TRAFFIC SEPARATION STUDY
for the
CITY OF FAYETTEVILLE

March 2004

Documentation Prepared by Ralph Whitehead Associates, Inc.:

Brian D. Dehler 3/12/04

Brian D. Dehler, P.E., Project Manager
Ralph Whitehead Associates, Inc.

Brock LaForty

Brock LaForty, AICP, Project Planner
Ralph Whitehead Associates, Inc.

For the North Carolina Department of Transportation:

Nancy M. Horne

Nancy Horne, P.E., Project Manager

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4	465 906S	US 401 Ramsey Street	B-4a	B-4b	G-4
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13	629 572T	SR 2299 Russell Street	B-13a	B-13b	G-13
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17	629 879E	Moore Street	B-17a	B-17b	G-17
18	629 881F	Hay Street	B-18a	B-18b	G-18
19	629 882M	Franklin Street	B-19a	B-19b	G-19
20	629 883U	SR 2299 West Russell Street	B-20a	B-20b	G-20
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22	629 885H	Blount Street	B-22a	B-22b	G-22
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24	629 904K	Hillsboro Street	B-24a	B-24b	G-24
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26	629 907F	Cumberland Street	B-26a	B-26b	G-26
27	629 910N	Langdon Street	B-27a	B-27b	G-27
28	629 911V	Jasper Street	B-28a	B-28b	G-28
29	629 912C	McLamb Street	B-29a	B-29b	G-29
30	629 913J	US 401	B-30a	B-30b	G-30
31	629 914R	SR 1614 Shawmill Road	B-31a	B-31b	G-31
32	641 772E	SR 2299 Russell Street	B-32a	B-32b	G-32
33	641 773L	Maxwell	B-33a	B-33b	G-33
34	641 774T	Donaldson Street	B-34a	B-34b	G-34
35	641 775A	SR 2311 Gillespie Street	B-35a	B-35b	G-35
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38	641 780W	Alexander	B-38a	B-38b	G-38
39	641 781D	Kennedy	B-39a	B-39b	G-39
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41	641 783S	Burns	B-41a	B-41b	G-41
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North Carolina Department of Transportation
RAIL DIVISION

RALPH WHITEHEAD ASSOCIATES, INC.

NOT TO SCALE

FAYETTEVILLE TRAFFIC SEPARATION STUDY

SHEET INDEX

DATE: 05/15/03	TIP NO. P-3309
DRAWN BY: JLS	STATE PROJECT NO. 9.9085004
CHECKED BY: BDD	SHEET NO. INDEX

PRELIMINARY PLANS
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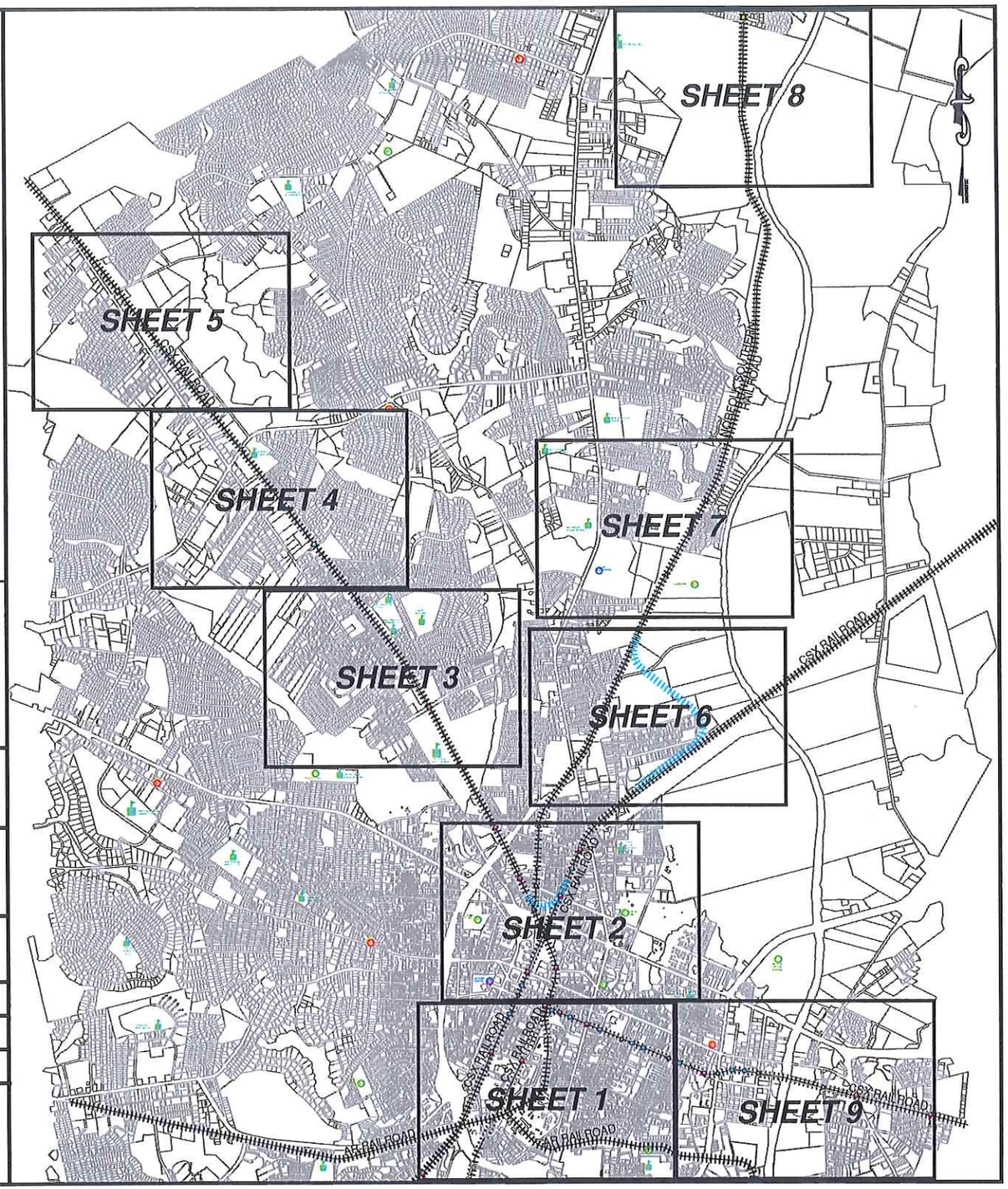

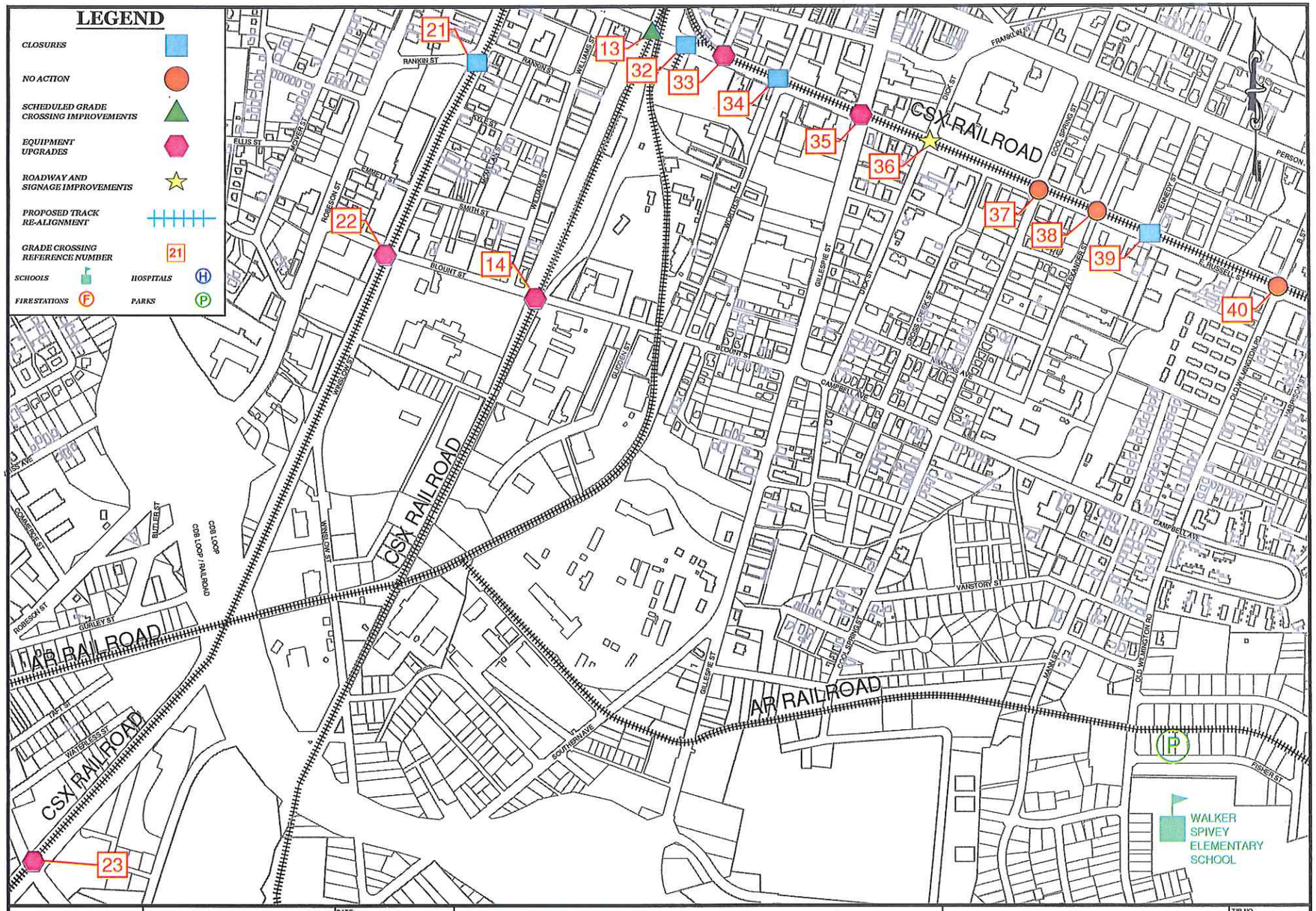

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RALPH WHITEHEAD ASSOCIATES, INC.

North Carolina Department of Transportation RAIL DIVISION

FAYETTEVILLE TRAFFIC SEPARATION STUDY

PROPOSED IMPROVEMENTS

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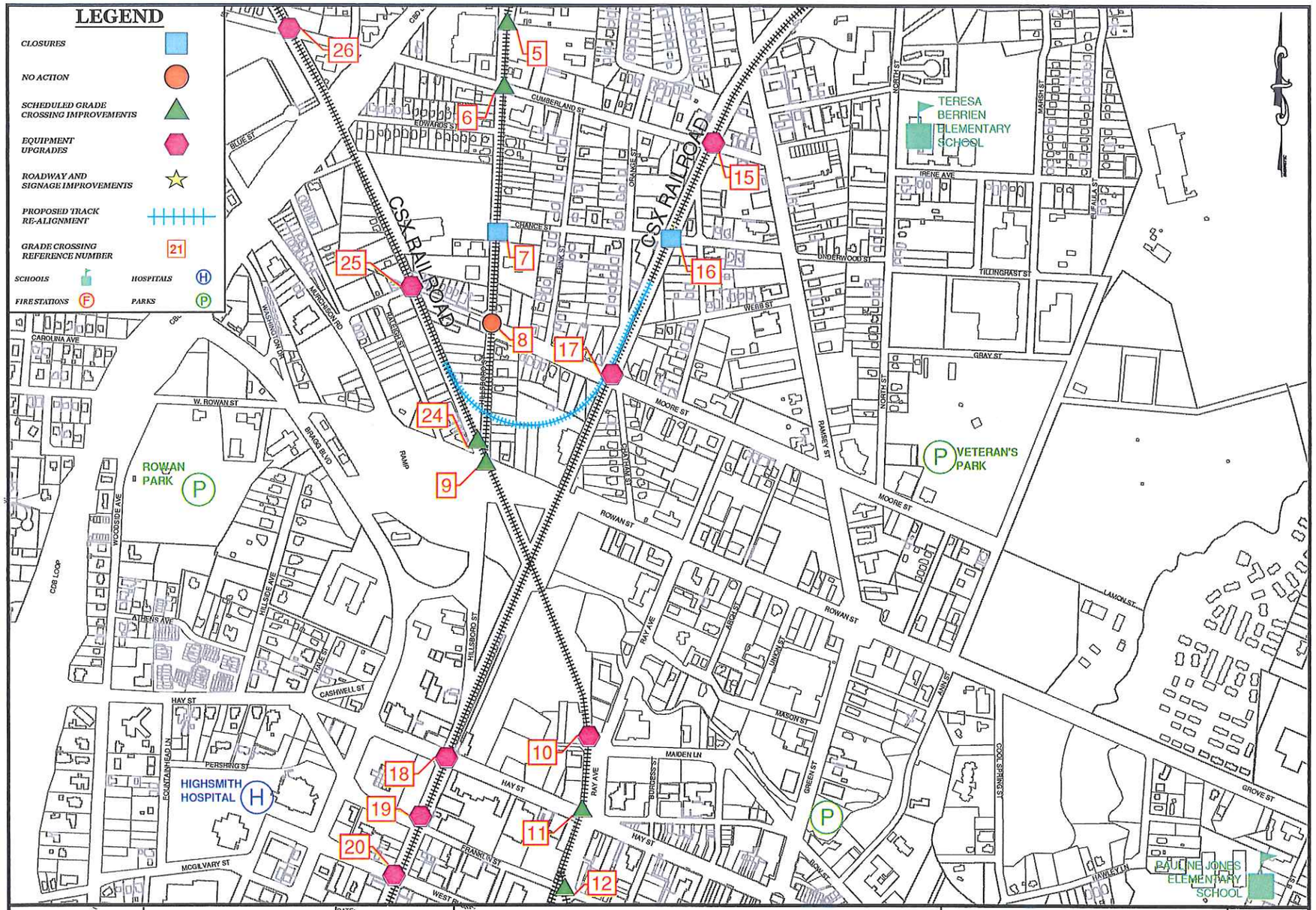
STATE PROJECT NO. 9.9085004
SHEET NO. 1



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PRELIMINARY PLANS
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North Carolina Department of Transportation RAIL DIVISION

FAYETTEVILLE TRAFFIC SEPARATION STUDY

PROPOSED IMPROVEMENTS

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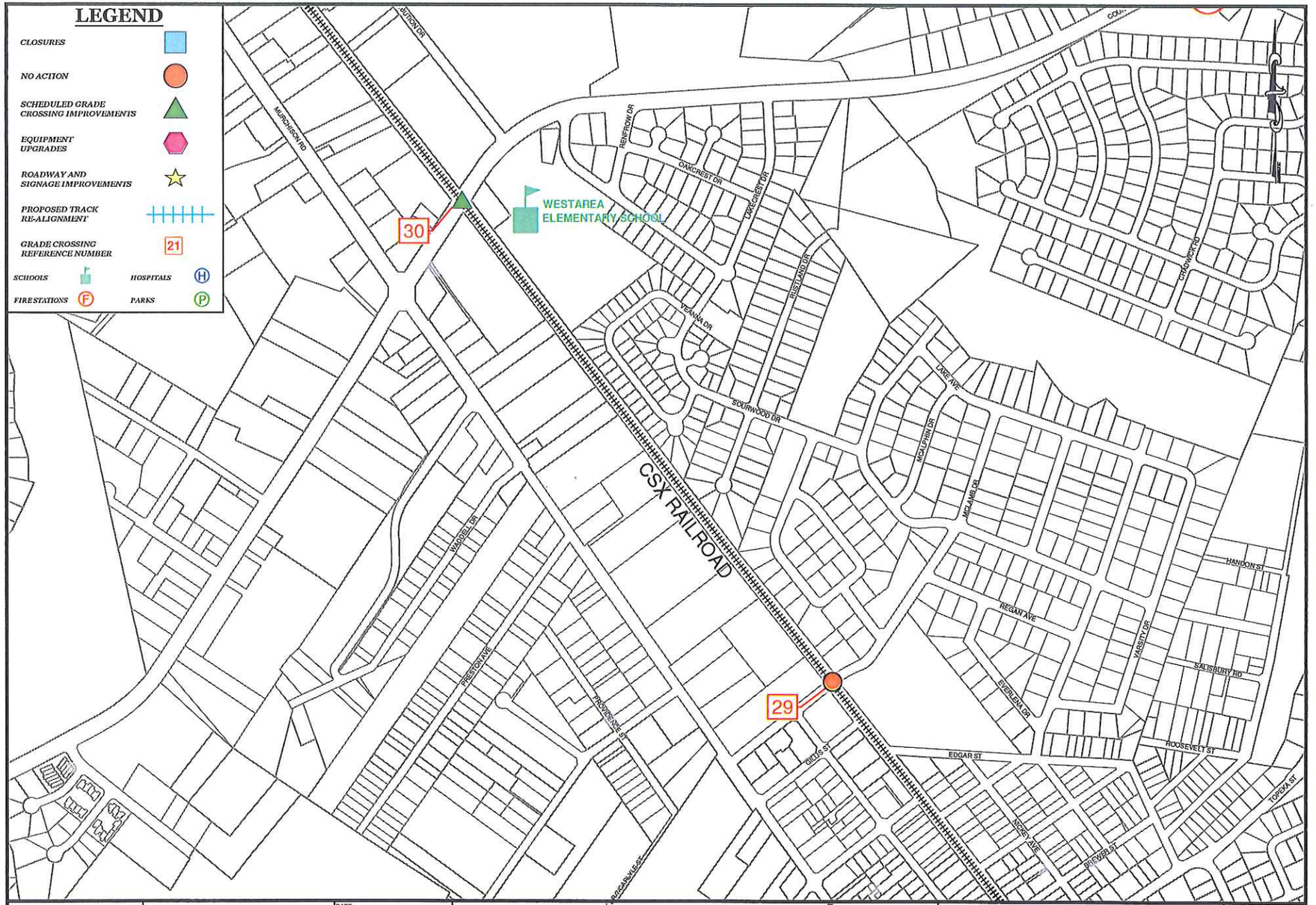
STATE PROJECT NO. 9.9085004
SHEET NO. 3



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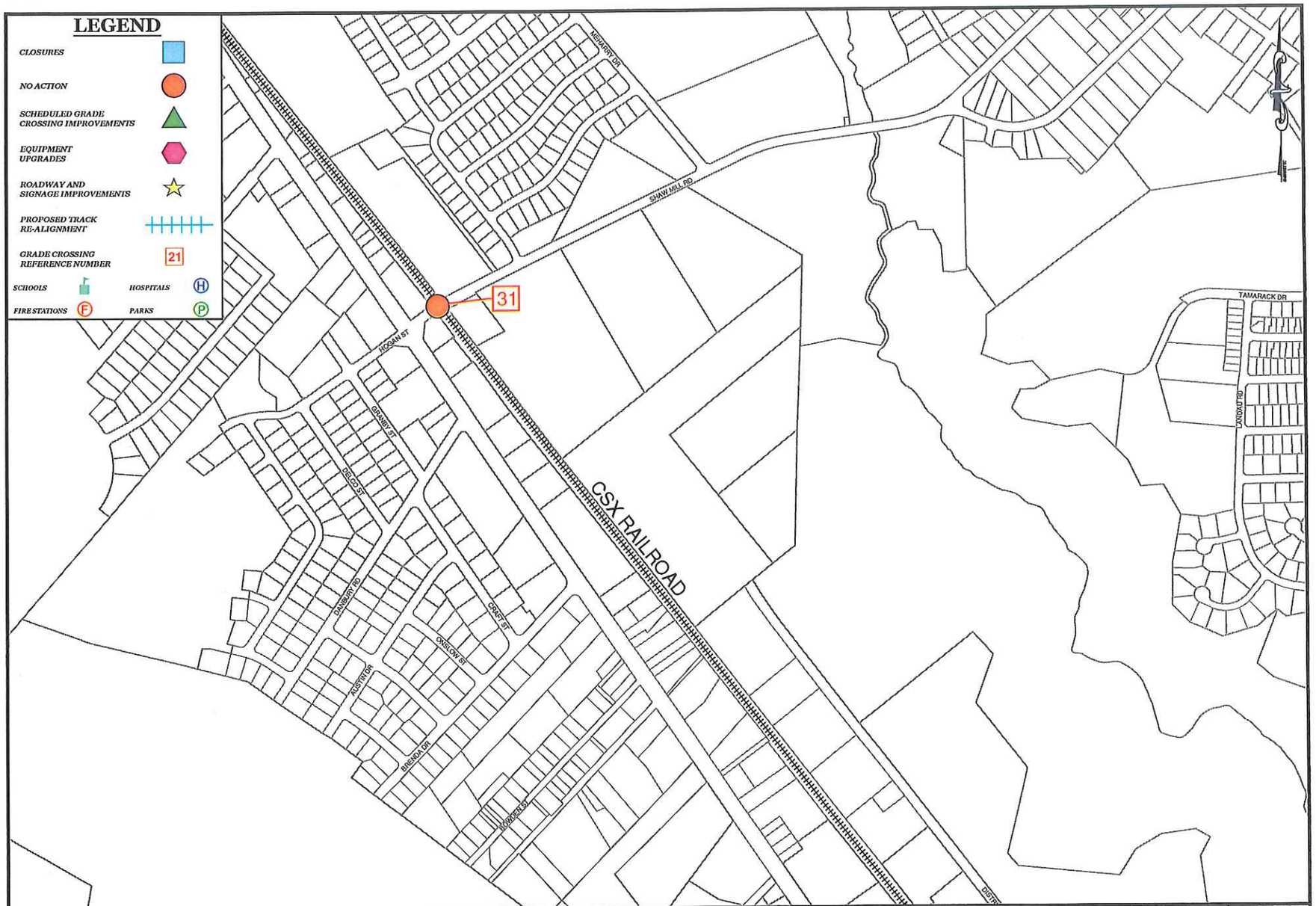

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FAYETTEVILLE TRAFFIC SEPARATION STUDY

PROPOSED IMPROVEMENTS

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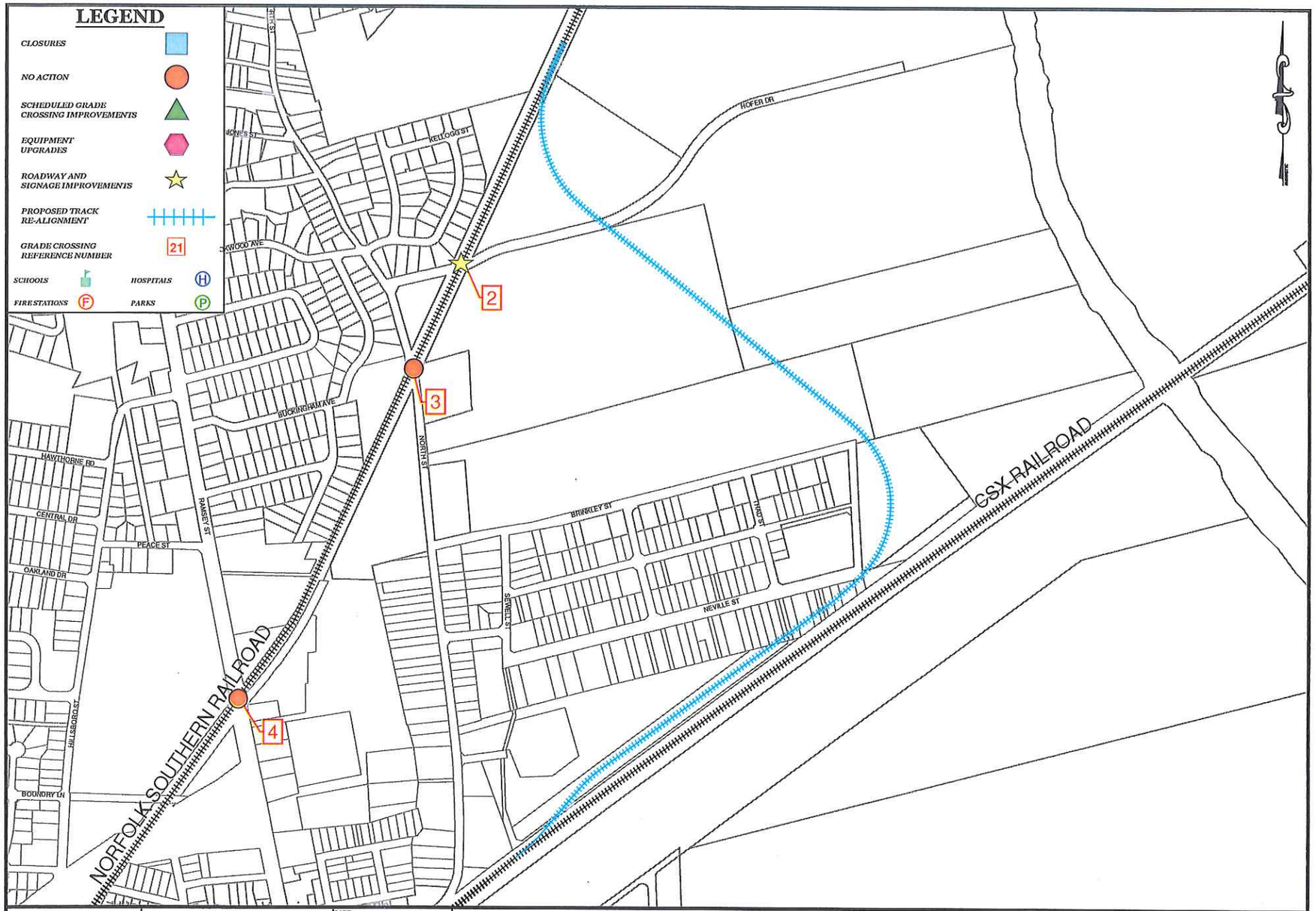
STATE PROJECT NO. 9.9085004
SHEET NO. 5



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NOT TO SCALE

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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RALPH WHITEHEAD ASSOCIATES, INC.

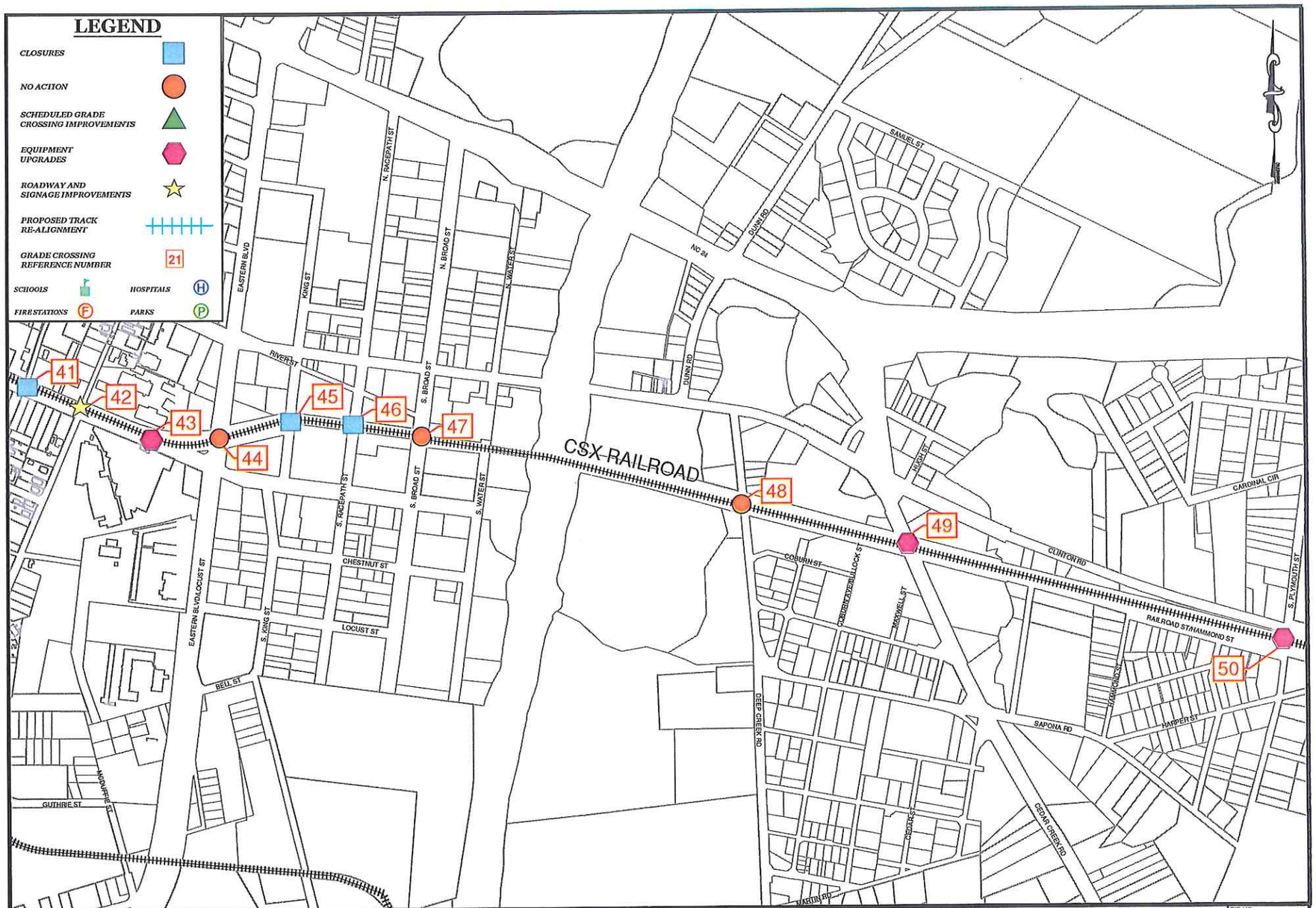
North Carolina Department of Transportation RAIL DIVISION

FAYETTEVILLE TRAFFIC SEPARATION STUDY

PROPOSED IMPROVEMENTS

TIP NO. P-3309
STATE PROJECT NO. 9.9085004
SHEET NO. 7

NOT TO SCALE	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	DATE: 05/15/03 DRAWN BY: JLS CHECKED BY: BDD	RALPH WHITEHEAD ASSOCIATES, INC.	North Carolina Department of Transportation RAIL DIVISION	*FAYETTEVILLE TRAFFIC SEPARATION STUDY* *PROPOSED IMPROVEMENTS*	TIP NO. P-3309 STATE PROJECT NO. 9.9085004 SHEET NO. 8



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EXECUTIVE SUMMARY

In a joint cooperative effort with the City of Fayetteville, CSX Transportation, and the Norfolk Southern Railroad, the North Carolina Department of Transportation has completed a series of meetings to gather information and receive public comments on proposed recommendations for safety improvements and closings at existing highway/rail grade crossings within the City of Fayetteville, North Carolina.

