]
A	≤ 10	≤ 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

Existing traffic volumes at the study intersections were obtained from the turning movement counts discussed in Chapter B. Traffic at the crossings to be closed was then diverted to adjacent intersections.

Table C-2 summarizes the analysis assumptions and results for each of the potential crossing closures studied.

Table C-2. Crossing Closure Analysis Summary

Crossing	Intersections Analyzed	Assumptions	Results
Mulberry Street	Ash St. at US 17/117 Northbound Ramps	Traffic on Mulberry St. diverted to Ash St.	No capacity issues
Virginia Street	US 70 (Grantham St.) at North Carolina St.	Traffic on Virginia St. diverted to North Carolina St.	No capacity issues and no signal warranted
Bryant Street/ Bain Street	Royall Ave. at William St. Royall Ave. at Bain St. Royall Ave. at Wayne Memorial Dr./Herman St.	If one of the crossings was closed, all traffic would shift to the other crossing. If both are closed, traffic would shift to William St. and Wayne Memorial Dr./Herman St. equally.	No capacity issues with either or both closures
Lionel Street/ Clingman Street	N/A	Lionel St. is closed to through traffic during the day at Goldsboro Middle School	N/A

Table C-3 summarizes the LOS and delay (seconds per vehicle) for all of the study intersections for the AM and PM peak hour traffic conditions. All capacity analyses are included in Appendix A.

Analysis indicates that all of the study intersections currently operate at an acceptable level-of-service in the AM and PM peak hours and are expected to continue to do so even with the proposed crossing closure at Mulberry Street.

In conclusion, it is anticipated that the closure of the Mulberry Street railroad crossing will have little impact on the traffic operations in the area, and no roadway improvements are needed in conjunction with this crossing closure.

Table C-3. Intersection Level-of-Service Summary		
Condition	**AM Peak-Hour LOS (Delay)**	**PM Peak-Hour LOS (Delay)**
Ash Street at US 13/117 Northbound Ramps (Signalized)		
Existing Traffic - *No Closure*	A (2.2)	A (4.9)
Existing Traffic - *With Mulberry Street Closure*	A (2.3)	A (5.0)
Royall Avenue at N William Street (Signalized)		
Existing Traffic - *No Closure*	C (22.3)	C (22.5)
Existing Traffic - *With Bain Street and Bryant Street Closures*	C (22.2)	C (22.6)
Royall Avenue at Bryant Street (Unsignalized)		
Existing Traffic - *No Closure*	Short delays for minor street approach	Short delays for minor street approach
Existing Traffic - *With Bain Street Closure*	Short delays for minor street approach	Short delays for minor street approach
Royall Avenue at Bain Street (Unsignalized)		
Existing Traffic - *No Closure*	Short delays for minor street approach	Short delays for minor street approach
Existing Traffic - *With Bryant Street Closure*	Short delays for minor street approach	Short delays for minor street approach
Royall Avenue at Wayne Memorial Drive/Herman Street (Signalized)		
Existing Traffic - *No Closure*	B (18.9)	B (18.9)
Existing Traffic - *With Bain Street and Bryant Street Closures*	B (19.0)	B (19.1)

2. *Exposure Analysis*

NCDOT uses an exposure index as one factor to determine if a grade separated crossing is warranted. The exposure index is calculated by multiplying the number of trains per day on the rail line being crossed by the number of vehicles per day at that crossing. The formula is shown below as:

EI = N x ADT

Where:

EI = NCDOT Rail Division's Exposure Index
N = Number of Trains per Day
ADT = Average Daily Traffic at at-grade crossing

Grade separations are generally considered in rural areas where the exposure index is greater than 15,000 and in urban areas where the exposure index is greater than 30,000. For purposes of this analysis, Goldsboro was considered to be an urban area. The exposure index was calculated for each of the study crossings using the year 2011 ADT volumes obtained from the pneumatic tube counts and the number of trains per day as reported by the NCDOT Rail Division and Norfolk Southern.

Table C-4 shows the exposure index calculations at each of the study area crossings. Analysis revealed that the following six crossings have exposure indices that exceed the 30,000 threshold based on existing traffic volumes:

- Ash Street
- George Street
- James Street
- William Street
- Wayne Memorial Drive/Herman Street
- Jefferson Street

However, it should be noted that only two trains per day arrive between the hours of 6 a.m. and 6 p.m. at all of these crossings. The majority of the trains that use this line do so at night when the vehicular crossing volumes are lower. Therefore, the resulting exposure indices may overstate the conflict between rail and automobile traffic at these locations. Only Wayne Memorial Drive/Herman Street also had a notable exposure index if only daytime volumes (6 a.m. to 6 p.m.) were used in the calculation (daytime exposure index of 30,780). Future traffic volumes were not calculated as part of this study.

Table C-4. Exposure Index				
Crossing No.	**Street Name**	**Trains/Day**	**ADT (2011)**	**Exposure Index**
735 305E	Mulberry Street	14	111	1,554
735 304X	Ash Street	14	6,653	**93,142**
735 302J	Virginia Street	14	412	5,768
735 301C	George Street	14	7,873	**110,222**
735 296H	James Street	14	2,273	**31,822**
722 879G	Holly Street	14	1,471	20,594
722 876L	William Street	14	7,999	**111,986**
722 875E	Bryant Street	14	551	7,714
722 874X	Bain Street	14	451	6,314
722 872J	Lionel Street/Clingman Street	14	568	7,952
722 870V	Wayne Memorial Drive/Herman Street	14	14,054	**196,756**
722 869B	Audubon Avenue	14	1,619	22,666
722 868U	Jefferson Street	14	6,683	**93,562**

* **Bold** indicates an exposure index exceeding the threshold of 30,000.

3. Economic Analysis

An economic analysis was performed to determine the possible improvements alternatives for a highway-rail grade crossing. This task involved developing estimates of expected project costs and safety and operational benefits for each alternative. GradeDec.Net—a web-based decision support tool that assists federal, state and local authority decision makers in evaluating the benefits and costs of highway-rail grade crossing upgrades, separations, and closures—was used to develop the cost-benefit analysis for the improvements resulting from this study.

GradeDec.Net employs benefit-cost methodologies to evaluate highway-rail grade crossing investment alternatives at the corridor or regional level. The site's modeling framework was developed by the Federal Railroad Administration.

D. Safety & Mobility Issues

This traffic separation study considered several safety and mobility issues when recommending improvements to the railroad crossings. This section discusses the potential issues and existing warning devices at the study crossings.

1. *Vehicles Queuing Across Railroad Tracks*

Parallel roadways, intersections, and traffic signals adjacent to at-grade railroad crossings can result in queues of vehicles extending across a crossing. Royall Avenue runs parallel to the Norfolk Southern line through most of the study area with crossings at William Street, Bryant Street, Bain Street, Lionel Street/Clingman Street, Wayne Memorial Drive/Herman Street, Audubon Avenue, and Jefferson Street. At all of these locations, the roadway is located approximately 30 feet from the crossing.

When the turning movement counts were performed, vehicles were observed stopping on the railroad tracks at Bryant Street, Bain Street, and Wayne Memorial Drive/Herman Street. At the Wayne Memorial Drive/Herman Street crossing, three vehicles were observed being struck by lowering gate arms, and one vehicle struck a lowered gate arm when turning off Royall Avenue. Citizens have noted similar problems at other locations along Royall Avenue.

Vehicles queuing over tracks on Wayne Memorial Drive/Herman Street

2. *Humped Crossings*

A "humped" crossing occurs when the elevation of the railroad crossing is significantly higher than the intersecting roadway, which results in steep grades on the approaches to the crossing. Humped crossings can cause in driver discomfort or "bottoming out" of vehicles with long wheelbases or low clearances; vehicles can be damaged or even become stuck on the crossing. A humped crossing has a combination of short crest and sag vertical curves, and is most easily identified by scrapes in the asphalt on the approaches. Routine track maintenance tends to exacerbate the problem over time, as track ballast work typically adds about 3 inches to track height per occurrence. Over a 10-year period, the railroad could rise about one foot as a result of this routine maintenance depending on frequency.

None of the crossings in the study area were observed to have a humped profile.

Example of scrapes in the asphalt at a humped crossing on Neal Road, Durham, NC

3. *Crossing Protection Device Upgrades*

Upgrading existing warning devices is one of the most cost-effective methods of improving safety at an at-grade railroad crossing. Commonly used warning devices include signs, crossbucks, gate arms, flashers, and warning bells. Passive devices like signs and crossbucks alert the driver to the presence of the crossing but do not prevent them from driving through the crossing when a train is present. Such devices are generally used when train volumes and vehicle crossing volumes are low, train speeds are low, and sight distance is not an issue. Active devices such as gate arms, flashers, and bells warn the driver of a train approaching the crossing. These devices are generally used at higher volume crossings, where train speeds are higher, or when there is a history of train/vehicle collisions. The hierarchy of crossing protection devices in order of increasing safety is as follows:

- Unmarked
- Crossbucks
- Stop signs and crossbucks
- Flashing signals and bells
- Flashing signals, bells, and gate arms

The effectiveness of warning signs, pavement markings, traffic signals, and other traffic control devices is largely dependent upon proper installation and maintenance.

Automated gates are generally one of the best possible warning devices for use at at-grade railroad crossings. However, when not used properly, they can lead to driver frustration, which can result in motorists driving around the gate arms.

Situations that can lead to this behavior include:

- Gates are lowered, but no train is visible
- Gate failure causes arms to remain in lowered position
- Gates are lowered and train is visible, but the motorist is too impatient to wait

None of the reported train/vehicle crashes at the study crossings involved vehicles driving around automated gates. No vehicles were observed driving around automated gates during the field work for this project. Ten crossings have flashing signals, bells, and gate arms. The three remaining crossings have crossbucks only:

- Mulberry Street
- Bryant Street
- Bain Street

Although Bryant and Bain Streets do not have stop signs before the crossings, stop signs are located approximately 10 feet past the railroad tracks to stop vehicles before they turn onto Royall Avenue.

In addition, advanced warning signs and pavement markings are missing or faded at several of the crossings, as listed in Table D-1.

Table D-1. Status of Crossing Protection Devices		
Crossing	**Advanced Warning Signs**	**Advanced Pavement Markings**
Mulberry St.	Faded (west side) Missing (east side)	Missing (both sides)
Ash St.	Present	Present
Virginia St.	Faded (both sides)	Missing (both sides)
George St.	Present	Present
James St.	Faded (both sides)	Missing (both sides)
Holly St.	Faded (west side) Missing (east side)	Missing (both sides)
William St.	Missing (north side)	Present
Bryant St.	Missing (both sides)	Missing (both sides)
Bain St.	Missing (both sides)	Missing (both sides)
Lionel St/Clingman St.	Missing (both sides)	Missing (both sides)
Wayne Memorial Dr./Herman St.	Present	Present
Audubon Ave.	Faded (both sides)	Missing (both sides)
Jefferson St.	Present	Missing (both sides)

4. Grade Crossing Condition

A poor grade crossing surface can result in a rough, uneven ride, and require increased maintenance requirements of the track and the road itself. This wears on vehicles and can lead to increased congestion due to reduced travel speeds.

There are many different types of road crossing materials that are commonly found throughout North America. However, three types of materials are typically used for at-grade crossings on public streets in North Carolina: asphalt with timber flangeway, concrete (cast in place and precast, and pre-manufactured rubber.

Asphalt or bituminous crossings are used for crossings with all levels of traffic from light to heavy. These crossings are constructed by filling in the area between the rails with compacted base material covered by several inches of asphalt as surfacing material. In some cases, full-depth asphalt may be used between the rails. Depending on the level of train and highway traffic, the flangeways may either be formed in the asphalt itself or formed by the use of timber flangeway headers.

Concrete road crossings may be either cast-in-place or constructed from pre-cast panels. Concrete crossings are typically used at locations with medium to heavy vehicular traffic.

For road crossings with heavy volumes of vehicular traffic, pre-manufactured rubber road crossings are often used. This type of crossing may be either a full-depth rubber material or a system of wood shims that are placed on the ties with the rubber crossing material placed on top of the shims.

Based on field observations, the following crossings were identified as needing an upgraded crossing or approach surface:

- Bain Street – dirt approach on south side of railroad tracks
- Wayne Memorial Drive/Herman Street – high number of trucks and buses use this crossing

5. *Traffic Signals*

The *Manual on Uniform Traffic Control Devices* (MUTCD) requires that traffic signals located within 200 feet of an at-grade rail crossing be coordinated with the train detection and warning system at the adjacent crossing to preempt normal operation of the traffic signal and disallow vehicles from crossing the railroad tracks. The normal signal operation should be preempted in the event of an approaching train to allow traffic to clear off the tracks. The signal should also be designed to allow non-conflicting movements to continue while the train is crossing to minimize delay.

As traffic volumes on the adjacent roadway network or at an intersection increase, warrants for traffic signals may be met. Advantages of traffic signals include increasing the traffic-handling capacity of intersections and reducing certain types of accidents (especially right-turn collisions). They can facilitate improved progression of traffic along a route, and they can interrupt heavy flows of traffic to allow other traffic (vehicular and pedestrian) to cross. Disadvantages include the increase in frequency of certain types of accidents (especially rear end collisions), increases in delay, and use of less adequate routes to avoid the signal.

The warrants for signalization are outlined in Part 4 of the MUTCD 2009 edition. The nine warrants for signalization include:

Warrant 1 – Eight-Hour Vehicular Volume
Warrant 2 – Four-Hour Vehicular Volume
Warrant 3 – Peak Hour
Warrant 4 – Pedestrian Volume
Warrant 5 – School Crossing
Warrant 6 – Coordinated Signal Systems
Warrant 7 – Crash Experience
Warrant 8 – Roadway Network
Warrant 9 – Intersection near a Grade Crossing

Minimum criteria are established for each of the warrants. One or more of the warrants must be met before installation of a new traffic signal is considered.

Royall Avenue is less than 50 feet north of the Norfolk Southern rail line between the William and Jefferson Street crossings. Traffic signal preemption is currently provided at all of the signalized intersections in that corridor, which includes the following locations:

- Royall Avenue at William Street
- Royall Avenue at Wayne Memorial Drive/Herman Street
- Royall Avenue at Jefferson Street

William Street railroad crossing and signalized intersection with Royall Avenue

6. *Advanced Crossing Protection Measures*

Additional crossing protection measures can also be used in crossing locations with high-volume, multi-lane roadways or where drivers are consistently ignoring or driving around existing crossing protection devices. Additional protection measures include median separators, four-quadrant gates, longer gate arms, articulated gates, remote video detection, traffic signals, roadway improvements, and the elimination/consolidation of crossings.

a) Long Gate Arms and Articulated Gate Arms

Extra-long gate arms that extend for three-fourths of the crossing can be used to make it difficult for vehicles to drive around the lowered gate arms. Articulated gate arms—which are hinged and fold out to three-fourths of the crossing distance like long gate arms—are generally used when vertical clearances prevent the use of long gate arms. Long gate arms installed in Charlotte reduced crossing violations by 67%, and articulated gate arms by 78%. There are no existing long or articulated gate arms within the corridor.

b) Four-Quadrant Gates

Four-quadrant gate treatments involve gate arms on both the approaches and departures of the crossing roadway. This restricts vehicles from being able to drive around the approach gate arms. However, care has to be taken to prevent vehicles from becoming trapped inside the gate arms. To avoid this situation, the gates are timed for the approach arms to lower before the departure arms, 16 feet of clearance is generally provided between the gates and the tracks, and either breakaway arms are used or a gap is provided between the tips of the arms to allow a vehicle to slip out. Tests in Charlotte revealed that application of four-quadrant gates reduced crossing violations by as much as 86%, increasing to 98% in combination with median barriers. There are no existing four-quadrant gate crossings at the study crossings.

c) Median Separators

Median separators consist of markers mounted on raised islands along the roadway centerline to discourage motorists from driving in opposite travel lanes to avoid lowered gate arms. Where markers are not preferred, a 4-foot median can be constructed with an 8-inch curb, which allows for landscaping. Median treatments typically extend 70 feet to 100 feet back from the gates, but they may be precluded by driveways or intersection roads within the distance.

Median barrier on Herman Street south of the crossing

Currently, there is a median barrier at one crossing along the corridor. Yellow bollards mounted directly to the roadway surface are located on Herman Street south of the crossing to restrict a left-turn movement from Atlantic Avenue to Herman Street.

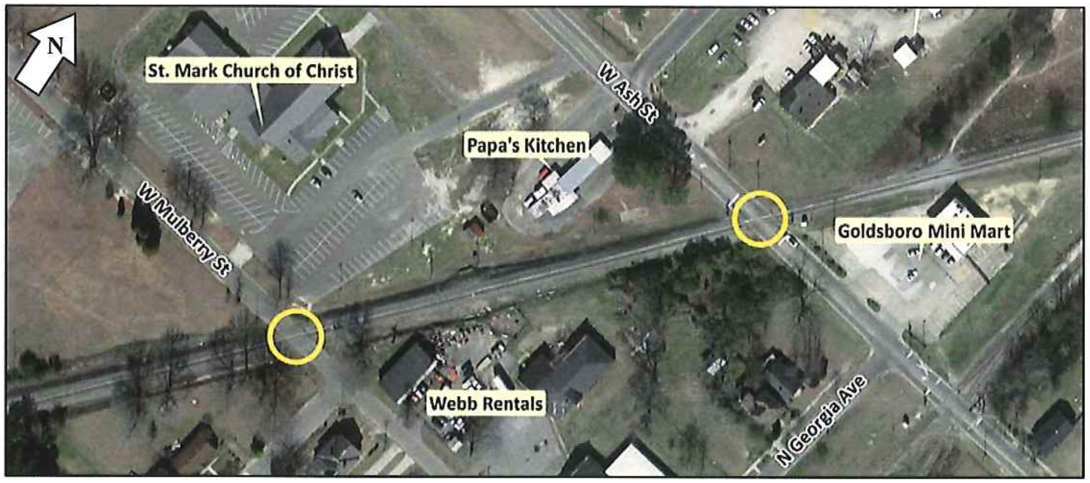
d) Remote Video Detection

The Crossing Law Enforcement and Research (CLEAR) of Violations program uses video detection to monitor crossings at select locations. This program provides information on crossing operations, crashes, and violations for research and enforcement purposes. This program was not determined to be necessary for crossings along this corridor.

e) Roadway Improvements

Roadway improvements can reduce both accident potential and traffic delay at highway/railroad crossings. Realignment and re-grading can improve skewed crossing alignments, thereby improving visibility and reducing the time required to traverse a crossing. Additional lanes significantly increase capacity, reducing the residual delay following a crossing event. New roadways can provide alternate routes, allowing crossings to occur at more desirable locations, and potentially eliminating some trips.

Roadway crossing angles should be as near to 90 degrees as possible. Along the study corridor, the Mulberry Street and Ash Street crossings are both skewed at an approximately 57 degree angle to the railroad. The Wayne Memorial Drive/Herman Street crossing is skewed at an approximately 58 degree angle to the railroad.



Skewed crossings at Mulberry Street and Ash Street

Skewed crossing at Wayne Memorial Drive/Herman Street

7. *Crossing Consolidation/Elimination*

If a low-volume crossing has alternate access across the tracks available within reasonable distance, it is often considered redundant. Low-volume crossings often lack sufficient warning devices, and since it can be impractical to upgrade the warning devices at all locations (and even less feasible to provide grade separations), the consolidation and closure of minor crossings can be an effective means of reducing maintenance costs while improving safety. Warning devices can then be upgraded at the remaining crossings as needed to accommodate the additional traffic using the crossing.

Factors that make a crossing a good candidate for closure include:

- Alternate crossing locations located within reasonable distance
- Skewed crossings
- Limited sight distance
- History of train/vehicle crashes
- Private crossing with no identifiable owner
- Complex crossings (e.g. multiple tracks, switching operations, etc.) that cannot be safely served with warning devices

As discussed in Chapter C, the following crossings were analyzed for closure:

- Mulberry Street
- Virginia Street
- Bryant Street
- Bain Street
- Lionel Street/Clingman Street

The Mulberry and Ash Street crossings are within 600 feet (0.12 miles) of each other. The vertical geometry of the Mulberry Street crossing does not meet design standards for the speed of the roadway. To meet current design standards, improvements to this location would require vertical improvements, raising the roadway to the elevation of the tracks, which would impact properties on all four quadrants. St. Mark Church of Christ is located between Mulberry Street and Ash Street west of the rail line. The primary driveway is on Ash Street, with a secondary access on Mulberry Street. Other land uses around the crossing are a combination of low-density residential and commercial.

The Virginia Street crossing is approximately 500 feet (0.09 miles) from the George Street crossing to the east, and is also just over 500 feet from the grade-separated crossing at North Carolina Street to the west.

The Bryant, Bain, Lionel/Clingman, and Wayne Memorial Drive/Herman Street crossings are parallel to each other, with approximately 300 feet (0.06 miles) between Bryant and Bain Streets, 800 feet (0.15 miles) between Bain and Lionel/Clingman Streets, and 700 feet (0.13 miles) between Lionel/Clingman and Wayne Memorial Drive/Herman Street. A low-income, minority neighborhood is served most directly by Bryant Street. County school system facilities are located along Bain and Lionel/Clingman Streets, including a maintenance/administration building, school, and athletic fields. Wayne Memorial Drive/Herman Street is a skewed crossing and is the busiest crossing along the Norfolk Southern study corridor in Goldsboro.

8. *Grade Separation*

Grade-separated crossings eliminate the potential for train/vehicle collisions while maintaining vehicular access across the railroad tracks. However, stringent design standards make changes to railway grades or profiles difficult. Railroad overpasses of highways require approximately 17 feet of vertical clearance, and highway overpasses of railroad tracks require approximately 23 feet of clearance. Sight distance requirements on the overpass vertical curves generally result in long approaches, which can create access and connectivity issues. In addition, visual and noise impacts associated with overpasses can negatively affect neighborhoods or historic areas.

Factors to be considered when considering grade separating highway/rail crossings include:

- Exposure index
- Crash history
- Topography
- Adjacent land uses
- Construction impacts
- Cost

a) Exposure Index

NCDOT uses the exposure index as one factor to determine whether grade separation of a crossing should be considered in place of an at-grade crossing. As discussed previously in Chapter C, the exposure index is calculated by multiplying the number of trains per day by the daily traffic volume using the crossing. Table C-4 shows the exposure index at each of the study crossings. Six of the study crossings meet the identified 30,000 threshold:

- Ash Street
- George Street
- James Street
- William Street
- Wayne Memorial Drive/Herman Street
- Jefferson Street

However, the majority of trains come through this corridor in the evening, and therefore the effective exposure index during the day is much lower at all crossings. Using volumes from 6 a.m. to 6 p.m., only Wayne Memorial Drive/Herman Street has a notable exposure index (30,780).

b) Crash History

A history of train/vehicle crashes can contribute to the need for a grade separated crossing even if the exposure index is below the established thresholds. However, a review of the crash data at the study crossings does not show enough of a safety concern to warrant grade separation at any of the study crossings.

c) Topography

Elevations and slopes in the vicinity of an at-grade crossing have a large impact on the feasibility of a grade separation. The cost of grade separation can be significantly reduced in situations where the topography facilitates a highway overpass due to the need for relatively minimal earthwork or right-of-way requirements. However, the topography in the study area is generally flat, and therefore the anticipated property impacts and cost of a grade separation at this location make it nonviable alternative. .

d) Adjacent Land Uses

Grade separations may not be feasible in heavily developed areas such as central business or historic districts. Right-of-way costs or socio-economic impacts associated with the potential loss of businesses and jobs can result in an unfavorable cost-benefit ratio for the project.

The area from Virginia Street to William Street is primarily industries and businesses. The section of the rail corridor parallel with Royall Avenue (from William Street to Jefferson Street) is adjacent to low-income and minority neighborhoods; businesses; historic resources; and community facilities such as schools, churches, and the Boys & Girls Club.

e) Construction Impacts

The impacts associated with the construction of new grade-separated crossings can be substantial and can include visual, noise, and access degradation and the relocation of dwellings or businesses. Environmental features like wetlands or woodlands, historical and archaeological sites, and the presence of hazardous materials can also pose considerable challenges.

f) Costs

Grade separations are significant long-term infrastructure investments that generally cost multiple millions of dollars. A detailed cost-benefit analysis and careful planning are required before a grade separation is implemented.

E. Community Impact Analysis

The project study area encompasses the 13 rail crossings along the Norfolk Southern rail line through Goldsboro. The neighborhoods along the corridor are predominately low-income and minority.

Land uses on the west end near Ash and Mulberry Streets are generally low-density residential and commercial. Virginia through William Street land use is mostly industrial and commercial. Land uses adjacent to Bryant through Jefferson Streets are generally residential with some commercial and community facilities.

1. Community Features

A field visit was conducted to identify community facilities such as hospitals, churches, schools, fire and rescue stations, parks, and recreation areas, as well as known historic (either listed on or eligible for the National Register of Historic Places [NRHP]) or archaeological sites in the vicinity of the study crossings. Community facilities and other features that could play an important role in or add to the sense of the community were also identified. The purpose of the community impact analysis was to determine the potential impacts to Goldsboro residents from changes to the at-grade crossings.

The following community features were observed near the crossings as shown on Figure 3:

Mulberry Street – St. Mark Church of Christ

Ash Street – St. Mark Church of Christ

Virginia Street – None

George Street – American Red Cross, Deliverance Evangelical Church of the Good Shepherd, Tiny Tot University day care

James Street – Historic Freight Depot (potentially eligible for NRHP)

Holly Street – Holly Street Miracle Deliverance Church (potentially eligible for NRHP)

William Street – Borden Manufacturing Company (listed on NRHP)

Bryant Street – WAGES Head Start Preschool and Community Agency, Goldsboro Housing Authority neighborhood, Potter's House church

Bain Street – WAGES Head Start Preschool and Community Agency, Wayne County Operations and Technology Building, Goldsboro Housing Authority neighborhood, school fields

Lionel Street/Clingman Street – Wayne Middle/High Academy, school track and fields, Outpouring Teaching Ministry

Wayne Memorial Drive/Herman Street – House of Faith Church, Gospel Light Temple Apostolic Church, WAGES Head Start Preschool, Goldsboro High School, two potential historic houses

Audubon Avenue – Boys & Girls Club of Wayne County, Wayne County Child Development Center

Jefferson Street – Boys & Girls Club of Wayne County, Jefferson United Methodist Church, St. Mary's School and Church

2. *Demographics*

Based on Census data and field observations, minority or low-income communities may be located near the following crossings as summarized in Table E-1 and shown on figures in Appendix C.

Table E-1. Minority and Low Income Communities

Crossing	Potential Community Adjacent to Crossing	
	Minority	Low-Income
Mulberry St.	East of crossing	-
Ash St.	Both sides of crossing	North side of Ash St
Virginia St.	Both sides of crossing	Both sides of crossing
George St.	Both sides of crossing	Both sides of crossing
James St.	Both sides of crossing	Both sides of crossing
Holly St.	-	Both sides of crossing
William St.	South of crossing	Both sides of crossing
Bryant St.	South of crossing	Both sides of crossing
Bain St.	South of crossing	Both sides of crossing
Lionel St./ Clingman St.	Both sides of crossing	West side of Lionel St/ Clingman St
Wayne Memorial Dr./Herman St.	South of crossing	-
Audubon Ave.	South of crossing	-
Jefferson St.	Both sides of crossing	-

3. *Bicycle and Pedestrian Facilities*

None of the crossings include marked sidewalks or bike lanes across the railroad tracks. However, based on field observations and local planner input, the following crossings are used frequently by pedestrians and bicyclists. No pedestrians or bicyclists were observed at the Mulberry Street or Holly Street crossings.

Ash Street – pedestrians and motorized wheelchairs, primarily accessing Adam's Convenience Store east of the crossing

Resident in motorized wheelchair crossing the railroad tracks at Ash Street

Virginia Street – pedestrians, primarily accessing the Franklin Baking Company Bread Store on North Carolina Street and the Thrift Store on Virginia Street north of the crossing

George Street – pedestrians and bicyclists, primarily accessing businesses on both sides of the crossing

James Street – pedestrians, primarily accessing businesses on both sides of the crossing

William Street – a dirt track south of the crossing indicates pedestrians walk parallel with tracks between William Street and Waters Street

Bryant Street – pedestrians, primarily accessing businesses north of the crossing

Bain Street – pedestrians, primarily accessing businesses north of the crossing

Lionel Street/Clingman Street – pedestrians, primarily accessing businesses north of the crossing and Wayne Middle/High Academy south of the crossing. A sidewalk in poor condition is located on Lionel Street in front of the school, but does not cross the tracks. There are handicap ramps on the northwest and northeast corners, but no sidewalks north of the tracks. A dirt track south of the crossing indicates pedestrians also walk parallel with the tracks between Bain Street and Lionel Street.

Wayne Memorial Drive/Herman Street – pedestrians and bicyclists, primarily accessing businesses north of the crossing and Goldsboro High School south of the crossing

Audubon Avenue – pedestrians, primarily accessing businesses and the Boys & Girls Club north of the crossing

Jefferson Street – pedestrians, primarily accessing businesses and the Boys & Girls Club north of the crossing

4. Bus Routes

Wayne County Public School buses travel in the morning and afternoon, Monday through Friday, through 12 of the crossings studied. Goldsboro-Wayne Transportation Authority GATEWAY buses travel through two of the crossings studied on a regular schedule through the day, Monday through Saturday. Table E-2 summarizes school and transit bus travel across the rail corridor.