Stakeholders Meeting #1

A stakeholders committee was established so key individuals could participate and provide critical input on reaching consensus on grade crossing recommendations. The following agencies participated on the Stakeholder Committee:

- City of Fayetteville Planning
- City of Fayetteville Police
- City of Fayetteville Fire
- City of Fayetteville Traffic
- Cumberland County Schools
- NCDOT Division 6
- CSX Transportation
- Norfolk Southern Railroad

The first stakeholder meeting was held on April 23, 2003. The purpose of this meeting was to present to the committee the preliminary recommendations and receive comments before going to the public meetings.

The committee requested two modifications to the initial grade crossing recommendations. The City is extending Ray Avenue and requested gates at Crossing #629 572T, Russell Street (See Figure B-13a and Figure G-13). The committee also recommended that the two-way section of traffic on Franklin Street be extended from Gillespie Street to Person Street.

Public Meetings (4)

Four public meetings were held throughout the City in June and July 2003. The meeting schedule was as follows

- June 25, 2003 (4:00-7:00 PM) – Smith Recreation Center
- June 26, 2003 (4:00-7:00 PM) – City Hall
- July 9, 2003 (4:00-7:00 PM) - Smith Recreation Center
- July 10, 2003 (4:00-7:00 PM) - City Hall

The objective of the public meetings was to present the recommendations and potential affect on traffic movements resulting from improvement scenarios under consideration for each of the 52 crossings and to receive public comment on the recommendations.

Stakeholders Meeting #2

The second meeting of the Stakeholder Committee was on August 25, 2003. The purpose of this meeting was to discuss the comments received from the public on the recommendations and to finalize the recommendations to be carried forward into the implementation phase.

The following page describes the near, mid, and long term recommendations, along with the estimated cost of the proposed improvements.

Public Hearing

The final recommendations were presented at a Public Hearing held in conjunction with the City of Fayetteville's City Council Meeting on October 27, 2003. A formal presentation of the project was made and staff was available to answer questions from the Council and the general public. The City Council approved all of the final recommendations.

The following page describes the near, mid, and long term recommendations, along with the estimated cost of the proposed improvements.

Summary of Improvements

Crossing Reference Number	Crossing Number	Street Name	Near-Term Recommendation	Est. Near-Term Cost	Mid-Term Recommendation	Est. Mid-Term Cost	Long-Term Recommendation	Est. Long-Term Cost
1	465 903W	Fayetteville City Park	Add signage for pedestrians	$ 600.00				
2	465 904D	Hofer Drive	Add private access gate for city employees only	$ 9,000.00				
3	465 905K	North Street	No Action					
4	465 906S	US 401 Ramsey Street	No Action					
5	465 911N	Hillsboro Street	Current Project: construct signal and gates (Z-4406AD)				Rail realignment to take NS into Milan Yard	To be determined
6	465 912V	Cumberland Street	Current Project: construct signal and gates (Z-4406AE)				Rail realignment to take NS into Milan Yard	To be determined
7	465 913C	Chance Street	Close crossing and channelize Chance St. to right-in/right-out	$ 12,000.00			Rail realignment to take NS into Milan Yard	To be determined
8	465 914J	Moore & Bruner Streets	No Action				Rail realignment to take NS into Milan Yard	To be determined
9	465 915R	NC 210 Hillsboro and Rowan Streets	Current Project: add gates to crossing (Z-3144B)				Rail realignment to take NS & CSX into Milan Yard	To be determined
10	629 569K	Maiden Lane	Add gates	$ 145,000.00				
11	629 570E	Hay Street	Current Project: construct signal and gates (Z-4106D)					
12	629 571L	Franklin Street	Current Project: construct signal and gates (Z-3344C)					
13	629 572T	SR 2299 Russell Street	Add gates	$ 145,000.00				
14	629 574G	Blount Street	Add gates	$ 145,000.00				
15	629 877R	Cumberland Street	Add 4 quadrant gates	$ 220,000.00				
16	629 878X	Chance Street	Close crossing	$ 12,000.00				
17	629 879E	Moore Street	Add 4 quadrant gates	$ 220,000.00				
18	629 881F	Hay Street	Add gates	$ 145,000.00				
19	629 882M	Franklin Street	Add 4 quadrant gates and signal preemption	$ 220,000.00			Close crossing if Russell Street is grade separated	$ 12,000.00
20	629 883U	SR 2299 West Russell Street	Add 4 quadrant gates and signal preemption	$ 220,000.00	Conduct grade separation feasibility study	$ 80,000.00	Grade separation	To be determined
21	629 884B	Rankin Street	Close crossing and change traffic patterns on Winslow Street	$ 225,000.00				
22	629 885H	Blount Street	Add 4 quadrant gates and adjust vertical profile of the roadway	$ 220,000.00				
23	629 886P	SR 1168 Whitfield Street	Add 4 quadrant gates	$ 220,000.00				
24	629 904K	Hillsboro Street	Current Project: construct signal and gates (Z-3144B)				Rail realignment to take NS & CSX into Milan Yard	To be determined
25	629 905S	Moore Street	Add gates	$ 145,000.00				
26	629 907F	Cumberland Street	Add gates	$ 145,000.00				
27	629 910N	Langdon Street	Add gates and upgrade traffic signal on Murchison Road	$ 185,000.00				
28	629 911V	Jasper Street	No Action					
29	629 912C	McLamb Street	No Action					
30	629 913J	US 401	Current Project: add gates (Z-4406E)					
31	629 914R	SR 1614 Shawmill Road	No Action					
32	641 772E	SR 2299 Russell Street	Remove crossing	$ 12,000.00				
33	641 773L	Maxwell	Add flashers and cantilevers	$ 160,000.00				
34	641 774T	Donaldson Street	Close crossing	$ 12,000.00				
35	641 775A	SR 2311 Gillespie Street	Upgrade traffic signal to current NCDOT standards	$ 40,000.00				
36	641 776G	Dick	No Action		Make Franklin two-way and modify traffic signal	$ 150,000.00		
37	641 778V	SR 2299 Cool Springs Road	No Action					
38	641 780W	Alexander	No Action					
39	641 781D	Kennedy	Close crossing	$ 12,000.00				
40	641 782K	SR 2299 Wilmington Street	No Action					
41	641 783S	Burns	Close crossing	$ 12,000.00				
42	641 785F	C	Make improvements to intersection	$ 50,000.00				
43	641 787U	SR 2299 East Russell Street	Close median crossing and add gates in WB direction	$ 32,000.00				
44	641 788B	US 301 Eastern Boulevard	No Action					
45	641 789H	King	Close crossing	$ 12,000.00				
46	641 790C	Racepath	Close crossing	$ 12,000.00				
47	641 791J	Broad Street	No Action					
48	641 792R	SR 2200 Deep Creek Road	No Action					
49	641 793X	NC 53/NC 210	Add gates and median barrier. Upgrade traffic signal and cantilevers	$ 225,000.00				
50	641 794E	SR 1839 (Plymouth Street)	Add gates	$ 20,000.00				
51	904 419J	Eastwood Avenue	No Action					
52	904 420D	Dobson Drive	No Action					

A. INTRODUCTION

Every year more than 450 persons are killed and nearly 500 injured nationwide as a result of crashes between vehicles and trains.

During the year 2002, North Carolina recorded 78 rail-highway grade crossing collisions that resulted in 2 deaths and 20 injuries making North Carolina 15th in the nation for such accidents.

The North Carolina Department of Transportation (NCDOT) has developed the Traffic Separation Study (TSS) as an effort to pursue a more systematic approach to crossing safety. Traffic Separation Studies are a comprehensive evaluation of traffic patterns and road usage for an entire municipality or region that determines the need for improving and/or eliminating public grade crossings.

The NCDOT entered into a municipal agreement with the City of Fayetteville to complete a TSS. This study looked at two of the three rail lines, CSX and Norfolk Southern (NS), which run through the City. The Aberdeen and Rockfish (AR) Railroad lines will be evaluated at a future date. A total of fifty-two (52) grade crossings were evaluated as part of this study; 41 CSX crossings and 11 NS crossings.

The Traffic Separation Study process has three phases:

1. Preliminary Phase

The NCDOT and the City of Fayetteville have contractually agreed to make a "best faith" effort to approve and implement improvements that will be identified by the TSS. An engineering consultant is then selected by NCDOT.

2. Study Phase

The engineering consultant evaluates the existing crossing conditions, average daily traffic (both trains and vehicles) and socioeconomic impact of potential closings for all public crossings within the study area and prepares recommendations for NCDOT and local officials to review. Near-term recommendations (within two years) may include installation of flashing lights and gates, enhanced devices such as four-quadrant gates and longer gate arms, installation of concrete or rubber crossings, crossing closures, median barrier installation, pavement markings, roadway approach modifications and crossings realignments. Mid-term recommendations (within two to five years) may include connector roads, roadway realignments, crossing closures, relocations of existing crossings to safer locations and feasibility studies to evaluate potential grade separation locations. Long-term recommendations (within five to ten years) may include grade separation, connector roads and crossing closures. Recommendations are presented to the public for comment.

3. Implementation Process

NCDOT officials identify funding sources for improvements, develop project agreements with the City of Fayetteville, coordinate project design, coordinate crossing closures with railroad and state highway officials, and oversee project implementation. City staff assists with project development and right of way acquisition, if needed.

B. DATA COLLECTION

The information included in Table B-1 was gathered for each grade crossing in order to evaluate the crossing conditions in terms of traffic and safety.

TABLE B-1

Data Item	Source
Crossing Number	NCDOT Rail
Street or Route	NCDOT Rail
Railroad Company	NCDOT Rail
Railroad Milepost	NCDOT Rail
Existing Warning Devices	Site Inspection
Vehicle Traffic	NCDOT
24 hour train volumes	FRA Inventory Forms
Accident History	Accident Reports (NCDOT & FRA)
Street Classification	FAMPO*
Truck Route	FAMPO
Transit Route	FAMPO
School Bus Route (Yes/No)	Cumberland County School
Crossing Surface and Condition	Site Inspection
Land Use	Site Inspection
Redundant Crossing (Yes/No)	Site Inspection
Potential for Grade Separation	Exposure Index**
Humped Crossing	Site Inspection
Crossing Geometry	Site Inspection
Need for Enhanced Warning devices	Site Inspection and accident history
Feasibility of Roadway Improvements	Site Inspection and engineering judgment

*FAMPO (Fayetteville Area Metropolitan Planning Orgnaization)

** Exposure Index = Number of trains per day x Average Daily Traffic at highway/rail crossing
(See Section C)

The data summary sheets for each crossing are located in Figures B-1a to B-52a. Photographs for each crossing are found with its corresponding data summary sheet in Figures B-1b to B-52b.

INDEX FOR GRADE CROSSING FIGURES

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4	465 906S	US 401 Ramsey Street	B-4a	B-4b	G-4
5	465 911N	Hillsboro Street	B-5a	B-5b	G-5
6	465 912V	Cumberland Street	B-6a	B-6b	G-6
7	465 913C	Chance Street	B-7a	B-7b	G-7
8	465 914J	Moore & Bruner Streets	B-8a	B-8b	G-8
9	465 915R	NC 210 Hillsboro and Rowan Streets	B-9a	B-9b	G-9
10	629 569K	Maiden Lane	B-10a	B-10b	G-10
11	629 570E	Hay Street	B-11a	B-11b	G-11
12	629 571L	Franklin Street	B-12a	B-12b	G-12
13	629 572T	SR 2299 Russell Street	B-13a	B-13b	G-13
14	629 574G	Blount Street	B-14a	B-14b	G-14
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16	629 878X	Chance Street	B-16a	B-16b	G-16
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19	629 882M	Franklin Street	B-19a	B-19b	G-19
20	629 883U	SR 2299 West Russell Street	B-20a	B-20b	G-20
21	629 884B	Rankin Street	B-21a	B-21b	G-21
22	629 885H	Blount Street	B-22a	B-22b	G-22
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29	629 912C	McLamb Street	B-29a	B-29b	G-29
30	629 913J	US 401	B-30a	B-30b	G-30
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36	641 776G	Dick	B-36a	B-36b	G-36
37	641 778V	SR 2299 Cool Springs Road	B-37a	B-37b	G-37
38	641 780W	Alexander	B-38a	B-38b	G-38
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44	641 788B	US 301 Eastern Boulevard	B-44a	B-44b	G-44
45	641 789H	King	B-45a	B-45b	G-45
46	641 790C	Racepath	B-46a	B-46b	G-46
47	641 791J	Broad Street	B-47a	B-47b	G-47
48	641 792R	SR 2200 Deep Creek Road	B-48a	B-48b	G-48
49	641 793X	NC 53/NC 210	B-49a	B-49b	G-49
50	641 794E	SR 1839 Plymouth Street	B-50a	B-50b	G-50
51	904 419J	Eastwood Avenue	B-51a	B-51b	G-51
52	904 420D	Dobson Drive	B-52a	B-52b	G-52

Figures included in this section

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
465 903W	VF 40.16	NS	Fayetteville City Park	Local	Crossbucks	Park

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
430	2		No	No	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Fair	Fair	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	Med

Aerials

Figure B-1a

Crossing# 465 903W (Fayetteville City Park)

Looking East

Looking North

Looking West

Looking South

Figure B-1b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
465 904D	VF 40.81	NS	Hofer Drive	Local	Crossbucks	Open Space

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
170	6		No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	Med

Aerials

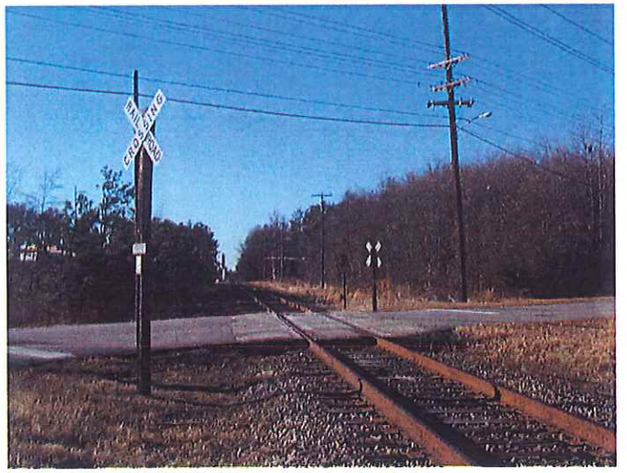
Figure B-2a

Crossing# 465 904D (Hofer Drive)

Looking East

Looking North

Looking West



Looking South

Figure B-2b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
465 905K	VF 40.98	NS	North Street	Local	Gates	Residential

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
560	6		Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	Low

Aerials

Figure B-3a

Crossing# 465 905K (North Street)

Looking East

Looking North

Looking West

Looking South

Figure B-3b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
465 906S	VF 41.45	NS	US 401 Ramsey Street	Major Tfare	Cantilevers, Gates	Industrial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
38860	2	2-PDO, 1-injury	No	Yes	Through

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	High	Low

Aerials

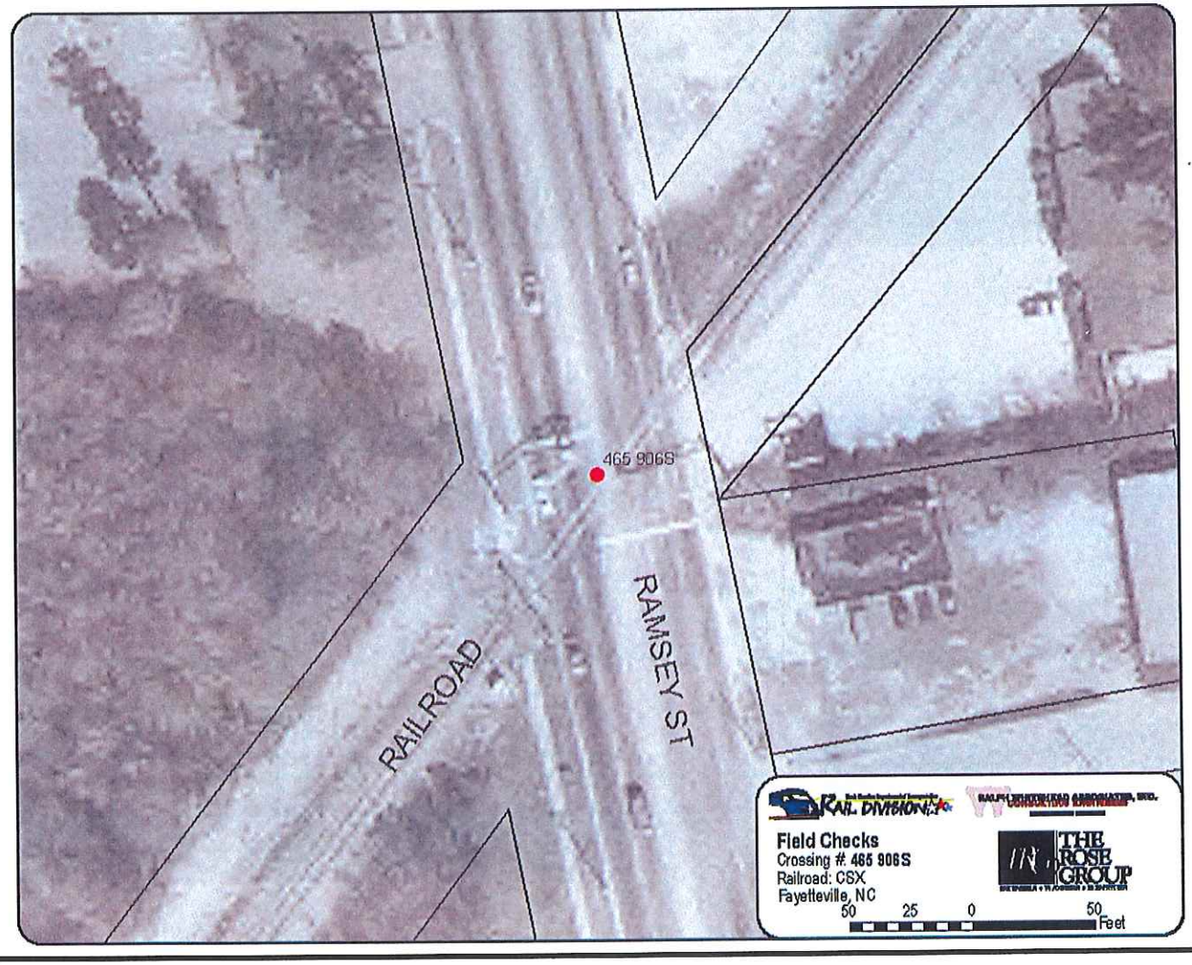


Figure B-4a

Crossing# 465 906S (US 401 Ramsey Street)

Looking East

Looking North

Looking West

Looking South

Figure B-4b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
465 911N	VF 42.01	NS	Hillsboro Street	Minor Tfare	Crossbucks	Industrial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
3860	2		Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Poor	Good	Poor	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

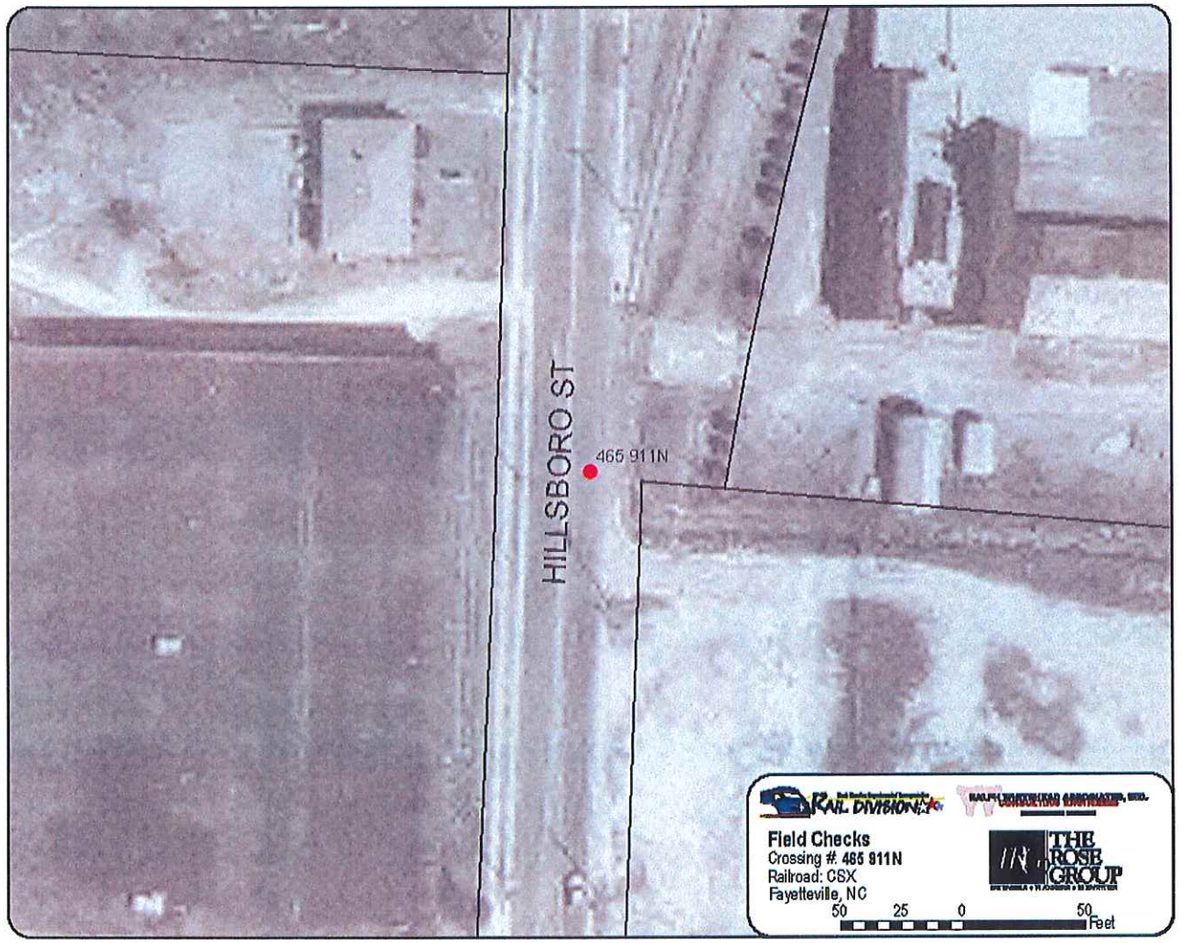
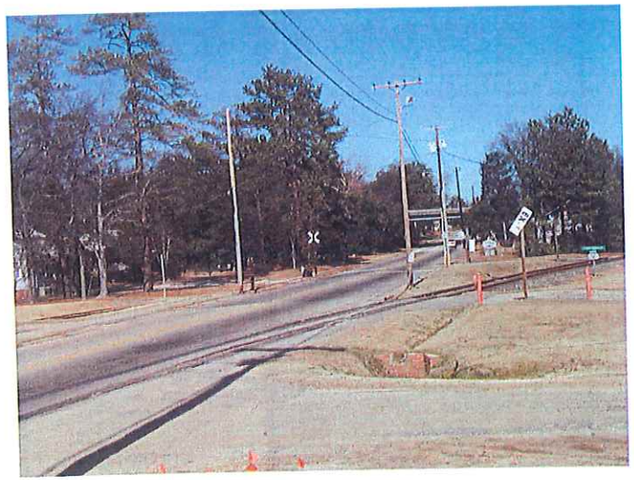
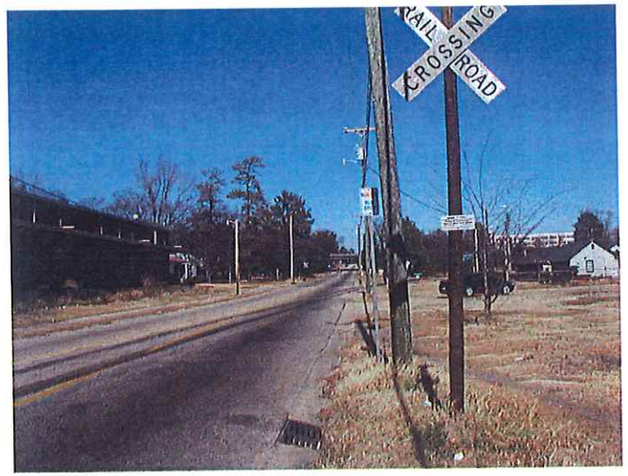


Figure B-5a

Crossing# 465 911N (Hillsboro Street)

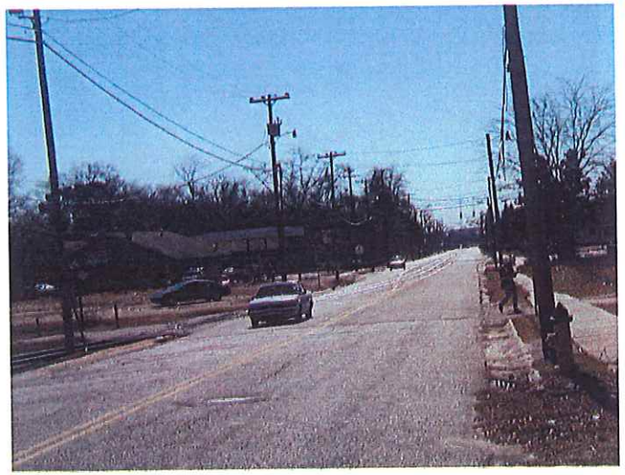


Looking Northwest



Looking North

Looking West



Looking South

Figure B-5b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
465 912V	VF 42.15	NS	Cumberland Street	Local	Crossbucks	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
2760	2		Yes	Yes	Local

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

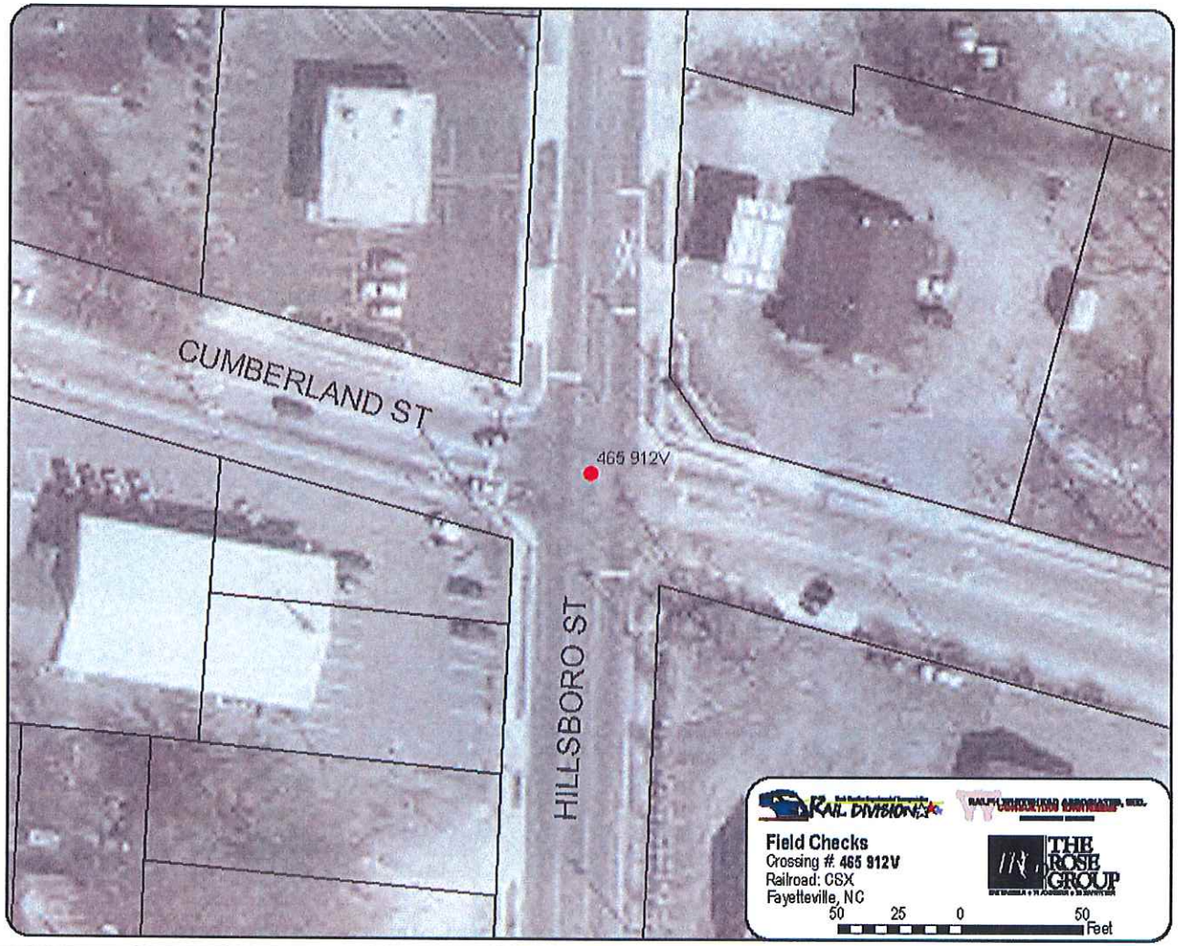
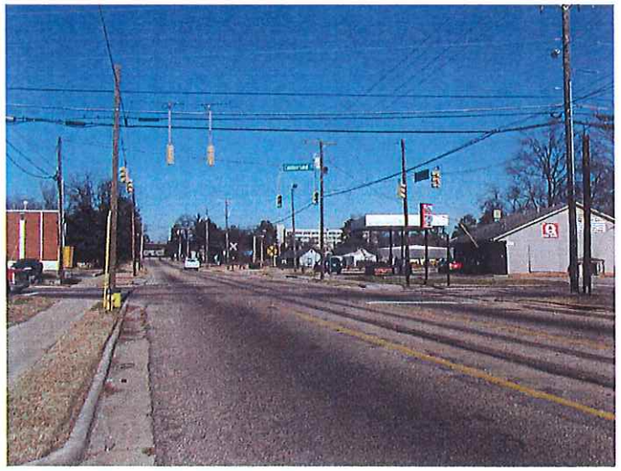


Figure B-6a

Crossing# 465 912V (Cumberland Street)