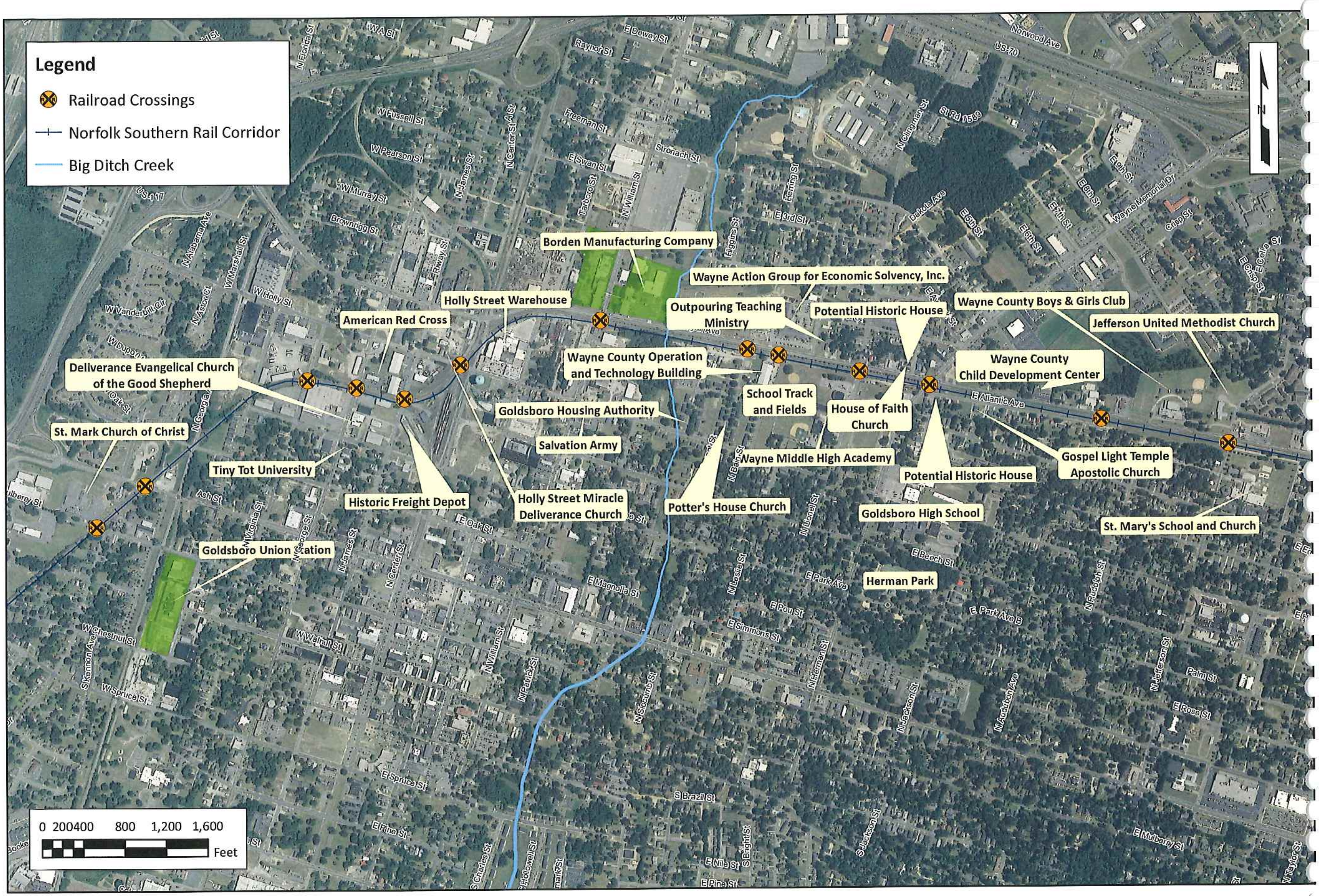
Table E-2. Bus Travel Through Crossings

Crossing	School Buses Crossing Daily	GATEWAY Buses Crossing Daily
Mulberry St	2	0
Ash St	66	13 (North End Route)
Virginia St	2	0
George St	24	0
James St	12	0
Holly St	11	0
William St	5	0
Bryant St	2	0
Bain St	2	0
Clingman St/ Lionel St	0	0
Wayne Memorial Dr/ Herman St	108	0
Audubon Ave	36	0
Jefferson St	42	38 (North End, Wayne Memorial, and Express Routes)

5. Community Impacts

The Mulberry Street crossing closure will have a minor impact on vehicles currently using that route, but an alternate route (Ash Street) is available approximately 600 feet from Mulberry Street. Based on field observations and local planner input, very little pedestrian or bicycle traffic is believed to use this crossing.

None of the other recommendations are expected to impact the community.



Goldsboro Traffic Separation Study
Community Features
Figure 3

G. Public Involvement

A public involvement program was established as part of this study. It consisted of:

- Project committee meetings
- Stakeholder committee meetings
- Public workshop
- City Council meeting / public hearing
- Small group meetings
- Newsletters

1. Project Committee Meetings

The project committee included the NCDOT Rail Division, City of Goldsboro, North Carolina Railroad Company, and Norfolk Southern Corporation. The project committee met on October 7, 2010 and April 14, 2011.

2. Stakeholder Committee Meetings

A stakeholder committee was established to provide an opportunity for key agencies and organizations to participate in the recommendations process. The following parties were part of the stakeholder committee:

- NCDOT Rail Division and NCDOT Division 4, District 3
- NC Railroad
- Norfolk Southern Corporation
- City of Goldsboro Planning and Transportation Departments
- Goldsboro Police and Fire Departments
- Wayne County EMS
- Goldsboro-Wayne Transportation Authority
- Goldsboro Housing Authority
- Wayne County Public Schools
- Wayne County Development Alliance (added after the first meeting)
- Franklin Baking Company (added after the first meeting)

The stakeholder committee met on May 18, 2011 to review preliminary recommendations before they would be presented at the public workshop. Modifications to preliminary recommendations included:

- Closing the Virginia Street crossing
- Adding a sign on the southbound access road at the Holly Street crossing
- Adding new access roads as mitigation for Bryant, Bain, and Lionel Street/Clingman Streets crossing closures
- Conducting a feasibility study for a grade separation at Wayne Memorial Drive/Herman Street

The stakeholder committee met on October 31, 2011 to review recommendations before they would be presented to the City Council. Modifications to recommendations included:

- Leaving Virginia Street, Bryant Street, Bain Street, and Lionel Street/Clingman Street crossings open

- Removing new access roads between Waters, Bryant, Bain, and Lionel/Clingman Streets
- Removing roadway improvements on Herman Street
- Adding improvements to Herman Place
- Not performing a feasibility study for a grade separation at Wayne Memorial Drive/Herman Street

3. *Public Workshop*

A public workshop was held on September 22, 2011 from 5:00 to 7:00 p.m. at the Wayne Middle/High Academy. Boards showing recommendations were available for review, and NCDOT and Kimley-Horn representatives attended the meeting to answer questions. The workshop did not include a formal presentation. A total of 36 citizens signed in at the workshop.

Citizens at the September 2011 public workshop

A total of eight comments and one petition with 58 signatures have been received from citizens, all of which opposed closing crossings (comments are in Appendix D). Concerns regarding opposition of closing crossings included restricting emergency vehicle access, restricting access to Wayne Middle/High Academy and the Wayne County Public Schools Operation Department, increasing congestion, reducing access for school buses, and reducing pedestrian access to St. Mark Church of Christ.

- Two were opposed to closing any of the crossings
- Two were opposed to closing the Bryant Street and Bain Street crossings
- Fifty-nine (one letter and a petition with 58 signatures) were opposed to closing the Bryant Street crossing
- One was opposed to closing the Lionel Street crossing
- One was opposed to closing the Mulberry Street crossing

Letters also were received from Franklin Baking Company and Wayne County Development Alliance opposing closure of the Virginia Street crossing. A letter was received from Wayne County Schools opposing closure of the Bain Street or Lionel Street/Clingman Street crossings.

4. *City Council Meeting / Public Hearing*

The recommendations were presented to the Goldsboro City Council at the December 19, 2011 work session. The Council passed a Resolution of Intent on January 23, 2012. A Public Hearing was advertised from January 26 through February 16, with a Public Hearing at the February 20 City Council meeting. The study was adopted by the Council at that time, and went before the Goldsboro Planning Commission on February 27. Final approval by City Council was given on March 5.

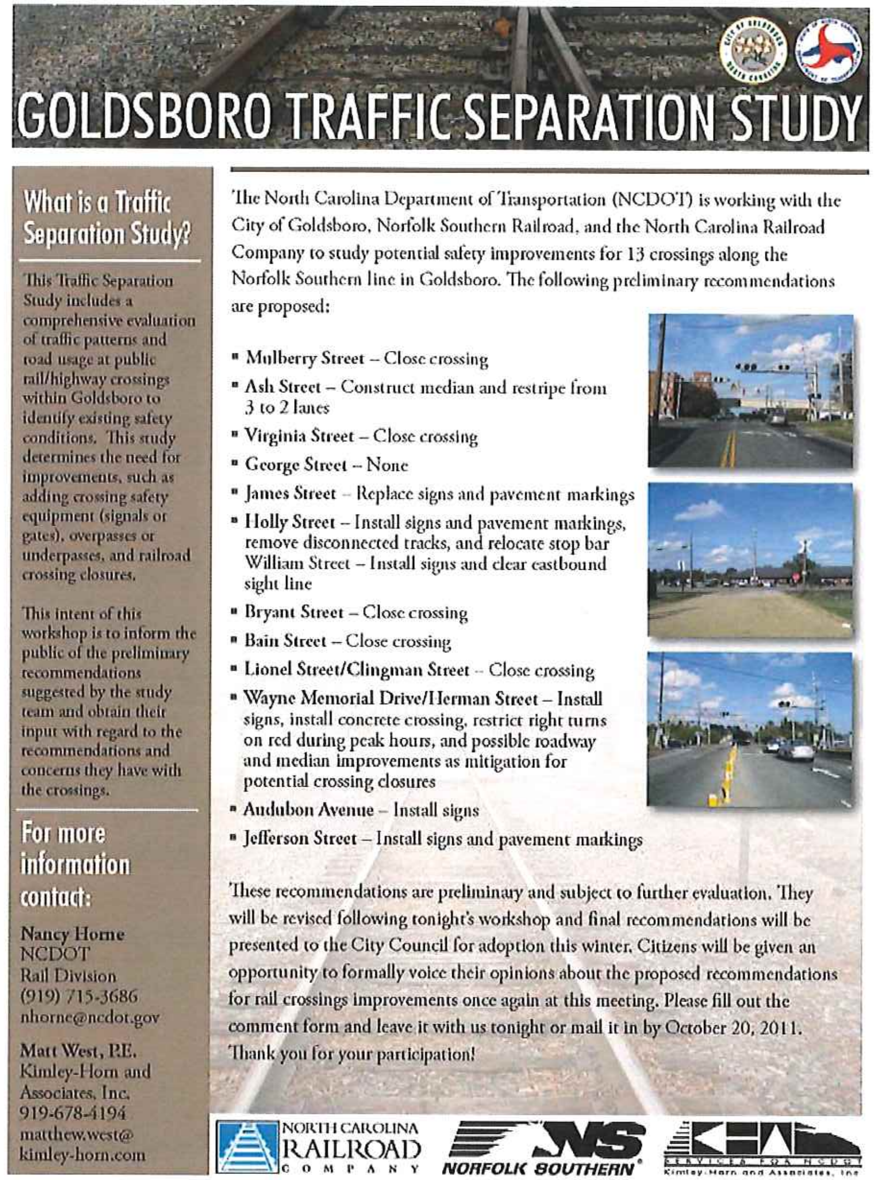
5. *Small Group Meetings*

NCDOT and the City of Goldsboro met with the Franklin Baking Company and Wayne County Development Alliance on June 9, 2011. NCDOT requested the meeting to discuss potentially closing the Virginia Street crossing, which is adjacent to the Franklin Baking Company facilities. Since this closing was added as a recommendation after the first stakeholder meeting, the Wayne County Development Alliance had not been part of the original stakeholder committee, and therefore had not had an opportunity to provide input on this recommendation. Both Franklin Baking Company and the Development Alliance stated they were opposed to closing the Virginia Street crossing.

6. *Mailings/Press Releases*

A press release was sent to local papers announcing the September 22, 2011 public workshop. A postcard announcing the workshop was mailed to property owners in the project corridor in early September.

A press release will be used to advertise the Public Hearing, tentatively scheduled for February 20, 2012. A final postcard or newsletter will be mailed to property owners announcing the approved recommendations following approval by City Council in March 2012.



GOLDSBORO TRAFFIC SEPARATION STUDY

What is a Traffic Separation Study?

This Traffic Separation Study includes a comprehensive evaluation of traffic patterns and road usage at public rail/highway crossings within Goldsboro to identify existing safety conditions. This study determines the need for improvements, such as adding crossing safety equipment (signals or gates), overpasses or underpasses, and railroad crossing closures.

This intent of this workshop is to inform the public of the preliminary recommendations suggested by the study team and obtain their input with regard to the recommendations and concerns they have with the crossings.

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The North Carolina Department of Transportation (NCDOT) is working with the City of Goldsboro, Norfolk Southern Railroad, and the North Carolina Railroad Company to study potential safety improvements for 13 crossings along the Norfolk Southern line in Goldsboro. The following preliminary recommendations are proposed:

- **Mulberry Street** – Close crossing
- **Ash Street** – Construct median and restripe from 3 to 2 lanes
- **Virginia Street** – Close crossing
- **George Street** – None
- **James Street** – Replace signs and pavement markings
- **Holly Street** – Install signs and pavement markings, remove disconnected tracks, and relocate stop bar William Street – Install signs and clear eastbound sight line
- **Bryant Street** – Close crossing
- **Bain Street** – Close crossing
- **Lionel Street/Clingman Street** – Close crossing
- **Wayne Memorial Drive/Herman Street** – Install signs, install concrete crossing, restrict right turns on red during peak hours, and possible roadway and median improvements as mitigation for potential crossing closures
- **Audubon Avenue** – Install signs
- **Jefferson Street** – Install signs and pavement markings

These recommendations are preliminary and subject to further evaluation. They will be revised following tonight's workshop and final recommendations will be presented to the City Council for adoption this winter. Citizens will be given an opportunity to formally voice their opinions about the proposed recommendations for rail crossings improvements once again at this meeting. Please fill out the comment form and leave it with us tonight or mail it in by October 20, 2011. Thank you for your participation!

NORTH CAROLINA RAILROAD COMPANY
NORFOLK SOUTHERN
Kimley-Horn and Associates, Inc.

Flyer distributed at the September 2011 public workshop

H. Summary of Recommendations

Recommendations are divided into near-term (2 to 5 years), mid-term (5 to 7 years), or long-term (7 to 15 years). Near-term and mid-term projects are typically paid for by the funding partners for the traffic separation study (in this case: NCDOT, City of Goldsboro, Norfolk Southern Corporation, and NCRR.). Long-term projects generally need additional study, and will be paid for as funds become available.

Table H-1 summarizes recommendations for the 13 public at-grade highway-rail crossings in Goldsboro. There are no long-term recommendations for this project. Each crossing is discussed in more detail following the table. Recommendations are shown on Figures 4A through 4.L.

Table H-1. Summary of Recommendations

Crossing	Near Term (2-5 years)		Mid Term (5-7 years)	
	Recommendation	Cost	Recommendation	Cost
Mulberry St	Close crossing	$49,000		
Ash St	Install a raised median Restripe from 3 to 2 lanes	$70,000		
Virginia St	Replace advanced warning signs Install advanced pavement markings	$600		
George St	No Action			
James St	Replace advanced warning signs Install advanced pavement markings	$600		
Holly St	Install advanced warning signs on Holly Street Install advanced pavement markings on Holly Street Install crossbucks east of CSX tracks Install grade-crossing warning sign southbound on unnamed road	$1,100	Remove disconnected track Relocate stop bar	$15,250
William St	Install grade-crossing warning signs on Royall Avenue	$500		
Bryant St	Install gates, flashers, bells, and new crossbucks at crossing Install advanced warning signs on Bryant Street Install advanced pavement markings on Bryant Street Install a "Do not stop on tracks" sign on Bryant Street Install grade-crossing warning signs on Royall Avenue	$205,000		

Table H-1. Summary of Recommendations				
Crossing	**Near Term (2-5 years)**		**Mid Term (5-7 years)**	
	Recommendation	**Cost**	**Recommendation**	**Cost**
Bain St	Install gates, flashers, bells, and new crossbucks at crossing Install advanced warning signs on Bain Street Install advanced pavement markings on Bain Street Install a "Do not stop on tracks" sign on Bain Street Install grade-crossing warning signs on Royall Avenue Install asphalt pavement and add curb and gutter south of the railroad track to improve the typical section	$360,000		
Lionel St/ Clingman St	Install advanced warning signs on Lionel Street/Clingman Street Install advanced pavement markings on Lionel Street/Clingman Street	$600		
Herman Pl	Remove the turnout on Royall Avenue to Herman Place Construct curb and gutter with a berm and drainage accommodations Install a "Dead End" sign on Herman Place at Herman Street Add landscaping on both sides of the closed crossing	$32,000		
Wayne Memorial Dr/ Herman St	Relocate advanced warning sign on Herman Street Install grade-crossing warning signs on Royall Avenue Add "No right turn on red 4-6 p.m." sign on Herman Street Replace the asphalt and timber flange with concrete	$131,000		
Audubon Ave	Install grade-crossing warning signs on Royall Avenue	$800		
Jefferson St	Install advanced pavement markings Install a second "Do not stop on tracks" sign on Jefferson Street Install grade-crossing warning signs on Royall Avenue	$850		

1. Mulberry Street

The Mulberry Street crossing was initially considered for closing because of its low traffic volumes (111 vehicles per day average) and proximity to Ash Street (approximately 600 feet or 0.12 miles). Mulberry Street is at a 57 degree angle to the railroad, compared with a preferred 90 degrees. The only existing warning devices are crossbucks and a faded advanced warning sign on the west side of the crossing. Land uses near the crossing are primarily residential with some small businesses. The vertical geometry of the Mulberry Street crossing does not meet design standards for the speed of the roadway. To meet current design standards, improvements to this location would require vertical improvements, raising the roadway to the elevation of the tracks, which would impact properties on all four quadrants.

St. Mark Church of Christ is located between Mulberry Street and Ash Street west of the rail line. The primary driveway is on Ash Street, with a secondary access on Mulberry Street that is closed except on Sundays. Members of the church were contacted during an early phase of this project. They stated that they would not be opposed to closing the Mulberry Street crossing, but requested that the closure not impact their driveway on Mulberry Street.

Near-Term Recommendations

- Close Mulberry Street between Alabama Avenue and the St. Mark Church of Christ's driveway.
- Provide landscaping and signage on both sides of the crossing.

Mid-Term Recommendation – None

Long-Term Recommendation – None

Goldsboro Traffic Separation Study
Recommendations
Norfolk Southern / Mulberry Street Crossing
Figure 4A

2. *Ash Street*

Ash Street is currently three lanes across the railroad tracks, and carries an average of 6,653 vehicles per day. Ash Street is at a 57 degree angle to the railroad, compared with a preferred 90 degrees. Although no vehicles were observed driving around the gates, the additional width of the center turning lane may encourage drivers to go around the gates to "beat the train." Existing warning devices include gates, flashers, bells, crossbucks, advanced warning signs, and advanced pavement markings.

Thirteen Goldsboro-Wayne Transportation Authority GATEWAY buses (along one route) and 66 school buses cross this location each weekday. Although Ash Street carries primarily through traffic entering Goldsboro from US 70/US 117/US 13, local planners noted that pedestrians likely travel between neighborhoods west of the crossing on Alabama Avenue and east of the crossing on North Carolina and Virginia Streets. Pedestrians and motorized wheelchairs were observed crossing the railroad along Ash Street, most of who were accessing Adam's Convenience Store east of the crossing. Since there is no paved shoulder, they were either walking on the road or in the narrow grass shoulder.

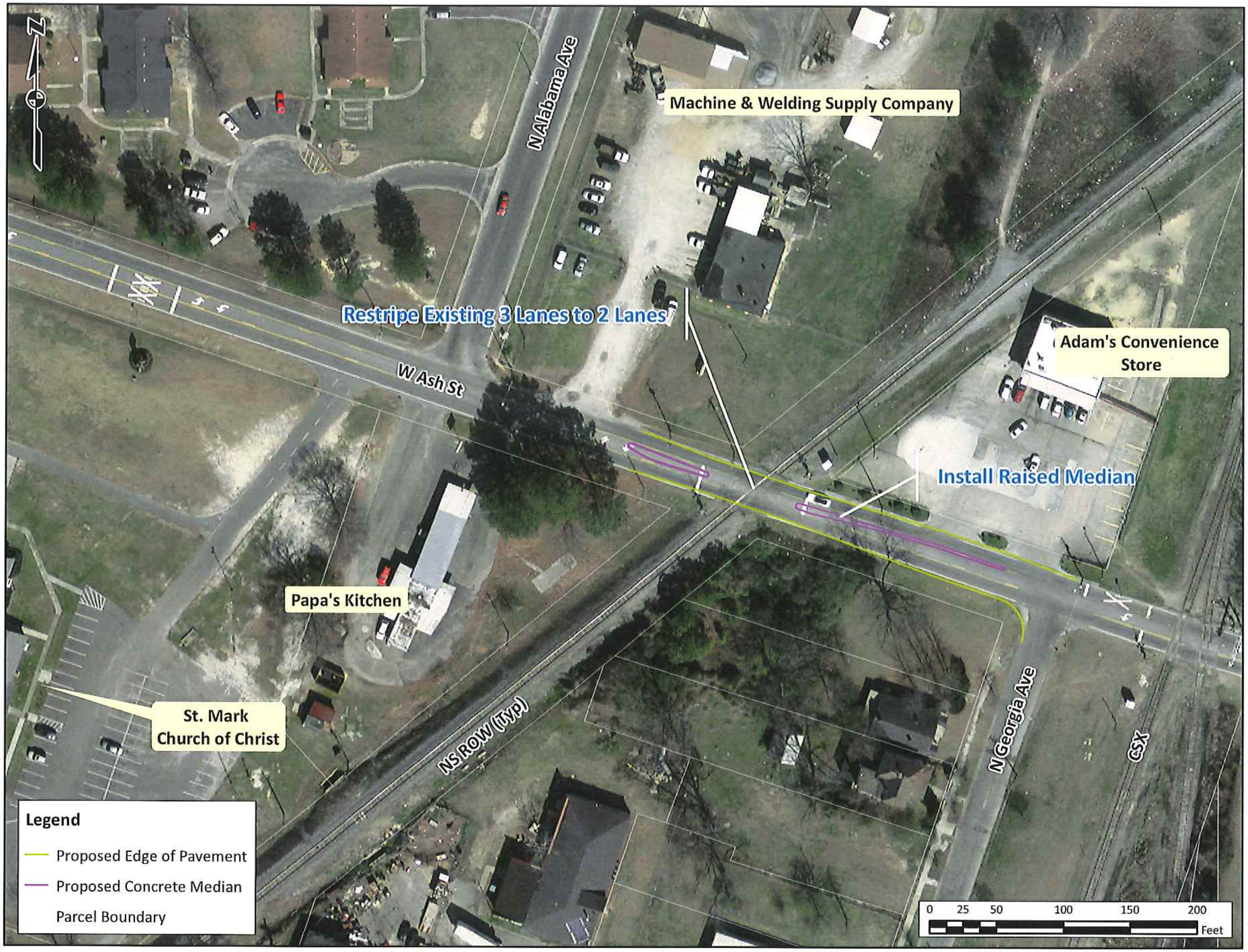
A raised median on Ash Street would restrict vehicles from driving around the gates. This median would be designed to continue to allow access into Adam's Convenience Store. Since there is currently a center two-way left turn lane in this section, no additional right of way would be required to install the median. Restriping the three existing lanes to two lanes with a median would provide space for pedestrians and bicyclists to share the road with vehicles across the tracks.

Near-Term Recommendations

- Restripe the existing three lanes on Ash Street across the tracks to two lanes
- Install a raised median.

Mid-Term Recommendation – None

Long-Term Recommendation – None



Goldsboro Traffic Separation Study
Recommendations
Norfolk Southern / Ash Street Crossing
Figure 4B

KHA Services for NCDOT
Kimley-Horn and Associates, Inc.

North Carolina Railroad Company
Norfolk Southern

3. *Virginia Street*

The Virginia Street crossing carries an average of 412 vehicles per day. It is an important link for industrial traffic, especially for the Franklin Baking Company, which is located adjacent to the crossing. Pedestrians were observed crossing the railroad tracks, and local planners noted that much of the pedestrian traffic is likely to access the Franklin Baking Company Bread Store and the Thrift Store. Two train crashes were reported in the early 1990s, but gates, flashers, and bells have been installed since that time. Crossbucks and faded advanced warning signs are on both sides of the crossing, but there are no advanced pavement markings.

Near-Term Recommendations

- Replace both advanced warning signs.
- Install advanced pavement markings on both sides of the crossing.

Mid-Term Recommendation – None

Long-Term Recommendation – None

SERVICES FOR NCDOT
Kimley-Horn and Associates, Inc.

Goldsboro Traffic Separation Study

Recommendations

Norfolk Southern / Virginia Street Crossing

Figure 4C

4. *James Street*

An average of 2,273 vehicles per day travels on James Street across the railroad. Land uses are primarily industrial and commercial, and some pedestrians were observed crossing the railroad tracks. There are two tracks in this location, with the main track continuing to the north and a spur track splitting off to go to the south. Existing warning devices include gates, flashers, bells, and crossbucks. Faded advanced warning signs are on both sides of the crossing, but there are no advanced pavement markings.

Near-Term Recommendations

- Replace both advanced warning signs.
- Install advanced pavement markings on both sides of the crossing.

Mid-Term Recommendation – None

Long-Term Recommendation – None

SERVICES FOR NCDOT
Kimley-Horn and Associates, Inc.

Goldsboro Traffic Separation Study

Recommendations

Norfolk Southern / James Street Crossing

Figure 4D

NORTH CAROLINA RAILROAD COMPANY

NS NORFOLK SOUTHERN

5. *Holly Street*

Holly Street is crossed by five tracks, including, from west to east, two disconnected Norfolk Southern tracks, two active Norfolk Southern tracks, and one CSX track. The westernmost track is recommended for removal. Once this track is removed, the eastbound stop bar can be moved east which will improve sight distance for stopped vehicles. A short, unnamed road connects Holly Street to Grantham Street on the north, and has been used by emergency vehicles since the Center Street crossing was closed in early 2011. A flashing pair of lights faces southbound traffic on that connector road, although local planners noted that drivers going south would bypass the gates and may accidentally turn onto the tracks when a train is coming.

Land uses adjacent to Holly Street are primarily industrial, and no pedestrians or bicyclists were observed at this crossing. There is an average of 1,471 vehicles per day on Holly Street at this location. Existing warning devices at the Norfolk Southern tracks include gates, flashers, bells, and crossbucks. A faded advanced warning sign is west of the crossing, but there are no advanced pavement markings. There are no warning devices at the CSX tracks.

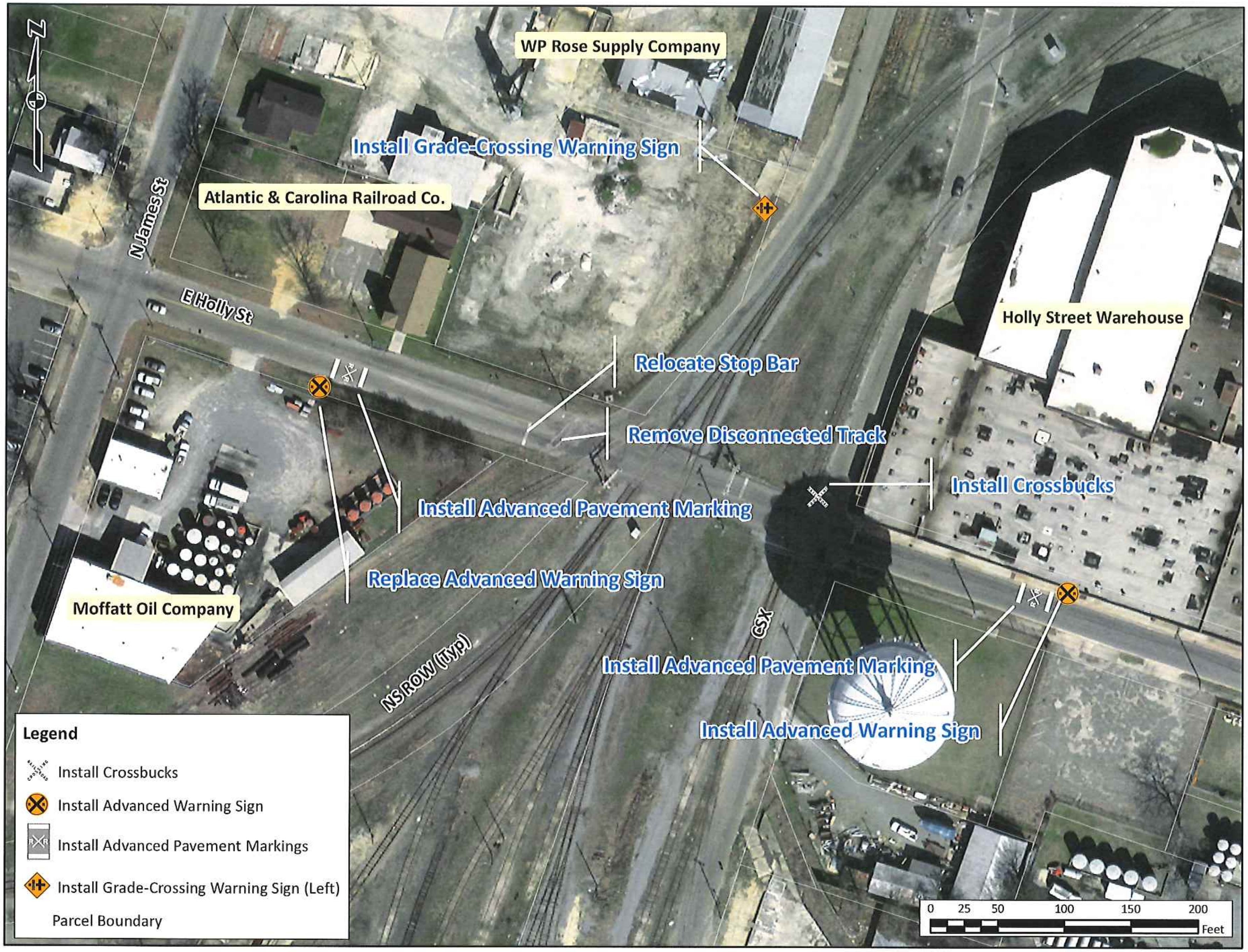
Near-Term Recommendations

- Replace the advanced warning sign west of the crossing.
- Install an advanced warning sign east of the crossing
- Install advanced pavement markings on both sides of the crossing.
- Install crossbucks east of the CSX tracks.
- Install a grade-crossing warning sign southbound on the unnamed connector road between Holly Street and Grantham Street, as shown on Figure 4E and Figure 5.

Mid-Term Recommendations

- Remove the westernmost disconnected track
- Relocate the stop bar closer to the crossing.

Long-Term Recommendation – None



Goldsboro Traffic Separation Study
Recommendations
Norfolk Southern / Holly Street Crossing
Figure 4E

KHA SERVICES FOR NCDOT Kimley-Horn and Associates, Inc.

NORTH CAROLINA RAILROAD COMPANY

NORFOLK SOUTHERN

6. *William Street*

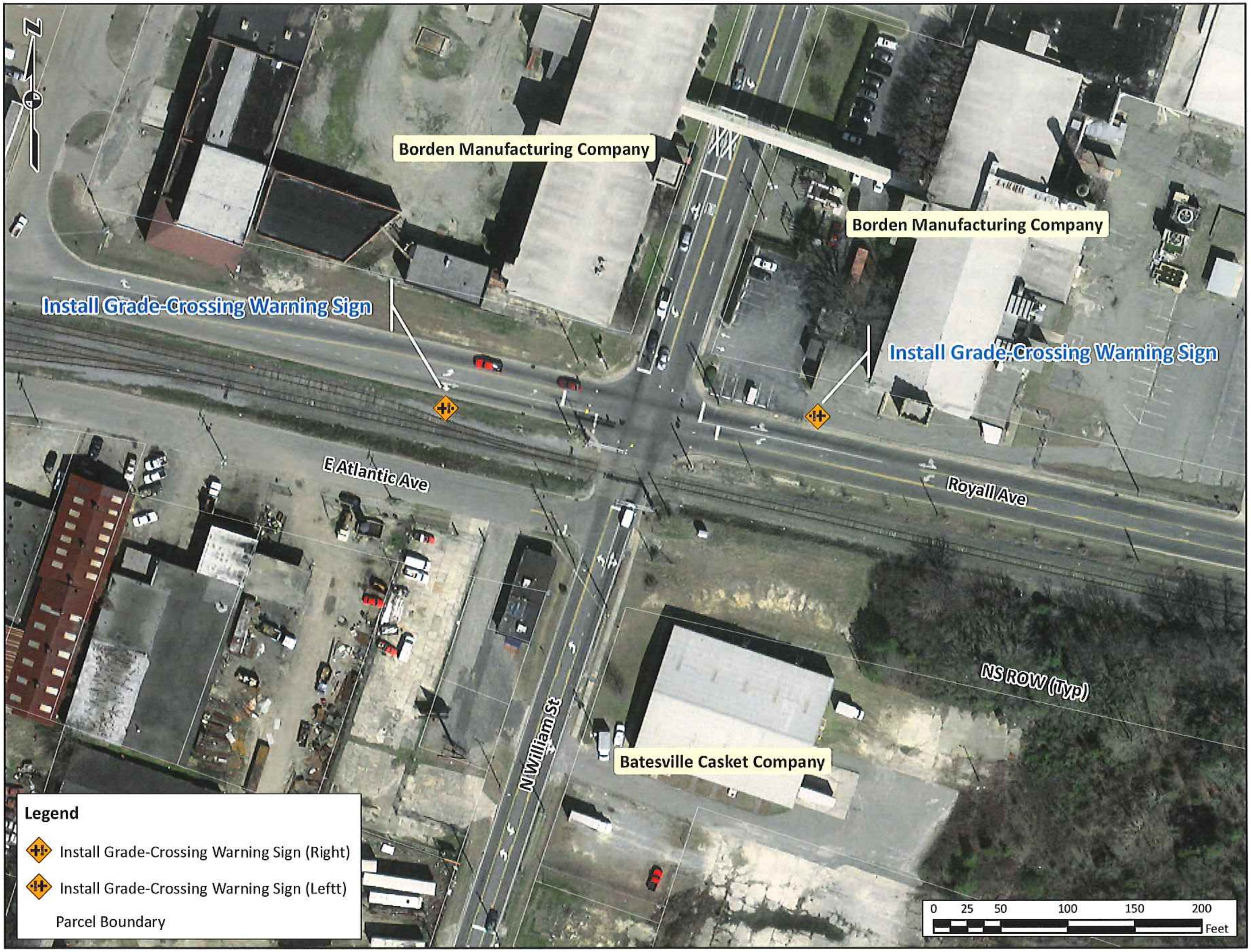
Land uses adjacent to the William Street crossing are commercial and industrial, including several vacant warehouses. There is an average of 7,999 vehicles per day across the tracks. Existing warning devices include gates, flashers, bells, advanced warning signs on both sides of the tracks, and advanced pavement markings on both sides of the tracks. Royall Avenue is parallel with the railroad tracks in this location, and the signalized intersection of William Street and Royall Avenue is approximately 50 feet north of the railroad crossing. There are no grade-crossing warning signs on Royall Avenue near the William Street crossing. Although neither pedestrians nor bicyclists were observed across the railroad tracks in this location, a dirt path in the railroad right of way parallel with the railroad between William Street and Waters Street indicates that pedestrians are in the vicinity.

Near-Term Recommendation

- Install grade-crossing warning signs on Royall Avenue, as shown on Figure 4F and Figure 5.

Mid-Term Recommendation – None

Long-Term Recommendation – None



Goldsboro Traffic Separation Study

Recommendations

Norfolk Southern / William Street Crossing

Figure 4F

SERVICES FOR NCDOT
Kimley-Horn and Associates, Inc.

7. *Bryant Street*

The Bryant Street crossing is approximately 300 feet west of the Bain Street crossing. Currently, the only warning device at this location is crossbucks on a wooden post. Bryant Street tees into Royall Avenue approximately 50 feet north of the railroad crossing. There are no grade-crossing warning signs on Royall Avenue near the Bryant Street crossing. The average traffic volume is 551 vehicles per day on Bryant Street at this location.

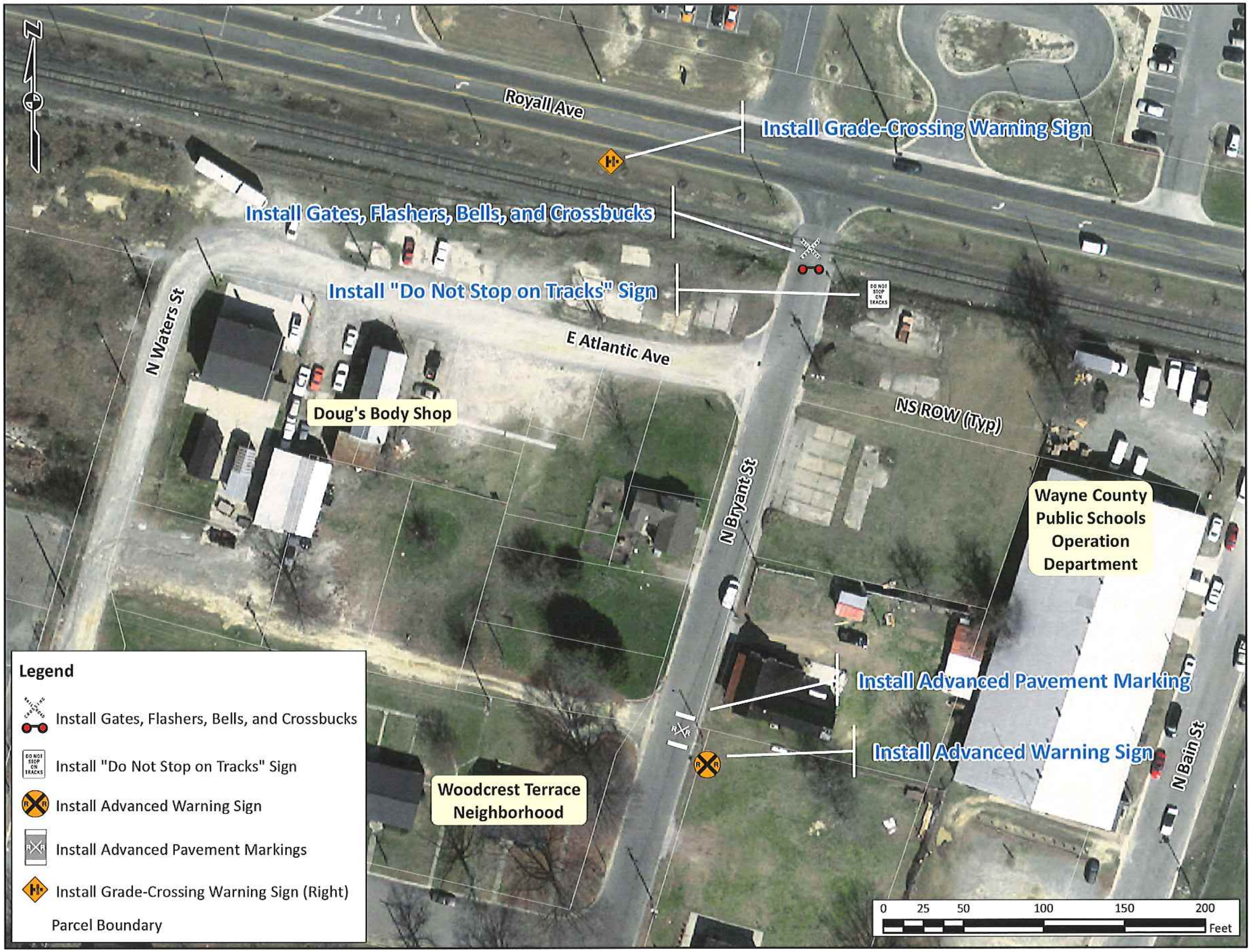
Woodcrest Terrace, a government-subsidized housing neighborhood, is located south of the rail line between Waters Street and Bain Street, with the majority of the housing closest to Bryant Street. Pedestrians were observed crossing the tracks at this location. Pedestrians may cross Royall Avenue to access the businesses on the north side of the street.

Near-Term Recommendations

- Install gates, flashers, bells, and new crossbucks.
- Install a "Do not stop on tracks" sign.
- Install an advanced warning sign.
- Install an advanced pavement marking.
- Install one grade-crossing warning sign for Bryant/Bain Street crossings on Royall Avenue, as shown in Figure 4G and Figure 5—a sign for eastbound drivers will be located west of Bryant Street.

Mid-Term Recommendation – None

Long-Term Recommendation – None



Goldsboro Traffic Separation Study
Recommendations
Norfolk Southern / Bryant Street Crossing
Figure 4G

SERVICES FOR NCDOT Kimley-Horn and Associates, Inc.

NORTH CAROLINA RAILROAD COMPANY

NORFOLK SOUTHERN

7. *Bain Street*

The Bain Street crossing is approximately 300 feet east of the Bryant Street crossing. Currently, the only warning device at this crossing is crossbucks on a wooden post. Bain Street tees into Royall Avenue approximately 50 feet north of the railroad crossing. There are no grade-crossing warning signs on Royall Avenue near the Bain Street crossing. Bain Street is dirt for approximately 135 feet south of the railroad track, with on-street parking for visitors to the Wayne County Public Schools Operations Department. The average traffic volume is 451 vehicles per day on Bain Street at this location.

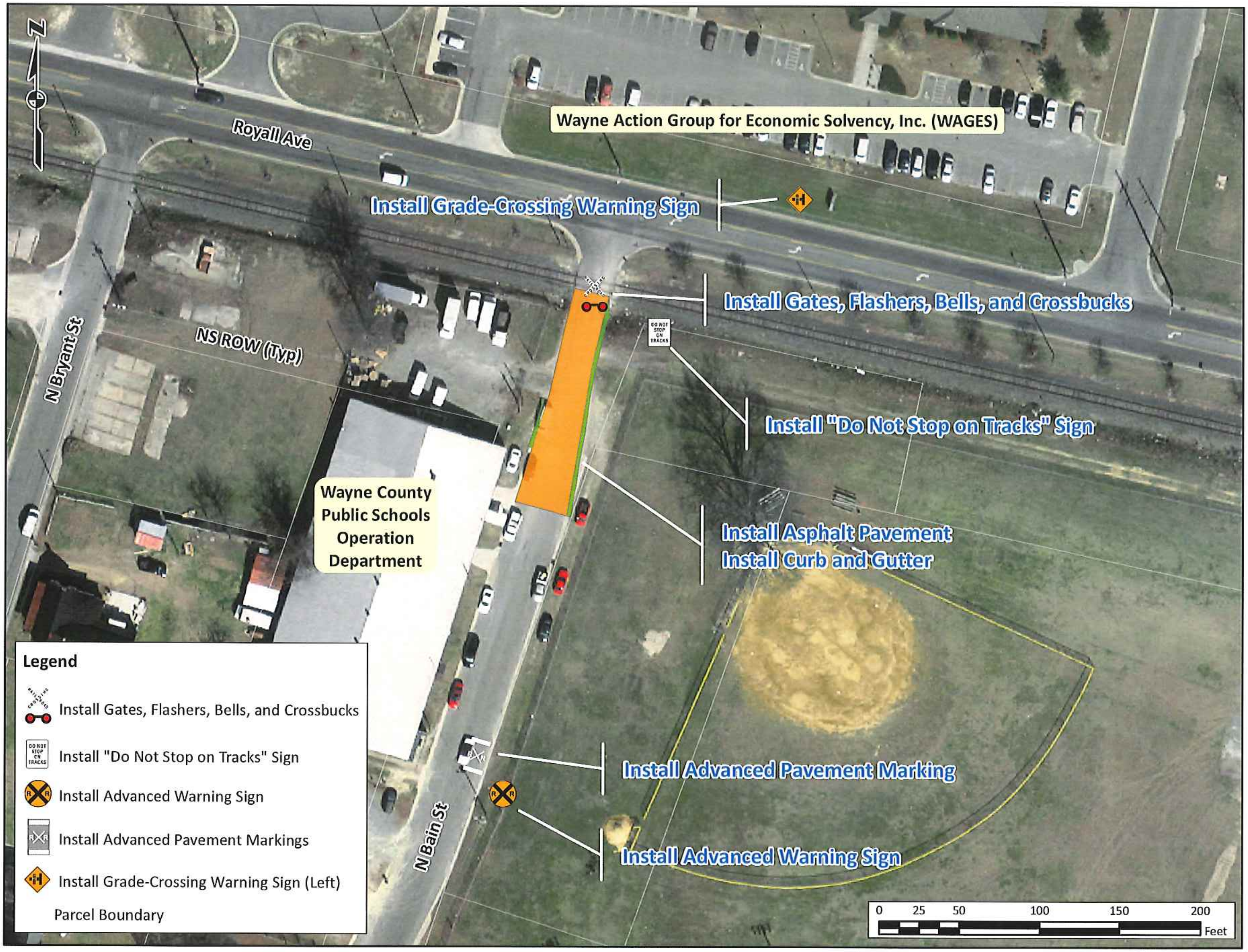
Woodcrest Terrace, a government-subsidized housing neighborhood, is located south of the rail line between Waters Street and Bain Street, with the majority of the housing closest to Bryant Street. Ball fields for the Wayne Middle/High Academy are east of Bain Street. Pedestrians were observed crossing the tracks at this location. Pedestrians may cross Royall Avenue to access the businesses on the north side of the street. A dirt path within railroad right of way between Bain Street and Lionel Street parallel with the railroad track indicates that pedestrians may be walking between the neighborhoods and Wayne Middle/High Academy on Lionel Street.

Near-Term Recommendations

- Install gates, flashers, bells, and new crossbucks.
- Install a "Do not stop on tracks" sign.
- Install an advanced warning sign.
- Install an advanced pavement marking.
- Install one grade-crossing warning sign for Bryant/Bain Street crossings on Royall Avenue, as shown in Figure 4H and Figure 5—a sign for westbound drivers will be located east of Bain Street.
- Install asphalt pavement and add curb and gutter south of the railroad track to improve the typical section on Bain Street

Mid-Term Recommendation – None

Long-Term Recommendation – None



Goldsboro Traffic Separation Study
Recommendations
Norfolk Southern / Bain Street Crossing
Figure 4H

SERVICES FOR NCDOT
Kimley-Horn and Associates, Inc.

NORTH CAROLINA RAILROAD COMPANY
NORFOLK SOUTHERN

8. *Lionel Street/Clingman Street*

Existing warning devices at this crossing include gates, flashers, bells, and crossbucks. There are no advanced warning signs or advanced pavement markings on Lionel Street/Clingman Street. There are grade-crossing warning sign on Royall Avenue in both directions, as shown on Figure 5. The average traffic volume at this crossing is 568 vehicles per day, with the majority coming between Royall Avenue and the employee parking lot in the southwest quadrant of the crossing. Lionel Street/Clingman Street has an unsignalized intersection with Royall Avenue approximately 50 feet north of the railroad crossing. Lionel Street is closed during the day except to bus traffic, which provides a safer environment for buses to unload and for students and faculty to cross the street between the school on the west side of Lionel Street and the school's track on the east side. The school is also designated as a Red Cross Emergency Facility.

A sidewalk runs along Lionel Street on the west side south of the crossing. A dirt path in the railroad right of way between Bain Street and Lionel Street indicates that pedestrians may be walking between the neighborhoods to the west and Wayne Middle/High Academy. Pedestrians were observed crossing the tracks at this location. Since all students are bused to Wayne County schools, there is not a need for students to cross the railroad tracks from the housing area north of the school, but some may choose to do so.

Near-Term Recommendations

- Install advanced warning signs on Lionel Street/Clingman Street.
- Install advanced pavement markings on Lionel Street/Clingman Street.

Mid-Term Recommendation – None

Long-Term Recommendation – None

Goldsboro Traffic Separation Study
Recommendations
Norfolk Southern / Lionel St / Clingman St Crossing
Figure 4I

SERVICES FOR NCDOT
Kimley-Horn and Associates, Inc.

NORTH CAROLINA RAILROAD COMPANY

NORFOLK SOUTHERN

9. *Herman Place*

The Herman Place crossing was closed in 1995, and a chain link fence is located across Herman Place on the south side of the railroad tracks. However, there is still a radius turnout on Royall Avenue to Herman Place, which may be confusing for drivers. Removing the turnout and constructing curb and gutter with a berm and drainage accommodations on Royall Avenue across Herman Place would clearly indicate the crossing is closed to drivers from the north. A "Dead End" sign on Herman Place at the intersection with Herman Street would indicate the crossing is closed to drivers from the south. New landscaping on both sides of the closed crossing would improve the appearance at this location.

Near-Term Recommendations

- Remove the turnout and construct curb and gutter with a berm and drainage accommodations on Royall Avenue at Herman Place.
- Install a "Dead End" sign on Herman Place at the intersection with Herman Street.
- Add landscaping on both sides of the closed crossing.

Mid-Term Recommendation – None

Long-Term Recommendation – None

Goldsboro Traffic Separation Study
Recommendations
Norfolk Southern / Herman Place Crossing
Figure 4J

10. Wayne Memorial Drive/Herman Street

There is an average of 14,054 vehicles per day in this location. A total of 108 school buses travel over this crossing daily, Monday through Friday, and a high number of trucks also use this route. Wayne Memorial Drive/Herman Street is at a 58 degree angle to the railroad, compared with a preferred 90 degrees. Wayne Memorial Drive/Herman Street has a signalized intersection with Royall Avenue approximately 50 feet northeast of the railroad crossing. Existing warning devices include gates, flashers, bells, crossbucks, advanced warning signs on Wayne Memorial Drive/Herman Street, and advanced pavement markings on Wayne Memorial Drive/Herman Street. The advanced warning sign south of the crossing is difficult to see because of its location on the curve and because it is hidden behind a tree. There are no grade-crossing warning signs on Royall Avenue approaching the crossing.

Land uses near the Wayne Memorial Drive/Herman Street crossing are residential in the south quadrant and commercial in the other three quadrants. Goldsboro High School is located on Herman Street approximately 0.25 miles south of the railroad track. Pedestrians and bicyclists were observed crossing the tracks at this location, and may be accessing businesses north of the crossing and Goldsboro High School south of the crossing along Herman Street.

Yellow bollards in the median on Herman Street restrict vehicles from turning left from Atlantic Avenue to Herman Street. It also prevents vehicles from driving around the gates when they are closed. Vehicles were observed queuing over the tracks, getting hit by the gates, and running into the gates. A traffic analysis studied restricting right turns on red from Herman Street to Royall Avenue, and found it did not worsen level of service.

Near-Term Recommendations

- Replace the asphalt and timber flange with concrete for better durability due to high traffic volumes, truck percentages, and number of school buses.
- Relocate the advanced warning sign on Herman Street south of the crossing.
- Install grade-crossing warning signs on Royall Avenue, as shown on Figure 4K and Figure 5.
- Add "No right turn on red 4-6 p.m." sign on Herman Street

Mid-Term Recommendation – None

Long-Term Recommendation – None

Goldsboro Traffic Separation Study
Recommendations
Norfolk Southern / Wayne Mem Dr/Herman St Crossing
Figure 4K

KHA Services for NCDOT Kimley-Horn and Associates, Inc.

North Carolina Railroad Company

Norfolk Southern

11. Audubon Avenue

Audubon Avenue carries an average of 1,619 vehicles per day across the railroad tracks, and tees into Royall Avenue approximately 50 feet north of the crossing. Land uses are residential south of the railroad and commercial on the north side of Royall Avenue. Pedestrians were observed crossing the tracks, and may be accessing businesses and the Boys & Girls Club north of the crossing. Existing warning devices include gates, flashers, bells, and crossbucks. There is not an advanced warning sign or advanced pavement marking on Audubon Avenue approaching the crossing. There are no grade-crossing warning signs on Royall Avenue in this area.

Near-Term Recommendations

- Replace an advanced warning sign on Audubon Avenue.
- Install advanced pavement marking on Audubon Avenue.
- Install grade-crossing warning signs on Royall Avenue, as shown on Figure 4L and Figure 5.

Mid-Term Recommendation – None

Long-Term Recommendation – None

Goldsboro Traffic Separation Study
Recommendations
Norfolk Southern / Audubon Avenue Crossing
Figure 4L

12. Jefferson Street

Jefferson Street is used by local and through traffic as an alternate route to Wayne Memorial Drive from the south side of Royall Avenue. Three Goldsboro-Wayne Transportation Authority GATEWAY bus routes, with a total of 38 buses per day during the week, travel on Jefferson Street, looping past the transfer center on Madison Avenue. There is an average of 6,683 vehicles per day at this location. Existing warning devices include gates, flashers, bells, crossbucks, and advanced warning signs. There are no advanced pavement markings on Jefferson Street or grade-crossing warning signs on Royall Avenue.

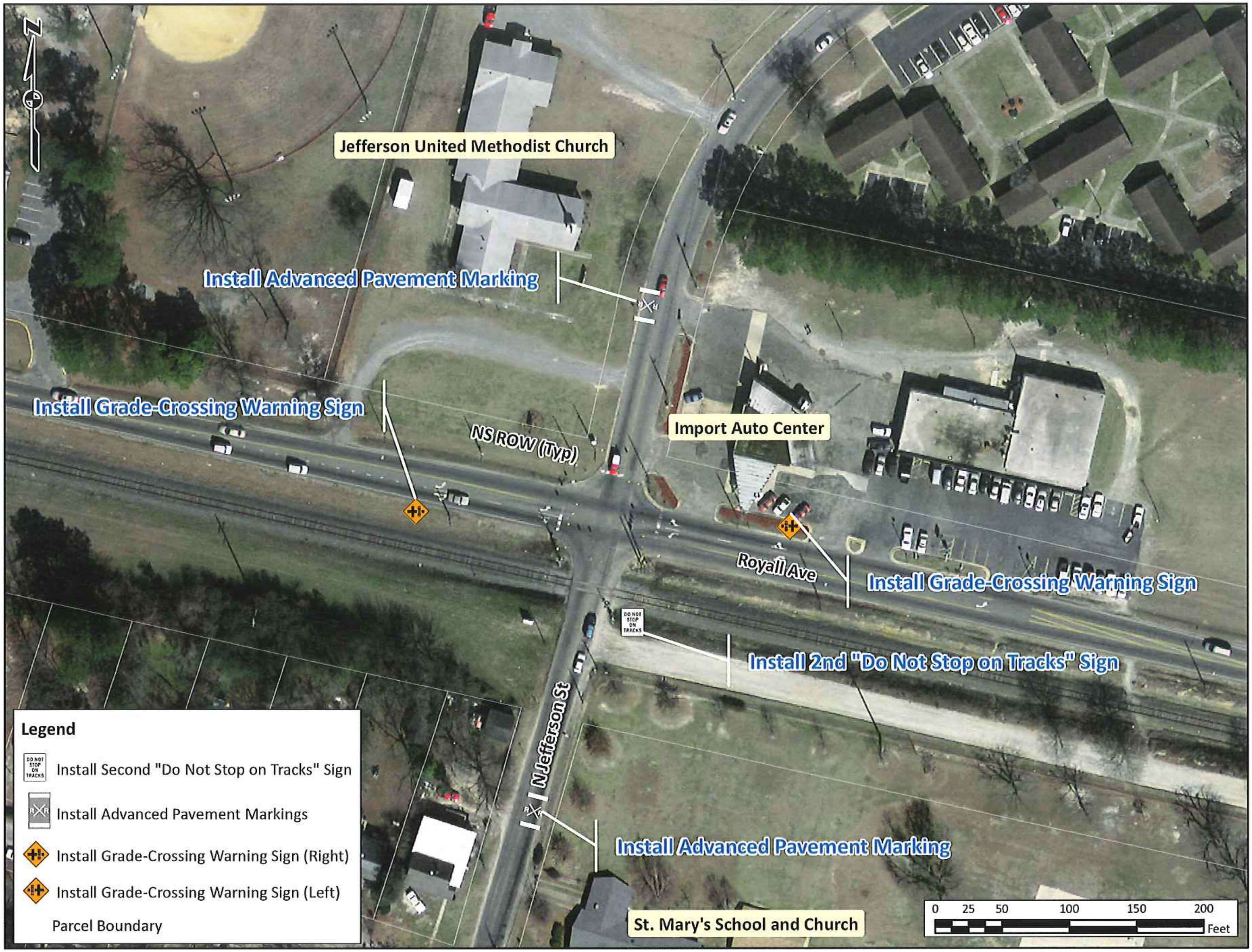
Land uses near the crossing are primarily residential with some commercial along Royall Avenue. Pedestrians were observed crossing the tracks, and may be accessing businesses and the Boys & Girls Club north of the crossing.

Near-Term Recommendations

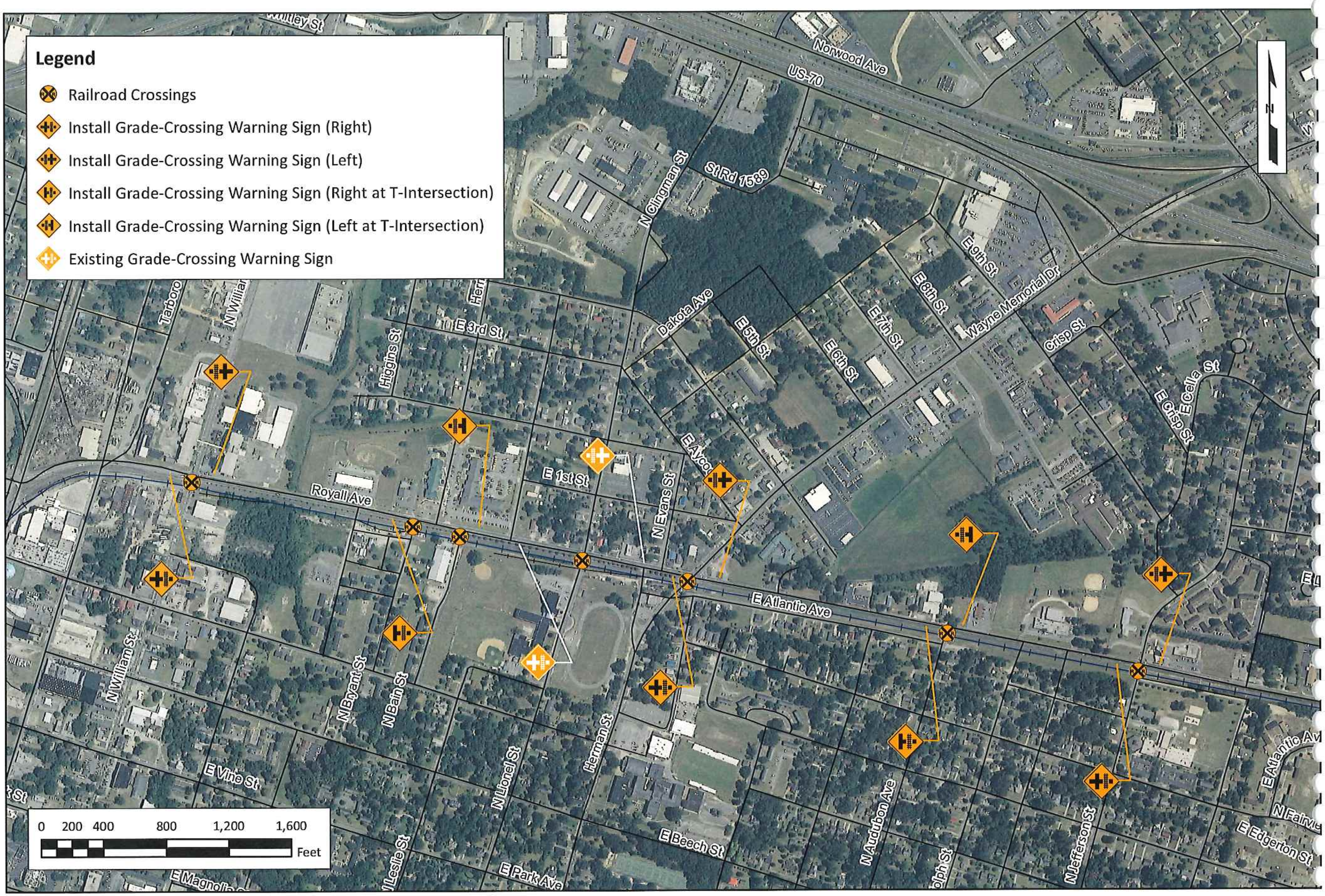
- Install advanced pavement markings on Jefferson Street.
- Install a second "Do not stop on tracks" sign on Jefferson Street south of the railroad tracks.
- Install grade-crossing warning signs on Royall Avenue, as shown on Figure 4M and Figure 5.

Mid-Term Recommendation – None

Long-Term Recommendation – None



Goldsboro Traffic Separation Study
Recommendations
Norfolk Southern / Jefferson Street Crossing
Figure 4M



Goldsboro Traffic Separation Study
Recommended Signage on Royall Avenue
Figure 4

SERVICES FOR NCDOT
Kimley-Horn and Associates, Inc.