Looking East



Looking North

Looking West

Looking South

Figure B-6b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
465 913C	VF 42.39	NS	Chance Street	Local	Crossbucks	Residential

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
550	2	1-Unk	Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	Yes

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Low	High	Low	Low

Aerials

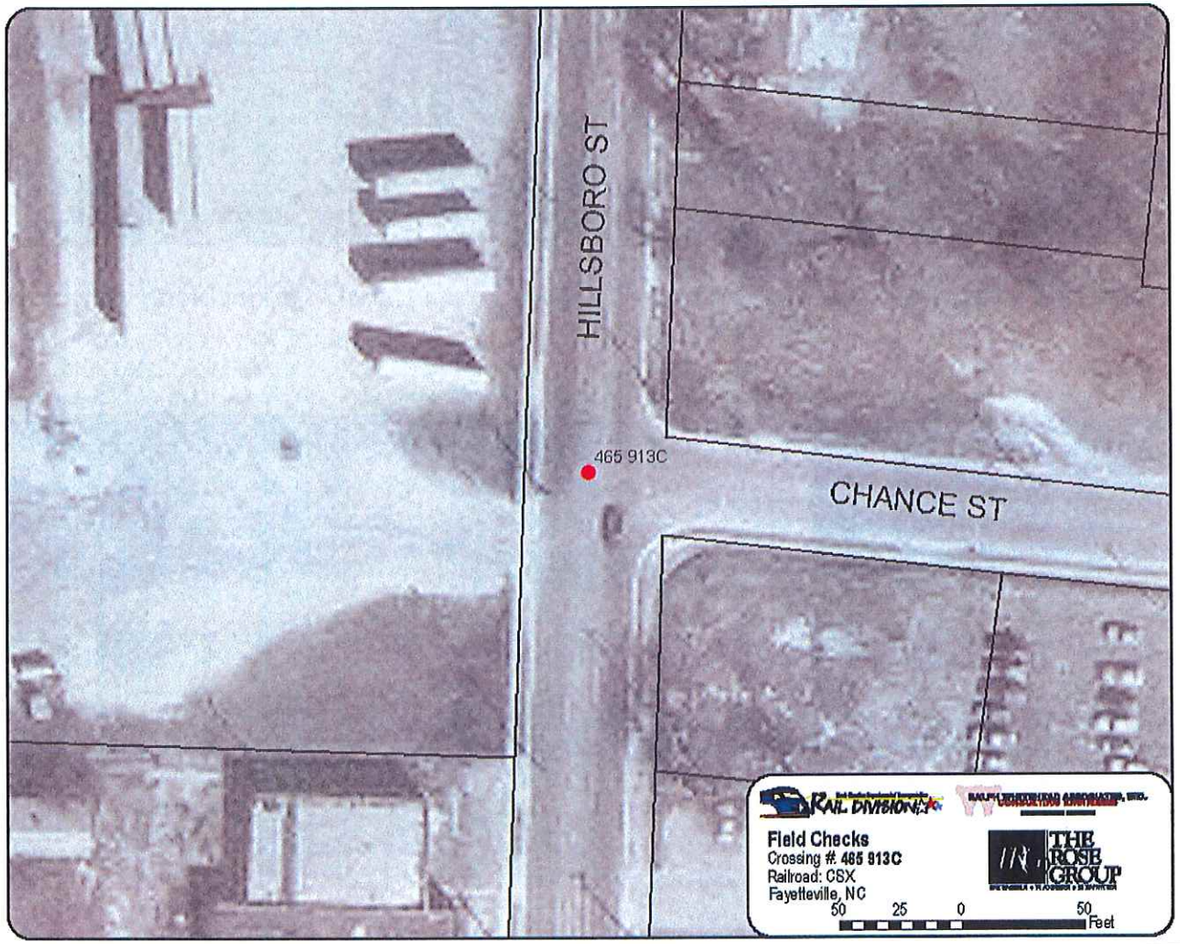
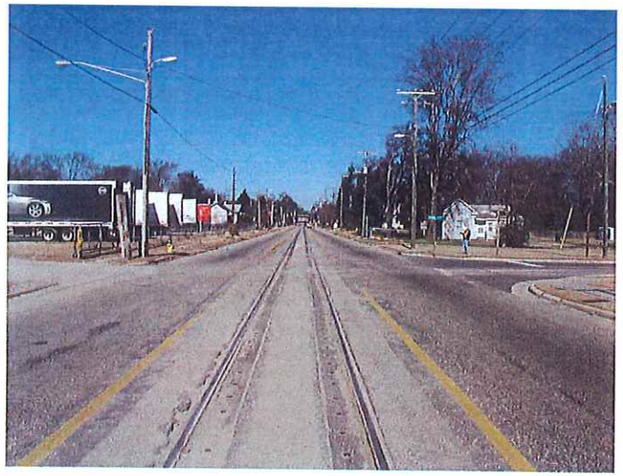


Figure B-7a

Crossing# 465 913C (Chance Street)

Looking East



Looking North

Looking West

Looking South

Figure B-7b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
465 914J	VF 42.49	NS	Moore & Bruner Streets	Minor Tfare	Crossbucks	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
2530	2		Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	Low

Aerials

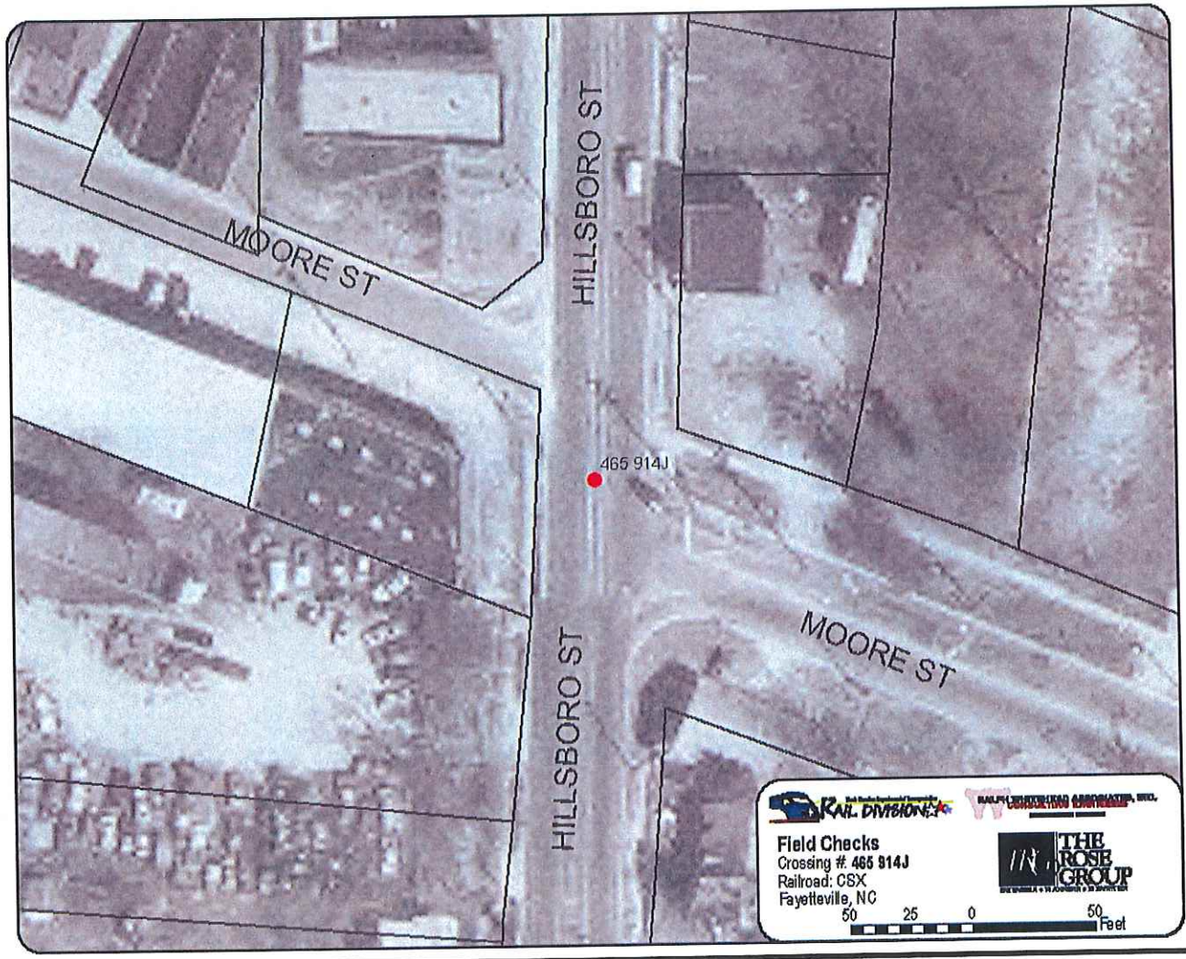


Figure B-8a

Crossing# 465 914J (Moore Street)

Looking East

Looking North

Looking West

Looking South

Figure B-8b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
465 915R	VF 42.61	NS	NC 210 Hillsboro and Rowan Streets	Minor Tfare	Cantilevers	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
5120	4	1-PDO	No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☑	☐	Poor	Good	Poor	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

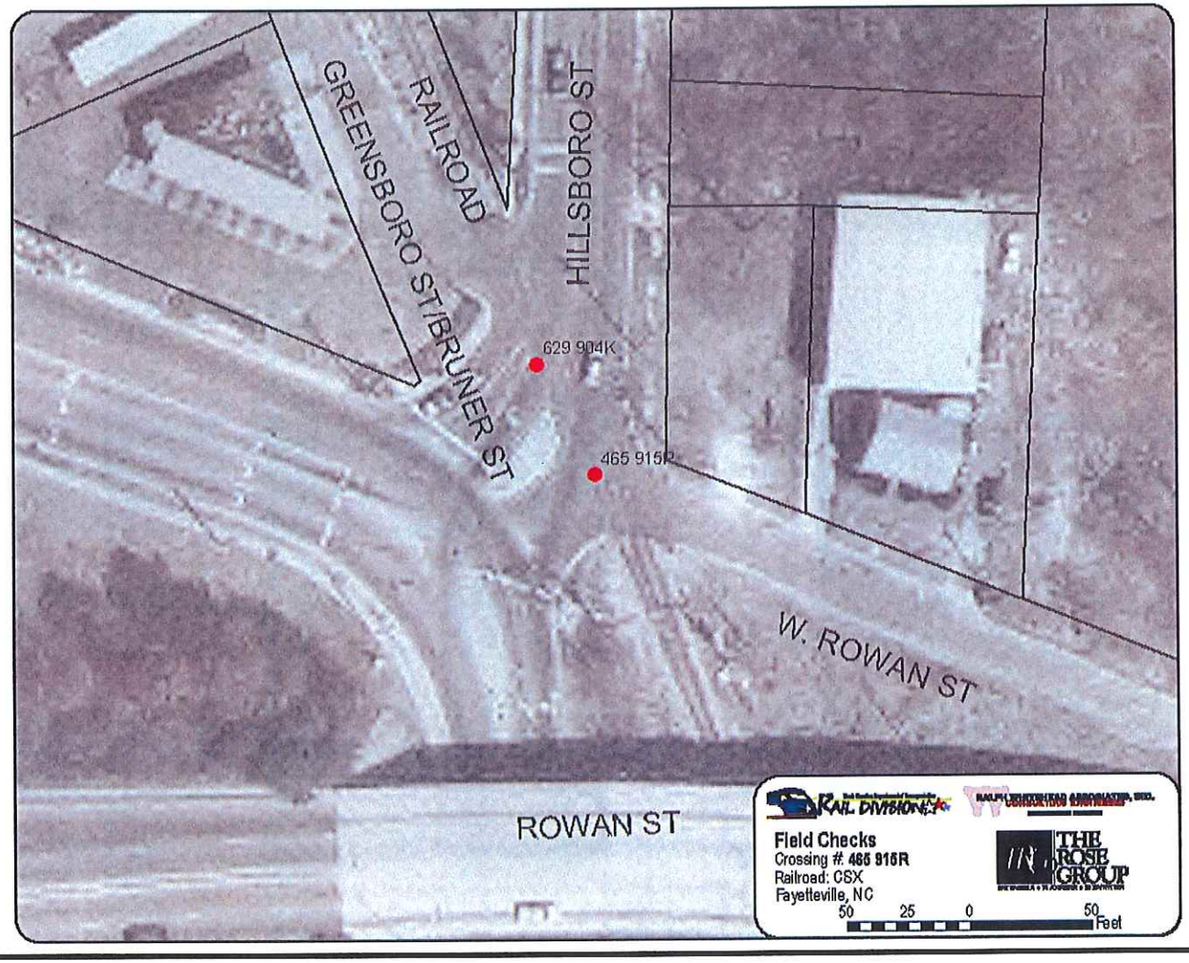
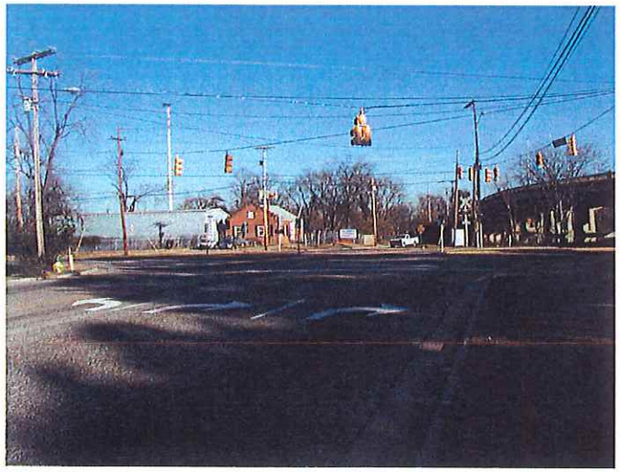


Figure B-9a

Crossing# 465 915R (Hillsboro and Rowan Streets)

Looking South down Hillsboro Street



Looking East on Rowan Street

Looking North

Looking West on Rowan Street

Figure B-9b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 569K	AE 209.43	CSX	Maiden Lane	Local	Crossbucks	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
1600	2		Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

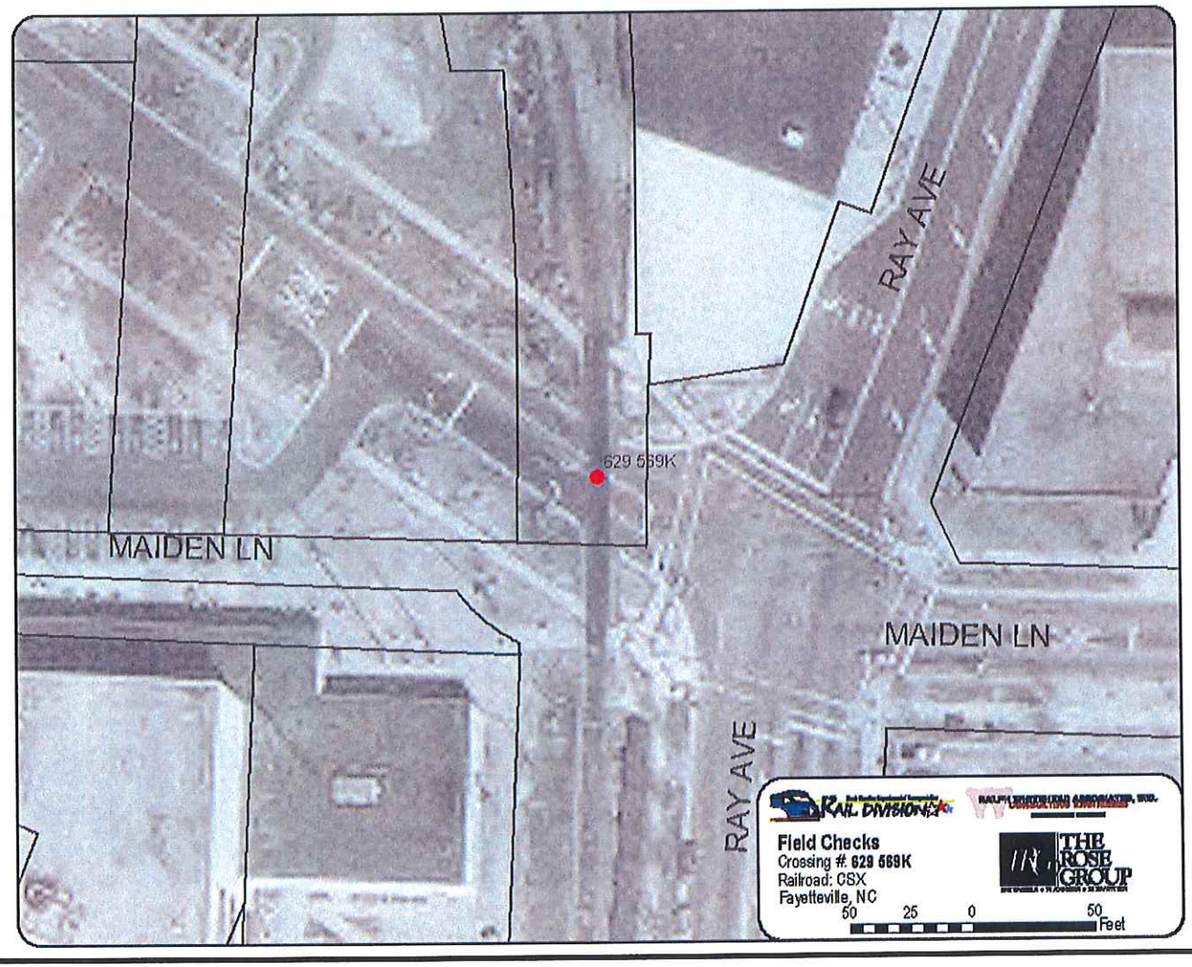
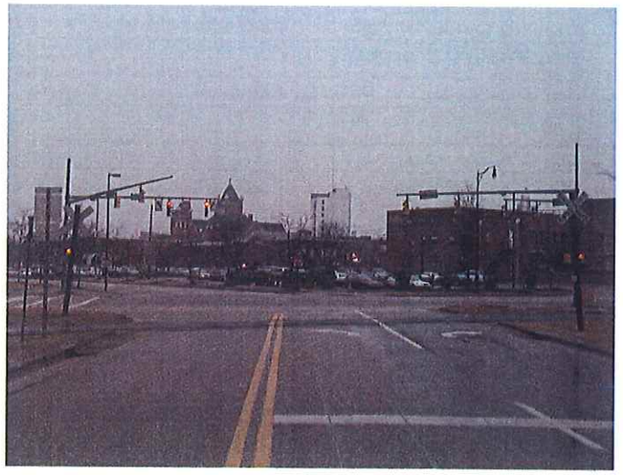


Figure B-10a

Crossing# 629 569K (Maiden Lane)



Looking East

Looking North

Looking West

Looking South

Figure B-10b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 570E	AF 209.5	CSX	Hay Street	Major Tfare	Flashers	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
8090	3	1-injuryC	Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☑	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

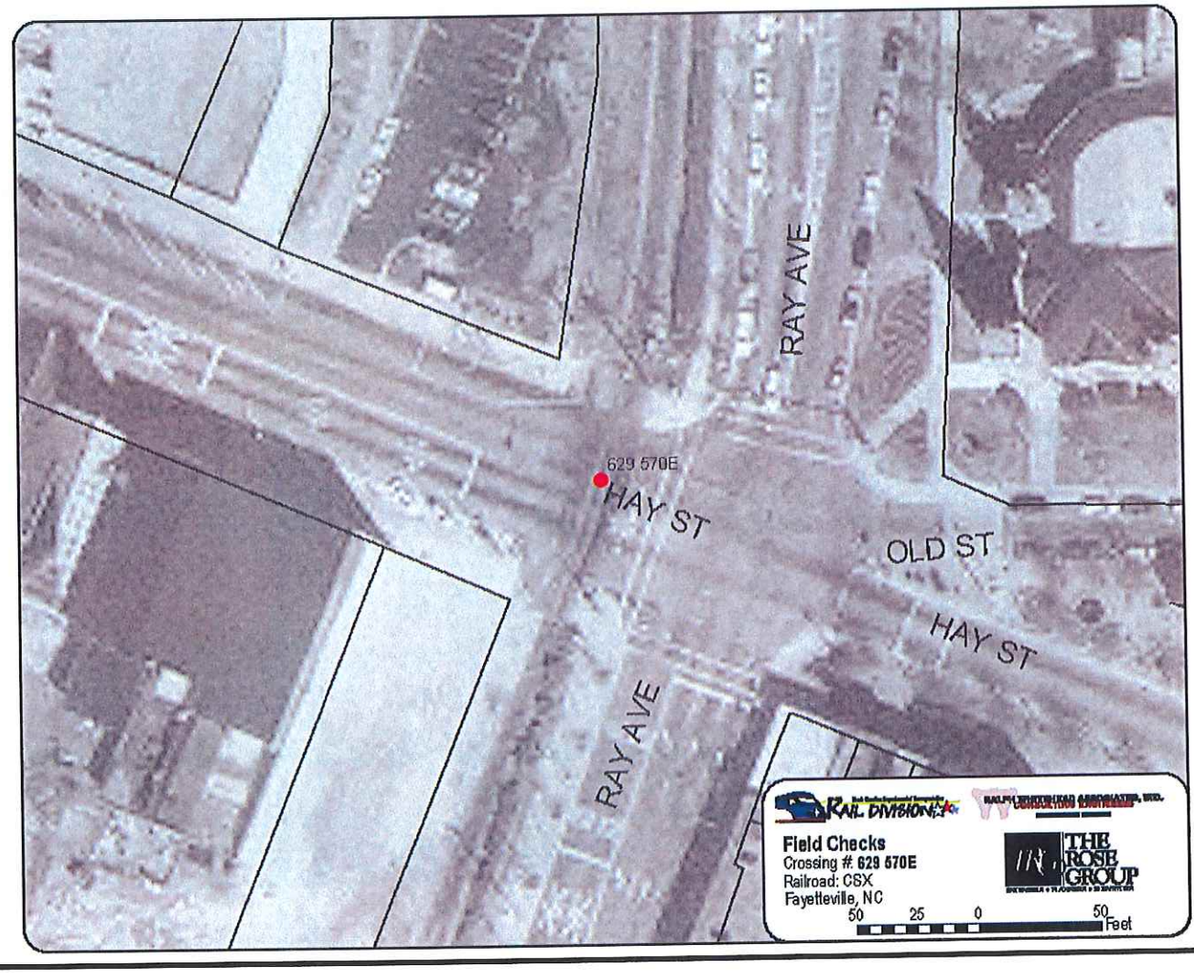


Figure B-11a

Crossing# 629 570E (Hay Street)

Looking East

Looking North

Looking West

Looking South

Figure B-11b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 571L	AE 209.5	CSX	Franklin Street	Major Tfare	Crossbucks	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
3030	2	1-PDO	Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

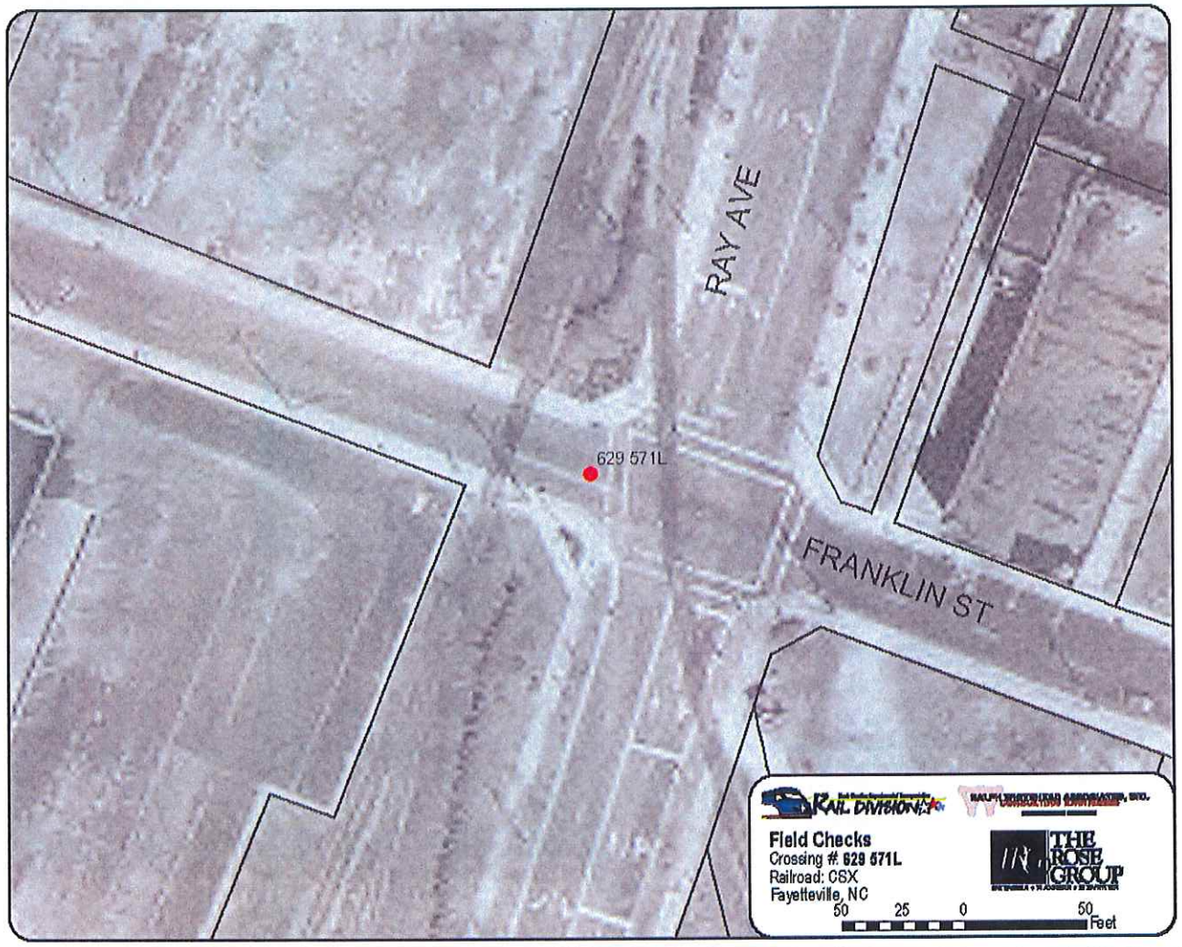


Figure B-12a

Crossing# 629 571L (Franklin Street)

Looking East

Looking North

Looking West

Looking South

Figure B-12b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 572T	AE 209.5	CSX	SR 2299 Russell Street	Major Tfare	Crossbucks	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
8990	2	1-Unk	Yes	Yes	Local

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

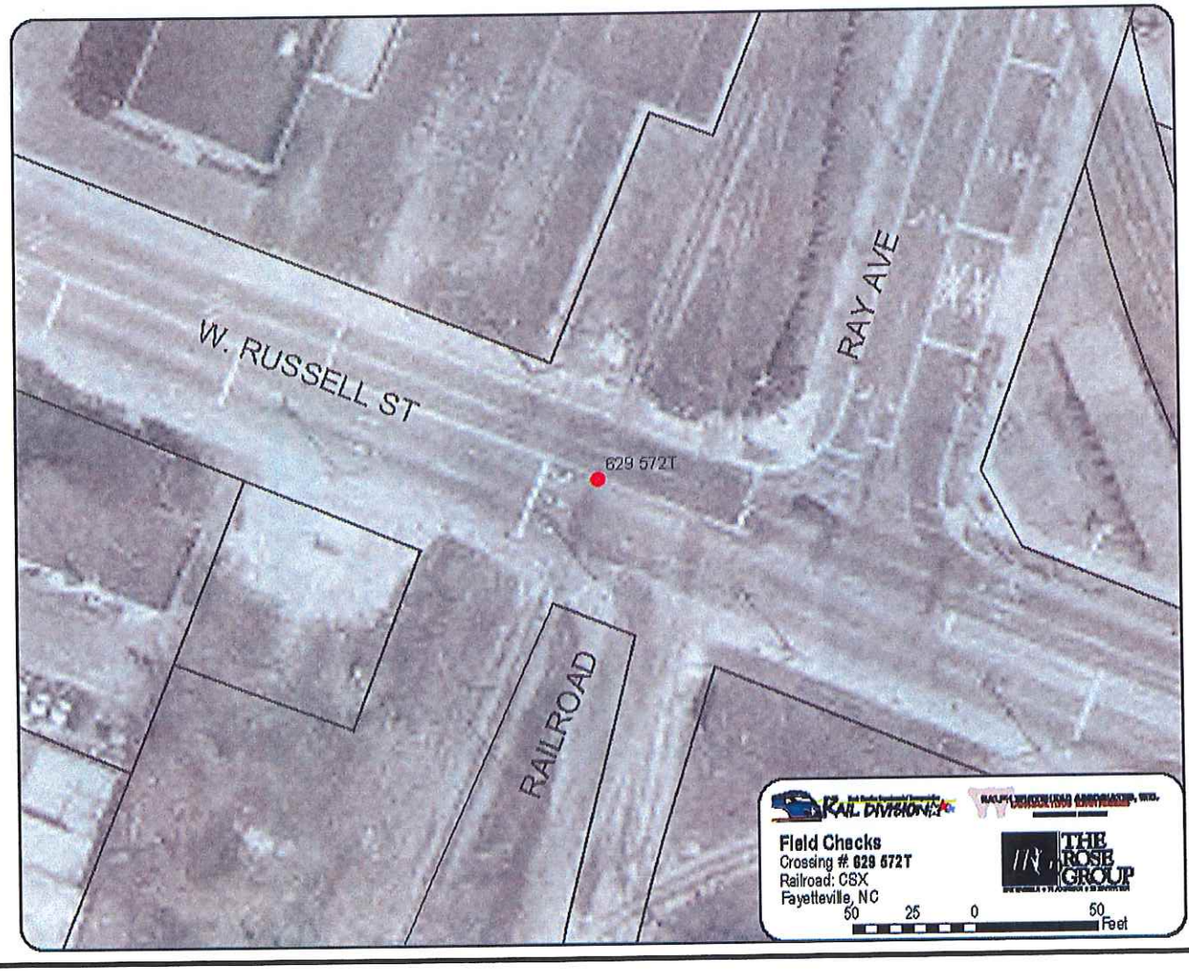
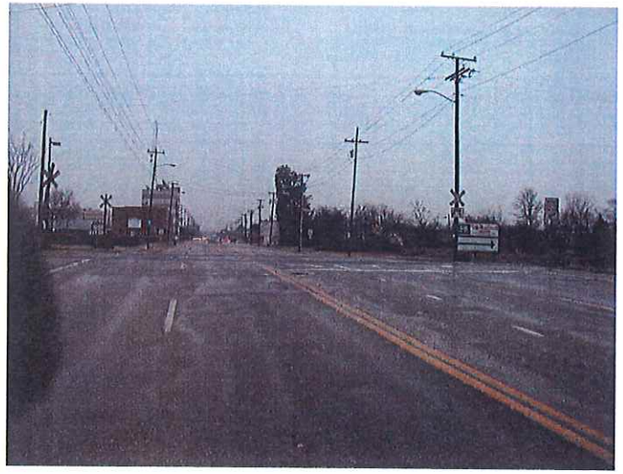