NORTH CAROLINA RAILROAD COMPANY

NORFOLK SOUTHERN

APPENDIX A

Traffic Analysis Data

Traffic Count Data

Kimley-Horn and Associates, Inc.
Raleigh, NC

ASH STREET
Site Code: 2
Station ID: 2

Latitude: 0' 0.000 South

Start	29-Nov-10		Tue		Wed		Thu		Fri		Sat		Sun		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	13	**154**	*	*	*	*	*	*	*	*	*	*	13	**154**
12:15	*	*	10	**158**	*	*	*	*	*	*	*	*	*	*	10	**158**
12:30	*	*	6	**144**	*	*	*	*	*	*	*	*	*	*	6	**144**
12:45	*	*	6	**140**	*	*	*	*	*	*	*	*	*	*	6	**140**
01:00	*	*	5	149	*	*	*	*	*	*	*	*	*	*	5	149
01:15	*	122	8	149	*	*	*	*	*	*	*	*	*	*	8	136
01:30	*	122	2	*	*	*	*	*	*	*	*	*	*	*	2	122
01:45	*	108	2	*	*	*	*	*	*	*	*	*	*	*	2	108
02:00	*	102	3	*	*	*	*	*	*	*	*	*	*	*	3	102
02:15	*	111	5	*	*	*	*	*	*	*	*	*	*	*	5	111
02:30	*	143	4	*	*	*	*	*	*	*	*	*	*	*	4	143
02:45	*	141	8	*	*	*	*	*	*	*	*	*	*	*	8	141
03:00	*	108	2	*	*	*	*	*	*	*	*	*	*	*	2	108
03:15	*	119	0	*	*	*	*	*	*	*	*	*	*	*	0	119
03:30	*	149	2	*	*	*	*	*	*	*	*	*	*	*	2	149
03:45	*	125	3	*	*	*	*	*	*	*	*	*	*	*	3	125
04:00	*	144	5	*	*	*	*	*	*	*	*	*	*	*	5	144
04:15	*	124	5	*	*	*	*	*	*	*	*	*	*	*	5	124
04:30	*	**156**	9	*	*	*	*	*	*	*	*	*	*	*	9	156
04:45	*	**113**	4	*	*	*	*	*	*	*	*	*	*	*	4	113
05:00	*	**173**	10	*	*	*	*	*	*	*	*	*	*	*	10	173
05:15	*	**147**	13	*	*	*	*	*	*	*	*	*	*	*	13	147
05:30	*	122	9	*	*	*	*	*	*	*	*	*	*	*	9	122
05:45	*	87	11	*	*	*	*	*	*	*	*	*	*	*	11	87
06:00	*	102	28	*	*	*	*	*	*	*	*	*	*	*	28	102
06:15	*	73	47	*	*	*	*	*	*	*	*	*	*	*	47	73
06:30	*	81	72	*	*	*	*	*	*	*	*	*	*	*	72	81
06:45	*	54	91	*	*	*	*	*	*	*	*	*	*	*	91	54
07:00	*	62	90	*	*	*	*	*	*	*	*	*	*	*	90	62
07:15	*	46	81	*	*	*	*	*	*	*	*	*	*	*	81	46
07:30	*	38	120	*	*	*	*	*	*	*	*	*	*	*	120	38
07:45	*	37	135	*	*	*	*	*	*	*	*	*	*	*	135	37
08:00	*	45	116	*	*	*	*	*	*	*	*	*	*	*	116	45
08:15	*	30	103	*	*	*	*	*	*	*	*	*	*	*	103	30
08:30	*	52	110	*	*	*	*	*	*	*	*	*	*	*	110	52
08:45	*	39	102	*	*	*	*	*	*	*	*	*	*	*	102	39
09:00	*	28	82	*	*	*	*	*	*	*	*	*	*	*	82	28
09:15	*	24	98	*	*	*	*	*	*	*	*	*	*	*	98	24
09:30	*	30	106	*	*	*	*	*	*	*	*	*	*	*	106	30
09:45	*	25	104	*	*	*	*	*	*	*	*	*	*	*	104	25
10:00	*	15	108	*	*	*	*	*	*	*	*	*	*	*	108	15
10:15	*	18	100	*	*	*	*	*	*	*	*	*	*	*	100	18
10:30	*	18	101	*	*	*	*	*	*	*	*	*	*	*	101	18
10:45	*	20	100	*	*	*	*	*	*	*	*	*	*	*	100	20
11:00	*	18	**113**	*	*	*	*	*	*	*	*	*	*	*	**113**	18
11:15	*	26	**124**	*	*	*	*	*	*	*	*	*	*	*	**124**	26
11:30	*	26	**131**	*	*	*	*	*	*	*	*	*	*	*	**131**	26
11:45	*	14	**150**	*	*	*	*	*	*	*	*	*	*	*	**150**	14
Total	0	3337	2557	894	0	0	0	0	0	0	0	0	0	0	2557	4096
Day Total	3337		3451		0		0		0		0		0		6653	
% Splits	0.0%	100.0 %	74.1%	25.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	38.4%	61.6%
Peak		04:30	11:00	12:00											11:00	12:00
Vol.		589	518	596											518	596
P.H.F.		0.851	0.863	0.943											0.863	0.943

ADT Not Calculated

Kimley-Horn and Associates, Inc.
Raleigh, NC

AUDOBON STREET
Site Code: 000000000010
Station ID:

Latitude: 0' 0.000 South

Start	29-Nov-10		Tue		Wed		Thu		Fri		Sat		Sun		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	*	*	3	14	*	*	*	*	*	*	*	*	3	14
12:15	*	*	*	*	2	28	*	*	*	*	*	*	*	*	2	28
12:30	*	*	*	*	3	19	*	*	*	*	*	*	*	*	3	19
12:45	*	*	*	*	2	31	*	*	*	*	*	*	*	*	2	31
01:00	*	*	*	*	1	22	*	*	*	*	*	*	*	*	1	22
01:15	*	*	*	*	0	26	*	*	*	*	*	*	*	*	0	26
01:30	*	*	*	*	2	22	*	*	*	*	*	*	*	*	2	22
01:45	*	*	*	*	3	30	*	*	*	*	*	*	*	*	3	30
02:00	*	*	*	*	0	23	*	*	*	*	*	*	*	*	0	23
02:15	*	*	*	*	0	20	*	*	*	*	*	*	*	*	0	20
02:30	*	*	*	*	0	**29**	*	*	*	*	*	*	*	*	0	29
02:45	*	*	*	*	1	**24**	*	*	*	*	*	*	*	*	1	**24**
03:00	*	*	*	*	2	**69**	*	*	*	*	*	*	*	*	2	**69**
03:15	*	*	*	*	1	**58**	*	*	*	*	*	*	*	*	1	**58**
03:30	*	*	*	32	1	*	*	*	*	*	*	*	*	*	1	**32**
03:45	*	*	*	24	1	*	*	*	*	*	*	*	*	*	1	24
04:00	*	*	*	35	0	*	*	*	*	*	*	*	*	*	0	35
04:15	*	*	*	**45**	0	*	*	*	*	*	*	*	*	*	0	45
04:30	*	*	*	**40**	1	*	*	*	*	*	*	*	*	*	1	40
04:45	*	*	*	**25**	0	*	*	*	*	*	*	*	*	*	0	25
05:00	*	*	*	**36**	3	*	*	*	*	*	*	*	*	*	3	36
05:15	*	*	*	30	1	*	*	*	*	*	*	*	*	*	1	30
05:30	*	*	*	35	2	*	*	*	*	*	*	*	*	*	2	35
05:45	*	*	*	27	7	*	*	*	*	*	*	*	*	*	7	27
06:00	*	*	*	18	4	*	*	*	*	*	*	*	*	*	4	18
06:15	*	*	*	26	7	*	*	*	*	*	*	*	*	*	7	26
06:30	*	*	*	30	11	*	*	*	*	*	*	*	*	*	11	30
06:45	*	*	*	9	14	*	*	*	*	*	*	*	*	*	14	9
07:00	*	*	*	49	19	*	*	*	*	*	*	*	*	*	19	49
07:15	*	*	*	18	18	*	*	*	*	*	*	*	*	*	18	18
07:30	*	*	*	19	**30**	*	*	*	*	*	*	*	*	*	**30**	19
07:45	*	*	*	12	**47**	*	*	*	*	*	*	*	*	*	**47**	12
08:00	*	*	*	14	**33**	*	*	*	*	*	*	*	*	*	**33**	14
08:15	*	*	*	9	**22**	*	*	*	*	*	*	*	*	*	**22**	9
08:30	*	*	*	12	19	*	*	*	*	*	*	*	*	*	19	12
08:45	*	*	*	17	26	*	*	*	*	*	*	*	*	*	26	17
09:00	*	*	*	6	22	*	*	*	*	*	*	*	*	*	22	6
09:15	*	*	*	10	20	*	*	*	*	*	*	*	*	*	20	10
09:30	*	*	*	8	15	*	*	*	*	*	*	*	*	*	15	8
09:45	*	*	*	10	20	*	*	*	*	*	*	*	*	*	20	10
10:00	*	*	*	2	19	*	*	*	*	*	*	*	*	*	19	2
10:15	*	*	*	5	29	*	*	*	*	*	*	*	*	*	29	5
10:30	*	*	*	9	12	*	*	*	*	*	*	*	*	*	12	9
10:45	*	*	*	4	59	*	*	*	*	*	*	*	*	*	59	4
11:00	*	*	*	2	19	*	*	*	*	*	*	*	*	*	19	2
11:15	*	*	*	5	28	*	*	*	*	*	*	*	*	*	28	5
11:30	*	*	*	4	20	*	*	*	*	*	*	*	*	*	20	4
11:45	*	*	*	8	20	*	*	*	*	*	*	*	*	*	20	8
Total	0	0	0	635	569	415	0	0	0	0	0	0	0	0	569	1050
Day Total	0		635		984		0		0		0		0		1619	
% Splits	0.0%	0.0%	0.0%	100.0 %	57.8%	42.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	35.1%	64.9%
Peak				04:15	07:30	02:30									07:30	02:45
Vol.				146	132	180									132	183
P.H.F.				0.811	0.702	0.652									0.702	0.663

ADT Not Calculated

Kimley-Horn and Associates, Inc.
Raleigh, NC

BAIN STREET- Fixed
Site Code: 000000000013
Station ID:

Latitude: 0' 0.000 South

Start	06-Dec-10		Tue		Wed		Thu		Fri		Sat		Sun		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	19	0	7	*	*	*	*	*	*	*	*	*	*	0	13
12:15	*	11	0	10	*	*	*	*	*	*	*	*	*	*	0	10
12:30	*	5	1	6	*	*	*	*	*	*	*	*	*	*	1	6
12:45	*	10	2	9	*	*	*	*	*	*	*	*	*	*	2	10
01:00	*	11	0	6	*	*	*	*	*	*	*	*	*	*	0	8
01:15	*	3	1	**8**	*	*	*	*	*	*	*	*	*	*	1	6
01:30	*	7	0	**8**	*	*	*	*	*	*	*	*	*	*	0	8
01:45	*	13	0	**9**	*	*	*	*	*	*	*	*	*	*	0	11
02:00	*	9	0	**8**	*	*	*	*	*	*	*	*	*	*	0	8
02:15	*	7	0	6	*	*	*	*	*	*	*	*	*	*	0	6
02:30	*	**13**	0	*	*	*	*	*	*	*	*	*	*	*	0	**13**
02:45	*	**17**	0	*	*	*	*	*	*	*	*	*	*	*	0	**17**
03:00	*	**14**	0	*	*	*	*	*	*	*	*	*	*	*	0	**14**
03:15	*	**12**	0	*	*	*	*	*	*	*	*	*	*	*	0	**12**
03:30	*	13	0	*	*	*	*	*	*	*	*	*	*	*	0	13
03:45	*	15	2	*	*	*	*	*	*	*	*	*	*	*	2	15
04:00	*	15	0	*	*	*	*	*	*	*	*	*	*	*	0	15
04:15	*	7	0	*	*	*	*	*	*	*	*	*	*	*	0	7
04:30	*	5	0	*	*	*	*	*	*	*	*	*	*	*	0	5
04:45	*	7	1	*	*	*	*	*	*	*	*	*	*	*	1	7
05:00	*	7	0	*	*	*	*	*	*	*	*	*	*	*	0	7
05:15	*	4	0	*	*	*	*	*	*	*	*	*	*	*	0	4
05:30	*	2	0	*	*	*	*	*	*	*	*	*	*	*	0	2
05:45	*	2	0	*	*	*	*	*	*	*	*	*	*	*	0	2
06:00	*	2	0	*	*	*	*	*	*	*	*	*	*	*	0	2
06:15	*	1	2	*	*	*	*	*	*	*	*	*	*	*	2	1
06:30	*	6	0	*	*	*	*	*	*	*	*	*	*	*	0	6
06:45	*	5	3	*	*	*	*	*	*	*	*	*	*	*	3	5
07:00	*	2	2	*	*	*	*	*	*	*	*	*	*	*	2	2
07:15	*	3	9	*	*	*	*	*	*	*	*	*	*	*	9	3
07:30	*	4	12	*	*	*	*	*	*	*	*	*	*	*	12	4
07:45	*	4	5	*	*	*	*	*	*	*	*	*	*	*	5	4
08:00	*	4	7	*	*	*	*	*	*	*	*	*	*	*	7	4
08:15	*	2	13	*	*	*	*	*	*	*	*	*	*	*	13	2
08:30	*	0	**13**	*	*	*	*	*	*	*	*	*	*	*	**13**	0
08:45	*	1	**11**	*	*	*	*	*	*	*	*	*	*	*	**11**	1
09:00	*	0	**10**	*	*	*	*	*	*	*	*	*	*	*	**10**	0
09:15	*	0	**16**	*	*	*	*	*	*	*	*	*	*	*	**16**	0
09:30	*	0	8	*	*	*	*	*	*	*	*	*	*	*	8	0
09:45	*	0	10	*	*	*	*	*	*	*	*	*	*	*	10	0
10:00	*	0	7	*	*	*	*	*	*	*	*	*	*	*	7	0
10:15	*	0	3	*	*	*	*	*	*	*	*	*	*	*	3	0
10:30	*	0	9	*	*	*	*	*	*	*	*	*	*	*	9	0
10:45	*	0	8	*	*	*	*	*	*	*	*	*	*	*	8	0
11:00	*	3	10	*	*	*	*	*	*	*	*	*	*	*	10	3
11:15	*	0	11	*	*	*	*	*	*	*	*	*	*	*	11	0
11:30	12	1	9	*	*	*	*	*	*	*	*	*	*	*	10	1
11:45	9	0	7	*	*	*	*	*	*	*	*	*	*	*	8	0
Total	21	266	192	77	0	0	0	0	0	0	0	0	0	0	194	257
Day Total	287		269		0		0		0		0		0		451	
% Splits	7.3%	92.7%	71.4%	28.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	43.0%	57.0%
Peak		02:30	08:30	01:15											08:30	02:30
Vol.		56	50	33											50	56
P.H.F.		0.824	0.781	0.825											0.781	0.824

ADT   ADT 271   AADT 271

Kimley-Horn and Associates, Inc.
Raleigh, NC

BRYANT STREET
Site Code: 000000000012
Station ID:

Latitude: 0' 0.000 South

Start	06-Dec-10		Tue		Wed		Thu		Fri		Sat		Sun		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	16	2	10	*	*	*	*	*	*	*	*	*	*	2	13
12:15	*	15	3	13	*	*	*	*	*	*	*	*	*	*	3	14
12:30	*	8	3	5	*	*	*	*	*	*	*	*	*	*	3	6
12:45	*	14	2	8	*	*	*	*	*	*	*	*	*	*	2	11
01:00	*	6	1	17	*	*	*	*	*	*	*	*	*	*	1	12
01:15	*	8	2	**10**	*	*	*	*	*	*	*	*	*	*	2	9
01:30	*	12	0	**13**	*	*	*	*	*	*	*	*	*	*	0	12
01:45	*	13	2	**12**	*	*	*	*	*	*	*	*	*	*	2	12
02:00	*	15	1	**19**	*	*	*	*	*	*	*	*	*	*	1	17
02:15	*	8	0	*	*	*	*	*	*	*	*	*	*	*	0	8
02:30	*	10	0	*	*	*	*	*	*	*	*	*	*	*	0	10
02:45	*	13	0	*	*	*	*	*	*	*	*	*	*	*	0	13
03:00	*	18	0	*	*	*	*	*	*	*	*	*	*	*	0	18
03:15	*	10	0	*	*	*	*	*	*	*	*	*	*	*	0	10
03:30	*	**11**	1	*	*	*	*	*	*	*	*	*	*	*	1	**11**
03:45	*	**16**	1	*	*	*	*	*	*	*	*	*	*	*	1	**16**
04:00	*	**20**	0	*	*	*	*	*	*	*	*	*	*	*	0	**20**
04:15	*	**12**	0	*	*	*	*	*	*	*	*	*	*	*	0	**12**
04:30	*	9	1	*	*	*	*	*	*	*	*	*	*	*	1	9
04:45	*	10	0	*	*	*	*	*	*	*	*	*	*	*	0	10
05:00	*	10	1	*	*	*	*	*	*	*	*	*	*	*	1	10
05:15	*	10	1	*	*	*	*	*	*	*	*	*	*	*	1	10
05:30	*	4	0	*	*	*	*	*	*	*	*	*	*	*	0	4
05:45	*	10	1	*	*	*	*	*	*	*	*	*	*	*	1	10
06:00	*	7	0	*	*	*	*	*	*	*	*	*	*	*	0	7
06:15	*	8	1	*	*	*	*	*	*	*	*	*	*	*	1	8
06:30	*	14	2	*	*	*	*	*	*	*	*	*	*	*	2	14
06:45	*	3	4	*	*	*	*	*	*	*	*	*	*	*	4	3
07:00	*	5	7	*	*	*	*	*	*	*	*	*	*	*	7	5
07:15	*	3	4	*	*	*	*	*	*	*	*	*	*	*	4	3
07:30	*	3	5	*	*	*	*	*	*	*	*	*	*	*	5	3
07:45	*	2	4	*	*	*	*	*	*	*	*	*	*	*	4	2
08:00	*	5	8	*	*	*	*	*	*	*	*	*	*	*	8	5
08:15	*	1	10	*	*	*	*	*	*	*	*	*	*	*	10	1
08:30	*	6	10	*	*	*	*	*	*	*	*	*	*	*	10	6
08:45	*	3	8	*	*	*	*	*	*	*	*	*	*	*	8	3
09:00	*	1	6	*	*	*	*	*	*	*	*	*	*	*	6	1
09:15	*	3	8	*	*	*	*	*	*	*	*	*	*	*	8	3
09:30	*	4	11	*	*	*	*	*	*	*	*	*	*	*	11	4
09:45	*	2	3	*	*	*	*	*	*	*	*	*	*	*	3	2
10:00	*	2	4	*	*	*	*	*	*	*	*	*	*	*	4	2
10:15	*	5	**8**	*	*	*	*	*	*	*	*	*	*	*	**8**	5
10:30	*	2	**10**	*	*	*	*	*	*	*	*	*	*	*	**10**	2
10:45	*	4	**12**	*	*	*	*	*	*	*	*	*	*	*	**12**	4
11:00	*	3	**11**	*	*	*	*	*	*	*	*	*	*	*	**11**	3
11:15	8	6	5	*	*	*	*	*	*	*	*	*	*	*	6	6
11:30	10	0	3	*	*	*	*	*	*	*	*	*	*	*	6	0
11:45	10	3	8	*	*	*	*	*	*	*	*	*	*	*	9	3
Total	28	373	174	107	0	0	0	0	0	0	0	0	0	0	179	372
Day Total	401		281		0		0		0		0		0		551	
% Splits	7.0%	93.0%	61.9%	38.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	32.5%	67.5%
Peak		03:30	10:15	01:15											10:15	03:30
Vol.		59	41	54											41	59
P.H.F.		0.738	0.854	0.711											0.854	0.738

ADT Not Calculated

Kimley-Horn and Associates, Inc.
Raleigh, NC

GEORGE STREET
Site Code: 000000000004
Station ID:

Latitude: 0' 0.000 South

Start	29-Nov-10		Tue		Wed		Thu		Fri		Sat		Sun		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	17	138	*	*	*	*	*	*	*	*	*	*	17	138
12:15	*	*	9	146	*	*	*	*	*	*	*	*	*	*	9	146
12:30	*	*	16	147	*	*	*	*	*	*	*	*	*	*	16	147
12:45	*	*	6	**143**	*	*	*	*	*	*	*	*	*	*	6	143
01:00	*	*	5	**134**	*	*	*	*	*	*	*	*	*	*	5	134
01:15	*	*	9	**193**	*	*	*	*	*	*	*	*	*	*	9	193
01:30	*	*	4	**179**	*	*	*	*	*	*	*	*	*	*	4	179
01:45	*	139	7	*	*	*	*	*	*	*	*	*	*	*	7	139
02:00	*	128	7	*	*	*	*	*	*	*	*	*	*	*	7	128
02:15	*	138	6	*	*	*	*	*	*	*	*	*	*	*	6	138
02:30	*	128	2	*	*	*	*	*	*	*	*	*	*	*	2	128
02:45	*	138	1	*	*	*	*	*	*	*	*	*	*	*	1	138
03:00	*	138	3	*	*	*	*	*	*	*	*	*	*	*	3	138
03:15	*	146	4	*	*	*	*	*	*	*	*	*	*	*	4	146
03:30	*	147	8	*	*	*	*	*	*	*	*	*	*	*	8	147
03:45	*	168	3	*	*	*	*	*	*	*	*	*	*	*	3	168
04:00	*	162	6	*	*	*	*	*	*	*	*	*	*	*	6	162
04:15	*	**159**	7	*	*	*	*	*	*	*	*	*	*	*	7	**159**
04:30	*	**158**	18	*	*	*	*	*	*	*	*	*	*	*	18	**158**
04:45	*	**146**	16	*	*	*	*	*	*	*	*	*	*	*	16	**146**
05:00	*	**208**	18	*	*	*	*	*	*	*	*	*	*	*	18	**208**
05:15	*	154	17	*	*	*	*	*	*	*	*	*	*	*	17	154
05:30	*	127	24	*	*	*	*	*	*	*	*	*	*	*	24	127
05:45	*	118	28	*	*	*	*	*	*	*	*	*	*	*	28	118
06:00	*	119	36	*	*	*	*	*	*	*	*	*	*	*	36	119
06:15	*	87	56	*	*	*	*	*	*	*	*	*	*	*	56	87
06:30	*	84	85	*	*	*	*	*	*	*	*	*	*	*	85	84
06:45	*	73	107	*	*	*	*	*	*	*	*	*	*	*	107	73
07:00	*	73	99	*	*	*	*	*	*	*	*	*	*	*	99	73
07:15	*	69	124	*	*	*	*	*	*	*	*	*	*	*	124	69
07:30	*	58	124	*	*	*	*	*	*	*	*	*	*	*	124	58
07:45	*	47	153	*	*	*	*	*	*	*	*	*	*	*	153	47
08:00	*	55	147	*	*	*	*	*	*	*	*	*	*	*	147	55
08:15	*	48	152	*	*	*	*	*	*	*	*	*	*	*	152	48
08:30	*	40	137	*	*	*	*	*	*	*	*	*	*	*	137	40
08:45	*	53	129	*	*	*	*	*	*	*	*	*	*	*	129	53
09:00	*	39	125	*	*	*	*	*	*	*	*	*	*	*	125	39
09:15	*	24	125	*	*	*	*	*	*	*	*	*	*	*	125	24
09:30	*	31	128	*	*	*	*	*	*	*	*	*	*	*	128	31
09:45	*	26	136	*	*	*	*	*	*	*	*	*	*	*	136	26
10:00	*	27	136	*	*	*	*	*	*	*	*	*	*	*	136	27
10:15	*	26	126	*	*	*	*	*	*	*	*	*	*	*	126	26
10:30	*	22	140	*	*	*	*	*	*	*	*	*	*	*	140	22
10:45	*	10	121	*	*	*	*	*	*	*	*	*	*	*	121	10
11:00	*	18	**146**	*	*	*	*	*	*	*	*	*	*	*	**146**	18
11:15	*	17	**151**	*	*	*	*	*	*	*	*	*	*	*	**151**	17
11:30	*	17	**144**	*	*	*	*	*	*	*	*	*	*	*	**144**	17
11:45	*	10	**150**	*	*	*	*	*	*	*	*	*	*	*	**150**	10
Total	0	3575	3218	1080	0	0	0	0	0	0	0	0	0	0	3218	4655
Day Total	3575		4298		0		0		0		0		0		7873	
% Splits	0.0%	100.0 %	74.9%	25.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	40.9%	59.1%
Peak		04:15	11:00	00:45											11:00	04:15
Vol.		671	591	649											591	671
P.H.F.		0.806	0.972	0.841											0.972	0.806

ADT Not Calculated

Kimley-Horn and Associates, Inc.
Raleigh, NC

HERMAN STREET
Site Code: 9
Station ID: 9

Latitude: 0' 0.000 South

Start	29-Nov-10		Tue		Wed		Thu		Fri		Sat		Sun		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	*	*	23	269	*	*	*	*	*	*	*	*	23	269
12:15	*	*	*	*	26	244	*	*	*	*	*	*	*	*	26	244
12:30	*	*	*	*	18	277	*	*	*	*	*	*	*	*	18	277
12:45	*	*	*	*	15	271	*	*	*	*	*	*	*	*	15	271
01:00	*	*	*	*	10	281	*	*	*	*	*	*	*	*	10	281
01:15	*	*	*	*	21	275	*	*	*	*	*	*	*	*	21	275
01:30	*	*	*	*	20	228	*	*	*	*	*	*	*	*	20	228
01:45	*	*	*	*	7	216	*	*	*	*	*	*	*	*	7	216
02:00	*	*	*	*	8	289	*	*	*	*	*	*	*	*	8	289
02:15	*	*	*	*	4	279	*	*	*	*	*	*	*	*	4	279
02:30	*	*	*	*	10	**284**	*	*	*	*	*	*	*	*	10	284
02:45	*	*	*	*	7	**308**	*	*	*	*	*	*	*	*	7	308
03:00	*	*	*	*	9	**289**	*	*	*	*	*	*	*	*	9	289
03:15	*	*	*	**311**	8	**314**	*	*	*	*	*	*	*	*	8	**312**
03:30	*	*	*	**292**	4	*	*	*	*	*	*	*	*	*	4	**292**
03:45	*	*	*	**337**	8	*	*	*	*	*	*	*	*	*	8	**337**
04:00	*	*	*	**334**	3	*	*	*	*	*	*	*	*	*	3	**334**
04:15	*	*	*	277	7	*	*	*	*	*	*	*	*	*	7	277
04:30	*	*	*	317	14	*	*	*	*	*	*	*	*	*	14	317
04:45	*	*	*	319	9	*	*	*	*	*	*	*	*	*	9	319
05:00	*	*	*	334	18	*	*	*	*	*	*	*	*	*	18	334
05:15	*	*	*	288	21	*	*	*	*	*	*	*	*	*	21	288
05:30	*	*	*	247	30	*	*	*	*	*	*	*	*	*	30	247
05:45	*	*	*	216	31	*	*	*	*	*	*	*	*	*	31	216
06:00	*	*	*	245	38	*	*	*	*	*	*	*	*	*	38	245
06:15	*	*	*	198	60	*	*	*	*	*	*	*	*	*	60	198
06:30	*	*	*	169	68	*	*	*	*	*	*	*	*	*	68	169
06:45	*	*	*	59	141	*	*	*	*	*	*	*	*	*	141	59
07:00	*	*	*	137	105	*	*	*	*	*	*	*	*	*	105	137
07:15	*	*	*	125	128	*	*	*	*	*	*	*	*	*	128	125
07:30	*	*	*	110	190	*	*	*	*	*	*	*	*	*	190	110
07:45	*	*	*	108	198	*	*	*	*	*	*	*	*	*	198	108
08:00	*	*	*	119	232	*	*	*	*	*	*	*	*	*	232	119
08:15	*	*	*	94	223	*	*	*	*	*	*	*	*	*	223	94
08:30	*	*	*	80	197	*	*	*	*	*	*	*	*	*	197	80
08:45	*	*	*	99	231	*	*	*	*	*	*	*	*	*	231	99
09:00	*	*	*	90	246	*	*	*	*	*	*	*	*	*	246	90
09:15	*	*	*	94	216	*	*	*	*	*	*	*	*	*	216	94
09:30	*	*	*	88	**253**	*	*	*	*	*	*	*	*	*	**253**	88
09:45	*	*	*	76	**256**	*	*	*	*	*	*	*	*	*	**256**	76
10:00	*	*	*	60	**274**	*	*	*	*	*	*	*	*	*	**274**	60
10:15	*	*	*	57	**293**	*	*	*	*	*	*	*	*	*	**293**	57
10:30	*	*	*	51	204	*	*	*	*	*	*	*	*	*	204	51
10:45	*	*	*	38	159	*	*	*	*	*	*	*	*	*	159	38
11:00	*	*	*	42	283	*	*	*	*	*	*	*	*	*	283	42
11:15	*	*	*	29	229	*	*	*	*	*	*	*	*	*	229	29
11:30	*	*	*	45	218	*	*	*	*	*	*	*	*	*	218	45
11:45	*	*	*	21	264	*	*	*	*	*	*	*	*	*	264	21
Total	0	0	0	5506	5037	3824	0	0	0	0	0	0	0	0	5037	9017
Day Total	0		5506		8861		0		0		0		0		14054	
% Splits	0.0%	0.0%	0.0%	100.0 %	56.8%	43.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	35.8%	64.2%
Peak				03:15	09:30	02:30									09:30	03:15
Vol.				1274	1076	1195									1076	1275
P.H.F.				0.945	0.918	0.951									0.918	0.946

ADT Not Calculated

Kimley-Horn and Associates, Inc.
Raleigh, NC

HOLLY STREET
Site Code: 000000000006
Station ID:

Latitude: 0' 0.000 South

Start Time	29-Nov-10 A.M.	P.M.	Tue A.M.	P.M.	Wed A.M.	P.M.	Thu A.M.	P.M.	Fri A.M.	P.M.	Sat A.M.	P.M.	Sun A.M.	P.M.	Average Day A.M.	P.M.
12:00	*	*	*	*	5	16	*	*	*	*	*	*	*	*	5	16
12:15	*	*	*	*	5	31	*	*	*	*	*	*	*	*	5	31
12:30	*	*	*	*	3	**46**	*	*	*	*	*	*	*	*	3	46
12:45	*	*	*	*	1	**42**	*	*	*	*	*	*	*	*	1	42
01:00	*	*	*	*	3	**45**	*	*	*	*	*	*	*	*	3	45
01:15	*	*	*	*	5	**55**	*	*	*	*	*	*	*	*	5	55
01:30	*	*	*	*	3	35	*	*	*	*	*	*	*	*	3	35
01:45	*	*	*	*	6	36	*	*	*	*	*	*	*	*	6	36
02:00	*	*	*	*	3	43	*	*	*	*	*	*	*	*	3	43
02:15	*	*	*	*	4	41	*	*	*	*	*	*	*	*	4	41
02:30	*	*	*	44	2	35	*	*	*	*	*	*	*	*	2	40
02:45	*	*	*	54	0	35	*	*	*	*	*	*	*	*	0	44
03:00	*	*	*	41	2	44	*	*	*	*	*	*	*	*	2	42
03:15	*	*	*	30	0	48	*	*	*	*	*	*	*	*	0	39
03:30	*	*	*	56	0	35	*	*	*	*	*	*	*	*	0	46
03:45	*	*	*	47	3	33	*	*	*	*	*	*	*	*	3	40
04:00	*	*	*	39	1	*	*	*	*	*	*	*	*	*	1	39
04:15	*	*	*	37	1	*	*	*	*	*	*	*	*	*	1	37
04:30	*	*	*	39	1	*	*	*	*	*	*	*	*	*	1	39
04:45	*	*	*	42	0	*	*	*	*	*	*	*	*	*	0	42
05:00	*	*	*	**59**	4	*	*	*	*	*	*	*	*	*	4	**59**
05:15	*	*	*	**42**	2	*	*	*	*	*	*	*	*	*	2	**42**
05:30	*	*	*	**39**	10	*	*	*	*	*	*	*	*	*	10	**39**
05:45	*	*	*	**49**	7	*	*	*	*	*	*	*	*	*	7	**49**
06:00	*	*	*	47	10	*	*	*	*	*	*	*	*	*	10	47
06:15	*	*	*	26	10	*	*	*	*	*	*	*	*	*	10	26
06:30	*	*	*	21	**18**	*	*	*	*	*	*	*	*	*	**18**	21
06:45	*	*	*	20	**15**	*	*	*	*	*	*	*	*	*	**15**	20
07:00	*	*	*	0	**19**	*	*	*	*	*	*	*	*	*	**19**	0
07:15	*	*	*	17	**15**	*	*	*	*	*	*	*	*	*	**15**	17
07:30	*	*	*	23	0	*	*	*	*	*	*	*	*	*	0	23
07:45	*	*	*	11	0	*	*	*	*	*	*	*	*	*	0	11
08:00	*	*	*	16	1	*	*	*	*	*	*	*	*	*	1	16
08:15	*	*	*	15	1	*	*	*	*	*	*	*	*	*	1	15
08:30	*	*	*	12	0	*	*	*	*	*	*	*	*	*	0	12
08:45	*	*	*	9	1	*	*	*	*	*	*	*	*	*	1	9
09:00	*	*	*	11	0	*	*	*	*	*	*	*	*	*	0	11
09:15	*	*	*	6	2	*	*	*	*	*	*	*	*	*	2	6
09:30	*	*	*	9	10	*	*	*	*	*	*	*	*	*	10	9
09:45	*	*	*	12	1	*	*	*	*	*	*	*	*	*	1	12
10:00	*	*	*	9	2	*	*	*	*	*	*	*	*	*	2	9
10:15	*	*	*	5	1	*	*	*	*	*	*	*	*	*	1	5
10:30	*	*	*	3	0	*	*	*	*	*	*	*	*	*	0	3
10:45	*	*	*	9	1	*	*	*	*	*	*	*	*	*	1	9
11:00	*	*	*	9	0	*	*	*	*	*	*	*	*	*	0	9
11:15	*	*	*	3	0	*	*	*	*	*	*	*	*	*	0	3
11:30	*	*	*	7	1	*	*	*	*	*	*	*	*	*	1	7
11:45	*	*	*	3	2	*	*	*	*	*	*	*	*	*	2	3
Total	0	0	0	921	181	620	0	0	0	0	0	0	0	0	181	1290
Day Total	0		921		801		0		0		0		0		1471	
% Splits	0.0%	0.0%	0.0%	100.0 %	22.6%	77.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.3%	87.7%
Peak				05:00	06:30	00:30									06:30	05:00
Vol.				189	67	188									67	189
P.H.F.				0.801	0.882	0.855									0.882	0.801

ADT Not Calculated

Kimley-Horn and Associates, Inc.
Raleigh, NC

JAMES STREET - FIXED
Site Code: 5
Station ID: 5

Latitude: 0' 0.000 Undefined

Start Time	29-Nov-10 A.M.	29-Nov-10 P.M.	Tue A.M.	Tue P.M.	Wed A.M.	Wed P.M.	Thu A.M.	Thu P.M.	Fri A.M.	Fri P.M.	Sat A.M.	Sat P.M.	Sun A.M.	Sun P.M.	Average Day A.M.	Average Day P.M.
12:00	*	*	2	51	*	*	*	*	*	*	*	*	*	*	2	51
12:15	*	*	3	45	*	*	*	*	*	*	*	*	*	*	3	45
12:30	*	*	4	29	*	*	*	*	*	*	*	*	*	*	4	29
12:45	*	*	3	51	*	*	*	*	*	*	*	*	*	*	3	51
01:00	*	*	3	**48**	*	*	*	*	*	*	*	*	*	*	3	**48**
01:15	*	*	3	**60**	*	*	*	*	*	*	*	*	*	*	3	**60**
01:30	*	*	4	**81**	*	*	*	*	*	*	*	*	*	*	4	**81**
01:45	*	*	2	**101**	*	*	*	*	*	*	*	*	*	*	2	**101**
02:00	*	22	2	*	*	*	*	*	*	*	*	*	*	*	2	22
02:15	*	45	6	*	*	*	*	*	*	*	*	*	*	*	6	45
02:30	*	33	3	*	*	*	*	*	*	*	*	*	*	*	3	33
02:45	*	35	2	*	*	*	*	*	*	*	*	*	*	*	2	35
03:00	*	46	1	*	*	*	*	*	*	*	*	*	*	*	1	46
03:15	*	41	3	*	*	*	*	*	*	*	*	*	*	*	3	41
03:30	*	37	5	*	*	*	*	*	*	*	*	*	*	*	5	37
03:45	*	43	4	*	*	*	*	*	*	*	*	*	*	*	4	43
04:00	*	51	2	*	*	*	*	*	*	*	*	*	*	*	2	51
04:15	*	**45**	1	*	*	*	*	*	*	*	*	*	*	*	1	45
04:30	*	**38**	4	*	*	*	*	*	*	*	*	*	*	*	4	38
04:45	*	**39**	4	*	*	*	*	*	*	*	*	*	*	*	4	39
05:00	*	**62**	6	*	*	*	*	*	*	*	*	*	*	*	6	62
05:15	*	33	6	*	*	*	*	*	*	*	*	*	*	*	6	33
05:30	*	38	11	*	*	*	*	*	*	*	*	*	*	*	11	38
05:45	*	29	17	*	*	*	*	*	*	*	*	*	*	*	17	29
06:00	*	23	7	*	*	*	*	*	*	*	*	*	*	*	7	23
06:15	*	27	21	*	*	*	*	*	*	*	*	*	*	*	21	27
06:30	*	24	19	*	*	*	*	*	*	*	*	*	*	*	19	24
06:45	*	8	21	*	*	*	*	*	*	*	*	*	*	*	21	8
07:00	*	10	27	*	*	*	*	*	*	*	*	*	*	*	27	10
07:15	*	6	22	*	*	*	*	*	*	*	*	*	*	*	22	6
07:30	*	13	29	*	*	*	*	*	*	*	*	*	*	*	29	13
07:45	*	16	35	*	*	*	*	*	*	*	*	*	*	*	35	16
08:00	*	24	44	*	*	*	*	*	*	*	*	*	*	*	44	24
08:15	*	21	40	*	*	*	*	*	*	*	*	*	*	*	40	21
08:30	*	22	19	*	*	*	*	*	*	*	*	*	*	*	19	22
08:45	*	16	34	*	*	*	*	*	*	*	*	*	*	*	34	16
09:00	*	22	29	*	*	*	*	*	*	*	*	*	*	*	29	22
09:15	*	18	34	*	*	*	*	*	*	*	*	*	*	*	34	18
09:30	*	13	29	*	*	*	*	*	*	*	*	*	*	*	29	13
09:45	*	10	27	*	*	*	*	*	*	*	*	*	*	*	27	10
10:00	*	6	35	*	*	*	*	*	*	*	*	*	*	*	35	6
10:15	*	7	**38**	*	*	*	*	*	*	*	*	*	*	*	**38**	7
10:30	*	9	**46**	*	*	*	*	*	*	*	*	*	*	*	**46**	9
10:45	*	3	**35**	*	*	*	*	*	*	*	*	*	*	*	**35**	3
11:00	*	8	**53**	*	*	*	*	*	*	*	*	*	*	*	**53**	8
11:15	*	8	36	*	*	*	*	*	*	*	*	*	*	*	36	8
11:30	*	6	24	*	*	*	*	*	*	*	*	*	*	*	24	6
11:45	*	4	41	*	*	*	*	*	*	*	*	*	*	*	41	4
Total	0	961	846	466	0	0	0	0	0	0	0	0	0	0	846	1427
Day Total	961		1312		0		0		0		0		0		2273	
% Splits	0.0%	100.0 %	64.5%	35.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	37.2%	62.8%
Peak		04:15	10:15	01:00											10:15	01:00
Vol.		184	172	290											172	290
P.H.F.		0.742	0.811	0.718											0.811	0.718

ADT Not Calculated

Kimley-Horn and Associates, Inc.
Raleigh, NC

JEFFERSON STREET - FIXED
Site Code: 11
Station ID: 11

Latitude: 0' 0.000 Undefined

Start	29-Nov-10		Tue		Wed		Thu		Fri		Sat		Sun		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	*	*	20	124	*	*	*	*	*	*	*	*	20	124
12:15	*	*	*	*	9	107	*	*	*	*	*	*	*	*	9	107
12:30	*	*	*	*	15	121	*	*	*	*	*	*	*	*	15	121
12:45	*	*	*	*	17	136	*	*	*	*	*	*	*	*	17	136
01:00	*	*	*	*	7	109	*	*	*	*	*	*	*	*	7	109
01:15	*	*	*	*	9	118	*	*	*	*	*	*	*	*	9	118
01:30	*	*	*	*	3	99	*	*	*	*	*	*	*	*	3	99
01:45	*	*	*	*	8	91	*	*	*	*	*	*	*	*	8	91
02:00	*	*	*	*	8	**115**	*	*	*	*	*	*	*	*	8	115
02:15	*	*	*	*	10	**128**	*	*	*	*	*	*	*	*	10	128
02:30	*	*	*	*	8	**132**	*	*	*	*	*	*	*	*	8	132
02:45	*	*	*	*	5	**153**	*	*	*	*	*	*	*	*	5	153
03:00	*	*	*	*	3	34	*	*	*	*	*	*	*	*	3	34
03:15	*	*	*	*	1	63	*	*	*	*	*	*	*	*	1	63
03:30	*	*	*	77	4	166	*	*	*	*	*	*	*	*	4	122
03:45	*	*	*	142	2	*	*	*	*	*	*	*	*	*	2	142
04:00	*	*	*	132	2	*	*	*	*	*	*	*	*	*	2	132
04:15	*	*	*	**136**	2	*	*	*	*	*	*	*	*	*	2	**136**
04:30	*	*	*	**127**	8	*	*	*	*	*	*	*	*	*	8	**127**
04:45	*	*	*	**143**	11	*	*	*	*	*	*	*	*	*	11	**143**
05:00	*	*	*	**165**	10	*	*	*	*	*	*	*	*	*	10	**165**
05:15	*	*	*	120	14	*	*	*	*	*	*	*	*	*	14	120
05:30	*	*	*	116	8	*	*	*	*	*	*	*	*	*	8	116
05:45	*	*	*	87	21	*	*	*	*	*	*	*	*	*	21	87
06:00	*	*	*	98	29	*	*	*	*	*	*	*	*	*	29	98
06:15	*	*	*	96	36	*	*	*	*	*	*	*	*	*	36	96
06:30	*	*	*	102	57	*	*	*	*	*	*	*	*	*	57	102
06:45	*	*	*	30	68	*	*	*	*	*	*	*	*	*	68	30
07:00	*	*	*	132	70	*	*	*	*	*	*	*	*	*	70	132
07:15	*	*	*	64	80	*	*	*	*	*	*	*	*	*	80	64
07:30	*	*	*	59	102	*	*	*	*	*	*	*	*	*	102	59
07:45	*	*	*	53	**178**	*	*	*	*	*	*	*	*	*	**178**	53
08:00	*	*	*	56	**186**	*	*	*	*	*	*	*	*	*	**186**	56
08:15	*	*	*	57	**164**	*	*	*	*	*	*	*	*	*	**164**	57
08:30	*	*	*	63	**111**	*	*	*	*	*	*	*	*	*	**111**	63
08:45	*	*	*	44	121	*	*	*	*	*	*	*	*	*	121	44
09:00	*	*	*	56	120	*	*	*	*	*	*	*	*	*	120	56
09:15	*	*	*	43	92	*	*	*	*	*	*	*	*	*	92	43
09:30	*	*	*	31	79	*	*	*	*	*	*	*	*	*	79	31
09:45	*	*	*	47	95	*	*	*	*	*	*	*	*	*	95	47
10:00	*	*	*	35	85	*	*	*	*	*	*	*	*	*	85	35
10:15	*	*	*	27	84	*	*	*	*	*	*	*	*	*	84	27
10:30	*	*	*	25	89	*	*	*	*	*	*	*	*	*	89	25
10:45	*	*	*	16	120	*	*	*	*	*	*	*	*	*	120	16
11:00	*	*	*	29	113	*	*	*	*	*	*	*	*	*	113	29
11:15	*	*	*	31	121	*	*	*	*	*	*	*	*	*	121	31
11:30	*	*	*	24	103	*	*	*	*	*	*	*	*	*	103	24
11:45	*	*	*	12	125	*	*	*	*	*	*	*	*	*	125	12
Total	0	0	0	2475	2633	1696	0	0	0	0	0	0	0	0	2633	4050
Day Total	0		2475		4329		0		0		0		0		6683	
% Splits	0.0%	0.0%	0.0%	100.0 %	60.8%	39.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	39.4%	60.6%
Peak				04:15	07:45	02:00									07:45	04:15
Vol.				571	639	528									639	571
P.H.F.				0.865	0.859	0.863									0.859	0.865

ADT Not Calculated

Kimley-Horn and Associates, Inc.
Raleigh, NC

LIONEL STREET - FIXED
Site Code: 8
Station ID: 8

Latitude: 0' 0.000 Undefined

Start	06-Dec-10		Tue		Wed		Thu		Fri		Sat		Sun		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	19	2	6	*	*	*	*	*	*	*	*	*	*	2	12
12:15	*	13	3	8	*	*	*	*	*	*	*	*	*	*	3	10
12:30	*	8	0	3	*	*	*	*	*	*	*	*	*	*	0	6
12:45	*	10	2	**7**	*	*	*	*	*	*	*	*	*	*	2	8
01:00	*	5	3	**9**	*	*	*	*	*	*	*	*	*	*	3	7
01:15	*	10	0	**7**	*	*	*	*	*	*	*	*	*	*	0	8
01:30	*	4	2	**5**	*	*	*	*	*	*	*	*	*	*	2	4
01:45	*	9	1	5	*	*	*	*	*	*	*	*	*	*	1	7
02:00	*	10	2	4	*	*	*	*	*	*	*	*	*	*	2	7
02:15	*	3	0	*	*	*	*	*	*	*	*	*	*	*	0	3
02:30	*	10	2	*	*	*	*	*	*	*	*	*	*	*	2	10
02:45	*	14	0	*	*	*	*	*	*	*	*	*	*	*	0	14
03:00	*	4	0	*	*	*	*	*	*	*	*	*	*	*	0	4
03:15	*	14	0	*	*	*	*	*	*	*	*	*	*	*	0	14
03:30	*	13	1	*	*	*	*	*	*	*	*	*	*	*	1	13
03:45	*	19	0	*	*	*	*	*	*	*	*	*	*	*	0	19
04:00	*	**14**	1	*	*	*	*	*	*	*	*	*	*	*	1	**14**
04:15	*	**12**	1	*	*	*	*	*	*	*	*	*	*	*	1	**12**
04:30	*	**20**	0	*	*	*	*	*	*	*	*	*	*	*	0	**20**
04:45	*	**23**	0	*	*	*	*	*	*	*	*	*	*	*	0	**23**
05:00	*	13	0	*	*	*	*	*	*	*	*	*	*	*	0	13
05:15	*	12	0	*	*	*	*	*	*	*	*	*	*	*	0	12
05:30	*	5	1	*	*	*	*	*	*	*	*	*	*	*	1	5
05:45	*	11	3	*	*	*	*	*	*	*	*	*	*	*	3	11
06:00	*	9	1	*	*	*	*	*	*	*	*	*	*	*	1	9
06:15	*	5	3	*	*	*	*	*	*	*	*	*	*	*	3	5
06:30	*	10	7	*	*	*	*	*	*	*	*	*	*	*	7	10
06:45	*	4	3	*	*	*	*	*	*	*	*	*	*	*	3	4
07:00	*	5	8	*	*	*	*	*	*	*	*	*	*	*	8	5
07:15	*	5	5	*	*	*	*	*	*	*	*	*	*	*	5	5
07:30	*	5	**16**	*	*	*	*	*	*	*	*	*	*	*	**16**	5
07:45	*	2	**22**	*	*	*	*	*	*	*	*	*	*	*	**22**	2
08:00	*	4	**27**	*	*	*	*	*	*	*	*	*	*	*	**27**	4
08:15	*	6	**9**	*	*	*	*	*	*	*	*	*	*	*	**9**	6
08:30	*	3	11	*	*	*	*	*	*	*	*	*	*	*	11	3
08:45	*	3	12	*	*	*	*	*	*	*	*	*	*	*	12	3
09:00	*	2	7	*	*	*	*	*	*	*	*	*	*	*	7	2
09:15	*	1	9	*	*	*	*	*	*	*	*	*	*	*	9	1
09:30	*	3	8	*	*	*	*	*	*	*	*	*	*	*	8	3
09:45	*	1	7	*	*	*	*	*	*	*	*	*	*	*	7	1
10:00	*	4	5	*	*	*	*	*	*	*	*	*	*	*	5	4
10:15	*	2	4	*	*	*	*	*	*	*	*	*	*	*	4	2
10:30	*	1	2	*	*	*	*	*	*	*	*	*	*	*	2	1
10:45	*	1	6	*	*	*	*	*	*	*	*	*	*	*	6	1
11:00	*	1	5	*	*	*	*	*	*	*	*	*	*	*	5	1
11:15	*	2	6	*	*	*	*	*	*	*	*	*	*	*	6	2
11:30	*	2	10	*	*	*	*	*	*	*	*	*	*	*	10	2
11:45	17	2	8	*	*	*	*	*	*	*	*	*	*	*	12	2
Total	17	358	225	54	0	0	0	0	0	0	0	0	0	0	229	339
Day Total	375		279		0		0		0		0		0		568	
% Splits	4.5%	95.5%	80.6%	19.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	40.3%	59.7%
Peak		04:00	07:30	00:45											07:30	04:00
Vol.		69	74	28											74	69
P.H.F.		0.750	0.685	0.778											0.685	0.750

ADT Not Calculated

Kimley-Horn and Associates, Inc.
Raleigh, NC

MULBERRY STREET
Site Code: 000000000001
Station ID:

Latitude: 0' 0.000 South

Start	29-Nov-10		Tue		Wed		Thu		Fri		Sat		Sun		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	1	**3**	*	*	*	*	*	*	*	*	*	*	1	3
12:15	*	*	0	**4**	*	*	*	*	*	*	*	*	*	*	0	4
12:30	*	*	0	**2**	*	*	*	*	*	*	*	*	*	*	0	2
12:45	*	*	0	**0**	*	*	*	*	*	*	*	*	*	*	0	0
01:00	*	2	0	2	*	*	*	*	*	*	*	*	*	*	0	2
01:15	*	1	0	*	*	*	*	*	*	*	*	*	*	*	0	1
01:30	*	2	0	*	*	*	*	*	*	*	*	*	*	*	0	2
01:45	*	1	0	*	*	*	*	*	*	*	*	*	*	*	0	1
02:00	*	1	0	*	*	*	*	*	*	*	*	*	*	*	0	1
02:15	*	2	0	*	*	*	*	*	*	*	*	*	*	*	0	2
02:30	*	1	0	*	*	*	*	*	*	*	*	*	*	*	0	1
02:45	*	**3**	0	*	*	*	*	*	*	*	*	*	*	*	0	**3**
03:00	*	**1**	0	*	*	*	*	*	*	*	*	*	*	*	0	**1**
03:15	*	**4**	2	*	*	*	*	*	*	*	*	*	*	*	2	**4**
03:30	*	**2**	0	*	*	*	*	*	*	*	*	*	*	*	0	**2**
03:45	*	1	0	*	*	*	*	*	*	*	*	*	*	*	0	1
04:00	*	1	0	*	*	*	*	*	*	*	*	*	*	*	0	1
04:15	*	3	0	*	*	*	*	*	*	*	*	*	*	*	0	3
04:30	*	0	1	*	*	*	*	*	*	*	*	*	*	*	1	0
04:45	*	4	1	*	*	*	*	*	*	*	*	*	*	*	1	4
05:00	*	1	0	*	*	*	*	*	*	*	*	*	*	*	0	1
05:15	*	1	1	*	*	*	*	*	*	*	*	*	*	*	1	1
05:30	*	2	0	*	*	*	*	*	*	*	*	*	*	*	0	2
05:45	*	0	5	*	*	*	*	*	*	*	*	*	*	*	5	0
06:00	*	0	1	*	*	*	*	*	*	*	*	*	*	*	1	0
06:15	*	0	3	*	*	*	*	*	*	*	*	*	*	*	3	0
06:30	*	0	0	*	*	*	*	*	*	*	*	*	*	*	0	0
06:45	*	1	3	*	*	*	*	*	*	*	*	*	*	*	3	1
07:00	*	0	1	*	*	*	*	*	*	*	*	*	*	*	1	0
07:15	*	0	**1**	*	*	*	*	*	*	*	*	*	*	*	**1**	0
07:30	*	1	**2**	*	*	*	*	*	*	*	*	*	*	*	**2**	1
07:45	*	1	**4**	*	*	*	*	*	*	*	*	*	*	*	**4**	1
08:00	*	3	**3**	*	*	*	*	*	*	*	*	*	*	*	**3**	3
08:15	*	0	1	*	*	*	*	*	*	*	*	*	*	*	1	0
08:30	*	0	1	*	*	*	*	*	*	*	*	*	*	*	1	0
08:45	*	0	1	*	*	*	*	*	*	*	*	*	*	*	1	0
09:00	*	0	3	*	*	*	*	*	*	*	*	*	*	*	3	0
09:15	*	4	1	*	*	*	*	*	*	*	*	*	*	*	1	4
09:30	*	0	1	*	*	*	*	*	*	*	*	*	*	*	1	0
09:45	*	0	2	*	*	*	*	*	*	*	*	*	*	*	2	0
10:00	*	2	1	*	*	*	*	*	*	*	*	*	*	*	1	2
10:15	*	0	3	*	*	*	*	*	*	*	*	*	*	*	3	0
10:30	*	1	3	*	*	*	*	*	*	*	*	*	*	*	3	1
10:45	*	1	3	*	*	*	*	*	*	*	*	*	*	*	3	1
11:00	*	1	1	*	*	*	*	*	*	*	*	*	*	*	1	1
11:15	*	0	1	*	*	*	*	*	*	*	*	*	*	*	1	0
11:30	*	1	0	*	*	*	*	*	*	*	*	*	*	*	0	1
11:45	*	1	1	*	*	*	*	*	*	*	*	*	*	*	1	1
Total	0	50	52	11	0	0	0	0	0	0	0	0	0	0	52	59
Day Total	50		63		0		0		0		0		0		111	
% Splits	0.0%	100.0 %	82.5%	17.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	46.8%	53.2%
Peak		02:45	07:15	12:00											07:15	02:45
Vol.		10	10	9											10	10
P.H.F.		0.625	0.500	0.563											0.500	0.625

ADT Not Calculated

Kimley-Horn and Associates, Inc.
Raleigh, NC

VIRGINIA STREET
Site Code: 000000000003
Station ID:

Latitude: 0' 0.000 South

Start Time	29-Nov-10 A.M.	29-Nov-10 P.M.	Tue A.M.	Tue P.M.	Wed A.M.	Wed P.M.	Thu A.M.	Thu P.M.	Fri A.M.	Fri P.M.	Sat A.M.	Sat P.M.	Sun A.M.	Sun P.M.	Average Day A.M.	Average Day P.M.
12:00	*	*	0	11	*	*	*	*	*	*	*	*	*	*	0	11
12:15	*	*	1	8	*	*	*	*	*	*	*	*	*	*	1	8
12:30	*	*	2	**6**	*	*	*	*	*	*	*	*	*	*	2	6
12:45	*	*	1	**7**	*	*	*	*	*	*	*	*	*	*	1	7
01:00	*	*	3	**15**	*	*	*	*	*	*	*	*	*	*	3	**15**
01:15	*	*	0	**9**	*	*	*	*	*	*	*	*	*	*	0	**9**
01:30	*	12	0	*	*	*	*	*	*	*	*	*	*	*	0	**12**
01:45	*	8	0	*	*	*	*	*	*	*	*	*	*	*	0	**8**
02:00	*	3	1	*	*	*	*	*	*	*	*	*	*	*	1	3
02:15	*	6	2	*	*	*	*	*	*	*	*	*	*	*	2	6
02:30	*	2	0	*	*	*	*	*	*	*	*	*	*	*	0	2
02:45	*	4	3	*	*	*	*	*	*	*	*	*	*	*	3	4
03:00	*	6	0	*	*	*	*	*	*	*	*	*	*	*	0	6
03:15	*	6	0	*	*	*	*	*	*	*	*	*	*	*	0	6
03:30	*	**10**	0	*	*	*	*	*	*	*	*	*	*	*	0	10
03:45	*	**12**	0	*	*	*	*	*	*	*	*	*	*	*	0	12
04:00	*	**10**	0	*	*	*	*	*	*	*	*	*	*	*	0	10
04:15	*	**9**	0	*	*	*	*	*	*	*	*	*	*	*	0	9
04:30	*	5	1	*	*	*	*	*	*	*	*	*	*	*	1	5
04:45	*	8	0	*	*	*	*	*	*	*	*	*	*	*	0	8
05:00	*	7	1	*	*	*	*	*	*	*	*	*	*	*	1	7
05:15	*	14	0	*	*	*	*	*	*	*	*	*	*	*	0	14
05:30	*	9	2	*	*	*	*	*	*	*	*	*	*	*	2	9
05:45	*	7	1	*	*	*	*	*	*	*	*	*	*	*	1	7
06:00	*	3	1	*	*	*	*	*	*	*	*	*	*	*	1	3
06:15	*	6	2	*	*	*	*	*	*	*	*	*	*	*	2	6
06:30	*	6	5	*	*	*	*	*	*	*	*	*	*	*	5	6
06:45	*	3	1	*	*	*	*	*	*	*	*	*	*	*	1	3
07:00	*	6	3	*	*	*	*	*	*	*	*	*	*	*	3	6
07:15	*	6	8	*	*	*	*	*	*	*	*	*	*	*	8	6
07:30	*	4	5	*	*	*	*	*	*	*	*	*	*	*	5	4
07:45	*	4	7	*	*	*	*	*	*	*	*	*	*	*	7	4
08:00	*	2	8	*	*	*	*	*	*	*	*	*	*	*	8	2
08:15	*	5	4	*	*	*	*	*	*	*	*	*	*	*	4	5
08:30	*	3	3	*	*	*	*	*	*	*	*	*	*	*	3	3
08:45	*	2	**8**	*	*	*	*	*	*	*	*	*	*	*	**8**	2
09:00	*	4	**9**	*	*	*	*	*	*	*	*	*	*	*	**9**	4
09:15	*	2	**3**	*	*	*	*	*	*	*	*	*	*	*	**3**	2
09:30	*	3	**9**	*	*	*	*	*	*	*	*	*	*	*	**9**	3
09:45	*	0	4	*	*	*	*	*	*	*	*	*	*	*	4	0
10:00	*	5	3	*	*	*	*	*	*	*	*	*	*	*	3	5
10:15	*	4	7	*	*	*	*	*	*	*	*	*	*	*	7	4
10:30	*	3	3	*	*	*	*	*	*	*	*	*	*	*	3	3
10:45	*	1	6	*	*	*	*	*	*	*	*	*	*	*	6	1
11:00	*	1	4	*	*	*	*	*	*	*	*	*	*	*	4	1
11:15	*	1	8	*	*	*	*	*	*	*	*	*	*	*	8	1
11:30	*	1	4	*	*	*	*	*	*	*	*	*	*	*	4	1
11:45	*	2	8	*	*	*	*	*	*	*	*	*	*	*	8	2
Total	0	215	141	56	0	0	0	0	0	0	0	0	0	0	141	271
Day Total	215		197		0		0		0		0		0		412	
% Splits	0.0%	100.0 %	71.6%	28.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	34.2%	65.8%
Peak		03:30	08:45	00:30											08:45	01:00
Vol.		41	29	37											29	44
P.H.F.		0.854	0.806	0.617											0.806	0.733

ADT Not Calculated

Kimley-Horn and Associates, Inc.
Raleigh, NC

WILLIAM STREET
Site Code: 7
Station ID: 7

Latitude: 0' 0.000 South

Start	29-Nov-10		Tue		Wed		Thu		Fri		Sat		Sun		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	*	*	*	*	*	*	15	181	*	*	*	*	*	*	15	181
12:15	*	*	*	*	*	*	11	153	*	*	*	*	*	*	11	153
12:30	*	*	*	*	*	*	6	179	*	*	*	*	*	*	6	179
12:45	*	*	*	*	*	*	7	171	*	*	*	*	*	*	7	171
01:00	*	*	*	*	*	*	6	144	*	*	*	*	*	*	6	144
01:15	*	*	*	*	*	*	4	153	*	*	*	*	*	*	4	153
01:30	*	*	*	*	*	*	9	183	*	*	*	*	*	*	9	183
01:45	*	*	*	*	*	*	3	174	*	*	*	*	*	*	3	174
02:00	*	*	*	*	*	*	10	174	*	*	*	*	*	*	10	174
02:15	*	*	*	*	*	*	7	184	*	*	*	*	*	*	7	184
02:30	*	*	*	*	*	*	3	171	*	*	*	*	*	*	3	171
02:45	*	*	*	*	*	*	8	151	*	*	*	*	*	*	8	151
03:00	*	*	*	*	*	*	2	156	*	*	*	*	*	*	2	156
03:15	*	*	*	*	*	*	1	157	*	*	*	*	*	*	1	157
03:30	*	*	*	*	*	*	6	**173**	*	*	*	*	*	*	6	**173**
03:45	*	*	*	*	*	*	8	**198**	*	*	*	*	*	*	8	**198**
04:00	*	*	*	*	*	*	2	**189**	*	*	*	*	*	*	2	**189**
04:15	*	*	*	*	*	*	5	**184**	*	*	*	*	*	*	5	**184**
04:30	*	*	*	*	*	*	6	157	*	*	*	*	*	*	6	157
04:45	*	*	*	*	*	**139**	10	182	*	*	*	*	*	*	10	160
05:00	*	*	*	*	*	**186**	6	214	*	*	*	*	*	*	6	200
05:15	*	*	*	*	*	**147**	10	161	*	*	*	*	*	*	10	154
05:30	*	*	*	*	*	**140**	12	149	*	*	*	*	*	*	12	144
05:45	*	*	*	*	*	104	26	130	*	*	*	*	*	*	26	117
06:00	*	*	*	*	*	122	16	*	*	*	*	*	*	*	16	122
06:15	*	*	*	*	*	99	28	*	*	*	*	*	*	*	28	99
06:30	*	*	*	*	*	88	45	*	*	*	*	*	*	*	45	88
06:45	*	*	*	*	*	2	86	*	*	*	*	*	*	*	86	2
07:00	*	*	*	*	*	69	69	*	*	*	*	*	*	*	69	69
07:15	*	*	*	*	*	59	77	*	*	*	*	*	*	*	77	59
07:30	*	*	*	*	*	79	70	*	*	*	*	*	*	*	70	79
07:45	*	*	*	*	*	40	115	*	*	*	*	*	*	*	115	40
08:00	*	*	*	*	*	49	112	*	*	*	*	*	*	*	112	49
08:15	*	*	*	*	*	53	112	*	*	*	*	*	*	*	112	53
08:30	*	*	*	*	*	17	111	*	*	*	*	*	*	*	111	17
08:45	*	*	*	*	*	48	124	*	*	*	*	*	*	*	124	48
09:00	*	*	*	*	*	70	156	*	*	*	*	*	*	*	156	70
09:15	*	*	*	*	*	48	148	*	*	*	*	*	*	*	148	48
09:30	*	*	*	*	*	30	141	*	*	*	*	*	*	*	141	30
09:45	*	*	*	*	*	0	142	*	*	*	*	*	*	*	142	0
10:00	*	*	*	*	*	26	130	*	*	*	*	*	*	*	130	26
10:15	*	*	*	*	*	28	122	*	*	*	*	*	*	*	122	28
10:30	*	*	*	*	*	19	128	*	*	*	*	*	*	*	128	19
10:45	*	*	*	*	*	22	169	*	*	*	*	*	*	*	169	22
11:00	*	*	*	*	*	26	**168**	*	*	*	*	*	*	*	**168**	26
11:15	*	*	*	*	*	24	**180**	*	*	*	*	*	*	*	**180**	24
11:30	*	*	*	*	*	11	**147**	*	*	*	*	*	*	*	**147**	11
11:45	*	*	*	*	*	10	**174**	*	*	*	*	*	*	*	**174**	10
Total	0	0	0	0	0	1755	2953	4068	0	0	0	0	0	0	2953	5046
Day Total	0		0		1755		7021		0		0		0		7999	
% Splits	0.0%	0.0%	0.0%	0.0%	0.0%	100.0 %	42.1%	57.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	36.9%	63.1%
Peak						04:45	11:00	03:30							11:00	03:30
Vol.						612	669	744							669	744
P.H.F.						0.823	0.929	0.939							0.929	0.939