Figure B-13a

Crossing# 629 572T (Russell Street)



Looking East

Looking North

Looking West

Looking South

Figure B-13b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 574G	AE 209.51	CSX	Blount Street	Minor Tfare	Crossbucks	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
1850	8		No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Poor (asphalt)	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

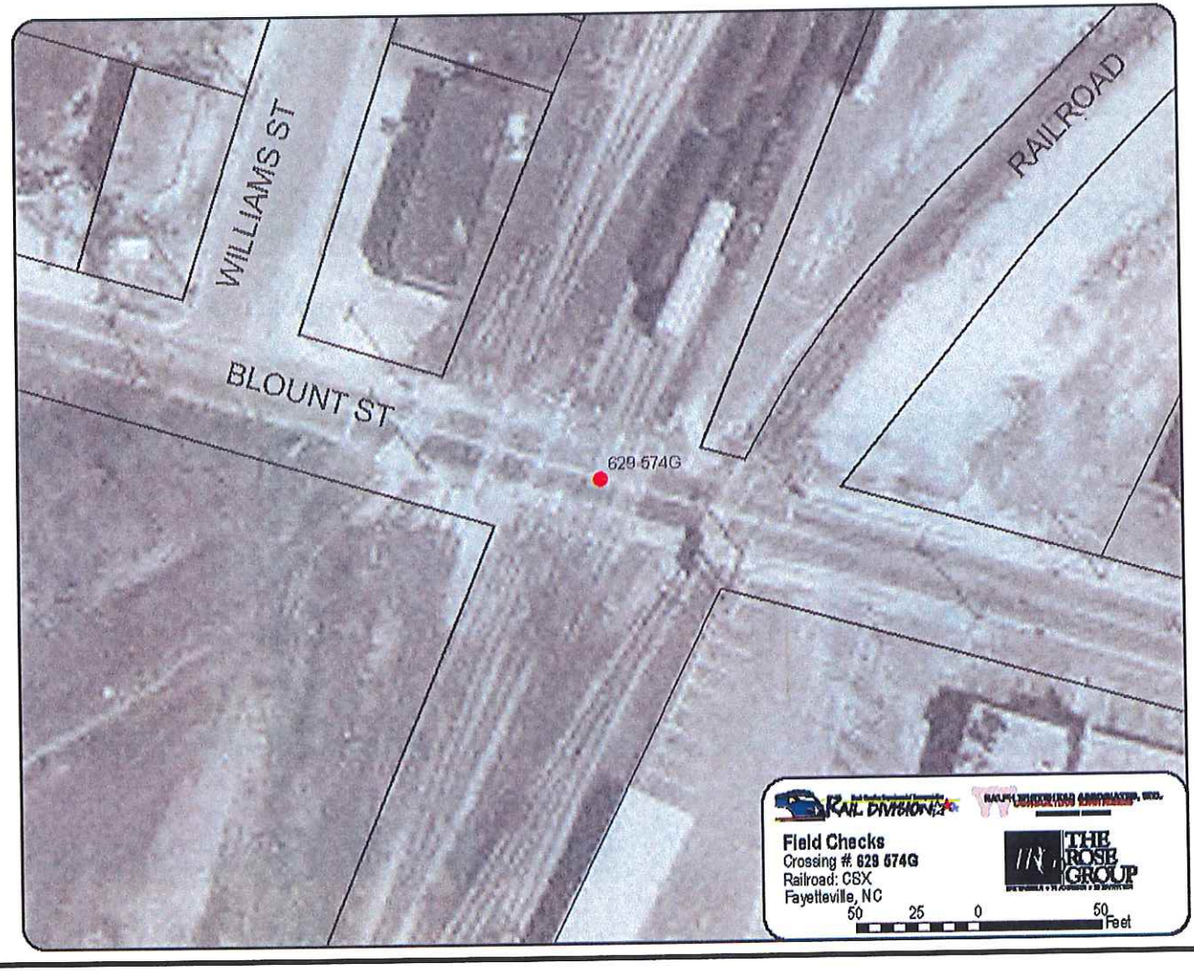


Figure B-14a

Crossing# 629 574G (Blount Street)

Looking East

Looking North

Looking West

Looking South

Figure B-14b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 877R	A 208.9	CSX	Cumberland Street	Local	Cantilevers, Gates	Industrial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
2840	23	1-Fatality	No	Yes	Local

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	High	High

Aerials

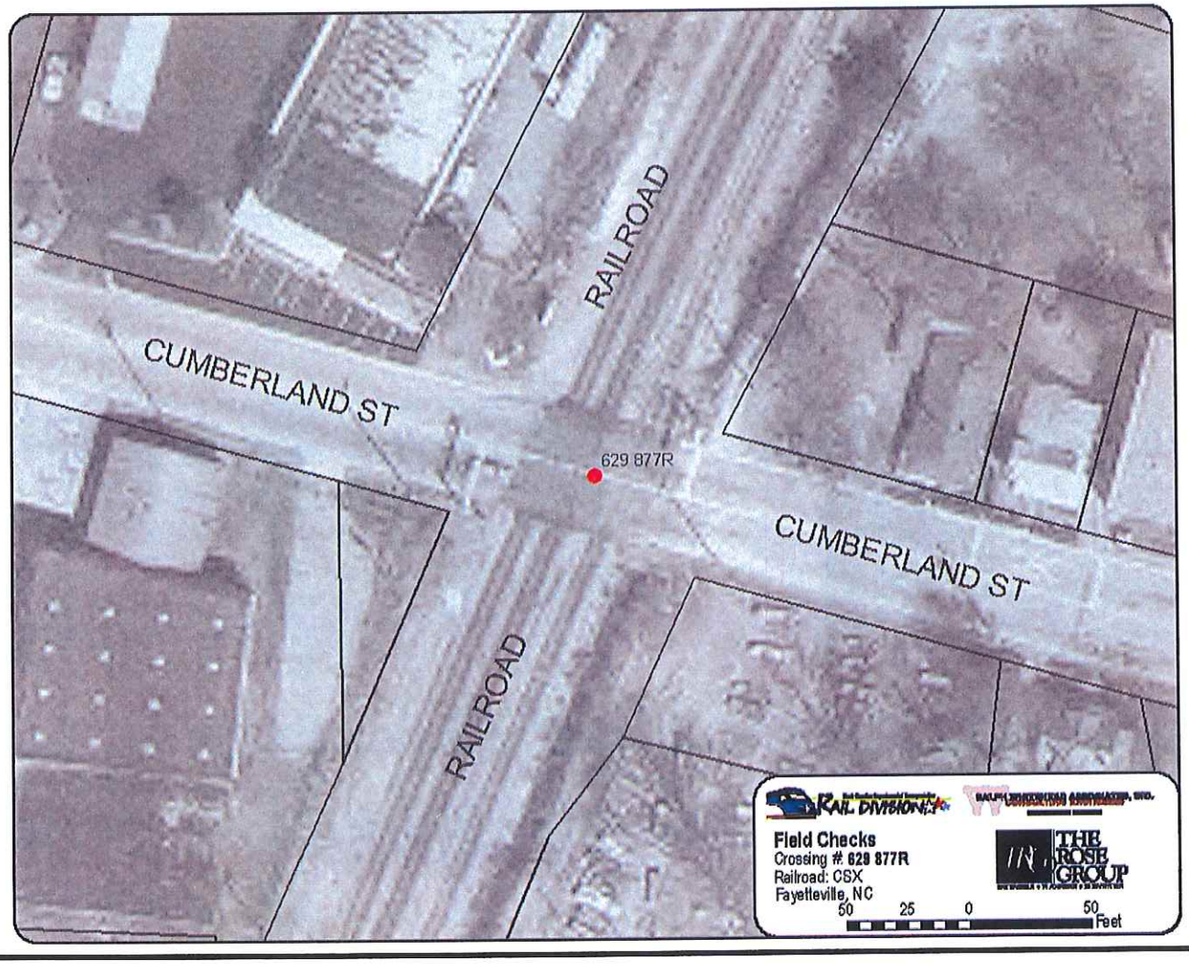
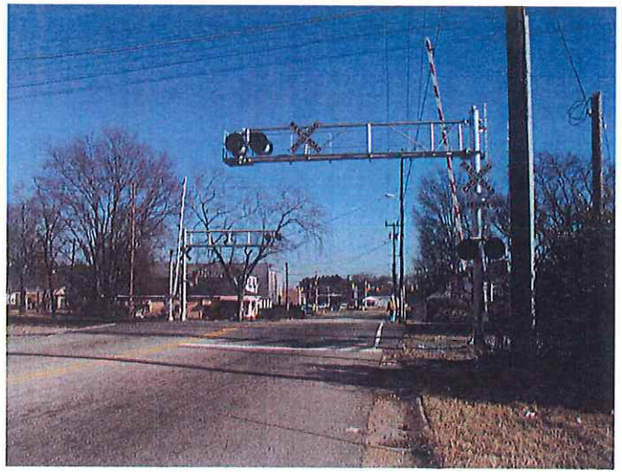


Figure B-15a

Crossing# 629 877R (Cumberland Street)



Looking East

Looking North

Looking West

Looking South

Figure B-15b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 878X	A 209.1	CSX	Chance Street	Local	Cantilevers, Gates	Industrial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
510	22		No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	Yes

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Low	Low	Low	High

Aerials

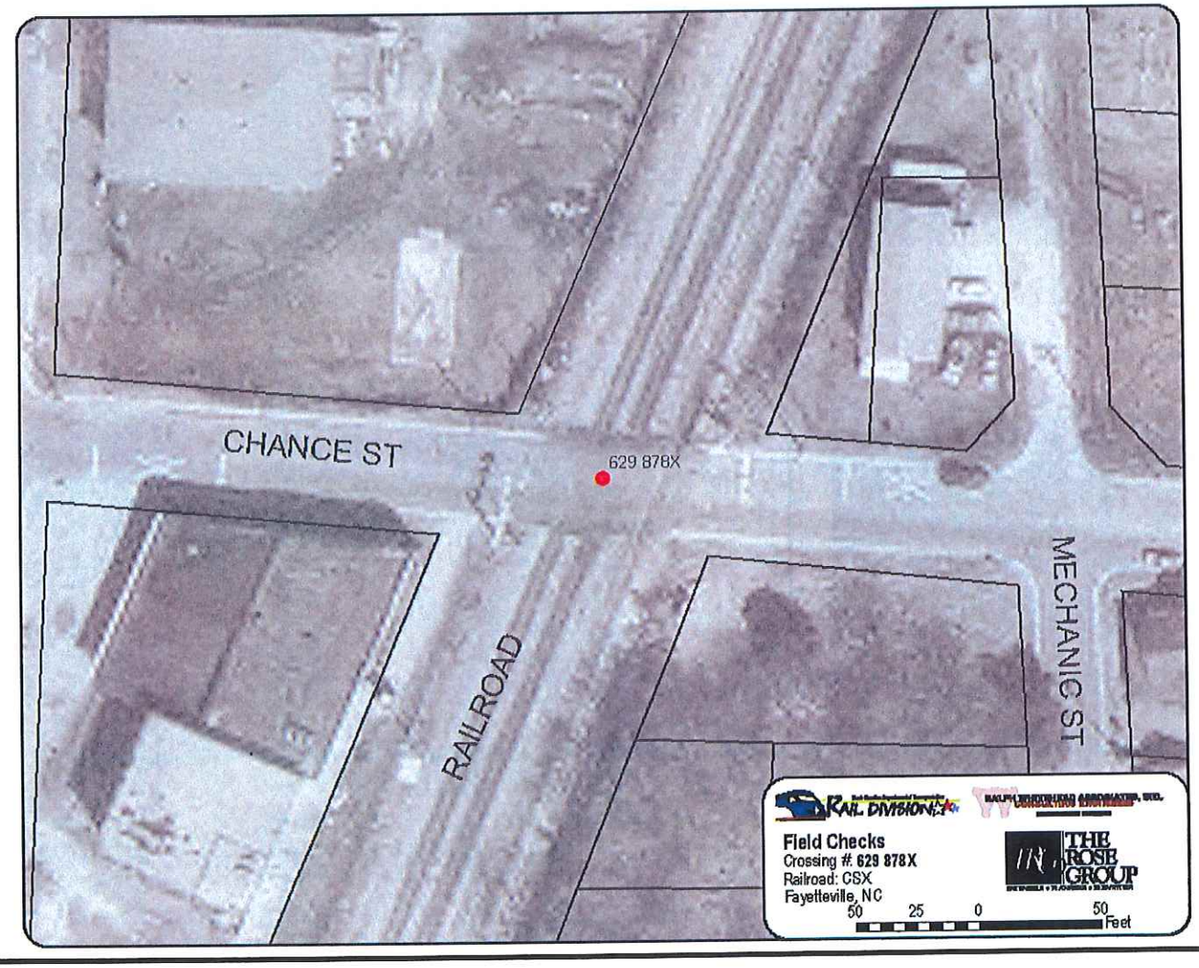


Figure B-16a

Crossing# 629 878X (Chance Street)

Looking East

Looking North

Looking West

Looking South

Figure B-16b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 879E	A 209.2	CSX	Moore Street	Minor Tfare	Cantilevers, Gates	Residential

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
2610	22	2-PDO	Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	High	High

Aerials

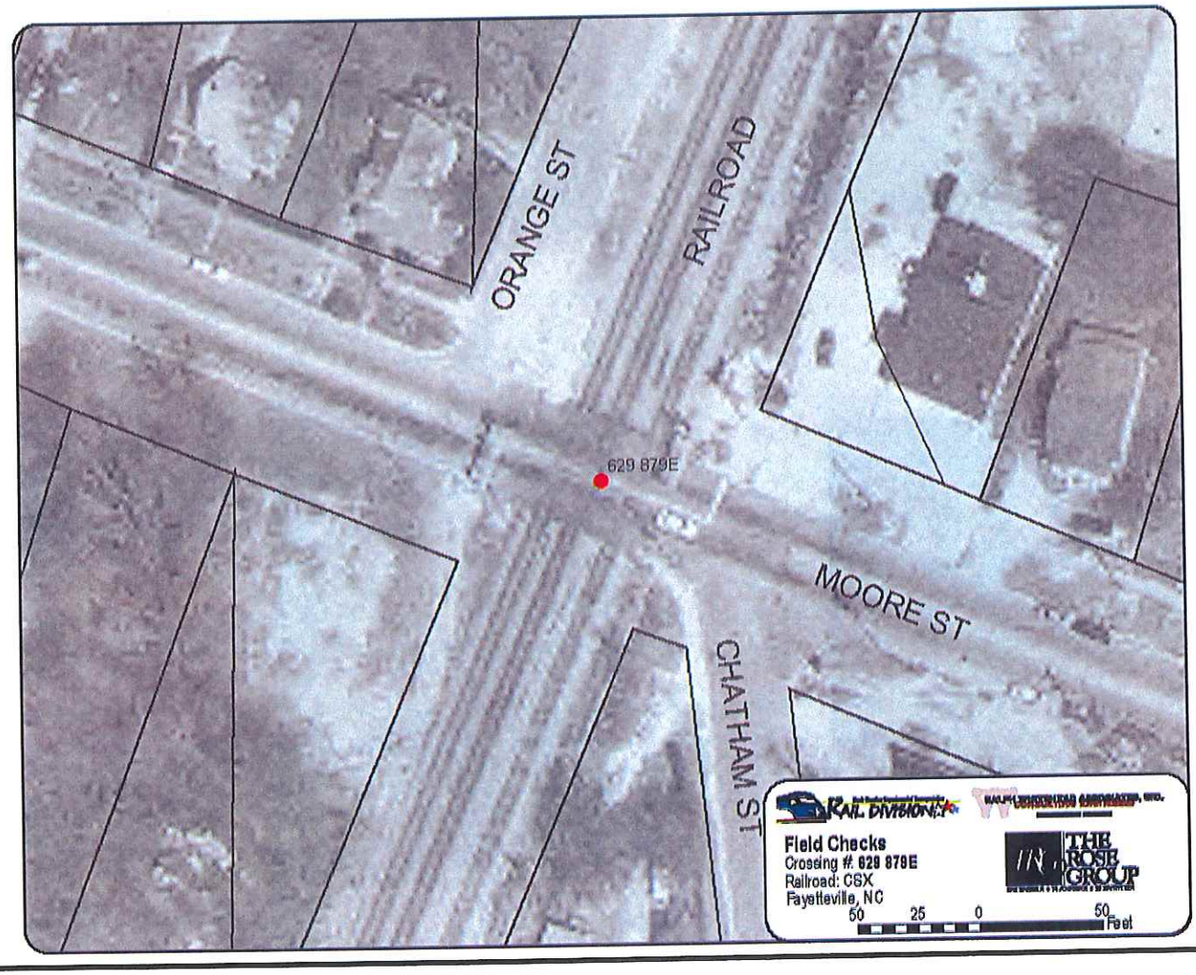
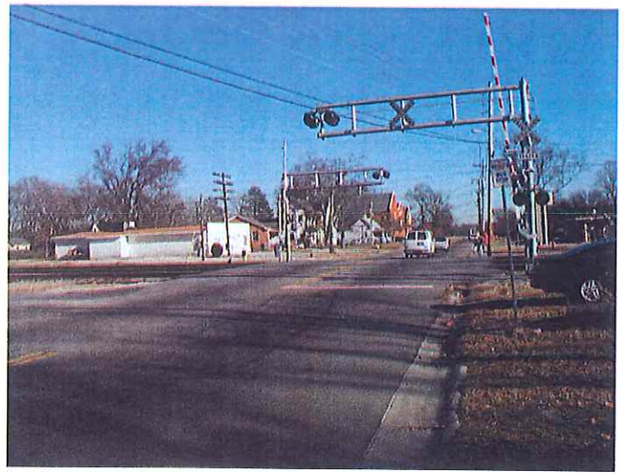


Figure B-17a

Crossing# 629 879E (Moore Street)



Looking East

Looking North

Looking West

Looking South

Figure B-17b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 881F	A 209.7	CSX	Hay Street	Major Tfare	Cantilevers	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
10810	22	3-PDO, 2-injuryA, 1-injuryB, 1injuryC, 2 Unk	Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☑	☐	Poor	Good	Fair	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	High	High

Aerials

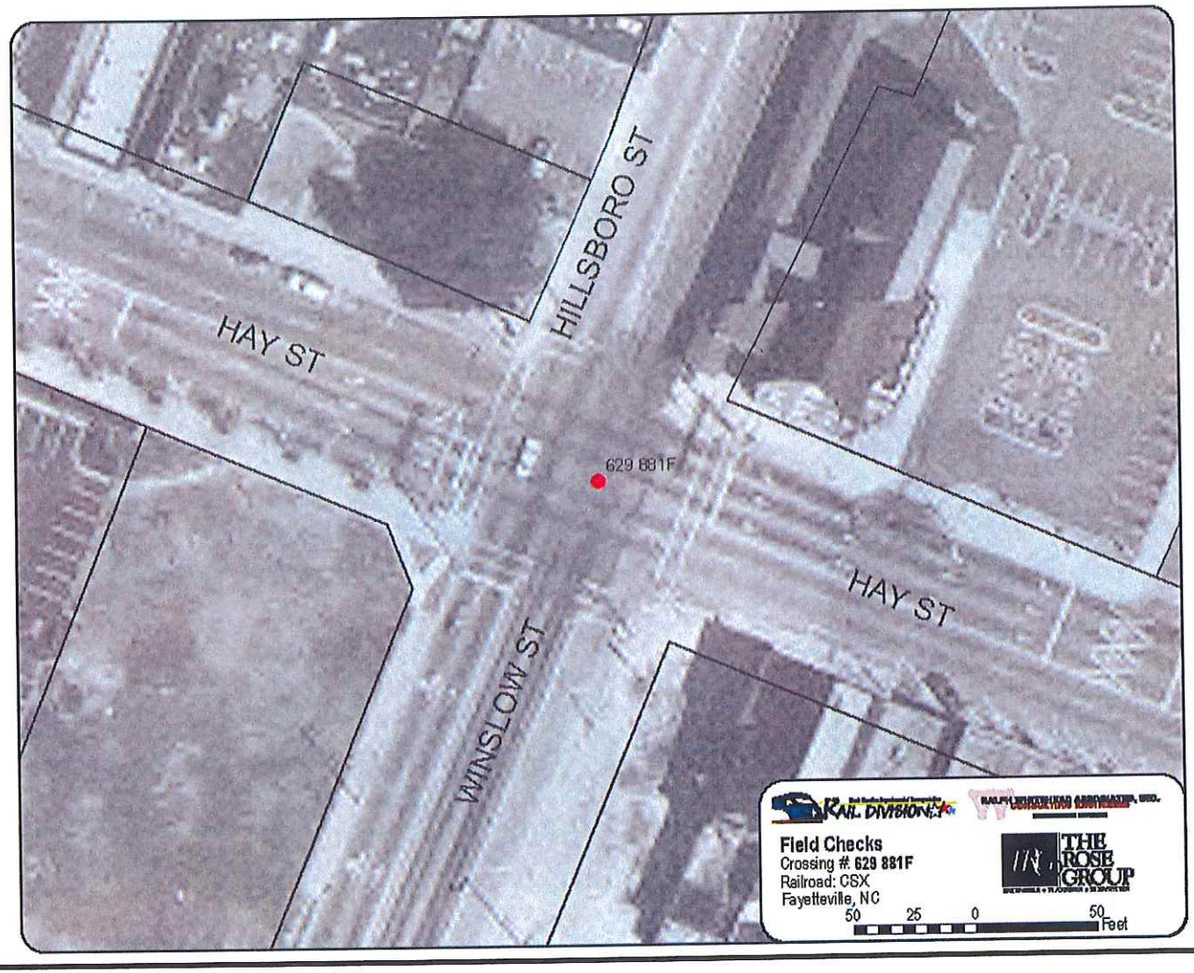


Figure B-18a

Crossing# 629 881F (Hay Street)

Looking East

Looking North

Looking West

Looking South

Figure B-18b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 882M	A 209.71	CSX	Franklin Street	Major Tfare	Cantilevers	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
3050	33	2-PDO	No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Low	Low	High	High

Aerials

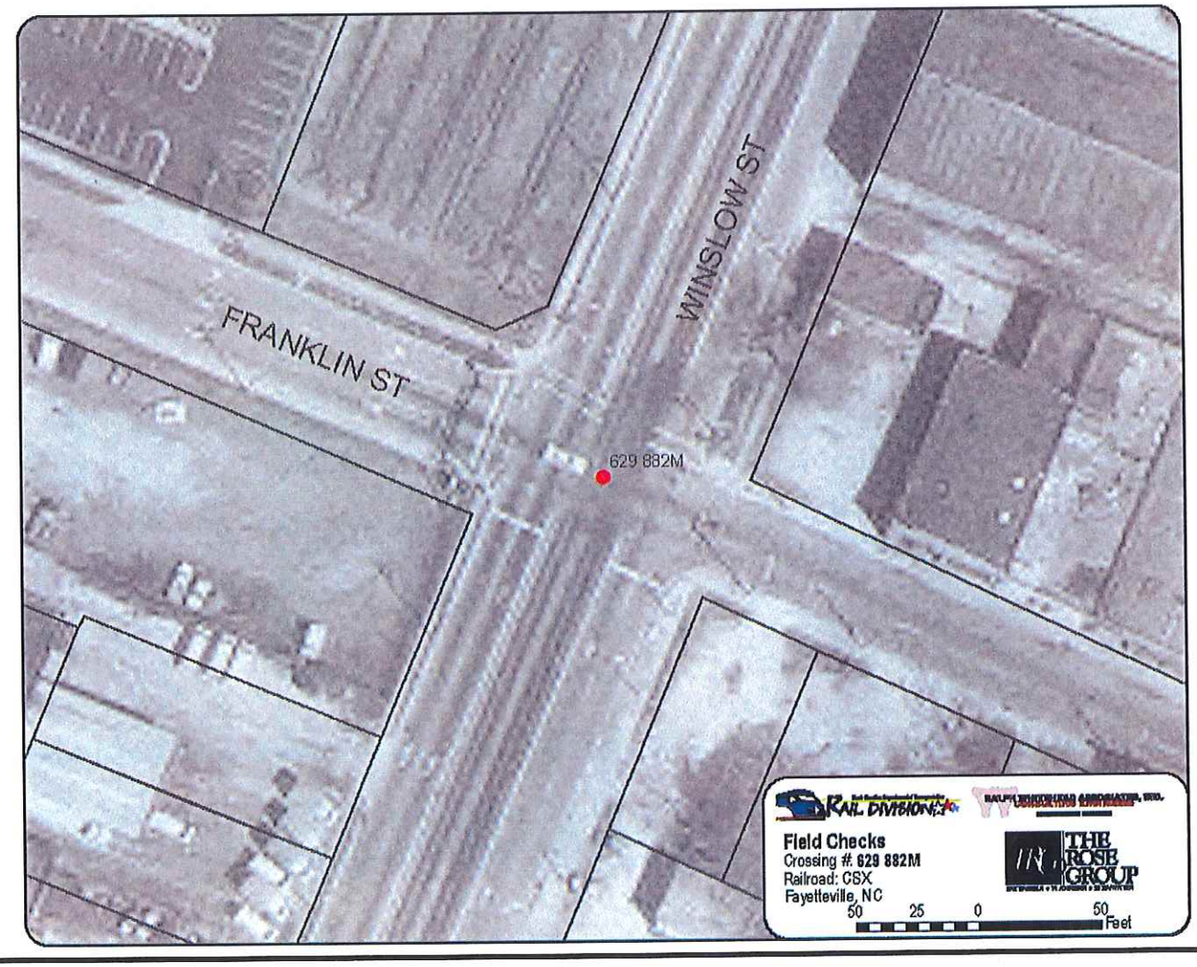


Figure B-19a

Crossing# 629 882M (Franklin Street)

Looking East

Looking North

Looking West

Looking South

Figure B-19b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 883U	A 209.8	CSX	SR 2299 West Russell Street	MajorTfare	Cantilevers	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
8880	33	1-PDO, 1-injuryC	Yes	Yes	Local

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	High	High

Aerials

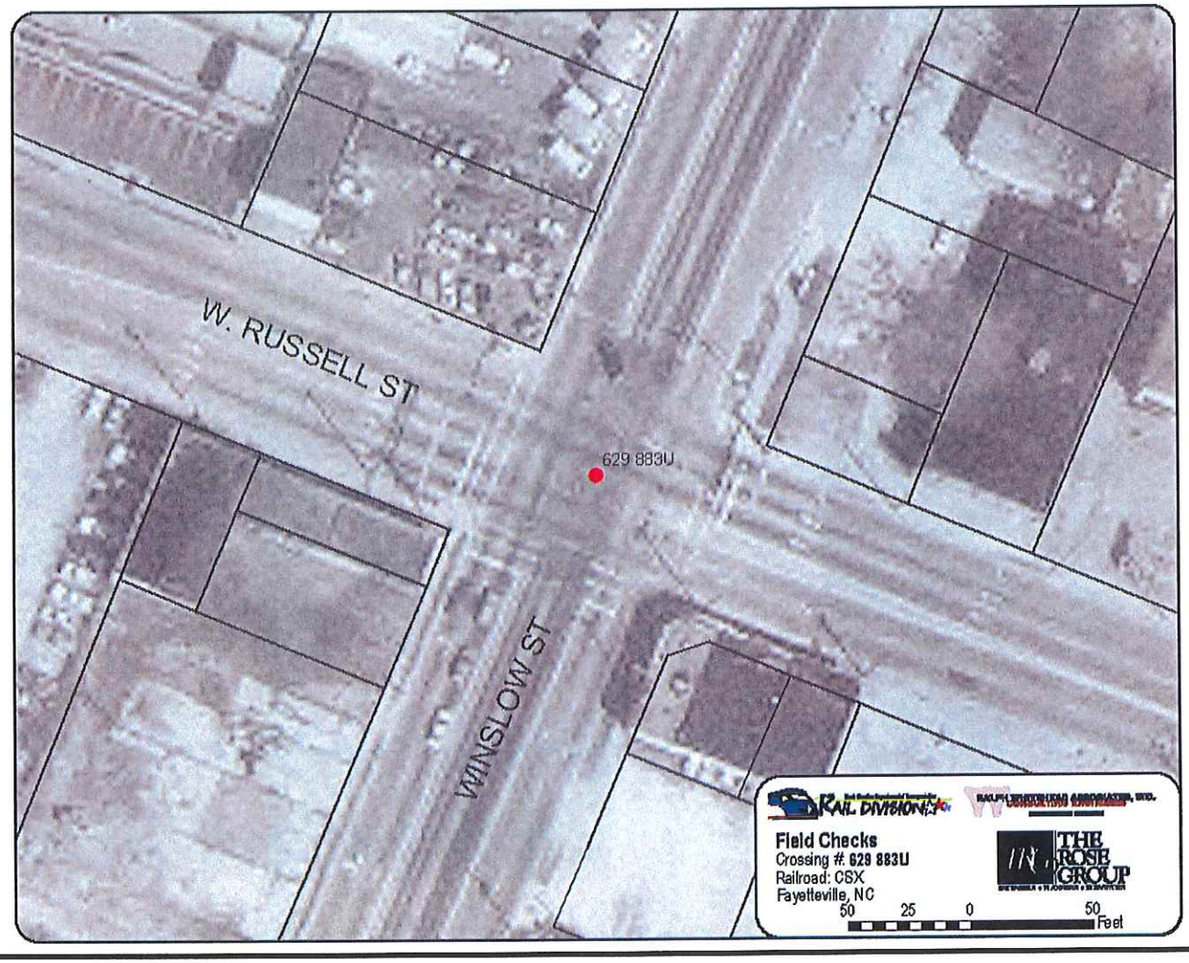


Figure B-20a

Crossing# 629 883U (Russell Street)

Looking East

Looking North

Looking West

Looking South

Figure B-20b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 884B	A 209.9	CSX	Rankin Street	Major Tfare	Gates	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
1780	33	3-PDO, 1-injuryB, 3-Unk	No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☑	☐	Poor	Good	Poor	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Low	Low	High	High

Aerials

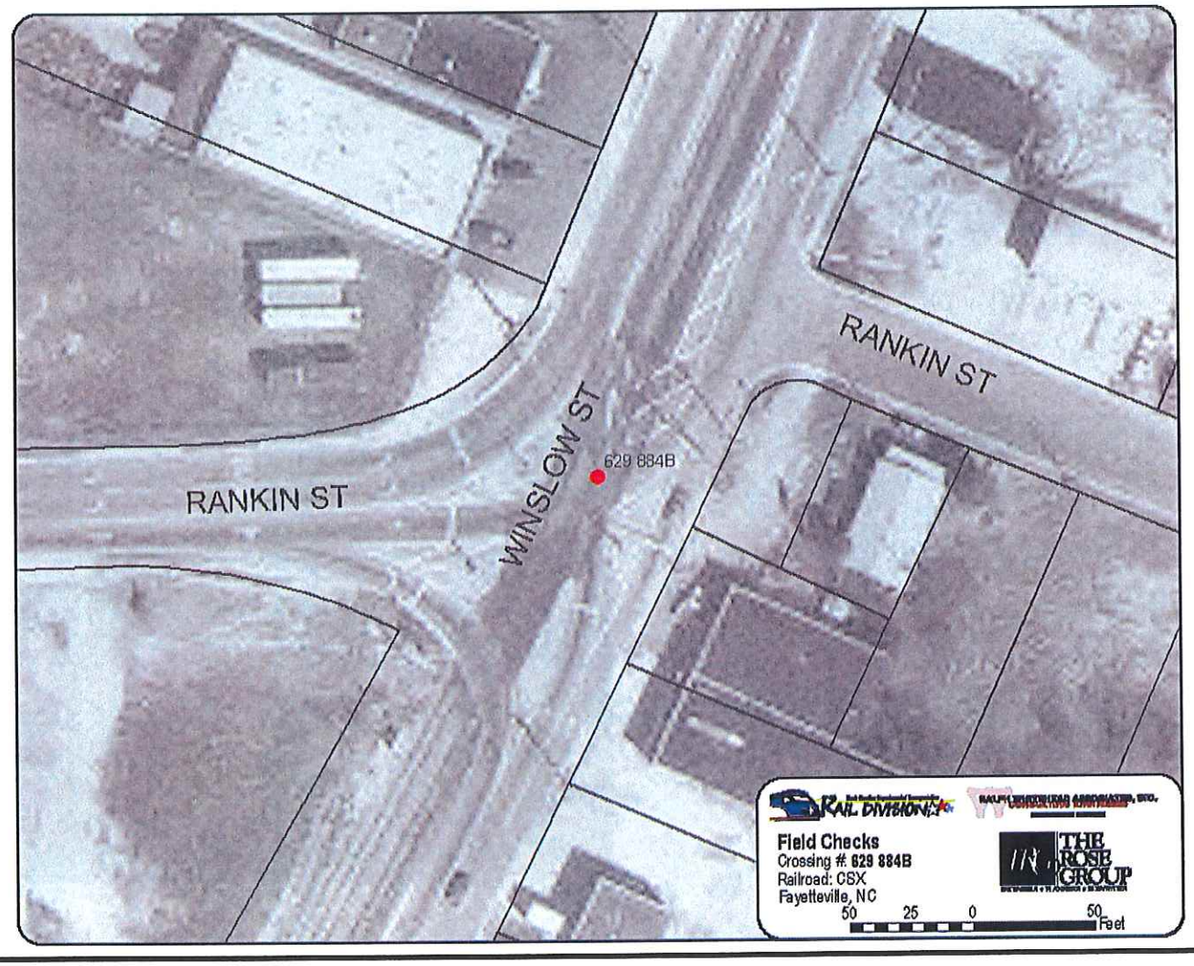


Figure B-21a

Crossing# 629 884B (Rankin Street)

Looking East

Looking North

Looking West

Looking South

Figure B-21b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 885H	A 210.1	CSX	Blount Street	Minor Tfare	Cantilevers, Gates	Industrial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
2120	33		No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☑	☑	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	High	High	High

Aerials

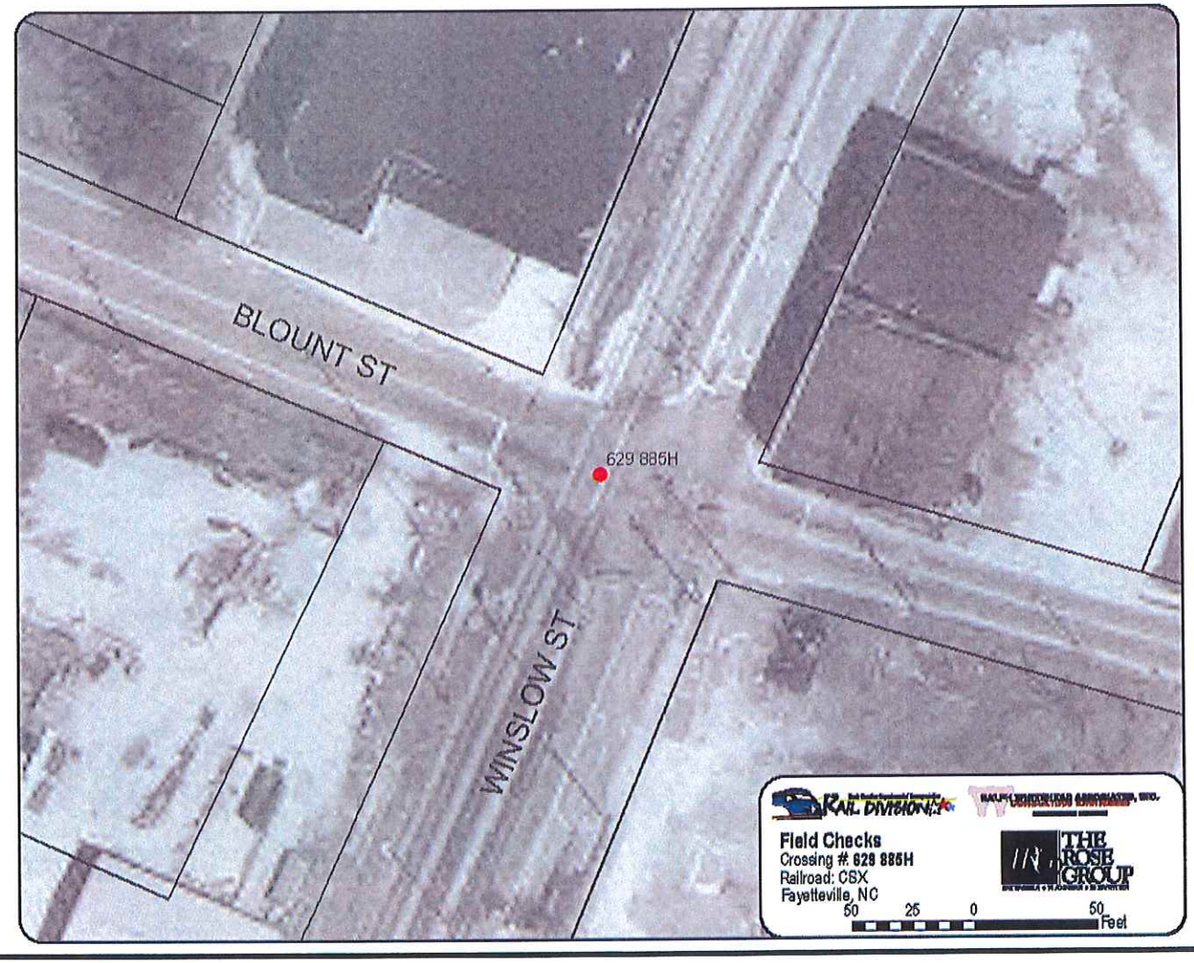
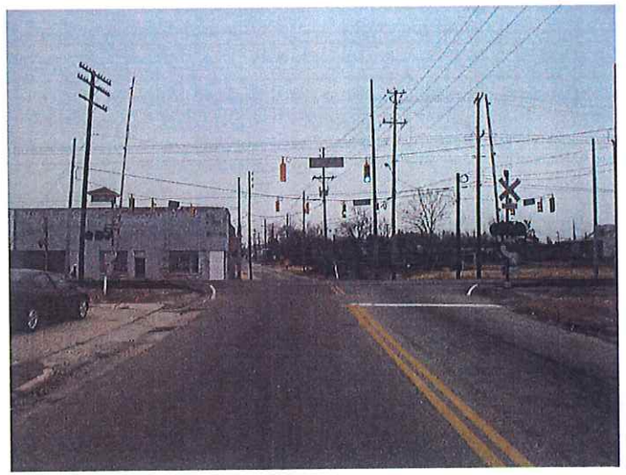


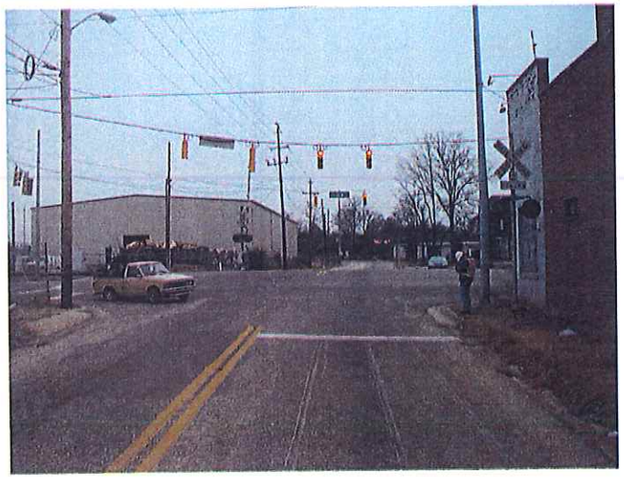
Figure B-22a

Crossing# 629 885H (Blount Street)



Looking East

Looking North



Looking West

Looking South

Figure B-22b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 886P	A 211.0	CSX	SR 1168 Whitfield Street	Major Tfare	Gates	Open Space

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
10430	33		No	Yes	Local

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☑	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	High	High

Aerials

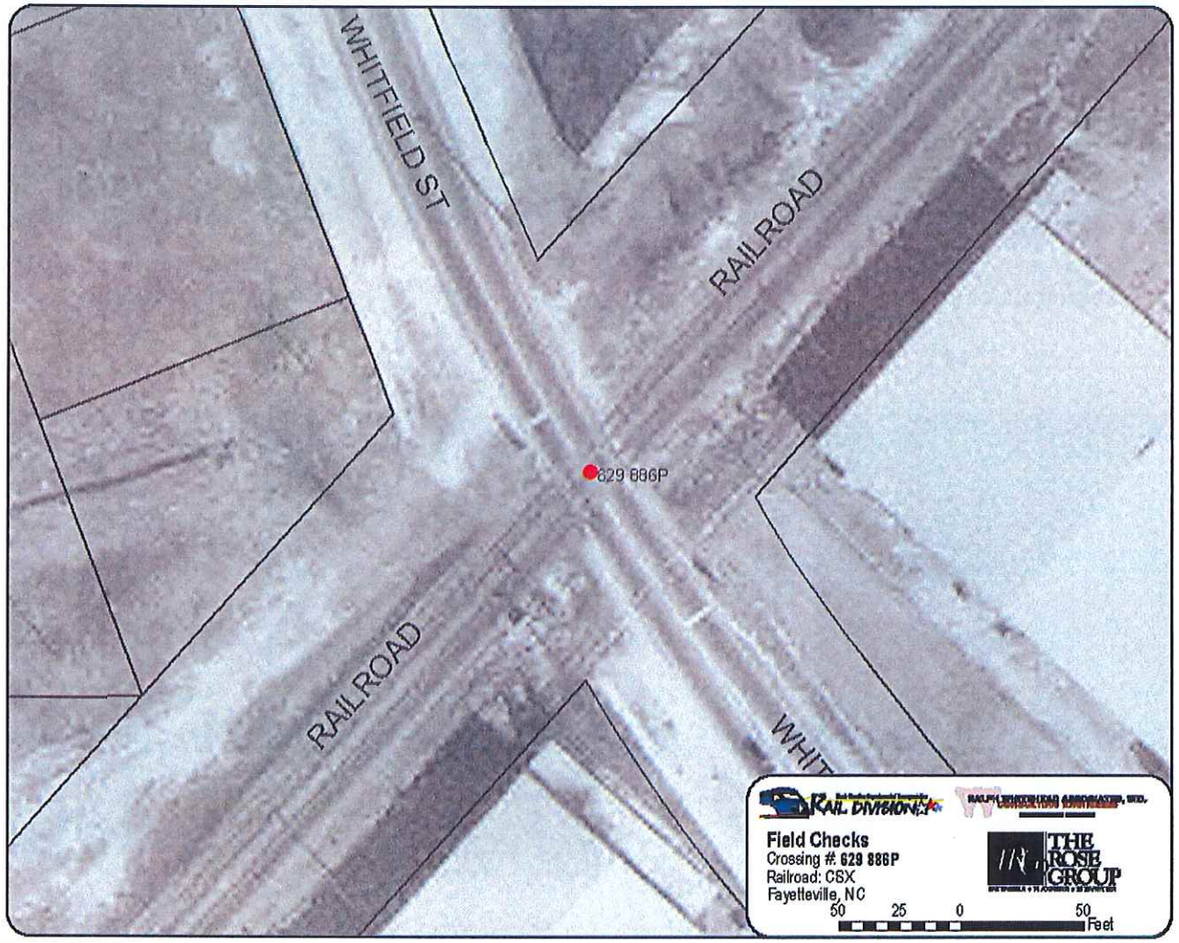
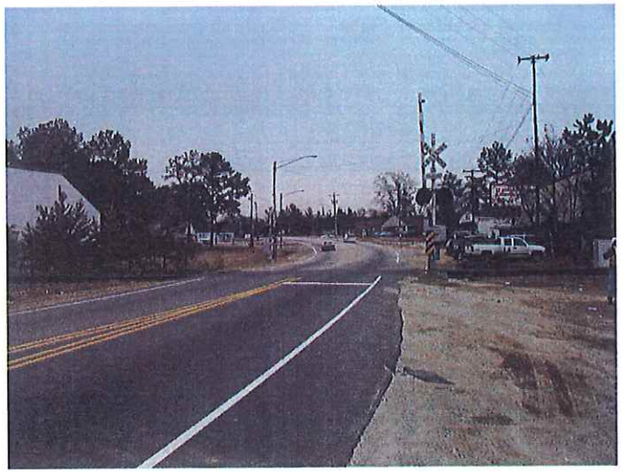


Figure B-23a

Crossing# 629 886P (Whitfield Street)



Looking East

Looking North

Looking West

Looking South

Figure B-23b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 904K	AE 210.9	CSX	Hillsboro Street	Minor Tfare	Cantilevers	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
1810	2		No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Poor	Good	Poor	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

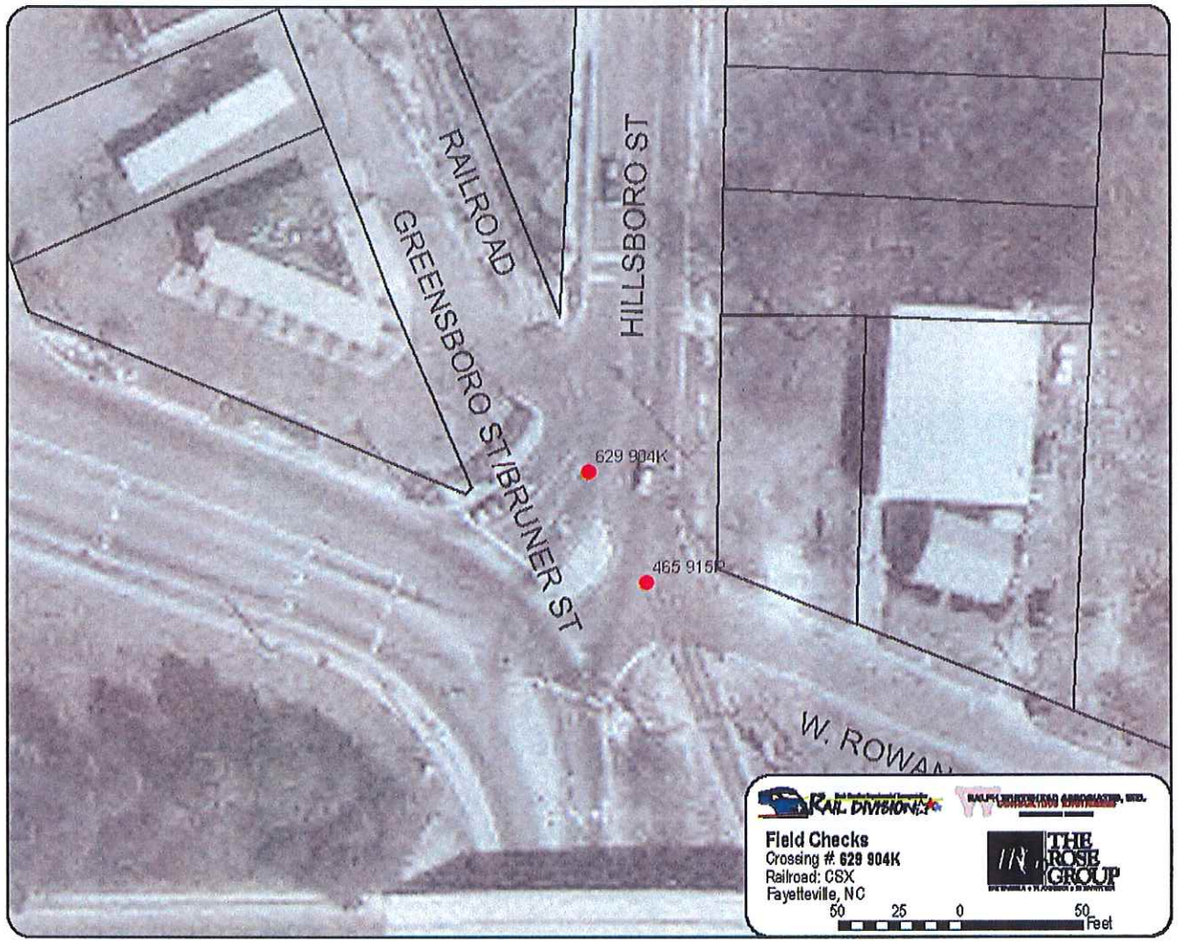


Figure B-24a

Crossing# 629 904K (Hillsboro and Rowan Streets)

Looking Southeast

Looking East on Rowan Street

Looking North

Looking West

Figure B-24b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 905S	AE 208.86	CSX	Moore Street	Minor Tfare	Crossbucks	Residential

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
1050	2		No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

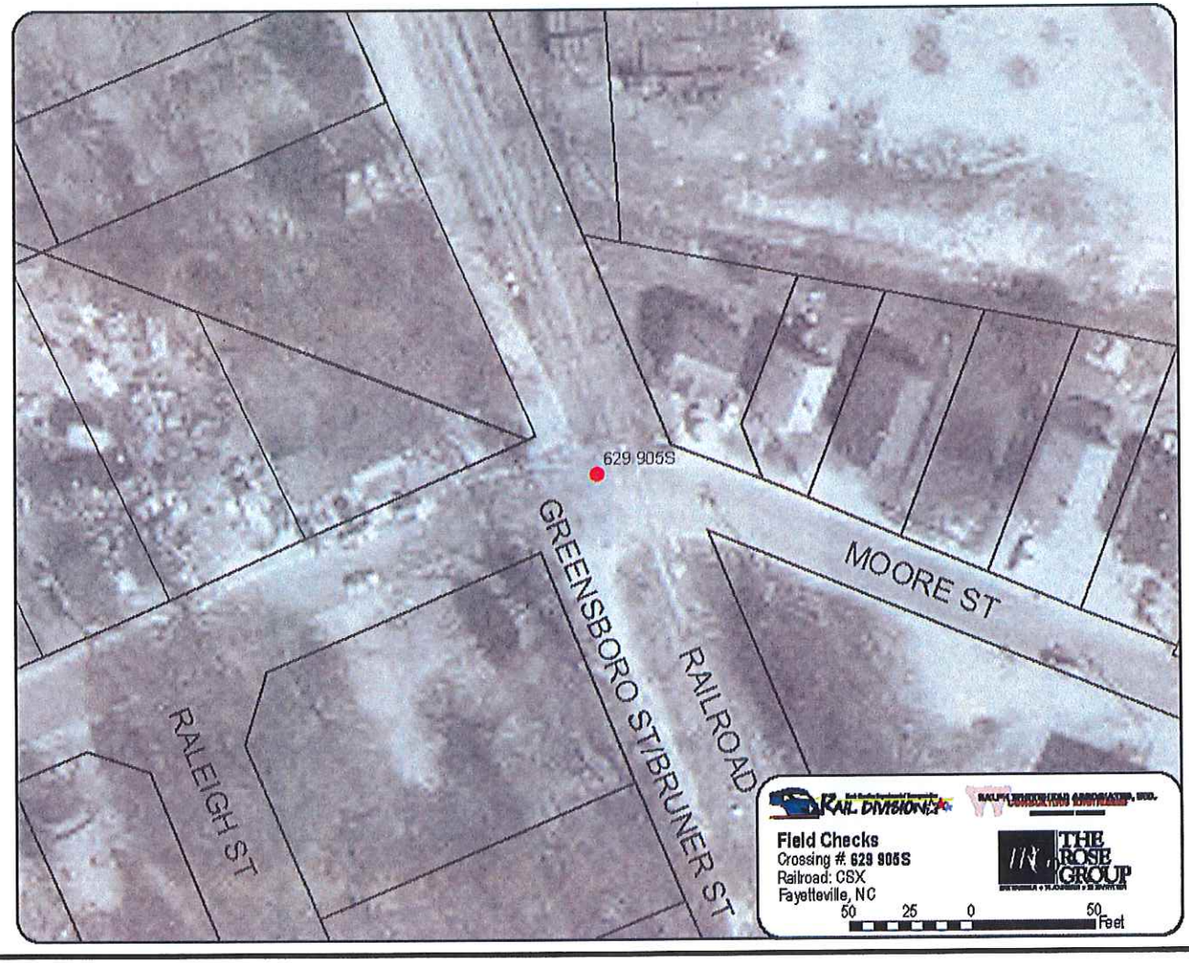


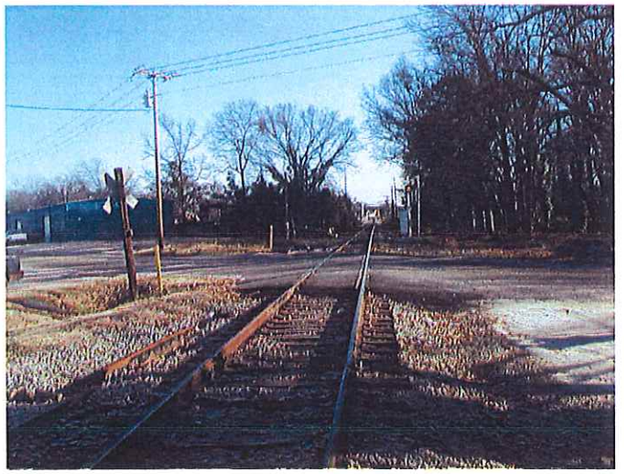
Figure B-25a

Crossing# 629 905S (Moore Street)

Looking East

Looking North

Looking West



Looking South

Figure B-25b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 907F	AE 208.5	CSX	Cumberland Street	Local	Cantilevers	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
4400	2		No	Yes	Local

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

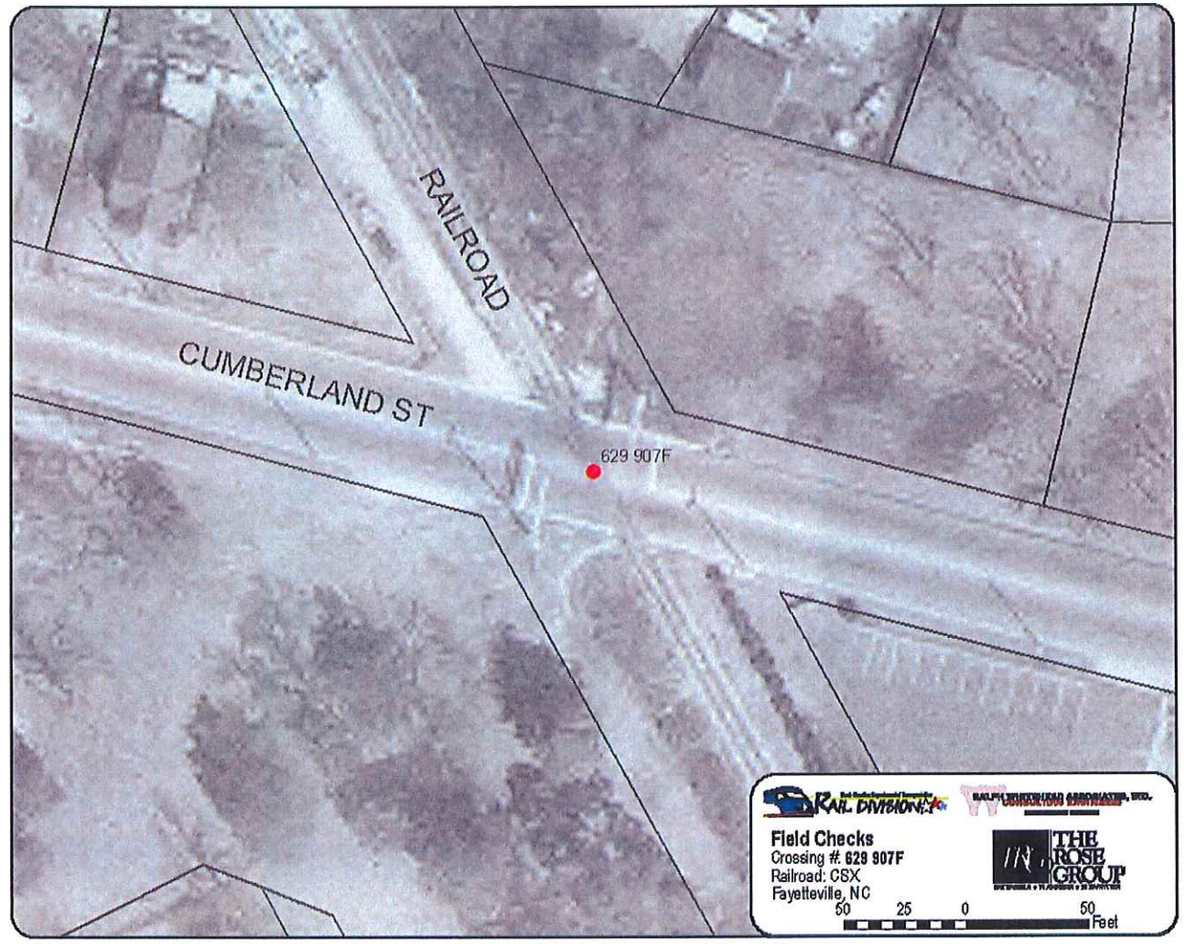
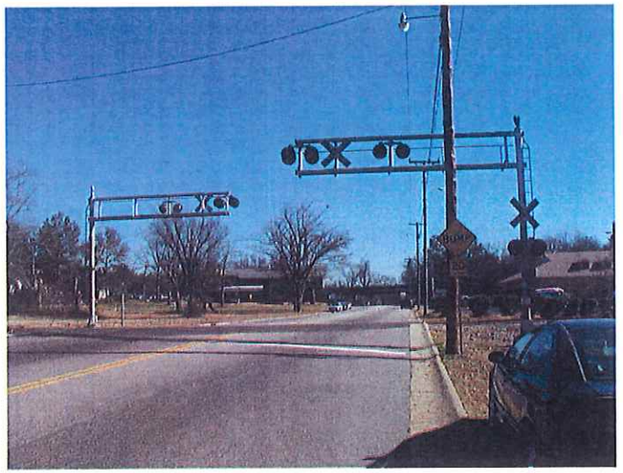
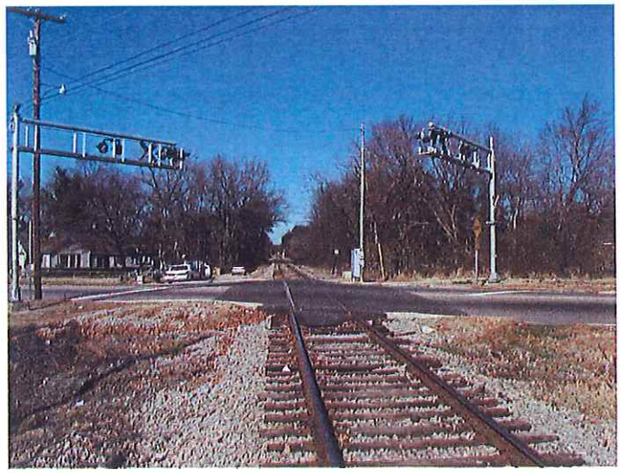


Figure B-26a

Crossing# 629 907F (Cumberland Street)



Looking East



Looking North

Looking West

Looking South

Figure B-26b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 910N	AE 207.7	CSX	Langdon Street	Local	Cantilevers	Institutional

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
9670	2	1-PDO	No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Poor	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