ADT Not Calculated

Synchro Output

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	271	8	5	123	24	1	1	5	2	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		3%			-3%			2%			2%	
Storage Length (ft)	100		0	50		0	0		0	0		25
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	100		25	50		25	25		25	25		100
Satd. Flow (prot)	1743	1827	0	1796	1843	0	0	1648	0	0	1752	1567
Flt Permitted	0.599			0.558				0.955				
Satd. Flow (perm)	1099	1827	0	1055	1843	0	0	1583	0	0	1844	1567
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			12			6				4
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		627			873			865			421	
Travel Time (s)		12.2			17.0			16.9			8.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	337	0	6	177	0	0	8	0	0	2	4
Turn Type	pm+pt			Perm			Perm			Perm		Perm
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	20.0
Total Split (s)	30.0	68.0	0.0	38.0	38.0	0.0	22.0	22.0	0.0	22.0	22.0	22.0
Total Split (%)	33.3%	75.6%	0.0%	42.2%	42.2%	0.0%	24.4%	24.4%	0.0%	24.4%	24.4%	24.4%
Yellow Time (s)	3.0	3.7		4.1	4.1		3.7	3.7		3.0	3.0	3.0
All-Red Time (s)	2.0	1.5		2.3	2.3		2.5	2.5		2.6	2.6	2.6
Lost Time Adjust (s)	0.0	-0.2	0.0	-1.4	-1.4	0.0	-1.2	-1.2	0.0	-0.6	-0.6	-0.6
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Act Effct Green (s)	82.4	86.4		69.6	69.6			8.2			7.7	7.7
Actuated g/C Ratio	0.92	0.96		0.77	0.77			0.09			0.09	0.09
v/c Ratio	0.24	0.19		0.01	0.12			0.05			0.01	0.03
Control Delay	1.4	1.0		4.4	3.6			26.1			37.5	25.0
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	1.4	1.0		4.4	3.6			26.1			37.5	25.0
LOS	A	A		A	A			C			D	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		1.1			3.6			26.1			29.2	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	0	0		1	14			1			1	0
Queue Length 95th (ft)	37	48		5	56			13			7	9
Internal Link Dist (ft)		547			793			785			341	
Turn Bay Length (ft)	100			50								25
Base Capacity (vph)	1185	1753		816	1428			304			348	299
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.21	0.19		0.01	0.12			0.03			0.01	0.01

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.24
Intersection Signal Delay: 2.2 — Intersection LOS: A
Intersection Capacity Utilization 43.1% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Ash Street & US 13-117 NB Ramps

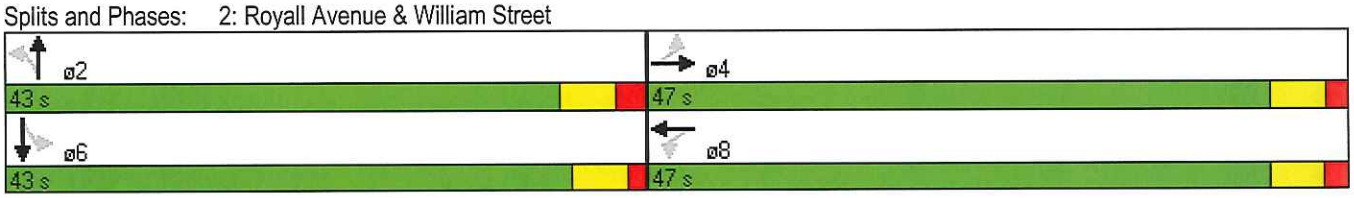
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	284	31	37	152	34	17	102	32	53	227	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			2%			3%			0%	
Storage Length (ft)	100		0	125		0	50		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100		25	50		25	50		25	25		25
Satd. Flow (prot)	1770	1835	0	1752	1794	0	1743	1769	0	1770	1840	0
Flt Permitted	0.535			0.293			0.586			0.664		
Satd. Flow (perm)	997	1835	0	540	1794	0	1075	1769	0	1237	1840	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			17			22			6	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		680			1445			704			811	
Travel Time (s)		13.2			28.1			13.7			15.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	343	0	40	202	0	18	146	0	58	269	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	47.0	47.0	0.0	47.0	47.0	0.0	43.0	43.0	0.0	43.0	43.0	0.0
Total Split (%)	52.2%	52.2%	0.0%	52.2%	52.2%	0.0%	47.8%	47.8%	0.0%	47.8%	47.8%	0.0%
Yellow Time (s)	3.8	3.8		3.7	3.7		3.7	3.7		3.8	3.8	
All-Red Time (s)	1.6	1.6		1.7	1.7		2.2	2.2		1.3	1.3	
Lost Time Adjust (s)	-0.4	-0.4	0.0	-0.4	-0.4	0.0	-0.9	-0.9	0.0	-0.1	-0.1	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	22.9	22.9		22.9	22.9		57.1	57.1		57.1	57.1	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.63	0.63		0.63	0.63	
v/c Ratio	0.17	0.73		0.29	0.43		0.03	0.13		0.07	0.23	
Control Delay	25.2	38.4		30.5	27.3		8.3	7.1		8.3	8.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	25.2	38.4		30.5	27.3		8.3	7.1		8.3	8.6	
LOS	C	D		C	C		A	A		A	A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		37.0			27.8			7.2			8.5	
Approach LOS		D			C			A			A	
Queue Length 50th (ft)	19	174		18	88		3	25		11	57	
Queue Length 95th (ft)	40	238		43	133		14	62		33	120	
Internal Link Dist (ft)		600			1365			624			731	
Turn Bay Length (ft)	100			125			50					
Base Capacity (vph)	465	861		252	846		682	1130		785	1170	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.09	0.40		0.16	0.24		0.03	0.13		0.07	0.23	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 22.3 Intersection LOS: C
Intersection Capacity Utilization 60.8% ICU Level of Service B
Analysis Period (min) 15
Description: 04-0871

Splits and Phases: 2: Royall Avenue & William Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	339	5	12	203	3	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	50		25	25
Satd. Flow (prot)	1859	0	1770	1863	1645	0
Flt Permitted			0.950		0.990	
Satd. Flow (perm)	1859	0	1770	1863	1645	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	1445			310	460	
Travel Time (s)	28.1			6.0	9.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	400	0	14	236	15	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type: Other	
Control Type: Unsignalized	
Intersection Capacity Utilization 28.1%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	339	5	12	203	3	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	394	6	14	236	3	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			400		661	397
vC1, stage 1 conf vol					397	
vC2, stage 2 conf vol					264	
vCu, unblocked vol			400		661	397
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	98
cM capacity (veh/h)			1159		603	652

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	400	14	236	15
Volume Left	0	14	0	3
Volume Right	6	0	0	12
cSH	1700	1159	1700	640
Volume to Capacity	0.24	0.01	0.14	0.02
Queue Length 95th (ft)	0	1	0	2
Control Delay (s)	0.0	8.1	0.0	10.8
Lane LOS		A		B
Approach Delay (s)	0.0	0.5		10.8
Approach LOS				B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	28.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	337	5	15	231	6	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	50		25	25
Satd. Flow (prot)	1859	0	1770	1863	1676	0
Flt Permitted			0.950		0.981	
Satd. Flow (perm)	1859	0	1770	1863	1676	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	310			793	517	
Travel Time (s)	6.0			15.4	10.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	393	0	17	266	18	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type: Other	
Control Type: Unsignalized	
Intersection Capacity Utilization 28.0%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	337	5	15	231	6	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	387	6	17	266	7	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			393		690	390
vC1, stage 1 conf vol					390	
vC2, stage 2 conf vol					300	
vCu, unblocked vol			393		690	390
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	98
cM capacity (veh/h)			1165		593	658

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	393	17	266	18
Volume Left	0	17	0	7
Volume Right	6	0	0	11
cSH	1700	1165	1700	632
Volume to Capacity	0.23	0.01	0.16	0.03
Queue Length 95th (ft)	0	1	0	2
Control Delay (s)	0.0	8.1	0.0	10.9
Lane LOS		A		B
Approach Delay (s)	0.0	0.5		10.9
Approach LOS				B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	28.0%	ICU Level of Service	A
Analysis Period (min)	15		

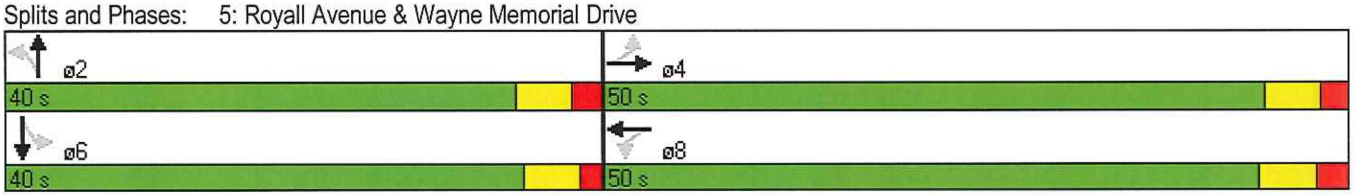
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	188	114	66	197	52	68	358	65	57	298	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			1%			0%			0%	
Storage Length (ft)	100		0	50		0	50		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100		25	100		25	50		25	100		25
Satd. Flow (prot)	1770	1757	0	1761	1796	0	1770	3458	0	1770	3415	0
Flt Permitted	0.401			0.299			0.508			0.490		
Satd. Flow (perm)	747	1757	0	554	1796	0	946	3458	0	913	3415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			21			27			51	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		703			684			520			733	
Travel Time (s)		13.7			13.3			10.1			14.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	325	0	71	268	0	73	455	0	61	416	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	50.0	50.0	0.0	50.0	50.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0
Total Split (%)	55.6%	55.6%	0.0%	55.6%	55.6%	0.0%	44.4%	44.4%	0.0%	44.4%	44.4%	0.0%
Yellow Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.0		2.3	2.3		2.1	2.1		1.5	1.5	
Lost Time Adjust (s)	-0.8	-0.8	0.0	-1.1	-1.1	0.0	-0.9	-0.9	0.0	-0.3	-0.3	1.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	21.5	21.5		21.5	21.5		58.5	58.5		58.5	58.5	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.65	0.65		0.65	0.65	
v/c Ratio	0.46	0.71		0.54	0.60		0.12	0.20		0.10	0.19	
Control Delay	35.8	34.5		43.2	32.7		8.4	7.1		8.3	6.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	35.8	34.5		43.2	32.7		8.4	7.1		8.3	6.6	
LOS	D	C		D	C		A	A		A	A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		34.8			34.9			7.3			6.8	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)	40	145		35	126		14	45		12	37	
Queue Length 95th (ft)	75	206		72	177		41	87		36	75	
Internal Link Dist (ft)		623			604			440			653	
Turn Bay Length (ft)	100			50			50			75		
Base Capacity (vph)	374	903		277	909		615	2257		593	2238	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.22	0.36		0.26	0.29		0.12	0.20		0.10	0.19	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 18.9 — Intersection LOS: B
Intersection Capacity Utilization 59.7% — ICU Level of Service B
Analysis Period (min) 15
Description: 04-0277

Splits and Phases: 5: Royall Avenue & Wayne Memorial Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	344	20	18	189	11	12	0	14	0	1	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	0	3504	0	0	3497	0	0	1689	0	0	1654	0
Flt Permitted		0.998			0.996			0.977				
Satd. Flow (perm)	0	3504	0	0	3497	0	0	1689	0	0	1654	0
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		574			1016			1005			654	
Travel Time (s)		11.2			19.8			19.6			12.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	405	0	0	234	0	0	28	0	0	6	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type: Other	
Control Type: Unsignalized	
Intersection Capacity Utilization 34.4%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	344	20	18	189	11	12	0	14	0	1	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	13	370	22	19	203	12	13	0	15	0	1	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	215			391			553	660	196	474	665	108
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	215			391			553	660	196	474	665	108
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			97	100	98	100	100	99
cM capacity (veh/h)	1352			1164			404	372	813	456	369	926

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	198	206	121	113	28	6
Volume Left	13	0	19	0	13	0
Volume Right	0	22	0	12	15	5
cSH	1352	1700	1164	1700	554	740
Volume to Capacity	0.01	0.12	0.02	0.07	0.05	0.01
Queue Length 95th (ft)	1	0	1	0	4	1
Control Delay (s)	0.6	0.0	1.4	0.0	11.8	9.9
Lane LOS	A		A		B	A
Approach Delay (s)	0.3		0.7		11.8	9.9
Approach LOS					B	A

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	237	203	1	1	295	56	3	1	12	10	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		3%			-3%			2%			2%	
Storage Length (ft)	100		0	50		0	0		0	0		25
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	100		25	50		25	25		25	25		100
Satd. Flow (prot)	1743	1833	0	1796	1845	0	0	1641	0	0	1752	1567
Flt Permitted	0.440			0.601				0.927			0.952	
Satd. Flow (perm)	807	1833	0	1136	1845	0	0	1537	0	0	1756	1567
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			14			15				4
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		627			873			865			421	
Travel Time (s)		12.2			17.0			16.9			8.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	296	255	0	1	439	0	0	20	0	0	12	4
Turn Type	pm+pt			Perm			Perm			Perm		Perm
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	20.0
Total Split (s)	25.0	70.0	0.0	45.0	45.0	0.0	20.0	20.0	0.0	20.0	20.0	20.0
Total Split (%)	27.8%	77.8%	0.0%	50.0%	50.0%	0.0%	22.2%	22.2%	0.0%	22.2%	22.2%	22.2%
Yellow Time (s)	3.0	3.7		4.1	4.1		3.7	3.7		3.0	3.0	3.0
All-Red Time (s)	2.0	1.5		2.3	2.3		2.5	2.5		2.6	2.6	2.6
Lost Time Adjust (s)	0.0	-0.2	0.0	-1.4	-1.4	0.0	-1.2	-1.2	0.0	-0.6	-0.6	-0.6
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Act Effct Green (s)	79.6	82.6		65.9	65.9			8.4			8.0	8.0
Actuated g/C Ratio	0.88	0.92		0.73	0.73			0.09			0.09	0.09
v/c Ratio	0.37	0.15		0.00	0.32			0.13			0.08	0.03
Control Delay	2.7	1.5		7.0	6.4			23.0			38.4	24.7
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	2.7	1.5		7.0	6.4			23.0			38.4	24.7
LOS	A	A		A	A			C			D	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		2.1			6.4			23.0			35.0	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	0	0		0	42			3			6	0
Queue Length 95th (ft)	44	37		2	148			21			20	8
Internal Link Dist (ft)		547			793			785			341	
Turn Bay Length (ft)	100			50								25
Base Capacity (vph)	921	1682		832	1355			269			293	265
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.32	0.15		0.00	0.32			0.07			0.04	0.02

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.37
Intersection Signal Delay: 4.9 — Intersection LOS: A
Intersection Capacity Utilization 50.4% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Ash Street & US 13-117 NB Ramps

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	246	44	50	276	61	35	346	90	39	218	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			2%			3%			0%	
Storage Length (ft)	100		0	125		0	50		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100		25	50		25	50		25	25		25
Satd. Flow (prot)	1770	1820	0	1752	1794	0	1743	1778	0	1770	1840	0
Flt Permitted	0.266			0.349			0.587			0.421		
Satd. Flow (perm)	495	1820	0	644	1794	0	1077	1778	0	784	1840	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			14			21			7	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		680			1445			704			811	
Travel Time (s)		13.2			28.1			13.7			15.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	322	0	56	375	0	39	484	0	43	264	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	40.0	40.0	0.0	40.0	40.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
Total Split (%)	44.4%	44.4%	0.0%	44.4%	44.4%	0.0%	55.6%	55.6%	0.0%	55.6%	55.6%	0.0%
Yellow Time (s)	3.8	3.8		3.7	3.7		3.7	3.7		3.8	3.8	
All-Red Time (s)	1.6	1.6		1.7	1.7		2.2	2.2		1.3	1.3	
Lost Time Adjust (s)	-0.4	-0.4	0.0	-0.4	-0.4	0.0	-0.9	-0.9	0.0	-0.1	-0.1	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	24.3	24.3		24.3	24.3		55.7	55.7		55.7	55.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.62		0.62	0.62	
v/c Ratio	0.25	0.64		0.32	0.76		0.06	0.44		0.09	0.23	
Control Delay	28.3	33.2		29.2	38.5		9.1	11.3		9.5	9.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.3	33.2		29.2	38.5		9.1	11.3		9.5	9.2	
LOS	C	C		C	D		A	B		A	A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		32.7			37.3			11.1			9.3	
Approach LOS		C			D			B			A	
Queue Length 50th (ft)	15	155		25	189		8	124		9	59	
Queue Length 95th (ft)	37	213		53	253		26	245		29	123	
Internal Link Dist (ft)		600			1365			624			731	
Turn Bay Length (ft)	100			125			50					
Base Capacity (vph)	193	715		250	706		666	1108		485	1141	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.18	0.45		0.22	0.53		0.06	0.44		0.09	0.23	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 22.5 Intersection LOS: C
Intersection Capacity Utilization 69.0% ICU Level of Service C
Analysis Period (min) 15
Description: 04-0871

Splits and Phases: 2: Royall Avenue & William Street

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	378	15	26	374	4	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	50		25	25
Satd. Flow (prot)	1853	0	1770	1863	1645	0
Flt Permitted			0.950		0.990	
Satd. Flow (perm)	1853	0	1770	1863	1645	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	1445			310	460	
Travel Time (s)	28.1			6.0	9.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	442	0	29	420	20	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type: Other	
Control Type: Unsignalized	
Intersection Capacity Utilization 31.6%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	378	15	26	374	4	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	425	17	29	420	4	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			442		912	433
vC1, stage 1 conf vol					433	
vC2, stage 2 conf vol					479	
vCu, unblocked vol			442		912	433
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			97		99	97
cM capacity (veh/h)			1118		505	623

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	442	29	420	20
Volume Left	0	29	0	4
Volume Right	17	0	0	16
cSH	1700	1118	1700	592
Volume to Capacity	0.26	0.03	0.25	0.03
Queue Length 95th (ft)	0	2	0	3
Control Delay (s)	0.0	8.3	0.0	11.3
Lane LOS		A		B
Approach Delay (s)	0.0	0.5		11.3
Approach LOS				B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	386	3	9	401	4	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	50		25	25
Satd. Flow (prot)	1861	0	1770	1863	1655	0
Flt Permitted			0.950		0.988	
Satd. Flow (perm)	1861	0	1770	1863	1655	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	310			793	517	
Travel Time (s)	6.0			15.4	10.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	418	0	10	431	16	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type: Other	
Control Type: Unsignalized	
Intersection Capacity Utilization 31.1%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	386	3	9	401	4	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	415	3	10	431	4	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			418		867	417
vC1, stage 1 conf vol					417	
vC2, stage 2 conf vol					451	
vCu, unblocked vol			418		867	417
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	98
cM capacity (veh/h)			1141		527	636

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	418	10	431	16
Volume Left	0	10	0	4
Volume Right	3	0	0	12
cSH	1700	1141	1700	603
Volume to Capacity	0.25	0.01	0.25	0.03
Queue Length 95th (ft)	0	1	0	2
Control Delay (s)	0.0	8.2	0.0	11.1
Lane LOS		A		B
Approach Delay (s)	0.0	0.2		11.1
Approach LOS				B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	31.1%	ICU Level of Service	A
Analysis Period (min)	15		

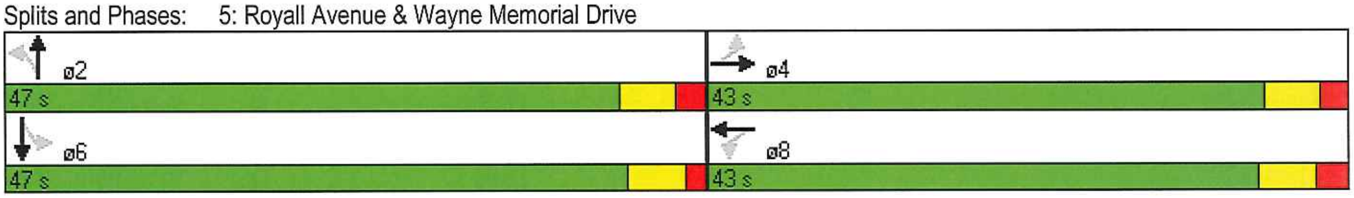
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	256	137	68	235	86	92	618	157	76	406	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			1%			0%			0%	
Storage Length (ft)	100		0	50		0	50		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100		25	100		25	50		25	100		25
Satd. Flow (prot)	1770	1766	0	1761	1779	0	1770	3433	0	1770	3447	0
Flt Permitted	0.349			0.240			0.445			0.299		
Satd. Flow (perm)	650	1766	0	445	1779	0	829	3433	0	557	3447	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			25			47			36	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		703			684			520			733	
Travel Time (s)		13.7			13.3			10.1			14.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	418	0	72	341	0	98	824	0	81	522	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	43.0	43.0	0.0	43.0	43.0	0.0	47.0	47.0	0.0	47.0	47.0	0.0
Total Split (%)	47.8%	47.8%	0.0%	47.8%	47.8%	0.0%	52.2%	52.2%	0.0%	52.2%	52.2%	0.0%
Yellow Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.0		2.3	2.3		2.1	2.1		1.5	1.5	
Lost Time Adjust (s)	-0.8	-0.8	0.0	-1.1	-1.1	0.0	-0.9	-0.9	0.0	-0.3	-0.3	1.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	26.5	26.5		26.5	26.5		53.5	53.5		53.5	53.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.59	0.59		0.59	0.59	
v/c Ratio	0.36	0.77		0.55	0.63		0.20	0.40		0.24	0.25	
Control Delay	28.3	35.3		41.2	29.8		11.7	10.8		13.4	9.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.3	35.3		41.2	29.8		11.7	10.8		13.4	9.5	
LOS	C	D		D	C		B	B		B	A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		34.3			31.8			10.9			10.0	
Approach LOS		C			C			B			A	
Queue Length 50th (ft)	30	198		34	155		24	112		20	63	
Queue Length 95th (ft)	60	263		72	209		63	194		60	115	
Internal Link Dist (ft)		623			604			440			653	
Turn Bay Length (ft)	100			50			50			75		
Base Capacity (vph)	274	767		188	766		493	2061		331	2064	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.25	0.54		0.38	0.45		0.20	0.40		0.24	0.25	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 18.9 Intersection LOS: B
Intersection Capacity Utilization 74.8% ICU Level of Service D
Analysis Period (min) 15
Description: 04-0277

Splits and Phases: 5: Royall Avenue & Wayne Memorial Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	329	30	21	446	7	25	4	10	5	6	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	0	3490	0	0	3525	0	0	1744	0	0	1711	0
Flt Permitted		0.998			0.998			0.969			0.990	
Satd. Flow (perm)	0	3490	0	0	3525	0	0	1744	0	0	1711	0
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		574			1016			1005			654	
Travel Time (s)		11.2			19.8			19.6			12.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	468	0	0	593	0	0	48	0	0	30	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type: Other	
Control Type: Unsignalized	
Intersection Capacity Utilization 39.2%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	329	30	21	446	7	25	4	10	5	6	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	19	411	38	26	558	9	31	5	12	6	8	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	566			449			819	1086	224	872	1101	283
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	566			449			819	1086	224	872	1101	283
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			87	98	98	97	96	98
cM capacity (veh/h)	1002			1108			246	206	779	229	202	714

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	224	243	305	288	49	30
Volume Left	19	0	26	0	31	6
Volume Right	0	38	0	9	12	16
cSH	1002	1700	1108	1700	291	344
Volume to Capacity	0.02	0.14	0.02	0.17	0.17	0.09
Queue Length 95th (ft)	1	0	2	0	15	7
Control Delay (s)	0.9	0.0	0.9	0.0	19.8	16.5
Lane LOS	A		A		C	C
Approach Delay (s)	0.4		0.5		19.8	16.5
Approach LOS					C	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	271	8	10	123	24	1	1	10	2	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		3%			-3%			2%			2%	
Storage Length (ft)	100		0	50		0	0		0	0		25
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	100		25	50		25	25		25	25		100
Satd. Flow (prot)	1743	1827	0	1796	1843	0	0	1624	0	0	1752	1567
Flt Permitted	0.599			0.558				0.974				
Satd. Flow (perm)	1099	1827	0	1055	1843	0	0	1588	0	0	1844	1567
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			12			12				4
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		627			873			865			421	
Travel Time (s)		12.2			17.0			16.9			8.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	337	0	12	177	0	0	14	0	0	2	4
Turn Type	pm+pt			Perm			Perm			Perm		Perm
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	20.0
Total Split (s)	33.0	68.0	0.0	35.0	35.0	0.0	22.0	22.0	0.0	22.0	22.0	22.0
Total Split (%)	36.7%	75.6%	0.0%	38.9%	38.9%	0.0%	24.4%	24.4%	0.0%	24.4%	24.4%	24.4%
Yellow Time (s)	3.0	3.7		4.1	4.1		3.7	3.7		3.0	3.0	3.0
All-Red Time (s)	2.0	1.5		2.3	2.3		2.5	2.5		2.6	2.6	2.6
Lost Time Adjust (s)	0.0	-0.2	0.0	-1.4	-1.4	0.0	-1.2	-1.2	0.0	-0.6	-0.6	-0.6
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Act Effct Green (s)	82.3	86.3		69.6	69.6			8.3			7.8	7.8
Actuated g/C Ratio	0.91	0.96		0.77	0.77			0.09			0.09	0.09
v/c Ratio	0.24	0.19		0.01	0.12			0.09			0.01	0.03
Control Delay	1.4	1.0		4.3	3.6			22.1			37.5	25.0
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	1.4	1.0		4.3	3.6			22.1			37.5	25.0
LOS	A	A		A	A			C			D	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		1.2			3.7			22.1			29.2	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	0	0		1	14			1			1	0
Queue Length 95th (ft)	38	50		8	57			17			7	9
Internal Link Dist (ft)		547			793			785			341	
Turn Bay Length (ft)	100			50								25
Base Capacity (vph)	1205	1752		816	1427			310			348	299
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.21	0.19		0.01	0.12			0.05			0.01	0.01

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.24
Intersection Signal Delay: 2.3 Intersection LOS: A
Intersection Capacity Utilization 43.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Ash Street & US 13-117 NB Ramps

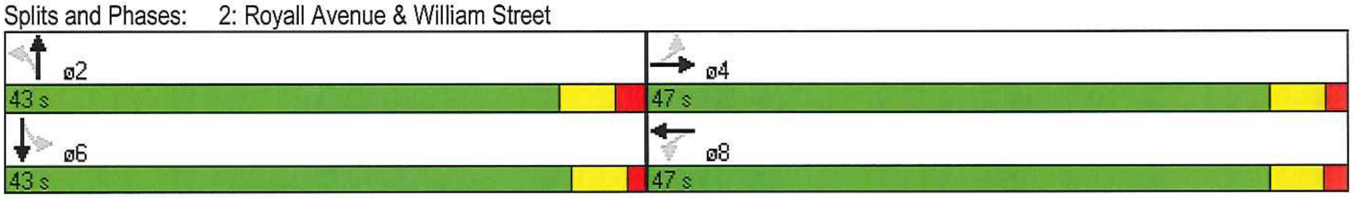
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	280	35	50	148	33	21	103	42	52	228	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			2%			3%			0%	
Storage Length (ft)	100		0	125		0	50		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100		25	50		25	50		25	25		25
Satd. Flow (prot)	1770	1831	0	1752	1794	0	1743	1754	0	1770	1840	0
Flt Permitted	0.544			0.295			0.585			0.657		
Satd. Flow (perm)	1013	1831	0	544	1794	0	1073	1754	0	1224	1840	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			17			28			6	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		680			1445			704			811	
Travel Time (s)		13.2			28.1			13.7			15.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	342	0	54	197	0	23	158	0	57	270	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	47.0	47.0	0.0	47.0	47.0	0.0	43.0	43.0	0.0	43.0	43.0	0.0
Total Split (%)	52.2%	52.2%	0.0%	52.2%	52.2%	0.0%	47.8%	47.8%	0.0%	47.8%	47.8%	0.0%
Yellow Time (s)	3.8	3.8		3.7	3.7		3.7	3.7		3.8	3.8	
All-Red Time (s)	1.6	1.6		1.7	1.7		2.2	2.2		1.3	1.3	
Lost Time Adjust (s)	-0.4	-0.4	0.0	-0.4	-0.4	0.0	-0.9	-0.9	0.0	-0.1	-0.1	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	22.9	22.9		22.9	22.9		57.1	57.1		57.1	57.1	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.63	0.63		0.63	0.63	
v/c Ratio	0.16	0.72		0.39	0.42		0.03	0.14		0.07	0.23	
Control Delay	25.1	38.3		34.4	27.0		8.3	6.9		8.3	8.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	25.1	38.3		34.4	27.0		8.3	6.9		8.3	8.6	
LOS	C	D		C	C		A	A		A	A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		36.9			28.6			7.1			8.5	
Approach LOS		D			C			A			A	
Queue Length 50th (ft)	19	173		25	85		4	26		11	58	
Queue Length 95th (ft)	40	237		55	130		17	65		33	120	
Internal Link Dist (ft)		600			1365			624			731	
Turn Bay Length (ft)	100			125			50					
Base Capacity (vph)	473	859		254	846		681	1124		777	1171	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.09	0.40		0.21	0.23		0.03	0.14		0.07	0.23	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 22.2 Intersection LOS: C
Intersection Capacity Utilization 60.9% ICU Level of Service B
Analysis Period (min) 15
Description: 04-0871

Splits and Phases: 2: Royall Avenue & William Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	339	10	27	203	9	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	50		25	25
Satd. Flow (prot)	1855	0	1770	1863	1662	0
Flt Permitted			0.950		0.985	
Satd. Flow (perm)	1855	0	1770	1863	1662	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	1445			310	460	
Travel Time (s)	28.1			6.0	9.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	406	0	31	236	33	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type: Other	
Control Type: Unsignalized	
Intersection Capacity Utilization 32.4%	ICU Level of Service A
Analysis Period (min) 15	

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↰	↑	Y	
Volume (veh/h)	339	10	27	203	9	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	394	12	31	236	10	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			406		699	400
vC1, stage 1 conf vol					400	
vC2, stage 2 conf vol					299	
vCu, unblocked vol			406		699	400
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	96
cM capacity (veh/h)			1153		585	650

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	406	31	236	34
Volume Left	0	31	0	10
Volume Right	12	0	0	23
cSH	1700	1153	1700	628
Volume to Capacity	0.24	0.03	0.14	0.05
Queue Length 95th (ft)	0	2	0	4
Control Delay (s)	0.0	8.2	0.0	11.1
Lane LOS		A		B
Approach Delay (s)	0.0	1.0		11.1
Approach LOS				B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	32.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	337	10	27	231	9	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	50		25	25
Satd. Flow (prot)	1855	0	1770	1863	1662	0
Flt Permitted			0.950		0.985	
Satd. Flow (perm)	1855	0	1770	1863	1662	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	310			793	517	
Travel Time (s)	6.0			15.4	10.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	398	0	31	266	33	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type: Other	
Control Type: Unsignalized	
Intersection Capacity Utilization 32.4%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	337	10	27	231	9	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	387	11	31	266	10	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			399		721	393
vC1, stage 1 conf vol					393	
vC2, stage 2 conf vol					328	
vCu, unblocked vol			399		721	393
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	96
cM capacity (veh/h)			1160		577	656

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	399	31	266	33
Volume Left	0	31	0	10
Volume Right	11	0	0	23
cSH	1700	1160	1700	629
Volume to Capacity	0.23	0.03	0.16	0.05
Queue Length 95th (ft)	0	2	0	4
Control Delay (s)	0.0	8.2	0.0	11.0
Lane LOS		A		B
Approach Delay (s)	0.0	0.9		11.0
Approach LOS				B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	32.4%	ICU Level of Service	A
Analysis Period (min)	15		