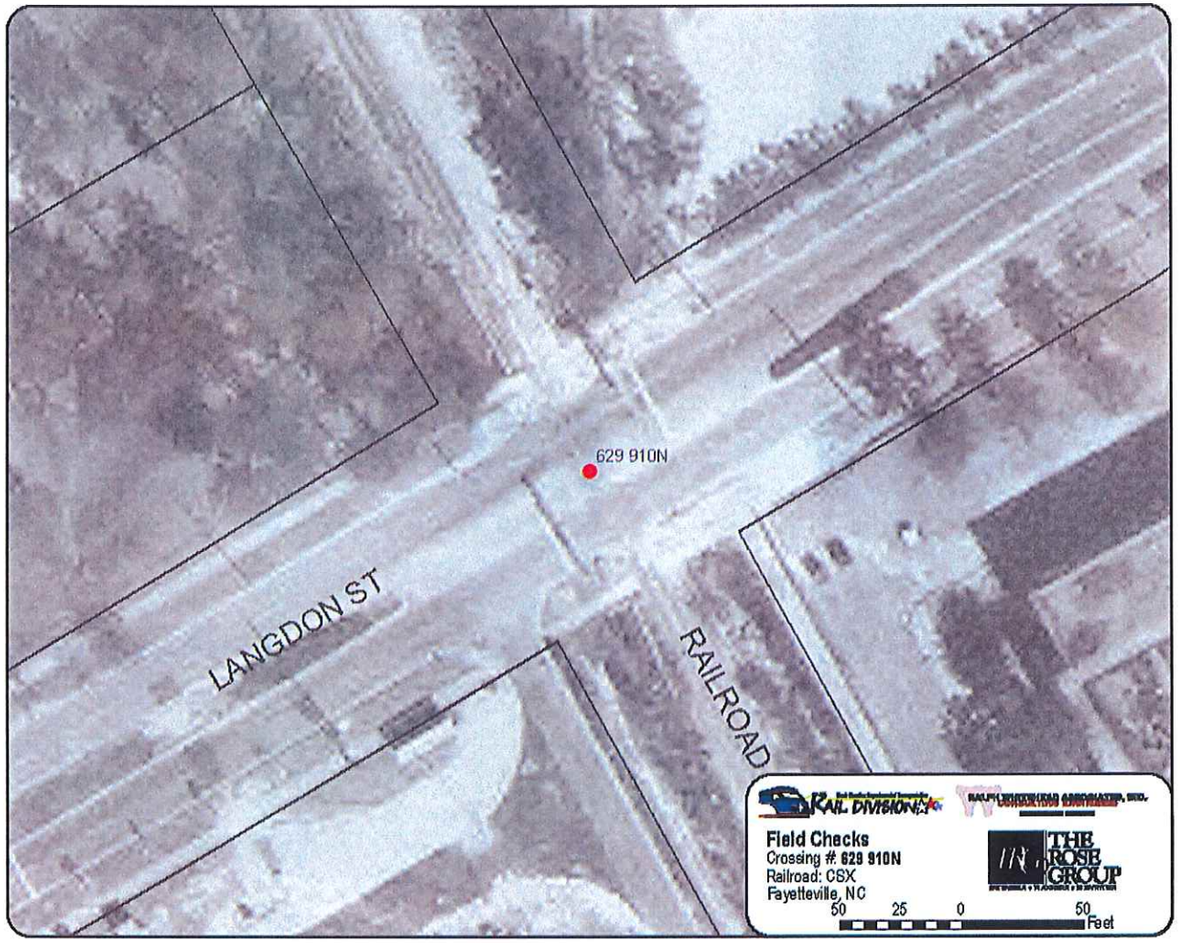


Figure B-27a

Crossing# 629 910N (Langdon Street)

Looking East

Looking North

Looking West

Looking South

Figure B-27b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 911V	AE 207.01	CSX	Jasper Street	Minor Tfare	Cantilevers, Gates	Residential

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
5320	4	1-PDO	Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	Low

Aerials

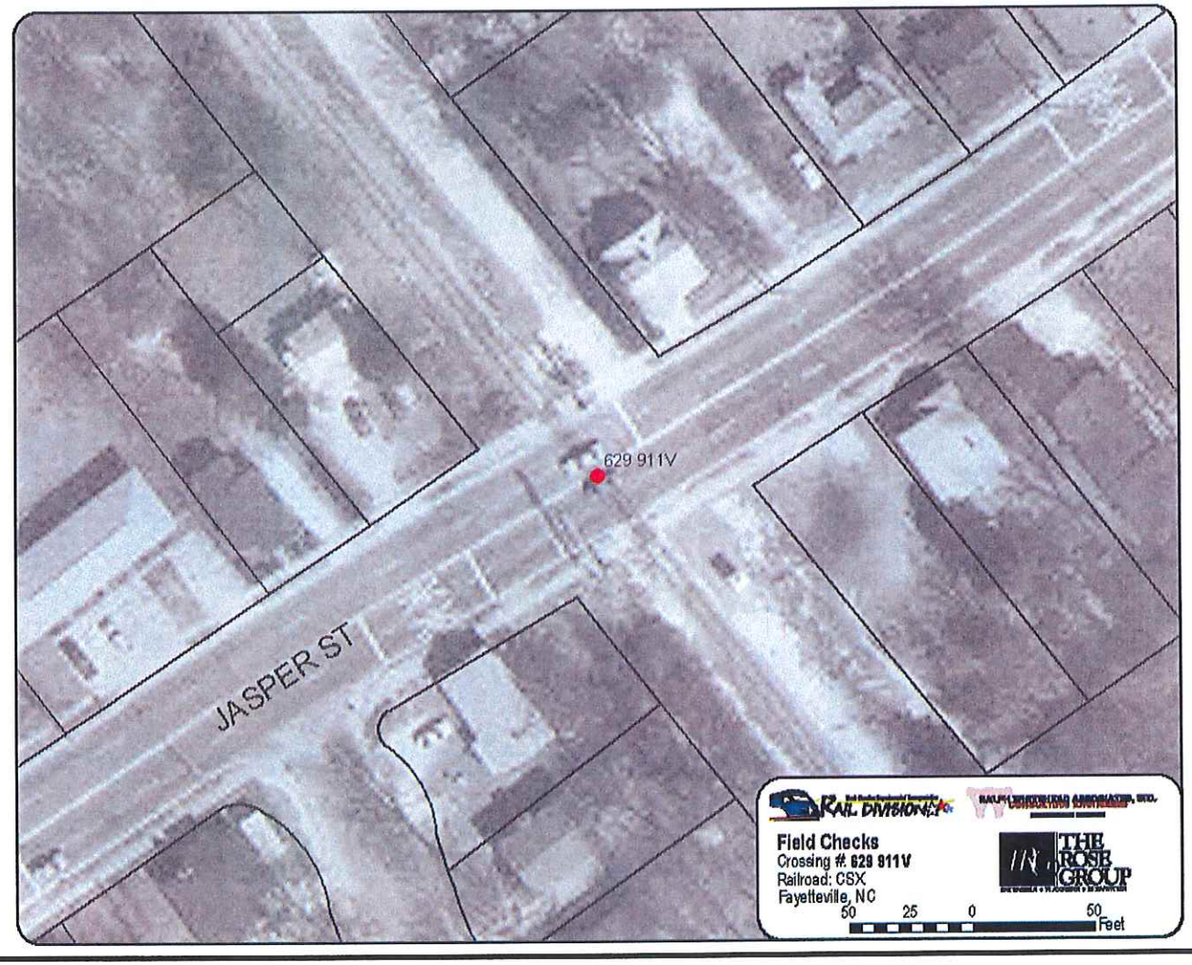


Figure B-28a

Crossing# 629 911V (Jasper Street)

Looking East

Looking North

Looking West

Looking South

Figure B-28b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 912C	AE 206.6	CSX	McLamb Street	Local	Cantilevers	Residential

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
1540	2		Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	Yes

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Med	High	Low	Low

Aerials

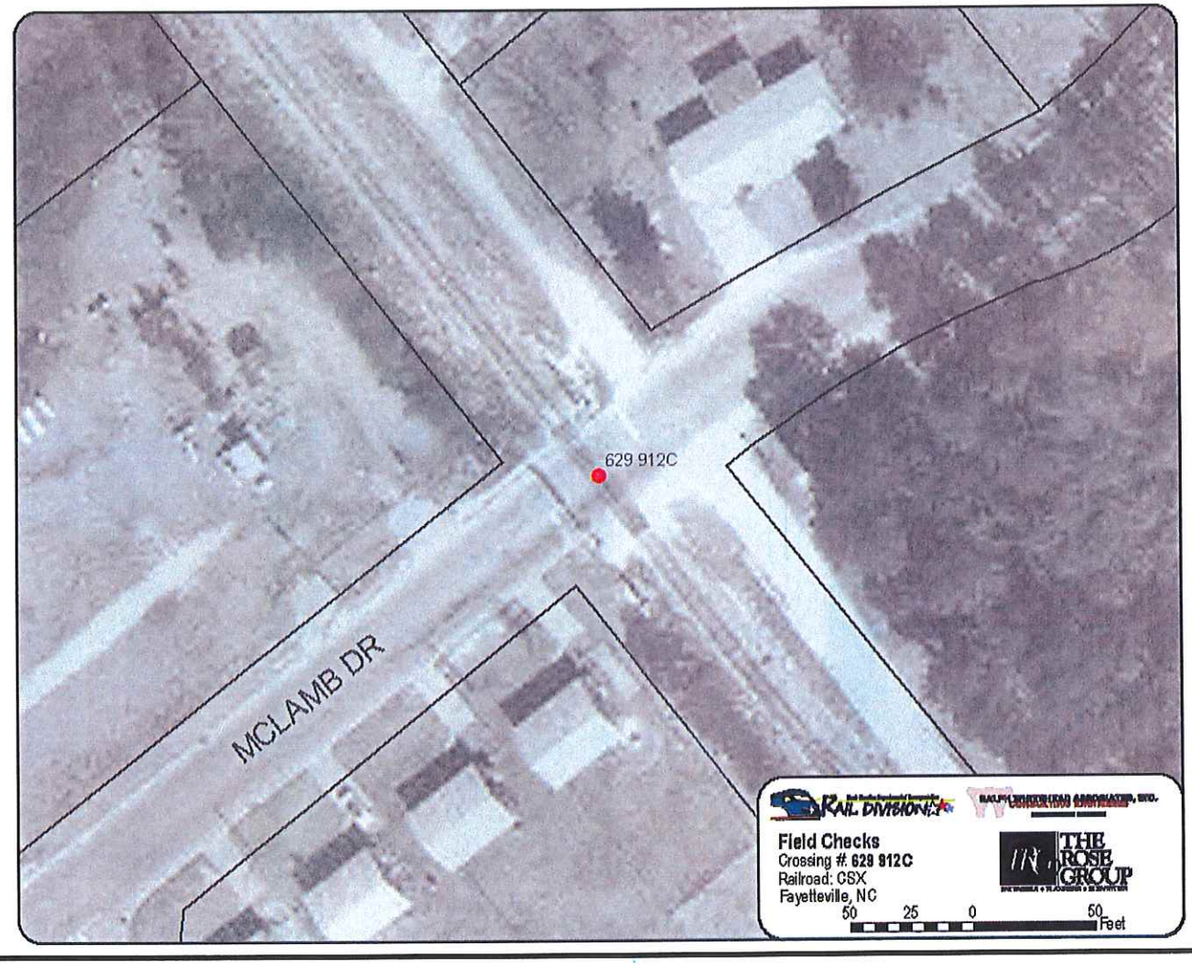


Figure B-29a

Crossing# 629 912C (McLamb Street)

Looking East

Looking North

Looking West

Looking South

Figure B-29b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 913J	AE 205.88	CSX	Country Club Drive	Major Tfare	Cantilevers	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
30150	2		No	Yes	Through

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Poor (asphalt)	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	High	High

Aerials

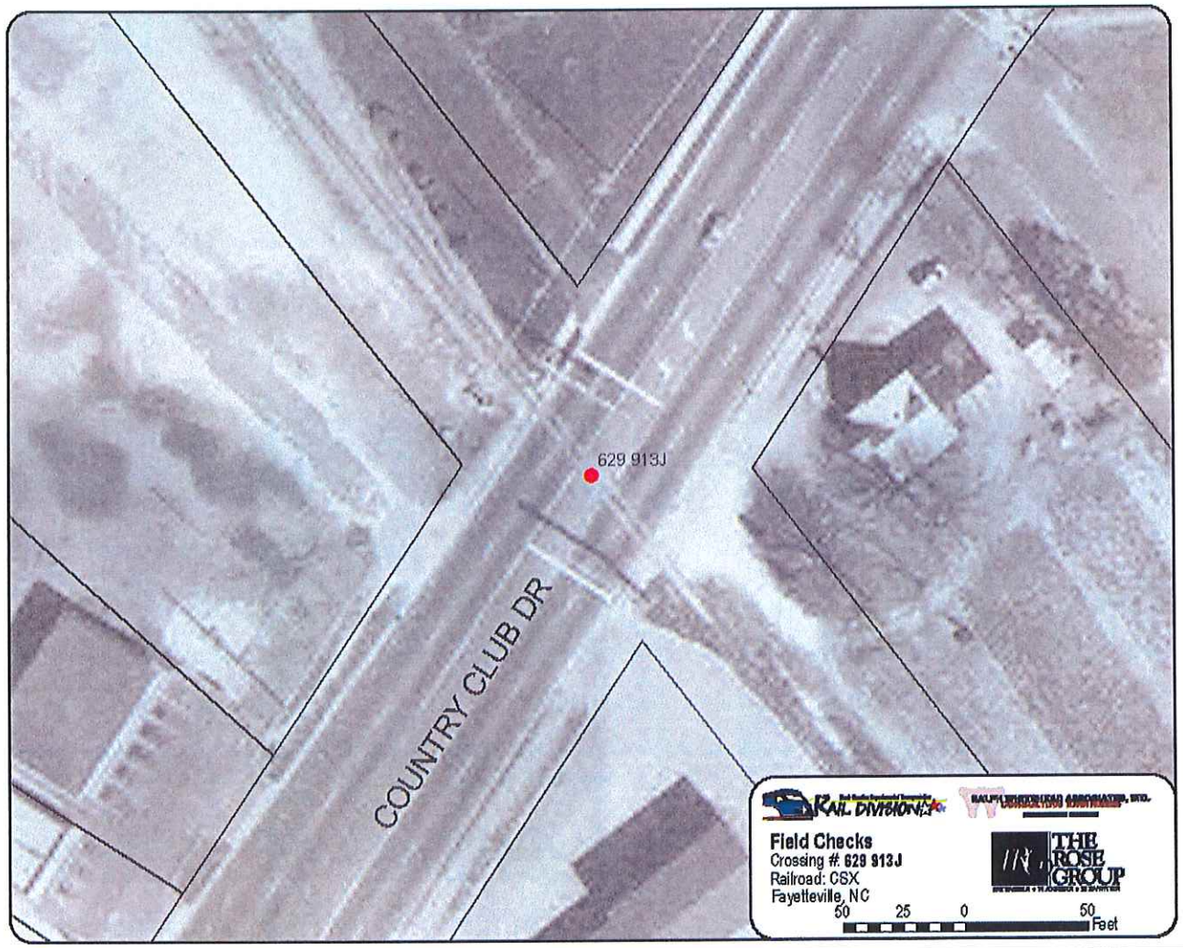


Figure B-30a

Crossing# 629 913J (Country Club Drive)

Looking East

Looking North

Looking West

Looking South

Figure B-30b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
629 914R	AE 204.7	CSX	SR 1614 Shawmill Road	Minor Tfare	Gates	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
13170	2		Yes	Yes	Local

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☑	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	High	Low	Low

Aerials

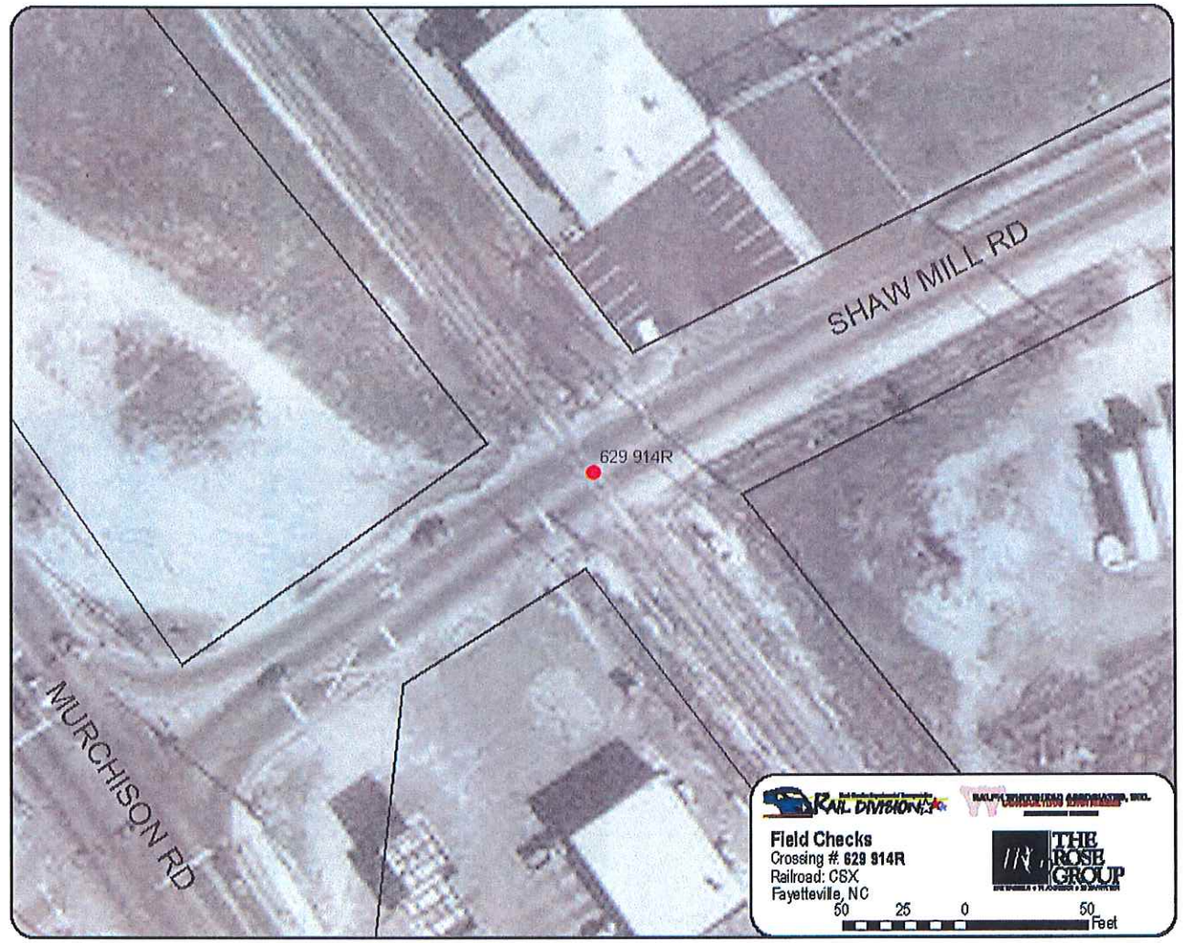
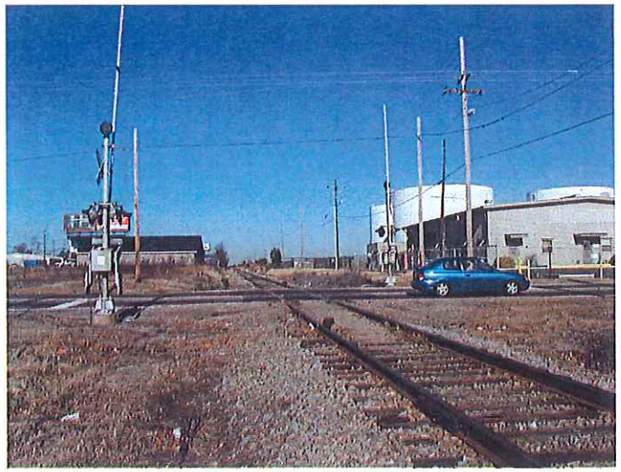


Figure B-31a

Crossing# 629 914R (Shawmill Road)

Looking East



Looking North

Looking West

Looking South

Figure B-31b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 772E	AF 209.72	CSX	SR 2299 Russell Street	Major Tfare	None	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
8900	2		Yes	Yes	Local

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Poor	Good	Good	Yes

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Low	Low	Low	Low

Aerials

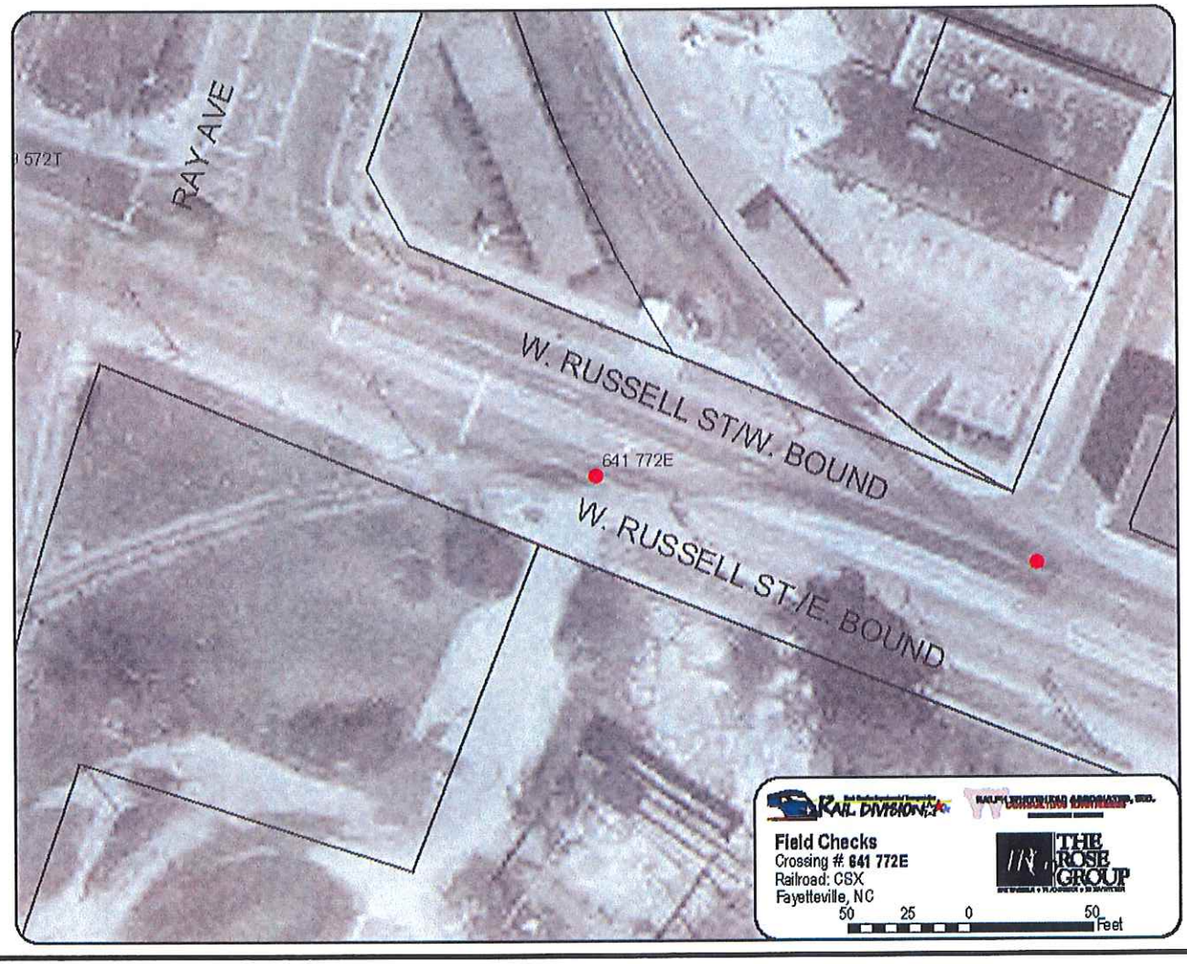


Figure B-32a

Crossing# 641 772E (Russell Street)

Looking East

Looking North

Looking West

Looking South

Figure B-32b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 773L	AE 209.73	CSX	Maxwell Street	Local	None	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
390	2		Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

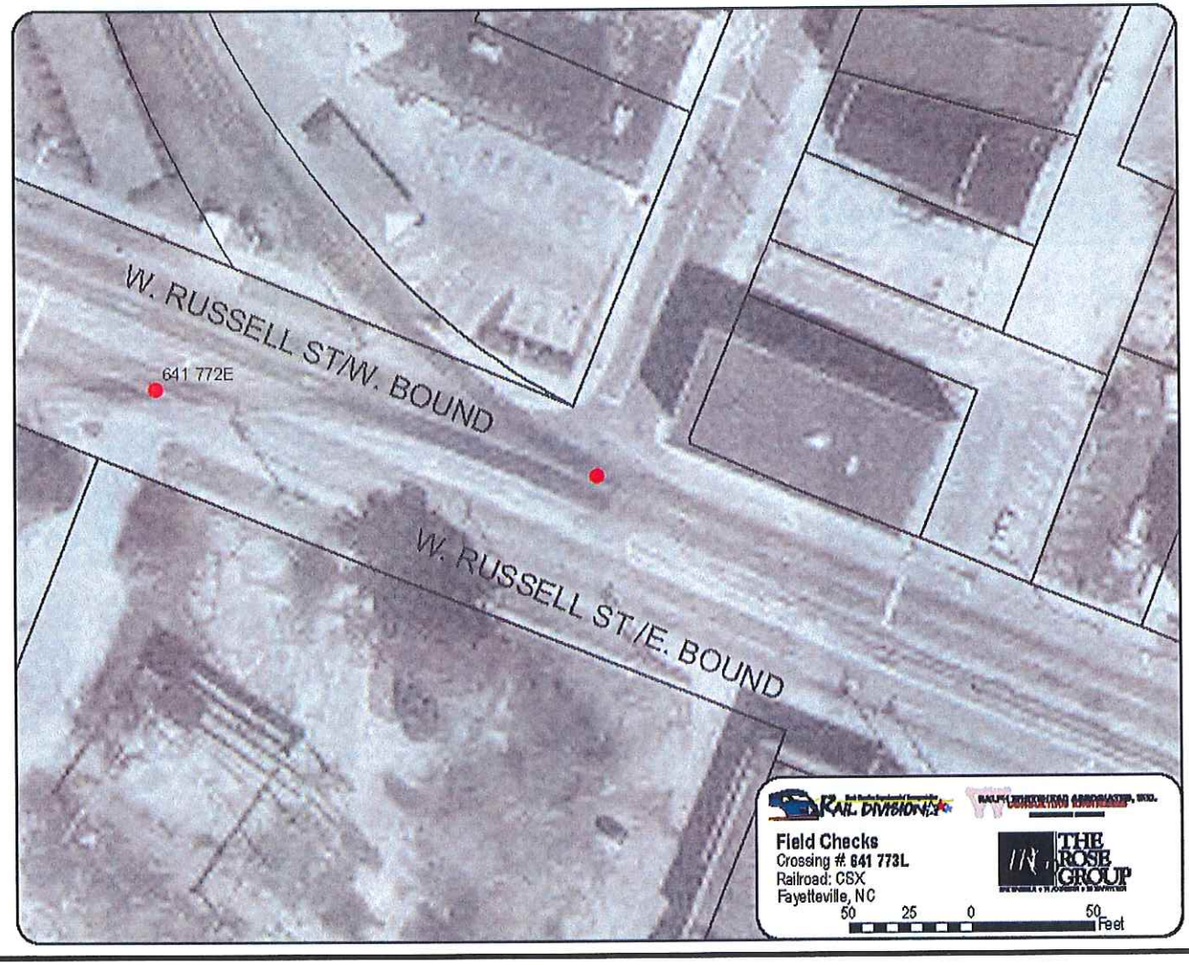
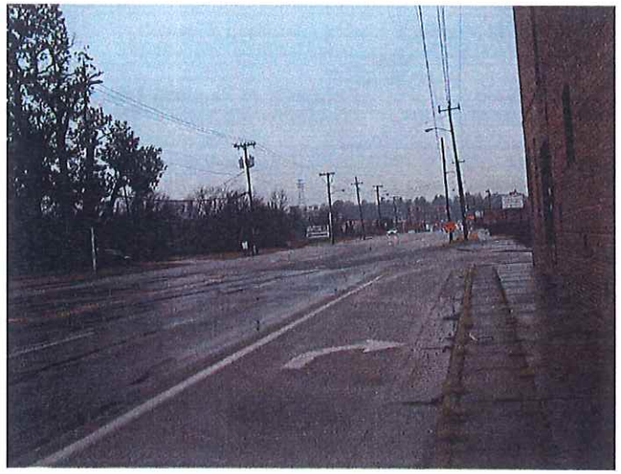


Figure B-33a

Crossing# 641 773L (Maxwell Street)

Looking East



Looking Southwest

Looking West

Looking Southeast

Figure B-33b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 774T	AE 209.8	CSX	Donaldson Street	Local	None	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
790	2		Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	Yes

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Low	Low	Low	Low

Aerials

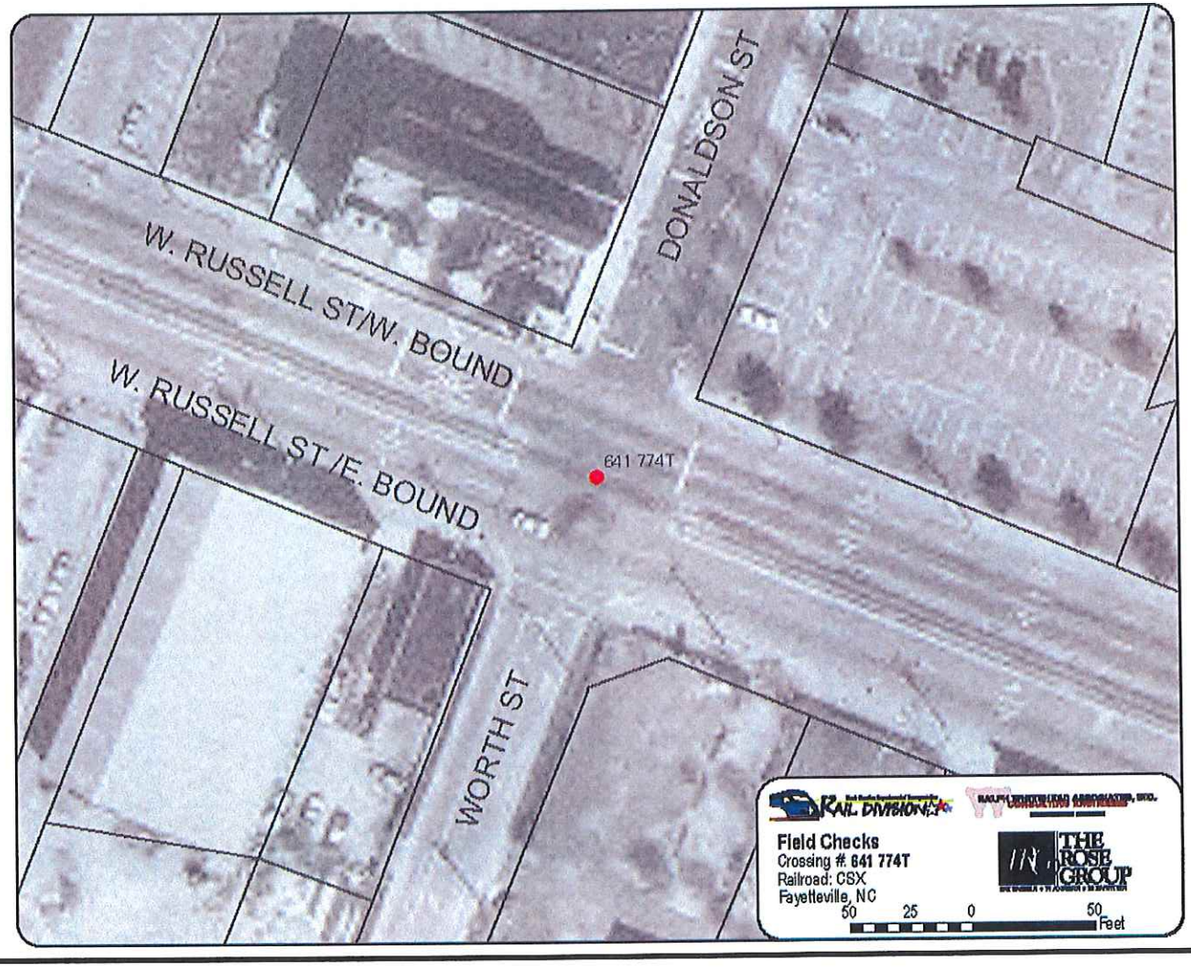


Figure B-34a

Crossing# 641 774T (Donaldson Street)

Looking East

Looking North

Looking West

Looking South

Figure B-34b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 775A	AE 209.9	CSX	SR 2311 Gillespie Street	Major Tfare	Flashers	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
9300	2		Yes	Yes	Local

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☑	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

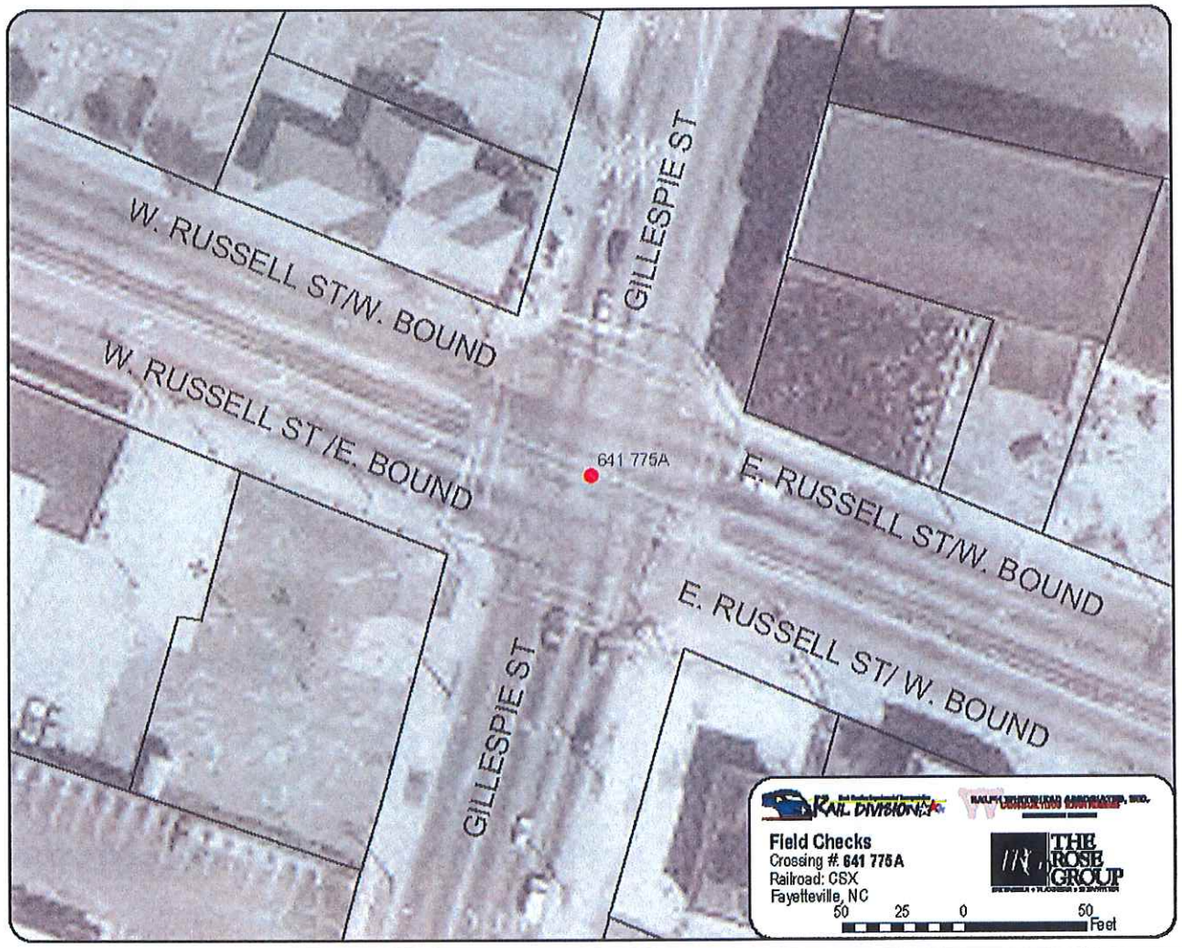


Figure B-35a

Crossing# 641 775A (Gillespie Street)

Looking East

Looking North

Looking West

Looking South

Figure B-35b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 776G	AE 209.97	CSX	Dick Street	Local	Crossbuck	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
1250	2		Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	Yes

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Low	High	Low	Low

Aerials

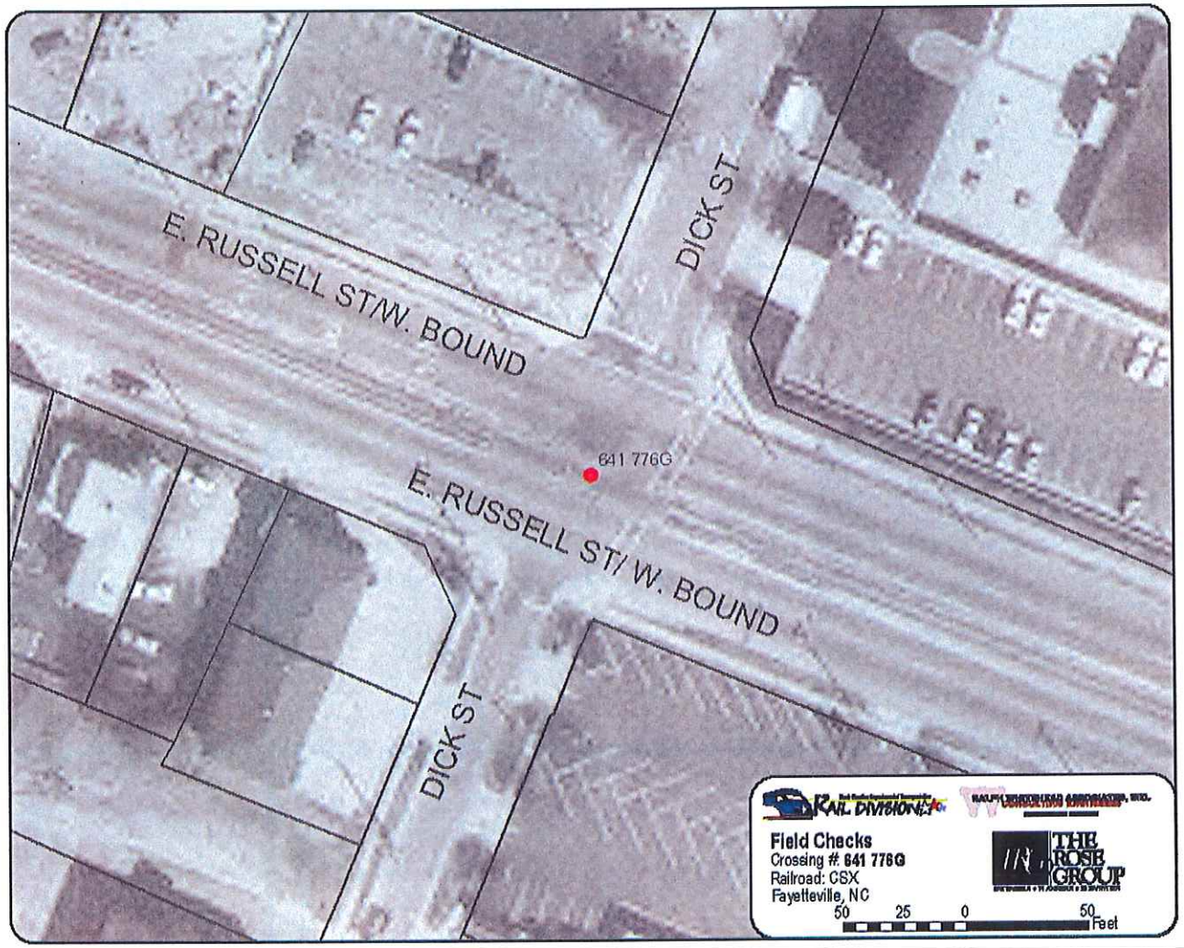


Figure B-36a

Crossing# 641 776G (Dick Street)

Looking East

Looking North

Looking West

Looking South

Figure B-36b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 778V	AE 210.1	CSX	SR 2299 Cool Springs Road	Minor Tfare	Cantilevers	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
1360	2		Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☑	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	Low

Aerials

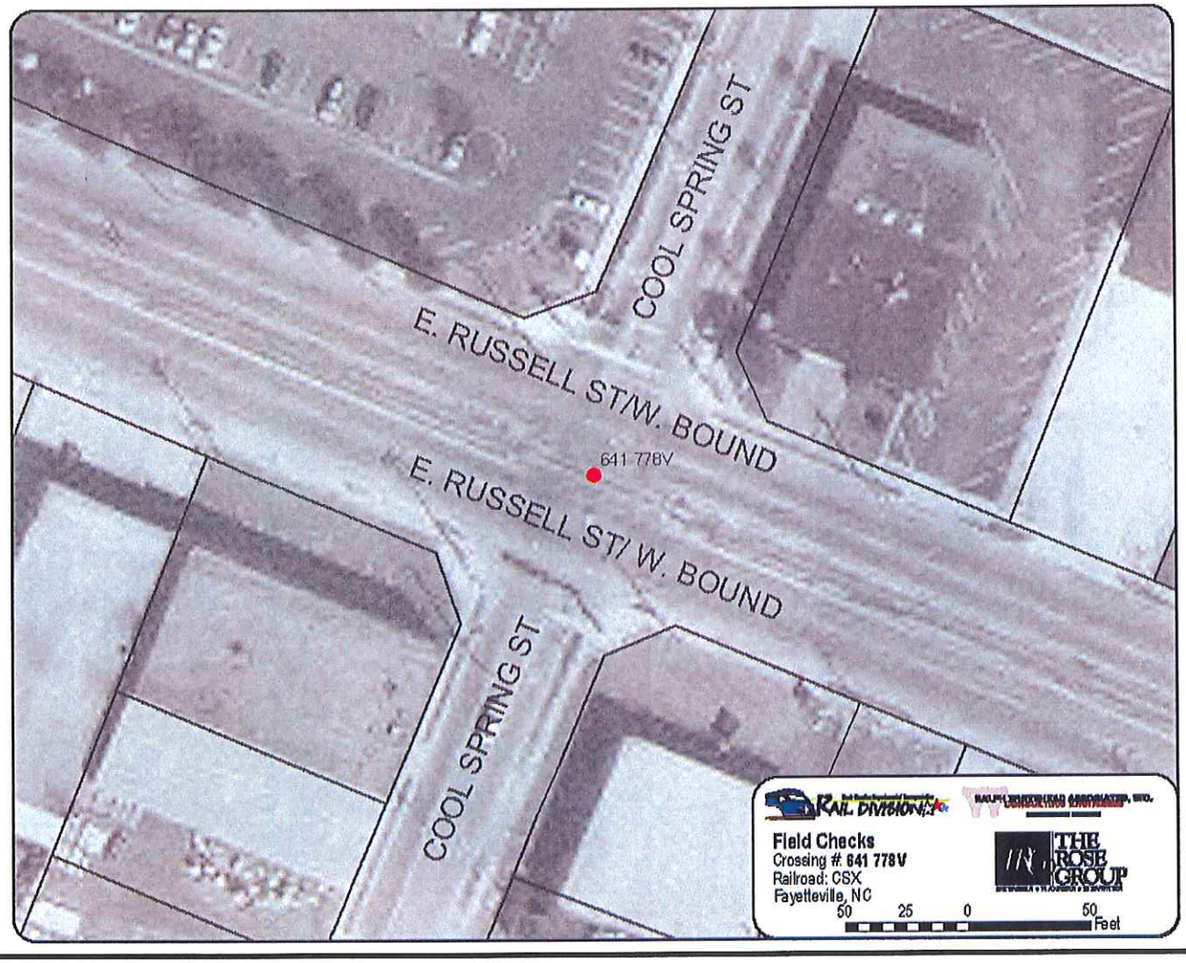


Figure B-37a

Crossing# 641 778V (Cool Springs Road)

Looking East

Looking North

Looking West

Looking South

Figure B-37b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 780W	AF 210.19	CSX	Alexander Street	Local	Crossbucks	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
960	2		Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	Yes

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Med	Low	Low	Low

Aerials

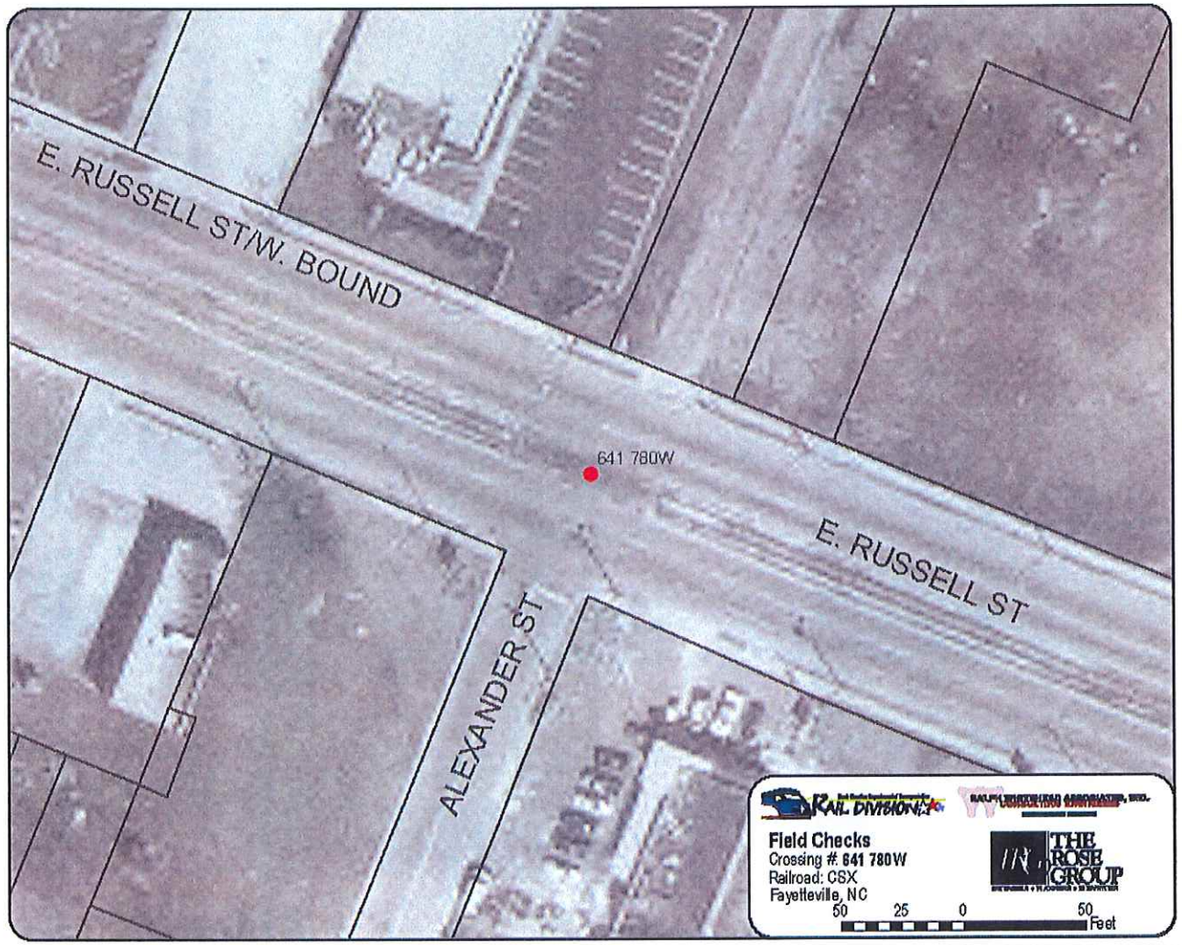


Figure B-38a

Crossing# 641 780W (Alexander Street)

Looking East

Looking North

Looking West

Looking South

Figure B-38b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 781D	AF 210.22	CSX	Kennedy Street	Local	None	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
910	2		Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	Yes

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Low	Low	Low	Low

Aerials

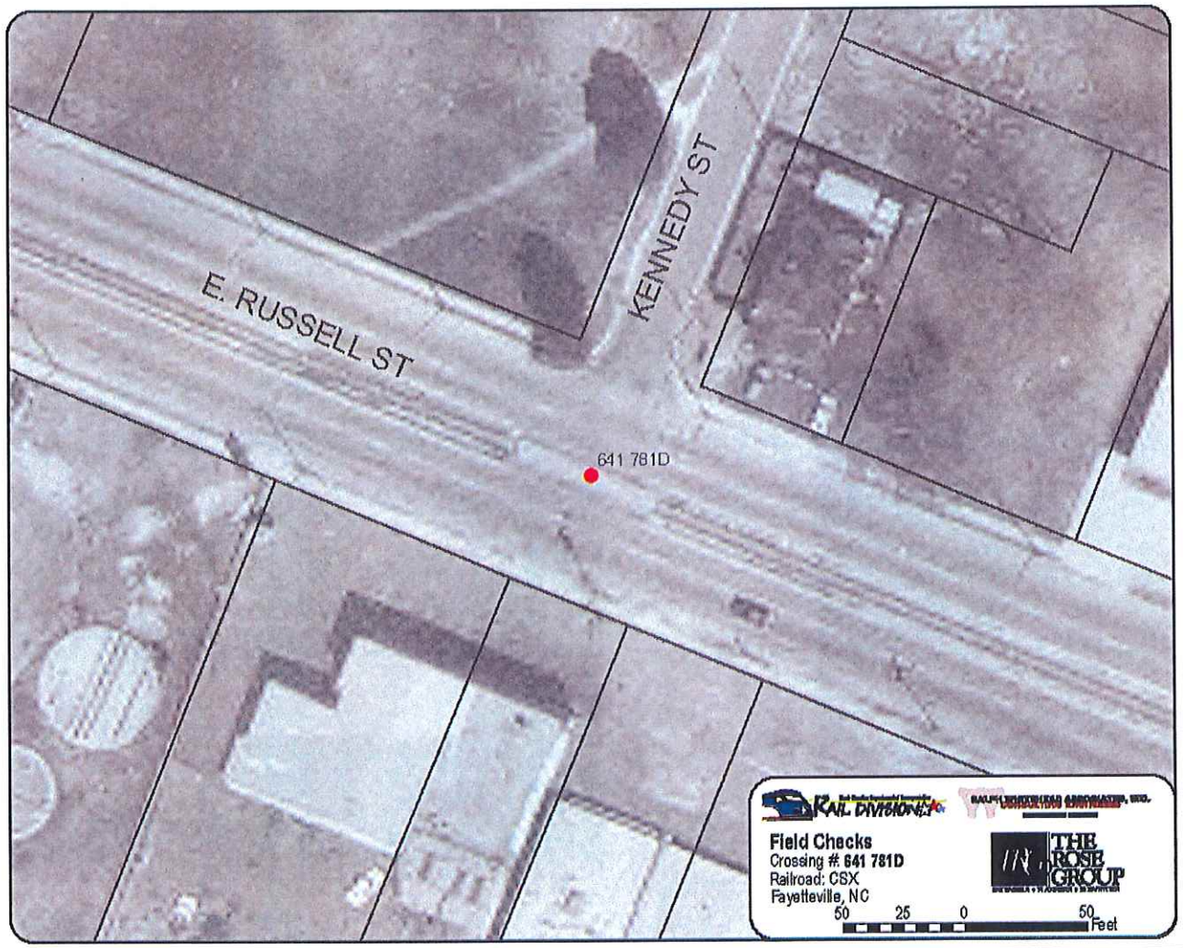


Figure B-39a

Crossing# 641 781D (Kennedy Street)

Looking East

Looking North

Looking West

Looking South

Figure B-39b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 782K	AF 210.4	CSX	SR 2299 Old Wilmington Road	Minor Tfare	Cantilevers	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
3930	2	1-PDO	Yes	Yes	Local

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☑	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	Low

Aerials

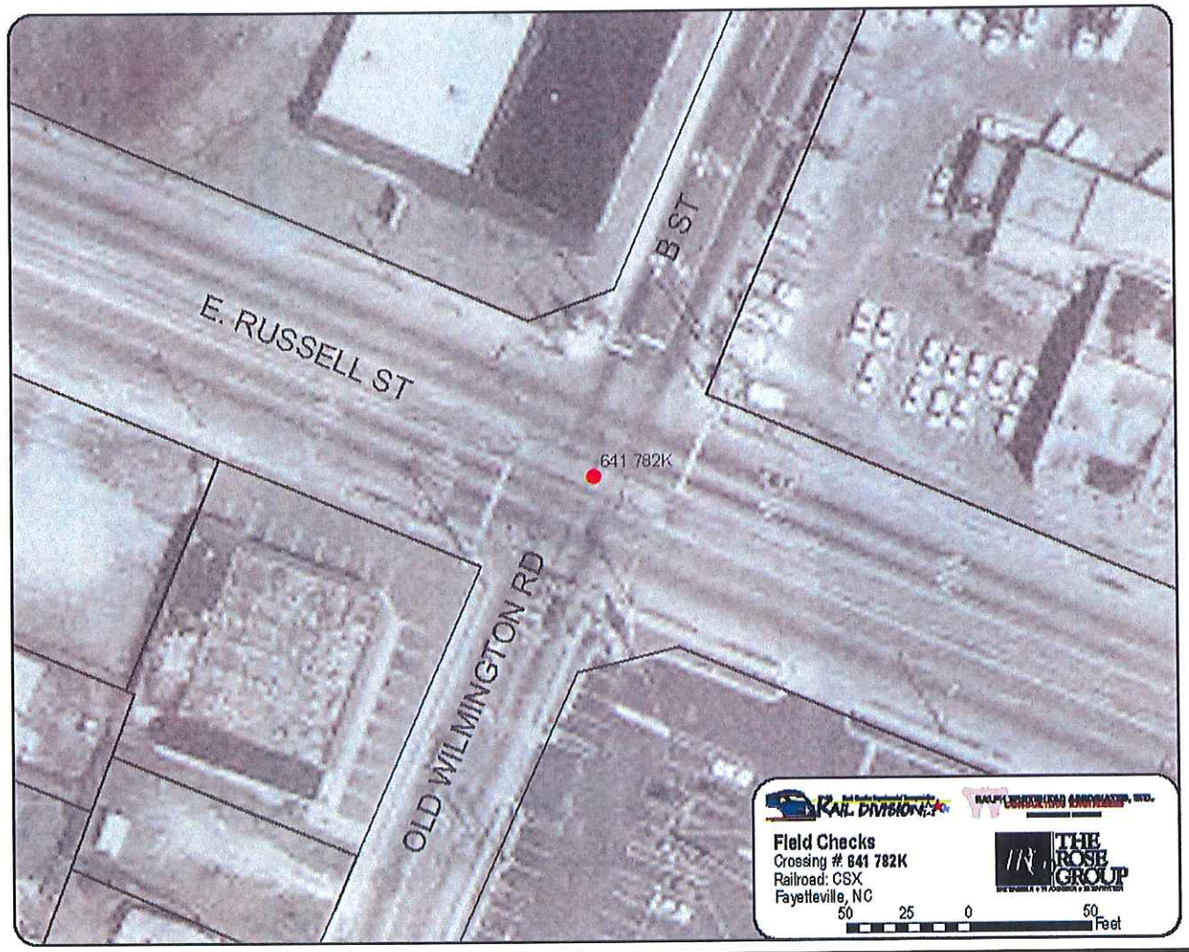
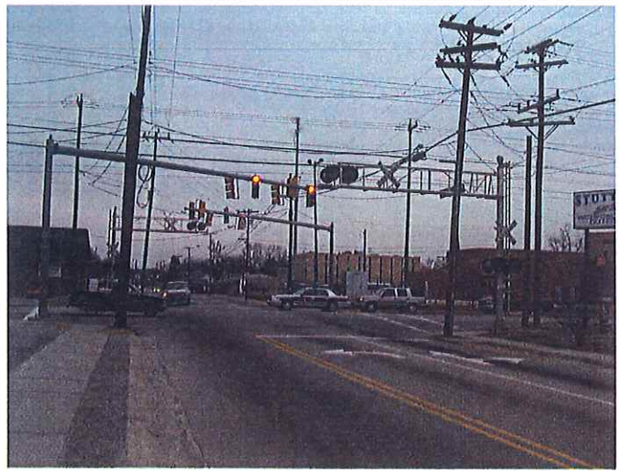


Figure B-40a

Crossing# 641 782K (Old Wilmington Road)

Looking East



Looking North

Looking West

Looking South

Figure B-40b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 783S	AF 210.48	CSX	Burns Street	Local	Crossbucks	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
260	2		Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	Yes

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Low	Low	Low	Low

Aerials

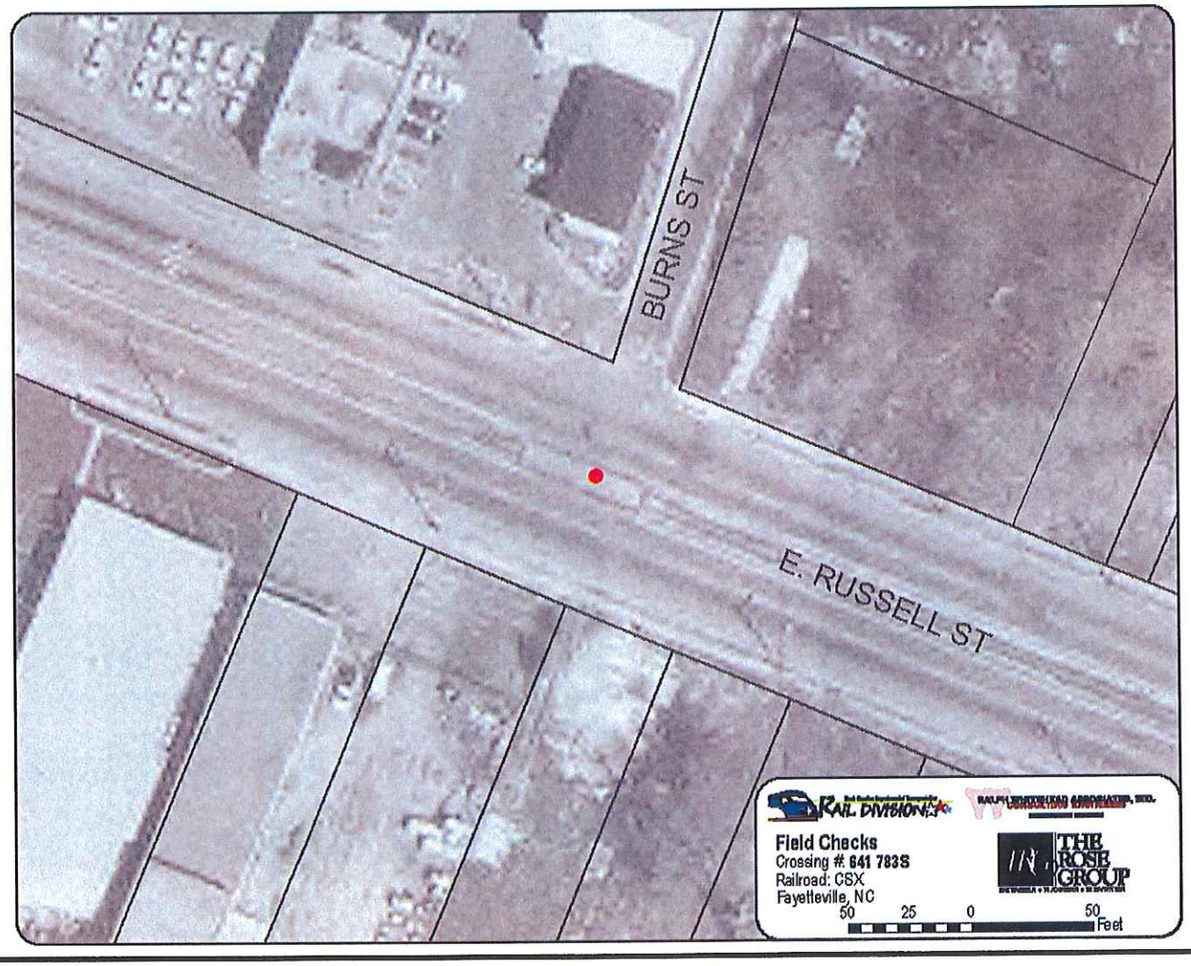
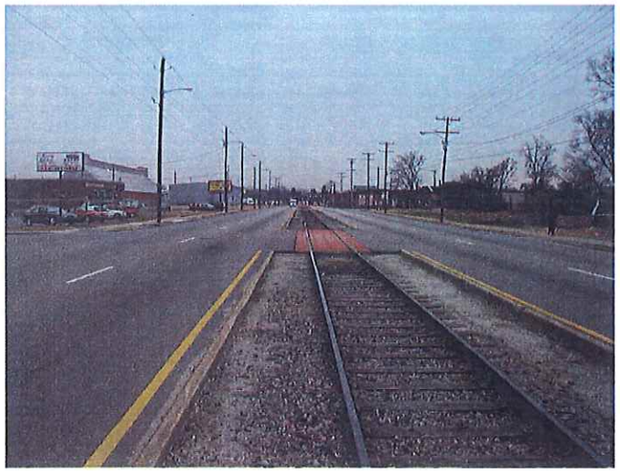
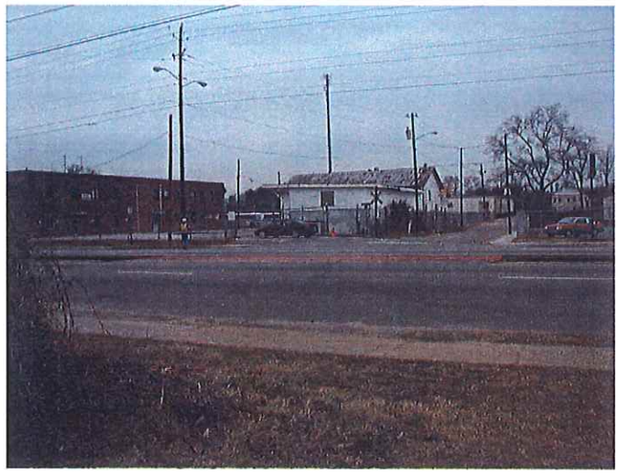