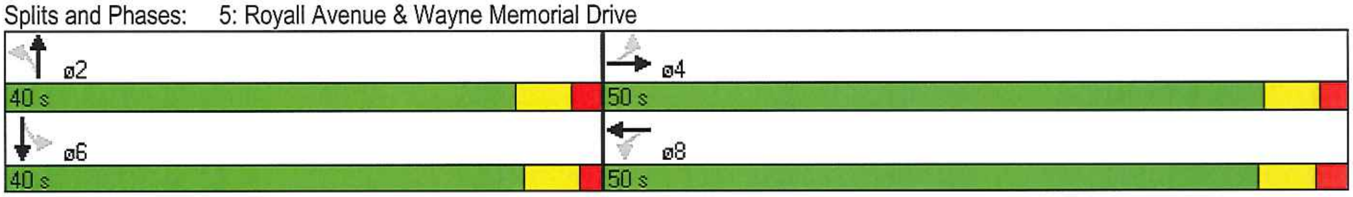
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	72	182	119	76	187	52	72	362	71	57	302	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			1%			0%			0%	
Storage Length (ft)	100		0	50		0	50		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100		25	100		25	50		25	100		25
Satd. Flow (prot)	1770	1753	0	1761	1792	0	1770	3451	0	1770	3422	0
Flt Permitted	0.417			0.295			0.508			0.485		
Satd. Flow (perm)	777	1753	0	547	1792	0	946	3451	0	903	3422	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			22			29			47	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		703			684			520			733	
Travel Time (s)		13.7			13.3			10.1			14.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	324	0	82	257	0	77	465	0	61	416	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	50.0	50.0	0.0	50.0	50.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0
Total Split (%)	55.6%	55.6%	0.0%	55.6%	55.6%	0.0%	44.4%	44.4%	0.0%	44.4%	44.4%	0.0%
Yellow Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.0		2.3	2.3		2.1	2.1		1.5	1.5	
Lost Time Adjust (s)	-0.8	-0.8	0.0	-1.1	-1.1	0.0	-0.9	-0.9	0.0	-0.3	-0.3	1.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	21.2	21.2		21.2	21.2		58.8	58.8		58.8	58.8	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.65	0.65		0.65	0.65	
v/c Ratio	0.42	0.72		0.64	0.59		0.12	0.21		0.10	0.18	
Control Delay	34.4	34.6		51.4	32.2		8.2	6.9		8.1	6.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	34.4	34.6		51.4	32.2		8.2	6.9		8.1	6.5	
LOS	C	C		D	C		A	A		A	A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		34.6			36.8			7.1			6.7	
Approach LOS		C			D			A			A	
Queue Length 50th (ft)	37	143		42	119		15	45		12	37	
Queue Length 95th (ft)	71	206		84	172		42	87		35	74	
Internal Link Dist (ft)		623			604			440			653	
Turn Bay Length (ft)	100			50			50			75		
Base Capacity (vph)	389	903		274	907		618	2264		590	2252	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.20	0.36		0.30	0.28		0.12	0.21		0.10	0.18	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 19.0 Intersection LOS: B
Intersection Capacity Utilization 59.9% ICU Level of Service B
Analysis Period (min) 15
Description: 04-0277

Splits and Phases: 5: Royall Avenue & Wayne Memorial Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	338	26	24	184	11	17	0	20	0	1	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	0	3497	0	0	3493	0	0	1687	0	0	1654	0
Flt Permitted		0.998			0.995			0.978				
Satd. Flow (perm)	0	3497	0	0	3493	0	0	1687	0	0	1654	0
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		574			1011			1005			654	
Travel Time (s)		11.2			19.7			19.6			12.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	404	0	0	236	0	0	40	0	0	6	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 35.5% ICU Level of Service A
Analysis Period (min) 15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	338	26	24	184	11	17	0	20	0	1	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	13	363	28	26	198	12	18	0	22	0	1	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	210			391			560	665	196	484	673	105
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	210			391			560	665	196	484	673	105
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			95	100	97	100	100	99
cM capacity (veh/h)	1358			1164			398	367	813	442	363	929

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	195	210	125	111	40	6
Volume Left	13	0	26	0	18	0
Volume Right	0	28	0	12	22	5
cSH	1358	1700	1164	1700	550	738
Volume to Capacity	0.01	0.12	0.02	0.07	0.07	0.01
Queue Length 95th (ft)	1	0	2	0	6	1
Control Delay (s)	0.6	0.0	1.8	0.0	12.1	9.9
Lane LOS	A		A		B	A
Approach Delay (s)	0.3		1.0		12.1	9.9
Approach LOS					B	A

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	237	203	1	5	295	56	3	1	16	10	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		3%			-3%			2%			2%	
Storage Length (ft)	100		0	50		0	0		0	0		25
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	100		25	50		25	25		25	25		100
Satd. Flow (prot)	1743	1833	0	1796	1845	0	0	1632	0	0	1752	1567
Flt Permitted	0.440			0.601				0.941			0.952	
Satd. Flow (perm)	807	1833	0	1136	1845	0	0	1548	0	0	1756	1567
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			14			20				4
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		627			873			865			421	
Travel Time (s)		12.2			17.0			16.9			8.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	296	255	0	6	439	0	0	25	0	0	12	4
Turn Type	pm+pt			Perm			Perm			Perm		Perm
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	7.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	20.0
Total Split (s)	25.0	70.0	0.0	45.0	45.0	0.0	20.0	20.0	0.0	20.0	20.0	20.0
Total Split (%)	27.8%	77.8%	0.0%	50.0%	50.0%	0.0%	22.2%	22.2%	0.0%	22.2%	22.2%	22.2%
Yellow Time (s)	3.0	3.7		4.1	4.1		3.7	3.7		3.0	3.0	3.0
All-Red Time (s)	2.0	1.5		2.3	2.3		2.5	2.5		2.6	2.6	2.6
Lost Time Adjust (s)	0.0	-0.2	0.0	-1.4	-1.4	0.0	-1.2	-1.2	0.0	-0.6	-0.6	-0.6
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		C-Max	C-Max		None	None		None	None	None
Act Effct Green (s)	79.5	82.5		65.9	65.9			8.4			8.1	8.1
Actuated g/C Ratio	0.88	0.92		0.73	0.73			0.09			0.09	0.09
v/c Ratio	0.37	0.15		0.01	0.32			0.15			0.08	0.03
Control Delay	2.7	1.5		6.4	6.4			21.4			38.3	24.7
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	2.7	1.5		6.4	6.4			21.4			38.3	24.7
LOS	A	A		A	A			C			D	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		2.2			6.4			21.4			34.9	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	0	0		1	42			3			6	0
Queue Length 95th (ft)	45	38		5	150			22			20	8
Internal Link Dist (ft)		547			793			785			341	
Turn Bay Length (ft)	100			50								25
Base Capacity (vph)	921	1680		831	1354			275			293	265
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.32	0.15		0.01	0.32			0.09			0.04	0.02

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.37
Intersection Signal Delay: 5.0 Intersection LOS: A
Intersection Capacity Utilization 50.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Ash Street & US 13-117 NB Ramps

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	238	52	67	273	60	38	347	102	38	219	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			2%			3%			0%	
Storage Length (ft)	100		0	125		0	50		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100		25	50		25	50		25	25		25
Satd. Flow (prot)	1770	1812	0	1752	1794	0	1743	1772	0	1770	1840	0
Flt Permitted	0.271			0.346			0.586			0.411		
Satd. Flow (perm)	505	1812	0	638	1794	0	1075	1772	0	766	1840	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			14			23			7	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		680			1445			704			811	
Travel Time (s)		13.2			28.1			13.7			15.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	322	0	74	370	0	42	499	0	42	265	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	40.0	40.0	0.0	40.0	40.0	0.0	50.0	50.0	0.0	50.0	50.0	0.0
Total Split (%)	44.4%	44.4%	0.0%	44.4%	44.4%	0.0%	55.6%	55.6%	0.0%	55.6%	55.6%	0.0%
Yellow Time (s)	3.8	3.8		3.7	3.7		3.7	3.7		3.8	3.8	
All-Red Time (s)	1.6	1.6		1.7	1.7		2.2	2.2		1.3	1.3	
Lost Time Adjust (s)	-0.4	-0.4	0.0	-0.4	-0.4	0.0	-0.9	-0.9	0.0	-0.1	-0.1	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	24.1	24.1		24.1	24.1		55.9	55.9		55.9	55.9	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.62	0.62		0.62	0.62	
v/c Ratio	0.25	0.65		0.43	0.76		0.06	0.45		0.09	0.23	
Control Delay	28.3	33.4		33.7	38.5		9.0	11.3		9.4	9.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.3	33.4		33.7	38.5		9.0	11.3		9.4	9.1	
LOS	C	C		C	D		A	B		A	A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		33.0			37.7			11.1			9.2	
Approach LOS		C			D			B			A	
Queue Length 50th (ft)	15	155		35	186		9	128		9	58	
Queue Length 95th (ft)	37	213		69	251		27	253		28	122	
Internal Link Dist (ft)		600			1365			624			731	
Turn Bay Length (ft)	100			125			50					
Base Capacity (vph)	196	713		248	706		668	1110		476	1146	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.17	0.45		0.30	0.52		0.06	0.45		0.09	0.23	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 22.6 Intersection LOS: C
Intersection Capacity Utilization 67.9% ICU Level of Service C
Analysis Period (min) 15
Description: 04-0871

Splits and Phases: 2: Royall Avenue & William Street

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	378	18	35	374	8	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	50		25	25
Satd. Flow (prot)	1852	0	1770	1863	1653	0
Flt Permitted			0.950		0.988	
Satd. Flow (perm)	1852	0	1770	1863	1653	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	1445			310	460	
Travel Time (s)	28.1			6.0	9.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	445	0	39	420	37	0
Sign Control	Free			Free	Stop	

Intersection Summary		
Area Type:	Other	
Control Type: Unsignalized		
Intersection Capacity Utilization 37.7%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	378	18	35	374	8	25
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	425	20	39	420	9	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			445		934	435
vC1, stage 1 conf vol					435	
vC2, stage 2 conf vol					499	
vCu, unblocked vol			445		934	435
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			96		98	95
cM capacity (veh/h)			1115		494	621

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	445	39	420	37
Volume Left	0	39	0	9
Volume Right	20	0	0	28
cSH	1700	1115	1700	585
Volume to Capacity	0.26	0.04	0.25	0.06
Queue Length 95th (ft)	0	3	0	5
Control Delay (s)	0.0	8.3	0.0	11.6
Lane LOS		A		B
Approach Delay (s)	0.0	0.7		11.6
Approach LOS				B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	386	18	35	401	8	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	50		25	25
Satd. Flow (prot)	1852	0	1770	1863	1655	0
Flt Permitted			0.950		0.988	
Satd. Flow (perm)	1852	0	1770	1863	1655	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	310			793	517	
Travel Time (s)	6.0			15.4	10.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	434	0	38	431	36	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type: Other	
Control Type: Unsignalized	
Intersection Capacity Utilization 38.1%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	386	18	35	401	8	25
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	415	19	38	431	9	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			434		931	425
vC1, stage 1 conf vol					425	
vC2, stage 2 conf vol					506	
vCu, unblocked vol			434		931	425
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	96
cM capacity (veh/h)			1125		495	629

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	434	38	431	35
Volume Left	0	38	0	9
Volume Right	19	0	0	27
cSH	1700	1125	1700	590
Volume to Capacity	0.26	0.03	0.25	0.06
Queue Length 95th (ft)	0	3	0	5
Control Delay (s)	0.0	8.3	0.0	11.5
Lane LOS		A		B
Approach Delay (s)	0.0	0.7		11.5
Approach LOS				B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

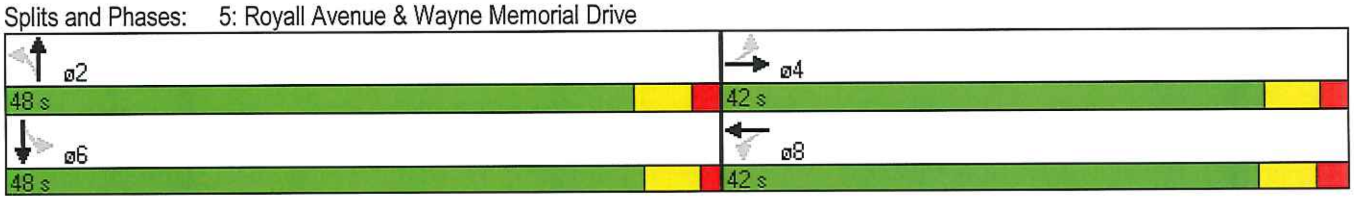
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	246	146	81	222	86	96	621	167	76	411	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			1%			0%			0%	
Storage Length (ft)	100		0	50		0	50		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100		25	100		25	50		25	100		25
Satd. Flow (prot)	1770	1758	0	1761	1776	0	1770	3426	0	1770	3454	0
Flt Permitted	0.367			0.238			0.446			0.294		
Satd. Flow (perm)	684	1758	0	441	1776	0	831	3426	0	548	3454	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40			26			52			34	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		703			684			520			733	
Travel Time (s)		13.7			13.3			10.1			14.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	417	0	86	327	0	102	839	0	81	522	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	42.0	42.0	0.0	42.0	42.0	0.0	48.0	48.0	0.0	48.0	48.0	0.0
Total Split (%)	46.7%	46.7%	0.0%	46.7%	46.7%	0.0%	53.3%	53.3%	0.0%	53.3%	53.3%	0.0%
Yellow Time (s)	3.8	3.8		3.8	3.8		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.0		2.3	2.3		2.1	2.1		1.5	1.5	
Lost Time Adjust (s)	-0.8	-0.8	0.0	-1.1	-1.1	0.0	-0.9	-0.9	0.0	-0.3	-0.3	1.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	26.3	26.3		26.3	26.3		53.7	53.7		53.7	53.7	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.60	0.60		0.60	0.60	
v/c Ratio	0.33	0.77		0.67	0.61		0.21	0.41		0.25	0.25	
Control Delay	27.2	35.5		51.6	29.2		11.7	10.7		13.4	9.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.2	35.5		51.6	29.2		11.7	10.7		13.4	9.4	
LOS	C	D		D	C		B	B		B	A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		34.4			33.8			10.8			9.9	
Approach LOS		C			C			B			A	
Queue Length 50th (ft)	29	196		43	147		25	114		20	63	
Queue Length 95th (ft)	57	262		89	200		65	196		60	114	
Internal Link Dist (ft)		623			604			440			653	
Turn Bay Length (ft)	100			50			50			75		
Base Capacity (vph)	281	746		181	745		496	2067		327	2076	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.23	0.56		0.48	0.44		0.21	0.41		0.25	0.25	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 19.1 — Intersection LOS: B
Intersection Capacity Utilization 75.2% — ICU Level of Service D
Analysis Period (min) 15
Description: 04-0277

Splits and Phases: 5: Royall Avenue & Wayne Memorial Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	319	40	28	434	7	37	5	15	5	8	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	0	3476	0	0	3522	0	0	1740	0	0	1720	0
Flt Permitted		0.998			0.997			0.969			0.991	
Satd. Flow (perm)	0	3476	0	0	3522	0	0	1740	0	0	1720	0
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		574			1016			1005			654	
Travel Time (s)		11.2			19.8			19.6			12.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	468	0	0	586	0	0	71	0	0	32	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type: Other	
Control Type: Unsignalized	
Intersection Capacity Utilization 42.3%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	319	40	28	434	7	37	5	15	5	8	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	19	399	50	35	542	9	46	6	19	6	10	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	551			449			824	1082	224	876	1103	276
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	551			449			824	1082	224	876	1103	276
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			81	97	98	97	95	98
cM capacity (veh/h)	1015			1108			240	205	779	223	200	722

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	218	249	306	280	71	32
Volume Left	19	0	35	0	46	6
Volume Right	0	50	0	9	19	16
cSH	1015	1700	1108	1700	288	323
Volume to Capacity	0.02	0.15	0.03	0.16	0.25	0.10
Queue Length 95th (ft)	1	0	2	0	24	8
Control Delay (s)	0.9	0.0	1.2	0.0	21.5	17.4
Lane LOS	A		A		C	C
Approach Delay (s)	0.4		0.6		21.5	17.4
Approach LOS					C	C

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX B

GradeDec Output

Variable: Benefit-cost ratio

No chart for fixed value result

Summary Statistics	
Mean	0.70403
Std. Deviation	NaN
Minimum	0.70403
Maximum	0.70403
Skewness	NaN
Kurtosis	NaN

Percentiles	
1%	0.70403
5%	0.70403
10%	0.70403
20%	0.70403
30%	0.70403
40%	0.70403
50%	0.70403
60%	0.70403
70%	0.70403
80%	0.70403
90%	0.70403
95%	0.70403
99%	0.70403

The chart shows the probability distribution for the result variable.
For the Histogram, Cumulative and De-Cumulative Charts:
The shaded gray region of the chart is the 80% confidence interval.
The dotted red line is the mean value.
For the Tornado Chart
The bars show the percent change in the mean of the result when the input varies within its 80% confidence interval while the other inputs are held constant at their central value.

U.S. Department of Transportation
Federal Railroad Administration

GradeDec.Net - System for Highway-Rail Grade Crossing Investment Analysis

Current Settings ==>	User: mswest68	Dataset: Goldsboro TSS	Model: Corridor	Corridor: Goldsboro TSS	Scenario: Strong rail growth	Results: Placeholder - Corridor Model

Settings
Crossings
Import
Scenario
Parameters
Simulation
Results
Help
Update
Logout

Results: Placeholder - Corridor Model

Selected results data group: Benefits and Benefit-Cost Summary Go Show summary chart

	Variable	Mean Value	Standard Deviation
View	Safety benefits, thous $ PV	512.322	NaN
View	Travel time savings, thous $ PV	-87.995	NaN
View	Environmental benefits, thous $ PV	-0.410	NaN
View	Veh operating cost benefit, thous $ PV	-6.233	NaN
View	Network benefits, thous $ PV	-3.458	NaN
View	Total benefits, thous $ PV	608.600	NaN
View	of this, benefits from induced trips, thous $ PV	0.073	NaN
View	of this, disbenefits from induced trips, thous $ PV	-0.203	NaN
View	of this, investment salvage value, thous $ PV	194.504	NaN
View	Total costs, thous $ PV	864.453	NaN
View	Net benefits, thous $ PV	-255.853	NaN
View	Benefit-cost ratio	0.704	NaN
View	Rate of return (constant dollars), %	0.932	NaN
View	Local benefits (not included in summary), thous $ PV	30.430	NaN

FEDERAL RAILROAD ADMINISTRATION
GRADEDEC.NET
CORRIDOR AND CROSSING DATA
(without phased improvements)

User: mswest68
Dataset: Goldsboro TSS
Corridor ID 6

Corridor Name	Goldsboro TSS				Avg. No. Trains Per Day	Train Time-of-Day Distribution
				Passenger	0.0	Night Flat
Technology Factors	0.50	0.50	0.50	Freight	10.0	Night Flat
Signal Synchronization?	False			Switch	4.0	Night Flat

CORRIDOR SUMMARY OF PREDICTED ANNUAL ACCIDENTS

Calculated: 29-Mar-2011 9:20 am

	Fatal	Injury	PDO	Total
Base	0.005552	0.068235	0.231332	0.305119
Alternate	0.003850	0.045654	0.153354	0.202857

CROSSING DATA FOR THE GOLDSBORO TSS CORRIDOR

Milepost 0.40 Crossing ID 722879G Accidents in 5 Years 0

Description NS - HOLLY STREET

Paved? True	Urban? True
GCX Base Type	Gates
Safety Sup. Type	None
GCX Alt Type	Gates
Safety Sup. type	None
No. RR Tracks	6

Train Speeds (mph)

Max Timetable	10.0
Passenger	10.0
Freight	8.0
Switch	3.0

Highway Traffic Characteristics

	Base	Alternate
H'way Lanes	2	2.0
Dist from hway	0.10	0.1
AADT	1,471	1,471
Auto TOD Dist	Day Flat	Day Flat
Percent Trucks	5.0	5.0
Of this, % trailers	0.0	0.0
Truck TOD Dist	Day Flat	Day Flat
Percent Bus	0.0	0.0
Bus TOD Dist	Day Flat	Day Flat

Costs in '000 $ of Hway Improvement 1.1

Predicted Annual Accidents

	Base	Alternate
Fatal	0.00031	0.00016
Injury	0.00257	0.00129
PDO	0.01576	0.00788
Total	0.01864	0.00932

Costs in '000 $

	Base	Alternate
Grade Crossing Devices		
O&M	1.7	1.7
Oth. Lcycle	0.0	0.0
Capital		0.0
Supplementary Safety		
O&M	0.0	0.0
Oth. Lcycle	0.0	0.0
Capital		0.0

Milepost 0.90 Crossing ID 722876L Accidents in 5 Years 0

Description NS - WILLIAM STREET

Paved? True	Urban? True
GCX Base Type	Gates
Safety Sup. Type	None
GCX Alt Type	Gates
Safety Sup. type	None
No. RR Tracks	2

Train Speeds (mph)

Max Timetable	10.0
Passenger	10.0
Freight	8.0
Switch	3.0

Highway Traffic Characteristics

	Base	Alternate
H'way Lanes	3	3.0
Dist from hway	0.10	0.1
AADT	7,999	7,999
Auto TOD Dist	Day Flat	Day Flat
Percent Trucks	7.0	7.0
Of this, % trailers	0.0	0.0
Truck TOD Dist	Day Flat	Day Flat
Percent Bus	0.1	0.1
Bus TOD Dist	Day Flat	Day Flat

Costs in '000 $ of Hway Improvement 0.5

Predicted Annual Accidents

	Base	Alternate
Fatal	0.00033	0.00033
Injury	0.00411	0.00411
PDO	0.01529	0.01529
Total	0.01974	0.01974

Costs in '000 $

	Base	Alternate
Grade Crossing Devices		
O&M	1.7	1.7
Oth. Lcycle	0.0	0.0
Capital		0.0
Supplementary Safety		
O&M	0.0	0.0
Oth. Lcycle	0.0	0.0
Capital		0.0

CROSSING DATA FOR THE GOLDSBORO TSS CORRIDOR

Milepost 1.10 | Crossing ID 722875E | Accidents in 5 Years: 2

Description NS - BRYANT ST

Paved? True	Urban? True
GCX Base Type	Passive
Safety Sup. Type	None
GCX Alt Type	Gates
Safety Sup. type	None
No. RR Tracks	1

Train Speeds (mph)

Max Timetable	10.0
Passenger	10.0
Freight	8.0
Switch	3.0

Highway Traffic Characteristics

	Base	Alternate
H'way Lanes	2	2.0
Dist from hway	0.10	0.1
AADT	551	551
Auto TOD Dist	Day Flat	Day Flat
Percent Trucks	5.0	5.0
Of this, % trailers	0.0	0.0
Truck TOD Dist	Day Flat	Day Flat
Percent Bus	0.0	0.0
Bus TOD Dist	Day Flat	Day Flat

Costs in '000 $ of Hway Improvement: 5.0

Predicted Annual Accidents

	Base	Alternate
Fatal	0.00126	0.00100
Injury	0.01736	0.01372
PDO	0.05714	0.04517
Total	0.07576	0.05988

Costs in '000 $

	Base	Alternate
Grade Crossing Devices		
O&M	0.2	1.7
Oth. Lcycle	0.0	0.0
Capital		200.0
Supplementary Safety		
O&M	0.0	0.0
Oth. Lcycle	0.0	0.0
Capital		0.0

Milepost 1.15 | Crossing ID 722874X | Accidents in 5 Years: 1

Description NS - BAIN ST

Paved? True	Urban? True
GCX Base Type	Passive
Safety Sup. Type	None
GCX Alt Type	Gates
Safety Sup. type	None
No. RR Tracks	1

Train Speeds (mph)

Max Timetable	10.0
Passenger	10.0
Freight	8.0
Switch	3.0

Highway Traffic Characteristics

	Base	Alternate
H'way Lanes	2	2.0
Dist from hway	0.10	0.1
AADT	451	451
Auto TOD Dist	Day Flat	Day Flat
Percent Trucks	5.0	5.0
Of this, % trailers	0.0	0.0
Truck TOD Dist	Day Flat	Day Flat
Percent Bus	0.0	0.0
Bus TOD Dist	Day Flat	Day Flat

Costs in '000 $ of Hway Improvement: 160.0

Predicted Annual Accidents

	Base	Alternate
Fatal	0.00073	0.00000
Injury	0.01002	0.00000
PDO	0.03298	0.00000
Total	0.04372	0.00000

Costs in '000 $

	Base	Alternate
Grade Crossing Devices		
O&M	0.2	1.7
Oth. Lcycle	0.0	0.0
Capital		200.0
Supplementary Safety		
O&M	0.0	0.0
Oth. Lcycle	0.0	0.0
Capital		0.0

Milepost 1.28 | Crossing ID 722872J | Accidents in 5 Years: 0

Description NS - CLINGMAN ST

Paved? True	Urban? True
GCX Base Type	Gates
Safety Sup. Type	None
GCX Alt Type	Gates
Safety Sup. type	None
No. RR Tracks	1

Train Speeds (mph)

Max Timetable	10.0
Passenger	10.0
Freight	8.0
Switch	3.0

Highway Traffic Characteristics

	Base	Alternate
H'way Lanes	2	2.0
Dist from hway	0.10	0.1
AADT	568	568
Auto TOD Dist	Day Flat	Day Flat
Percent Trucks	6.0	6.0
Of this, % trailers	0.0	0.0
Truck TOD Dist	Day Flat	Day Flat
Percent Bus	0.0	0.0
Bus TOD Dist	Day Flat	Day Flat

Costs in '000 $ of Hway Improvement: 0.6

Predicted Annual Accidents

	Base	Alternate
Fatal	0.00013	0.00013
Injury	0.00180	0.00182
PDO	0.00593	0.00600
Total	0.00787	0.00796

Costs in '000 $

	Base	Alternate
Grade Crossing Devices		
O&M	1.7	1.7
Oth. Lcycle	0.0	0.0
Capital		0.0
Supplementary Safety		
O&M	0.0	0.0
Oth. Lcycle	0.0	0.0
Capital		0.0

CROSSING DATA FOR THE GOLDSBORO TSS CORRIDOR

Milepost 1.50 | Crossing ID 722870V | Accidents in 5 Years 0

Description NS - WAYNE MEMORIAL DR

Paved? True	Urban? True
GCX Base Type	Gates
Safety Sup. Type	Mountable curbs
GCX Alt Type	Gates
Safety Sup. type	None
No. RR Tracks	1

Train Speeds (mph)

Max Timetable	10.0
Passenger	10.0
Freight	8.0
Switch	3.0

Highway Traffic Characteristics

	Base	Alternate
H'way Lanes	5	5.0
Dist from hway	0.10	0.1
AADT	14,054	14,054
Auto TOD Dist	Day Flat	Day Flat
Percent Trucks	7.0	7.0
Of this, % trailers	0.0	0.0
Truck TOD Dist	Day Flat	Day Flat
Percent Bus	0.1	0.1
Bus TOD Dist	Day Flat	Day Flat

Costs in '000 $ of Hway Improvement 131.0

Predicted Annual Accidents

	Base	Alternate
Fatal	0.00012	0.00000
Injury	0.00160	0.00000
PDO	0.00525	0.00000
Total	0.00697	0.00000

Costs in '000 $

	Base	Alternate
Grade Crossing Devices		
O&M	1.7	1.7
Oth. Lcycle	0.0	0.0
Capital		0.0
Supplementary Safety		
O&M	0.0	0.2
Oth. Lcycle	0.0	0.0
Capital		15.0

Milepost 1.79 | Crossing ID 722869B | Accidents in 5 Years 0

Description NS - AUDUBON AVENUE

Paved? True	Urban? True
GCX Base Type	Gates
Safety Sup. Type	None
GCX Alt Type	Gates
Safety Sup. type	None
No. RR Tracks	1

Train Speeds (mph)

Max Timetable	10.0
Passenger	10.0
Freight	8.0
Switch	3.0

Highway Traffic Characteristics

	Base	Alternate
H'way Lanes	2	2.0
Dist from hway	0.10	0.1
AADT	1,619	1,619
Auto TOD Dist	Day Flat	Day Flat
Percent Trucks	5.0	5.0
Of this, % trailers	0.0	0.0
Truck TOD Dist	Day Flat	Day Flat
Percent Bus	0.0	0.0
Bus TOD Dist	Day Flat	Day Flat

Costs in '000 $ of Hway Improvement 0.8

Predicted Annual Accidents

	Base	Alternate
Fatal	0.00016	0.00007
Injury	0.00215	0.00103
PDO	0.00708	0.00340
Total	0.00938	0.00450

Costs in '000 $

	Base	Alternate
Grade Crossing Devices		
O&M	1.7	1.7
Oth. Lcycle	0.0	0.0
Capital		0.0
Supplementary Safety		
O&M	0.0	0.0
Oth. Lcycle	0.0	0.0
Capital		0.0

Milepost 2.02 | Crossing ID 722868U | Accidents in 5 Years 0

Description NS - JEFFERSON STREET

Paved? True	Urban? True
GCX Base Type	Gates
Safety Sup. Type	None
GCX Alt Type	Gates
Safety Sup. type	None
No. RR Tracks	1

Train Speeds (mph)

Max Timetable	30.0
Passenger	30.0
Freight	24.0
Switch	9.0

Highway Traffic Characteristics

	Base	Alternate
H'way Lanes	2	2.0
Dist from hway	0.10	0.1
AADT	6,683	6,683
Auto TOD Dist	Day Flat	Day Flat
Percent Trucks	5.0	5.0
Of this, % trailers	0.0	0.0
Truck TOD Dist	Day Flat	Day Flat
Percent Bus	0.0	0.0
Bus TOD Dist	Day Flat	Day Flat

Costs in '000 $ of Hway Improvement 0.9

Predicted Annual Accidents

	Base	Alternate
Fatal	0.00072	0.00072
Injury	0.00411	0.00411
PDO	0.01018	0.01018
Total	0.01501	0.01501

Costs in '000 $

	Base	Alternate
Grade Crossing Devices		
O&M	1.7	1.7
Oth. Lcycle	0.0	0.0
Capital		0.0
Supplementary Safety		
O&M	0.0	0.0
Oth. Lcycle	0.0	0.0
Capital		0.0

CROSSING DATA FOR THE GOLDSBORO TSS CORRIDOR

Milepost 128.51 | Crossing ID 735305E | Accidents in 5 Years: 0

Description NS - MULBERRY ST

Paved? True	Urban? True
GCX Base Type	Passive
Safety Sup. Type	None
GCX Alt Type	Closure
Safety Sup. type	None
No. RR Tracks	1

Train Speeds (mph)

Max Timetable	10.0
Passenger	10.0
Freight	8.0
Switch	3.0

Highway Traffic Characteristics

	Base	Alternate
H'way Lanes	2	2.0
Dist from hway	0.10	0.1
AADT	111	111
Auto TOD Dist	Day Flat	Day Flat
Percent Trucks	4.0	4.0
Of this, % trailers	0.0	0.0
Truck TOD Dist	Day Flat	Day Flat
Percent Bus	0.0	0.0
Bus TOD Dist	Day Flat	Day Flat

Costs in '000 $ of Hway Improvement: 24.0

Predicted Annual Accidents

	Base	Alternate
Fatal	0.00015	0.00000
Injury	0.00204	0.00000
PDO	0.00672	0.00000
Total	0.00891	0.00000

Costs in '000 $

	Base	Alternate
Grade Crossing Devices		
O&M	0.2	0.0
Oth. Lcycle	0.0	0.0
Capital		25.0
Supplementary Safety		
O&M	0.0	0.0
Oth. Lcycle	0.0	0.0
Capital		0.0

Milepost 128.60 | Crossing ID 735304X | Accidents in 5 Years: 0

Description NS - ASH ST

Paved? True	Urban? True
GCX Base Type	Gates
Safety Sup. Type	Mountable curbs
GCX Alt Type	Gates
Safety Sup. type	None
No. RR Tracks	1

Train Speeds (mph)

Max Timetable	10.0
Passenger	10.0
Freight	8.0
Switch	3.0

Highway Traffic Characteristics

	Base	Alternate
H'way Lanes	3	2.0
Dist from hway	0.10	0.1
AADT	6,653	6,764
Auto TOD Dist	Day Flat	Day Flat
Percent Trucks	3.0	3.0
Of this, % trailers	0.0	0.0
Truck TOD Dist	Day Flat	Day Flat
Percent Bus	0.1	0.1
Bus TOD Dist	Day Flat	Day Flat

Costs in '000 $ of Hway Improvement: 70.0

Predicted Annual Accidents

	Base	Alternate
Fatal	0.00027	0.00006
Injury	0.00374	0.00083
PDO	0.01231	0.00275
Total	0.01632	0.00364

Costs in '000 $

	Base	Alternate
Grade Crossing Devices		
O&M	1.7	1.7
Oth. Lcycle	0.0	0.0
Capital		0.0
Supplementary Safety		
O&M	0.0	0.2
Oth. Lcycle	0.0	0.0
Capital		15.0

Milepost 129.02 | Crossing ID 735302J | Accidents in 5 Years: 2

Description NS - VIRGINIA ST

Paved? True	Urban? True
GCX Base Type	Gates
Safety Sup. Type	None
GCX Alt Type	Gates
Safety Sup. type	None
No. RR Tracks	1

Train Speeds (mph)

Max Timetable	10.0
Passenger	10.0
Freight	8.0
Switch	3.0

Highway Traffic Characteristics

	Base	Alternate
H'way Lanes	2	2.0
Dist from hway	0.10	0.1
AADT	412	412
Auto TOD Dist	Day Flat	Day Flat
Percent Trucks	3.0	3.0
Of this, % trailers	0.0	0.0
Truck TOD Dist	Day Flat	Day Flat
Percent Bus	0.0	0.0
Bus TOD Dist	Day Flat	Day Flat

Costs in '000 $ of Hway Improvement: 0.6

Predicted Annual Accidents

	Base	Alternate
Fatal	0.00093	0.00093
Injury	0.01275	0.01275
PDO	0.04198	0.04198
Total	0.05566	0.05566

Costs in '000 $

	Base	Alternate
Grade Crossing Devices		
O&M	1.7	1.7
Oth. Lcycle	0.0	0.0
Capital		0.0
Supplementary Safety		
O&M	0.0	0.0
Oth. Lcycle	0.0	0.0
Capital		0.0

CROSSING DATA FOR THE GOLDSBORO TSS CORRIDOR

Milepost 129.50 | Crossing ID 735301C | Accidents in 5 Years 0

Description NS - GEORGE ST

Paved? True | Urban? True

GCX Base Type	Gates
Safety Sup. Type	None
GCX Alt Type	Gates
Safety Sup. type	None
No. RR Tracks	1

Train Speeds (mph)

Max Timetable	10.0
Passenger	10.0
Freight	8.0
Switch	3.0

Highway Traffic Characteristics

	Base	Alternate
H'way Lanes	2	2.0
Dist from hway	0.10	0.1
AADT	7,873	7,873
Auto TOD Dist	Day Flat	Day Flat
Percent Trucks	5.0	5.0
Of this, % trailers	0.0	0.0
Truck TOD Dist	Day Flat	Day Flat
Percent Bus	0.0	0.0
Bus TOD Dist	Day Flat	Day Flat

Costs in '000 $ of Hway Improvement 0.0

Predicted Annual Accidents

	Base	Alternate
Fatal	0.00026	0.00026
Injury	0.00360	0.00360
PDO	0.01185	0.01185
Total	0.01571	0.01571

Costs in '000 $

	Base	Alternate
Grade Crossing Devices		
O&M	1.7	1.7
Oth. Lcycle	0.0	0.0
Capital		0.0
Supplementary Safety		
O&M	0.0	0.0
Oth. Lcycle	0.0	0.0
Capital		0.0

Milepost 129.97 | Crossing ID 735296H | Accidents in 5 Years 0

Description NS - JAMES ST

Paved? True | Urban? True

GCX Base Type	Gates
Safety Sup. Type	None
GCX Alt Type	Gates
Safety Sup. type	None
No. RR Tracks	2

Train Speeds (mph)

Max Timetable	10.0
Passenger	10.0
Freight	8.0
Switch	3.0

Highway Traffic Characteristics

	Base	Alternate
H'way Lanes	2	2.0
Dist from hway	0.10	0.1
AADT	2,273	2,273
Auto TOD Dist	Day Flat	Day Flat
Percent Trucks	3.0	3.0
Of this, % trailers	0.0	0.0
Truck TOD Dist	Day Flat	Day Flat
Percent Bus	0.0	0.0
Bus TOD Dist	Day Flat	Day Flat

Costs in '000 $ of Hway Improvement 0.6

Predicted Annual Accidents

	Base	Alternate
Fatal	0.00019	0.00019
Injury	0.00238	0.00238
PDO	0.00886	0.00886
Total	0.01143	0.01143

Costs in '000 $

	Base	Alternate
Grade Crossing Devices		
O&M	1.7	1.7
Oth. Lcycle	0.0	0.0
Capital		0.0
Supplementary Safety		
O&M	0.0	0.0
Oth. Lcycle	0.0	0.0
Capital		0.0

APPENDIX C

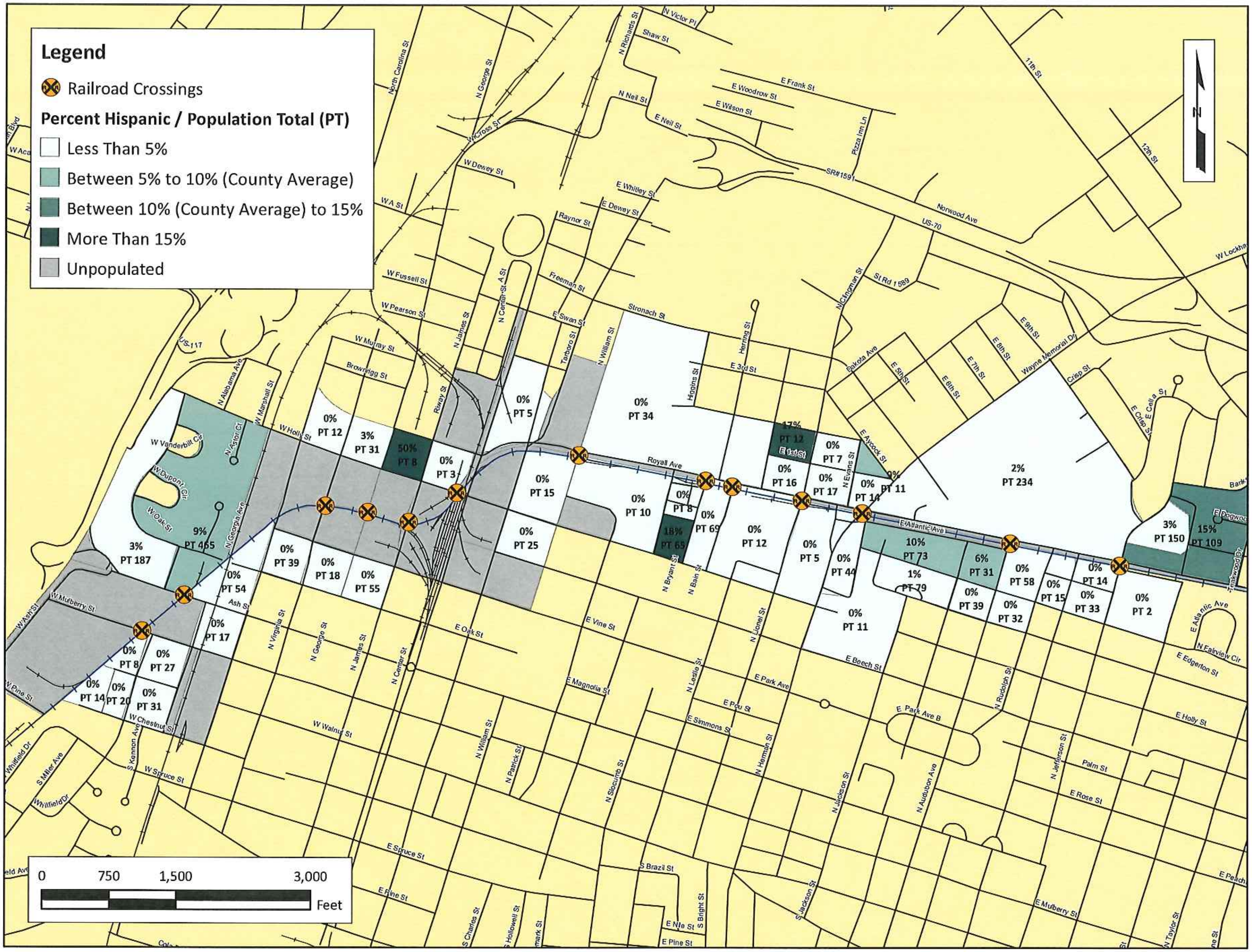
Socioeconomic Figures

Goldsboro Traffic Separation Study
Minority Census Blocks
Adjacent to Crossings
Figure C.1

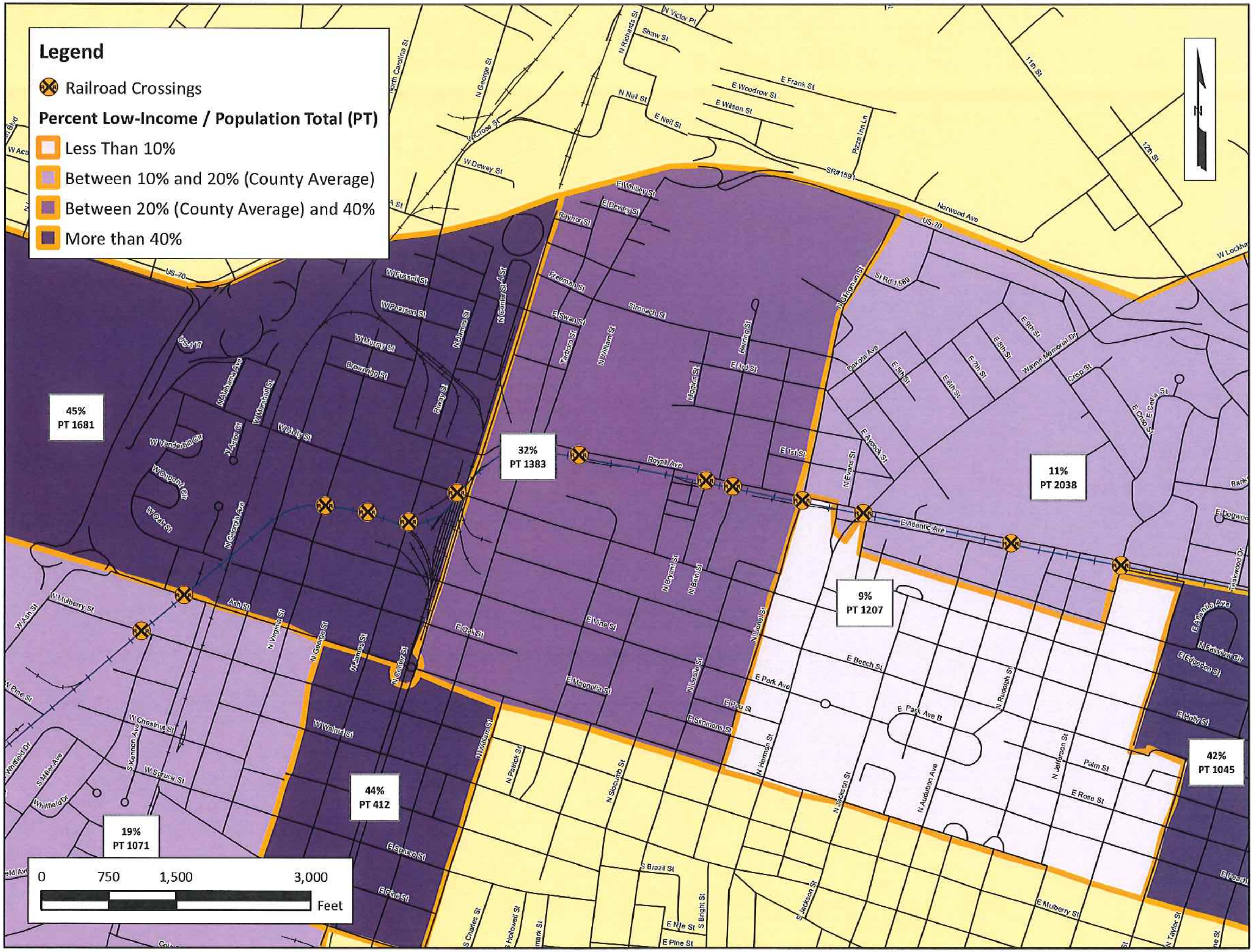
SERVICES FOR NCDOT
Kimley-Horn and Associates, Inc.

NORTH CAROLINA RAILROAD COMPANY

NORFOLK SOUTHERN



Goldsboro Traffic Separation Study
Hispanic Census Blocks
Adjacent to Crossings
Figure C.2



Goldsboro Traffic Separation Study
Low-Income Census Block Groups
Adjacent to Crossings
Figure C.3

SERVICES FOR NCDOT
Kimley-Horn and Associates, Inc.

NORTH CAROLINA RAILROAD COMPANY

NORFOLK SOUTHERN

APPENDIX D

Public Comments

Stakeholder Letters

From: Mike Haney [mailto:Mike.Haney@waynegov.com]
Sent: Wednesday, June 22, 2011 2:37 PM
To: 'Tom.Buffkin@flocorp.com'; Gresham, Teresa; West, Matthew
Cc: nhorne@ncdot.gov; sastepney@ncdot.gov; rguthrie@ci.goldsboro.nc.us; David.Wright@flocorp.com; Charles_Brogden@flocorp.com; Joanna Helms
Subject: Goldsboro Traffic Separation Study - Franklin Baking Company LLC

Please be advised that the Wayne County Development Alliance OPPOSES the recommendation to close the rail crossing at Virginia Street. This would have a negative impact on one of our major industries - Franklin Baking Company LLC.

Regards,

Mike

Mike Haney
Vice President/Existing Industry Specialist
Wayne County Development Alliance, Inc.
P.O. Box 1280 (27533)
309 East Chestnut Street
Goldsboro, NC 27530
p: 919.731.7700
f: 919.580.9147

Visit our website!
http://www.waynealliance.org/

WAYNE TODAY. WORLD TOMORROW.

From: Tom.Buffkin@flocorp.com [mailto:Tom.Buffkin@flocorp.com]
Sent: Friday, June 10, 2011 2:28 PM
To: Gresham, Teresa; West, Matthew
Cc: nhorne@ncdot.gov; sastepney@ncdot.gov; rguthrie@ci.goldsboro.nc.us; mike.haney@waynegov.com; David.Wright@flocorp.com; Charles_Brogden@flocorp.com
Subject: Goldsboro Traffic Separation Study

Please be advised that Franklin Baking Company LLC OPPOSES your recommendation to close Virginia Street due to the negative impact it will have on our retail store as well as reducing the accessibility to our property by our fleet from Virginia Street..

Thank you
Tom Buffkin
President
Franklin Baking Company LLC
607 N. Carolina Street
PO Box 228
Goldsboro NC 27533

Wayne County Public Schools

opening minds...

October 27, 2011

Matt West, P.E., AVS
Kimley-Horn & Associates, Inc.
PO Box 33068 Raleigh, NC 27636
Office: (919) 678-4194
Fax: (919) 677-2050
Email: matthew.west@kimley-horn.com

Ref: City of Goldsboro Traffic Separation Study

Dear Mr. West:

Wayne County Public Schools was very appreciative of the opportunity to take part in the stakeholders meeting for the purpose of making recommendations with regards to the City of Goldsboro Traffic Separation Study. Mr. Raymond Smith, Director of Transportation, was at the meeting to represent our district in this discussion.

As a result of this meeting, please note the following recommendations as it relates to our interest in this endeavor relative to the Bain Street and Lionel Street crossings:

1. Mitigating factors "against" closing the Bain Street crossing:
    - Bain Street provides access to Royall Ave. for several housing units supported by the City of Goldsboro.
    - The Diagnostic Center facilitates all of the technology resources for Wayne County Public Schools (WCPS) (i.e. 20,000 students and approximately 3,000 full and part time employees).
    - The facility houses the Operations Department which facilitates the distribution and warehousing of all of the school systems textbooks as well as the distribution and warehousing of custodial supplies for all 31 schools.
    - Additionally, the facility performs the diagnostic function for all test data that are required by local, state and federal law. It also houses the servers for the entire school system.
    - Numerous deliveries are made to this facility on a daily basis by semis, or tractor-trailers (53'), which ***would not be capable of turning around*** if the crossing was closed.
    - Lastly, the facility is also accessed by the general public for the purpose of obtaining high school transcripts for anyone who currently attends or previously attended a Wayne County Public School.

2. Mitigating factors "against" closing the Lionel Street crossing:
    - Lionel Street facilitates access to Wayne Middle / High School Academy, which houses students and staff to include the Exceptional Children's Program.
    - The facility is accessed by students, staff, school buses and the general public seeking services. The street is gated during school hours due to the fact that there is no school crossing zone or signs to protect students as they walk across the street to access the track which is an integral part of the physical education program at the school. Also, in an attempt to separate public traffic from school bus traffic in the morning and afternoons, the street barrier is in place. If the proper zones and signs were in place, the barrier could be removed.
    - The facility also serves as a Red Cross Shelter during severe weather. A few years ago during hurricane Fran, the facility housed numerous residents that were displaced from the Days Inn Hotel that became damaged due to the weather event.
    - As you can see, this facility is not only vital to the school system, it is also vital to the community. Limiting access to this facility would place the students and staff in danger by having only one way in and one way out. It would also create a major problem for the American Red Cross when access is needed for emergency vehicles and citizens seeking shelter during severe weather events.
    - Lastly, if this crossing was closed, the quickest access to Royall Ave. would be via the Holly/Herman Street intersection. This would create an additional burden to the already, highly traveled corridor leading to Wayne Memorial Drive and Royall Avenue. This intersection is adjacent to the Goldsboro High School student parking lot and a large number of Goldsboro High School students use this intersection to access the track for physical education as well as walking to and from school each day. It would not be productive to increase the traffic flow at this intersection.

Wayne County Public Schools wishes to emphasize a spirit of cooperation with this project; however, it is imperative that we point out our concerns and emphasize the adverse effect that closing either of these crossings would have on the district and community.

Please contact me or Mr. Raymond Smith if you need additional information or clarification of the concerns listed.

Sincerely,

Steven D. Taylor

Steven D. Taylor, Ph.D.
Superintendent, Wayne County Public Schools

Citizen Comments and Petition

COMMENT SHEET

City of Goldsboro
Traffic Separation Study

September 22, 2011

Wayne County

NAME: Vanessa Kirby

ADDRESS: 706 Bryant Street Goldsboro

COMMENTS AND/OR QUESTIONS:

I feel you could leave Bryant + Bain open and put railroad crossing Royal Ave. and Wayne Memorial meet at a point that is very difficult to see if a person is turning left at the light. Royal Ave. was not design for all that traffic. I don't want [illegible] constructed in wooded like a maze and police and ambulance service can't get to us who want to be close in a project. There is one like that, it is not safe or fair

Comments may be mailed to:
Kimberly Hinton, Senior Public Involvement Officer
N.C. Department of Transportation
Public Involvement Unit
1598 Mail Service Center
Raleigh, North Carolina 27699-1598
Telephone: (919) 707-6072
FAX: (919) 212-5785
Email: khinton@ncdot.gov

COMMENT SHEET

City of Goldsboro
Traffic Separation Study

September 22, 2011

Wayne County

NAME: Paulette Williams

ADDRESS: 707 Bain St.

COMMENTS AND/OR QUESTIONS:

I adamently oppose the closing of any of the streets if you close access to any of the streets it will cause a back up of traffic and make exiting or entering that much harder and please send me the statistics on accidents or fatalities caused by Trains on these streets

Comments may be mailed to:
Kimberly Hinton, Senior Public Involvement Officer
N.C. Department of Transportation
Public Involvement Unit
1598 Mail Service Center
Raleigh, North Carolina 27699-1598
Telephone: (919) 707-6072
FAX: (919) 212-5785
Email: khinton@ncdot.gov

COMMENT SHEET

City of Goldsboro
Traffic Separation Study

September 22, 2011

Wayne County

NAME: Alma Hopkins

ADDRESS: 708 Bryant St

COMMENTS AND/OR QUESTIONS:

Please dont close Bryant st
because it's very safe to drive
down to my house.
I can see crossing the Railroad
track
Thank you very much

Comments may be mailed to:
Kimberly Hinton, Senior Public Involvement Officer
N.C. Department of Transportation
Public Involvement Unit
1598 Mail Service Center
Raleigh, North Carolina 27699-1598
Telephone: (919) 707-6072
FAX: (919) 212-5785
Email: khinton@ncdot.gov

COMMENT SHEET

City of Goldsboro
Traffic Separation Study

September 22, 2011

Wayne County

NAME: Annette Nickelson

ADDRESS: 716 Waters St, Goldsboro, NC.

COMMENTS AND/OR QUESTIONS:

If the rail road crossing at Bryant and Royal Ave is closed it will certainly create problems. Not only for traffic going in and coming out of that community - Wood-Crest. In case of an emergency Bryant St. is used a lot. Exiting out from Bryant St to Royal Ave. enables people to get to their jobs. School buses uses Bryant St. to transport children to and from school. We as residences in Wood-Crest I myself do not want to boxed in. If you all close Bryant and Baux

Comments may be mailed to:
Kimberly Hinton, Senior Public Involvement Officer
N.C. Department of Transportation
Public Involvement Unit
1598 Mail Service Center
Raleigh, North Carolina 27699-1598
Telephone: (919) 707-6072
FAX: (919) 212-5785
Email: khinton@ncdot.gov

2

COMMENT SHEET

City of Goldsboro
Traffic Separation Study

September 22, 2011

Wayne County

NAME: Annette NicKelson

ADDRESS: 716 Waters St. Goldsboro, N.C

COMMENTS AND/OR QUESTIONS:

rail road crossings we are really going to be in a mess. Both rail road crossings is important. If I had to choose as to which one to Keep open I would be in favor of Bryant rail road crossing staying open. This situation like every thing else Need prayer.

Comments may be mailed to:
Kimberly Hinton, Senior Public Involvement Officer
N.C. Department of Transportation
Public Involvement Unit
1598 Mail Service Center
Raleigh, North Carolina 27699-1598
Telephone: (919) 707-6072
FAX: (919) 212-5785
Email: khinton@ncdot.gov

HUMAN ENVIRONMENT UNIT
OCT 05 2011
RECEIVED

COMMENT SHEET

City of Goldsboro
Traffic Separation Study

September 22, 2011

Wayne County

NAME: Linda Johnson

ADDRESS: 508 W New Hope Rd. El

COMMENTS AND/OR QUESTIONS:

In closing some of these streets and changing Signs interfer with emergency vehicles. mostly from I am understanding the changes are in black neighborhoods. Think good and hard before making a desission. Seems that it would take longer for emergency personel to get where it is going. Please Pray before making your decission.

Comments may be mailed to:
Kimberly Hinton, Senior Public Involvement Officer
N.C. Department of Transportation
Public Involvement Unit
1598 Mail Service Center
Raleigh, North Carolina 27699-1598
Telephone: (919) 707-6072
FAX: (919) 212-5785
Email: khinton@ncdot.gov

HUMAN ENVIRONMENT UNIT
OCT 21 2011
RECEIVED

HUMAN ENVIRONMENT UNIT
SEP 27 2011
RECEIVED

COMMENT SHEET

City of Goldsboro
Traffic Separation Study

September 22, 2011

HUMAN ENVIRONMENT UNIT
RECEIVED

Wayne County

NAME: April Holland - Wayne Middle High Academy (Preschool Department)

ADDRESS: 801 N. Lionel St.
Goldsboro, NC 27530

COMMENTS AND/OR QUESTIONS:

Due to the location of our parking lot and closing the street during school hours, those of us who are coming and going from our office several times a day we would be unable to access the parking area. Also, we have preschool kids who come for therapy services several times a week. Again we would not have access to the large parking lot. Creating a parking lot on the other side of the barriers would cause the Parents to have to walk the entire length of the school to get to the therapy clinic with small children. Finally, some parents access services for their children by riding the Gateway bus. The bus stop is across the railroad tracks. Closing the tracks would make it difficult for these parents to access these services for their children.

Comments may be mailed to:
Kimberly Hinton, Senior Public Involvement Officer
N.C. Department of Transportation
Public Involvement Unit
1598 Mail Service Center
Raleigh, North Carolina 27699-1598
Telephone: (919) 707-6072
FAX: (919) 212-5785
Email: khinton@ncdot.gov

COMMENT SHEET

City of Goldsboro
Traffic Separation Study

September 22, 2011

Wayne County

NAME: Gina Jernigan - Speech Therapist

Home **ADDRESS:** 114 Somervale Lane, Goldsboro, NC 27530

COMMENTS AND/OR QUESTIONS:

I work with Wayne County Public Schools as a speech therapist with the Preschool Resource Department (801 N. Lionel Street, Goldsboro, NC, 27530; 919-580-3578) at Wayne Academy. Most working days, I access the parking lot via Lionel street by crossing over the railroad tracks. My work takes me out into the community. I return to Wayne Academy several times per day (accessing the parking lot via the railroad tracks). In Addition, I ask some of the children's parents to bring their child into Wayne Academy for speech therapy services. Since these are preschool-aged children who may also be physically handicapped, safety issues are a concern. I am requesting that you please consider not closing the Lionel Street crossing as many school staff and families utilize this entrance.

*(Also, please consider putting up a street sign for "Lionel Street").

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HUMAN ENVIRONMENT UNIT
SEP 29 2011
RECEIVED

From: eman1901@hotmail.com [mailto:eman1901@hotmail.com]
Sent: Tuesday, December 27, 2011 9:58 AM
To: Tasha Logan
Subject: RAILROAD CROSSING - Mulberry St. Goldsboro NC

The following message was submitted by: Emmanuel Holloman

Contact via: email
Phone:
E-mail Address: eman1901@hotmail.com

Hello, My name is Emmanuel Holloman I live at 107 N. Alabama Ave. Goldsboro NC, I have some concerns about this crossing i have live in this home for almost 20 plus years. my church is St Mark Church of Christ. that crossing is my life, i don't drive so my only means of getting to church is that crossing... i have to be to church each morning at 7PM to open my church turn heat on, and turn lights on, I have to use that crossing to go to meeting and, to go to bible study and now with that crossing gone, that means i would have to walk around the corner, to get back on ash to get to my church and to me that not fair. we have members that go to st mark who live behind the church and they come in through the back gate. our church has a food bank every two weeks and we have members who live in this community who take advantage of that and now with that crossing gone that means they miss out on food because they are not going to go out of there way...the things that hurts the most is nobody even came in this community but i notice that concerns came from another community but not this one.... and i don't understand why...that crossing is not a problem for traffic it's a problem because this community uses it to walk to the store,get to church, get to work and so i feel that we had no say in the matter because we are a small community that you all say is run down anyway, but we are a community that has a voice also and i think that we should be heard. We would love to know the plans of this closing are you going to block it off with a gate or a closed road sign..how is this going to work for this community and it people....Thanks for your time i hope that this letter was not offensive by any mean but i wanted to be heard....Looking to hear form you soon with a response........Thank You

Petition from Woodcrest Terrace

We, the undersigned of Woodcrest Apartments hereby oppose any closing of Bryant Street due to the limitations on exiting of the development. We feel that we need two (2) exits. If the street is closed it would limit emergency vehicles access to our residential area.

	Name	Address
1.	Dora Whitfield	408 E Holly St
2.	Linda Almond	404 E. Holly St.
3.	[illegible]	410 East Holly St
4.	Juanita C. Griffin	508 E. Holly St.
5.	Jean Brown	514 E. Holly St.
6.	Betty Gavill	503 Eunice St.
7.	Lorene Cox	712 Waters St.
8.	Annette Nickelson	716 Waters St.
9.	Katera Hinnant	515 Eunice St
10.	Vernice Austin	501 Eunice St
11.	Ira King	513 Eunice St. 734-2883
12.	Ethel L. Graham	507 Eunice St.
13.	George W. Summerlin	406 HLLY
14.	Dorothy Jackson	504 E Holly St
15.	Pamela Martin	506 E. Holly St

Petition from Woodcrest Terrace

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Name	Address
1. Joyce M. Woods	713 Waters St
2. James Williams	711 Water St
3. Kate McWars	700 Waters Street
4. Rachel Cummings	706 Waters St.
5. Denise Dawson	705 Bryant St
6. Shekila Williams	700 Bryant St
7. Omeo Starks	702 Bryant St
8. Janisha Johnson	704 Bryant St
9. Dulores Herring	710 Bryant St.
10. Rosa Tourney	712 Bryant St
11. Mary [illegible]	716 Bryant St
12. Ethel Oaks	718 Bryant St
13. Angelia Kennon	720 Bryant St
14. Drekia [illegible]	726 Bryant St
15. Deborah Greene	719 Bryant St

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Name	Address
1. Antoinette Jefferson	722 Waters St.
2. Mary Crawford	714 Waters St
3. Endia Exum	724 Bryant St.
4. Chester Peacock	713 Bryant St
5. Dausha [illegible]	707 Bryant St.
6. Sulltha Williams	720 Waters St.
7. [illegible] Battle	703 Bryant St
8. Barry Johnson	701 Bryant St
9. Paulette Williams	709 Bain St.
10 Burnice Smith	705 Bain St
11. Roshune Youngton	703 Bain St.
12. Elfreda Washington	715 Waters St.

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Name	Address
1. Mary Braitham	713 Bain St.
2 Sandra McKnight	715 Bain St.
3. Alma Wooten	723 Bain St.
4. Almyra Bell	727 Bain St
5. Evelyn Bell	7[illegible] Bain St
6 Penelia Reid	71[illegible] Bain St
7. Shayla [illegible]	70[illegible] Bain St.
8. Latonya [illegible]	717 Bain St.
9. Renee [illegible]	704 waters St
10 Lashanda Johnson	702 Waters St
11. [illegible]	708 Waters St
12 [illegible]	710 Waters St.
13 [illegible]	717 Waters St.
14 Latashia Newsome	724 water street