Figure B-41a

Crossing# 641 783S (Burns Street)



Looking East



Looking North

Looking West

Looking South

Figure B-41b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 785F	AF 210.54	CSX	C Street	Local	Crossbucks	Industrial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
110	2		Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	High	Low	Low

Aerials

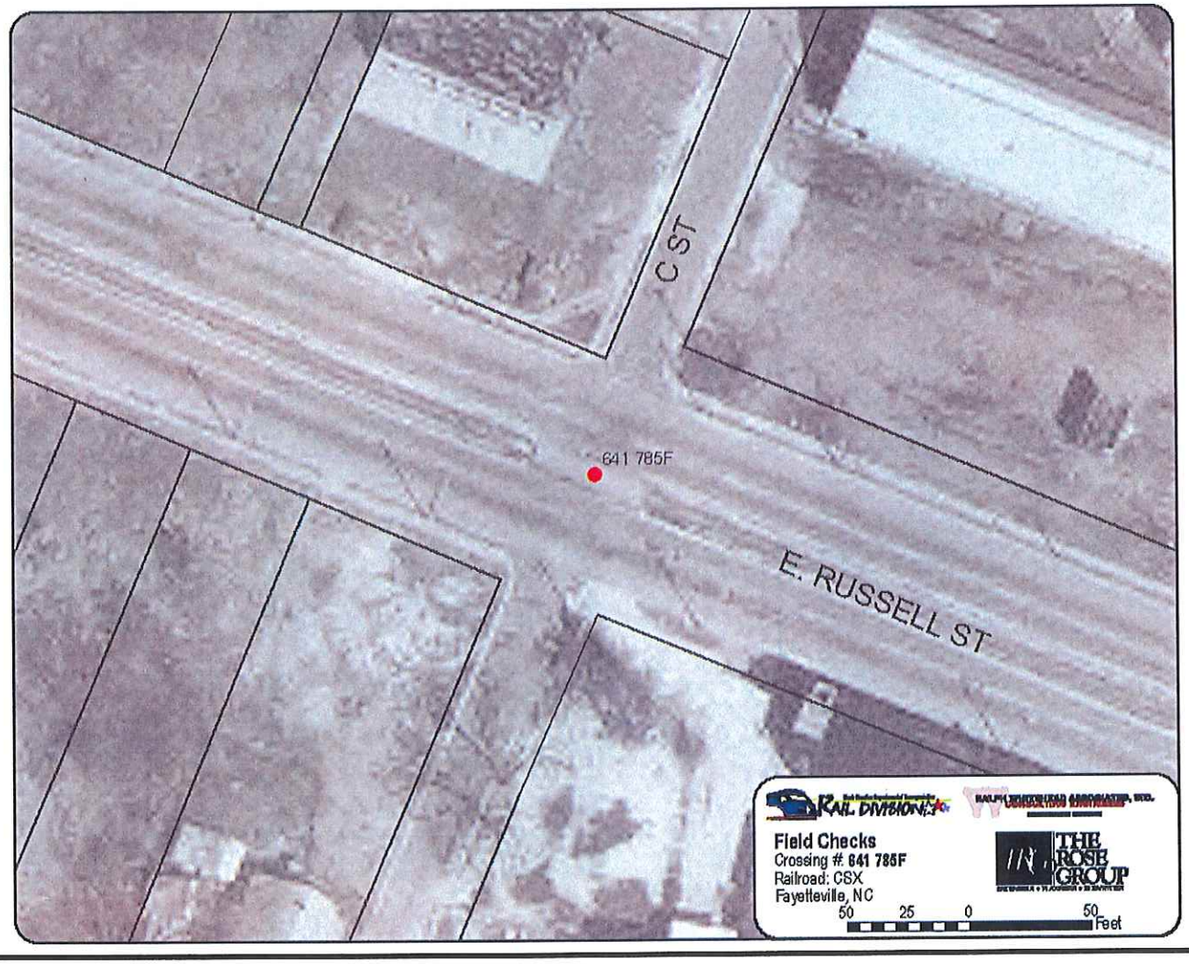
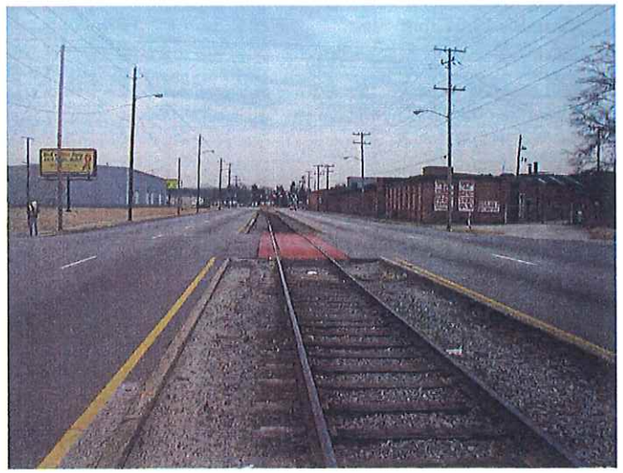


Figure B-42a

Crossing# 641 785F (C Street)



Looking East

Looking North

Looking West

Looking South

Figure B-42b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 787U	AF 210.4	CSX	SR 2299 East Russell Street	Major Tfare	Flashers	Industrial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
6640	2		Yes	Yes	Local

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Poor	Good	Good	Yes

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Med	Low	Low	High

Aerials

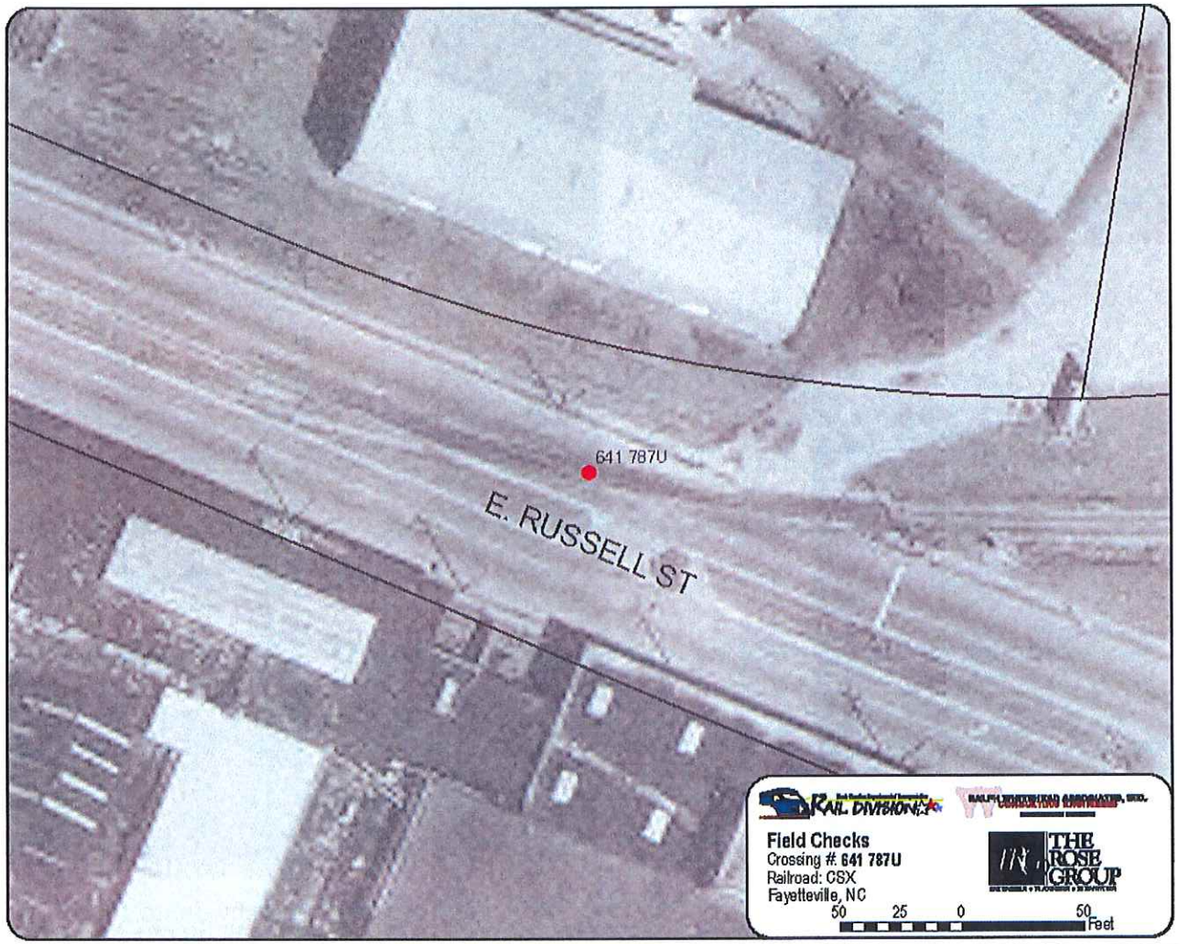
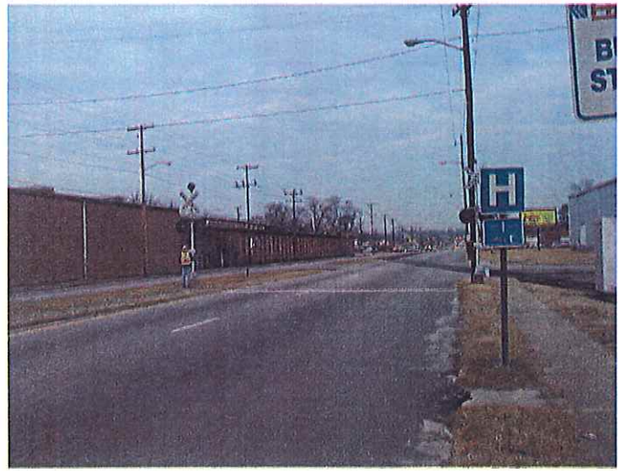


Figure B-43a

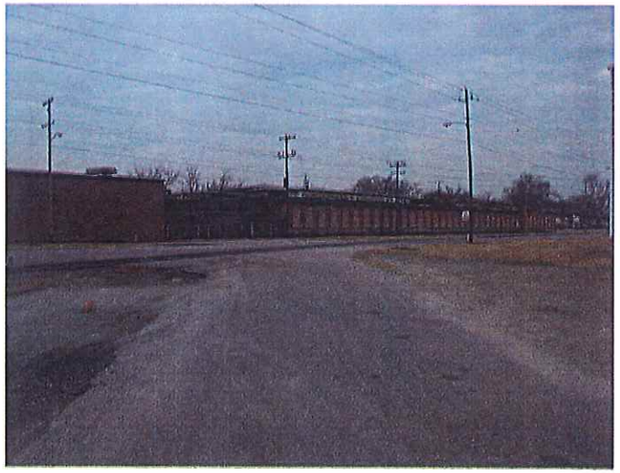
Crossing# 641 787U (Russell Street)

Looking East

Looking Southwest



Looking West



Looking South from driveway

Figure B-43b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 788B	AF 210.7	CSX	US 301 Eastern Boulevard	Major Tfare	Cantilevers, Gates	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
26130	2		Yes	Yes	Through

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☑	☐	Good	Poor (rubber)	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	High	Low

Aerials

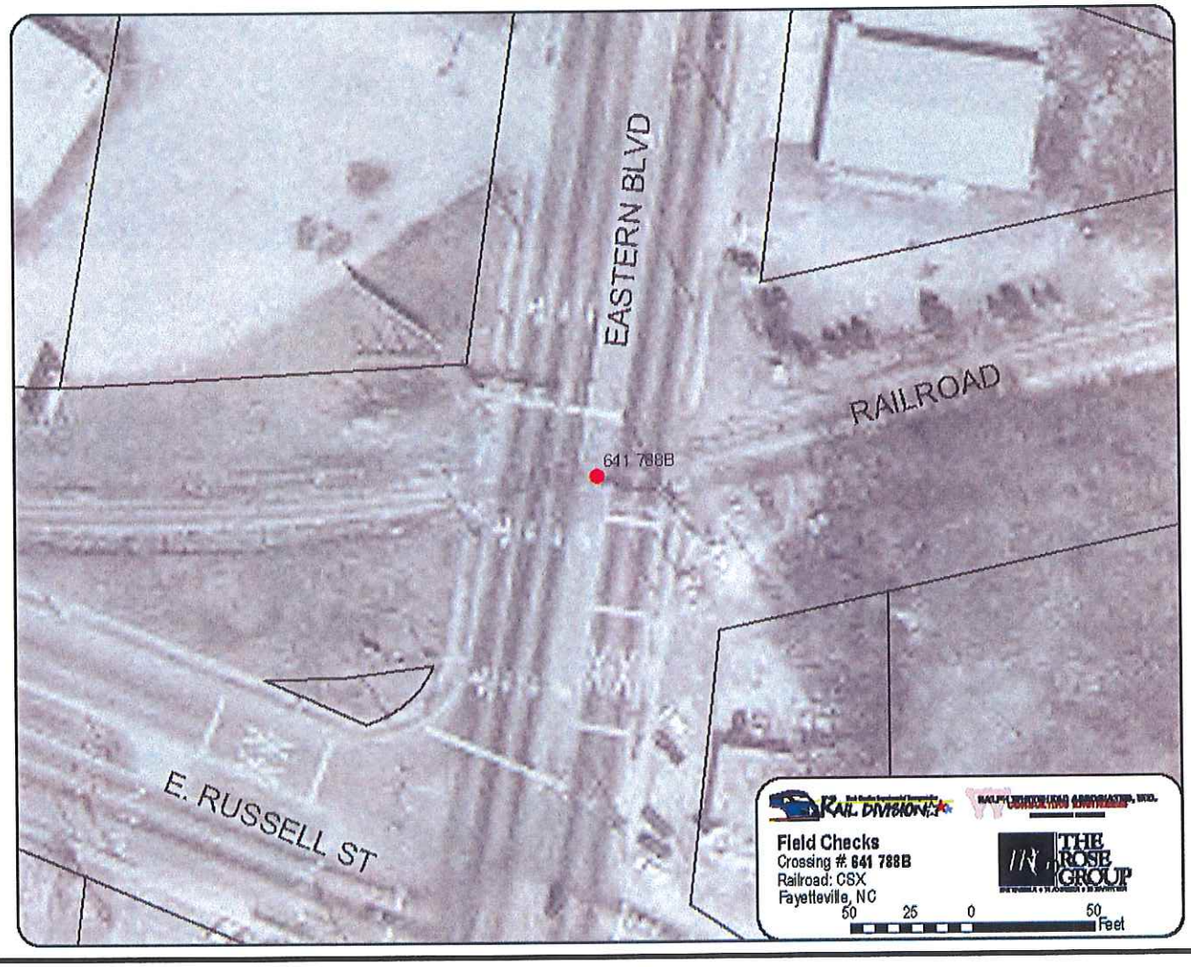
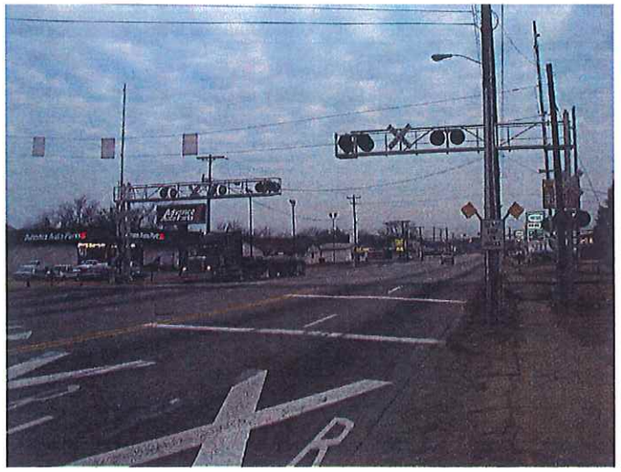


Figure B-44a

Crossing# 641 788B (Eastern Boulevard)

Looking East



Looking North

Looking West

Looking South

Figure B-44b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 789H	AF 210.77	CSX	King Street	Local	Crossbucks	Industrial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
410	2	1-injury	No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	Yes

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Low	Low	Low	Low

Aerials

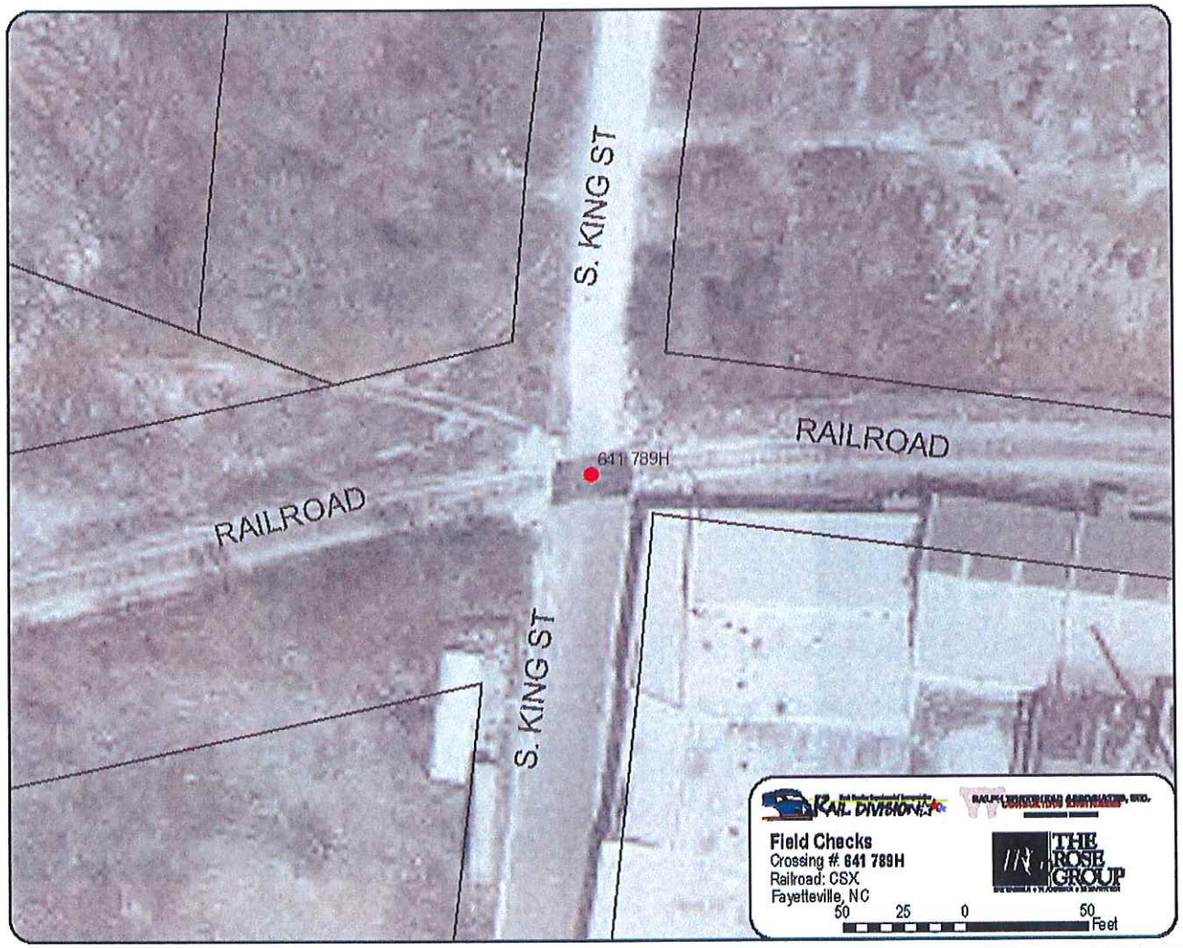
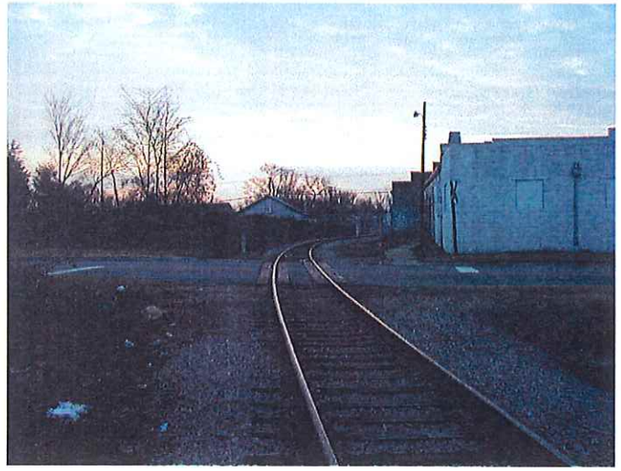


Figure B-45a

Crossing# 641 789H (King Street)



Looking East

Looking North

Looking West

Looking South

Figure B-45b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 790C	AF 210.87	CSX	Racepath Street	Local	Crossbucks	Industrial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
680	2		No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	Yes

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
Low	Low	Low	Low

Aerials

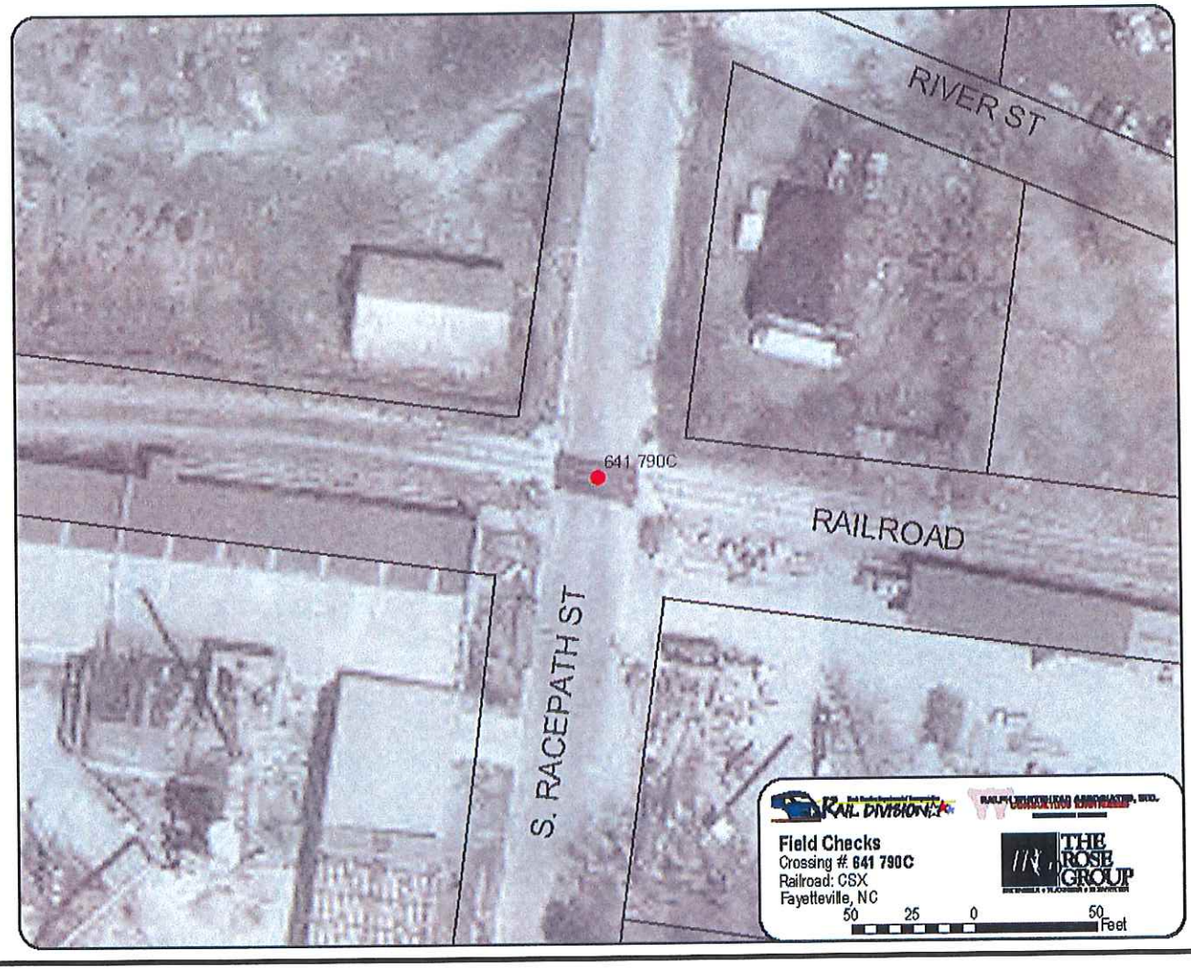
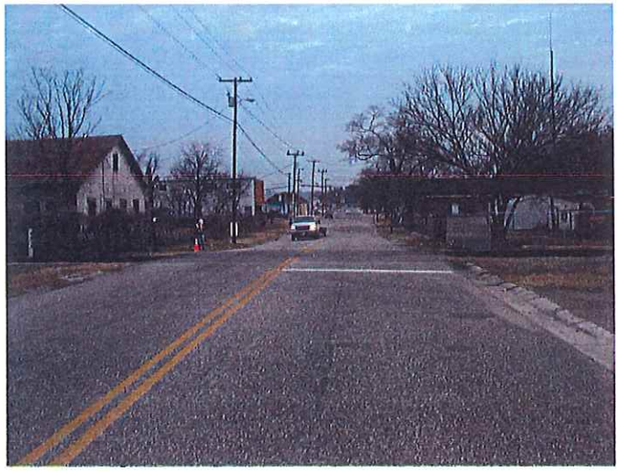


Figure B-46a

Crossing# 641 790C (Racepath Street)

Looking East



Looking North

Looking West

Looking South

Figure B-46b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 791J	AF 210.95	CSX	Broad Street	Local	Gates	Industrial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
3520	2	2-PDO	No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	Low

Aerials

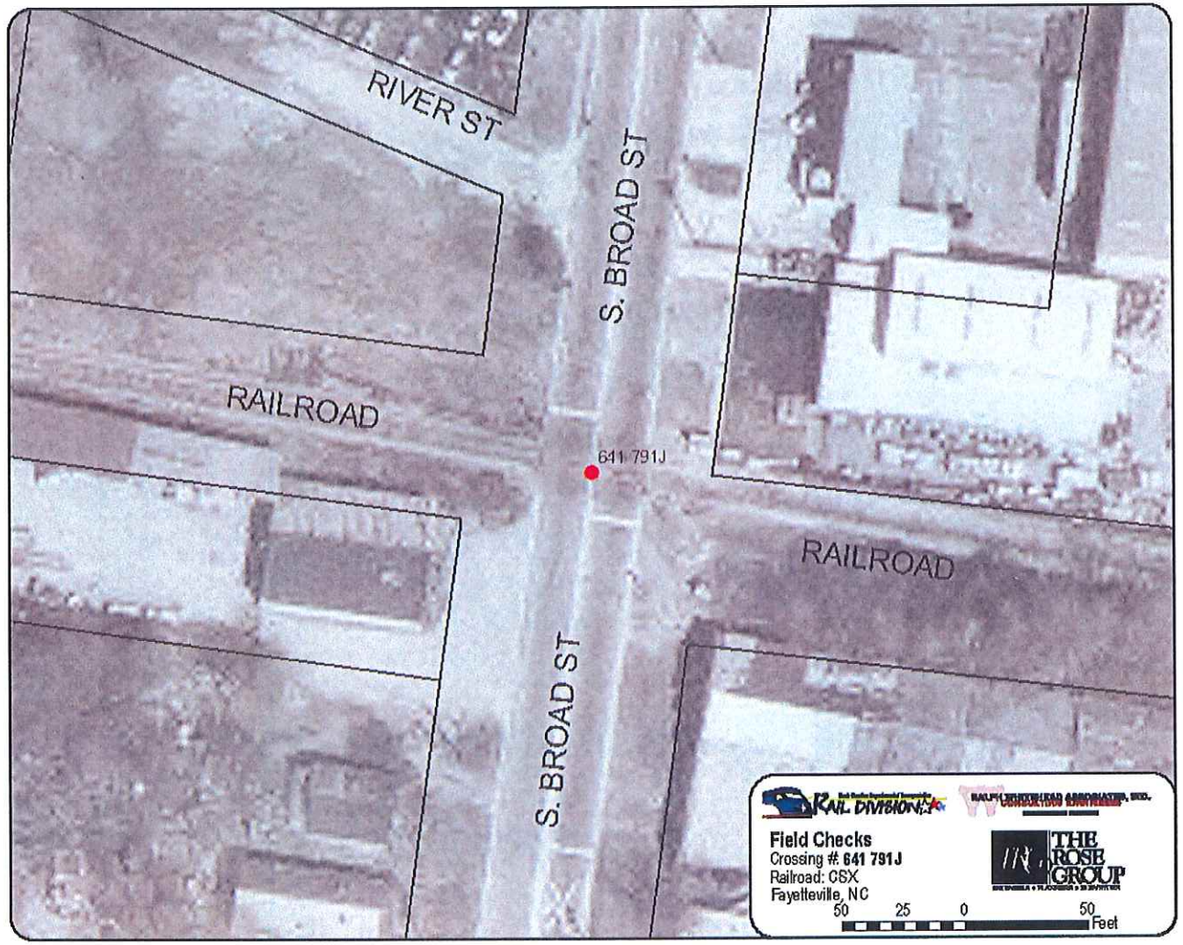
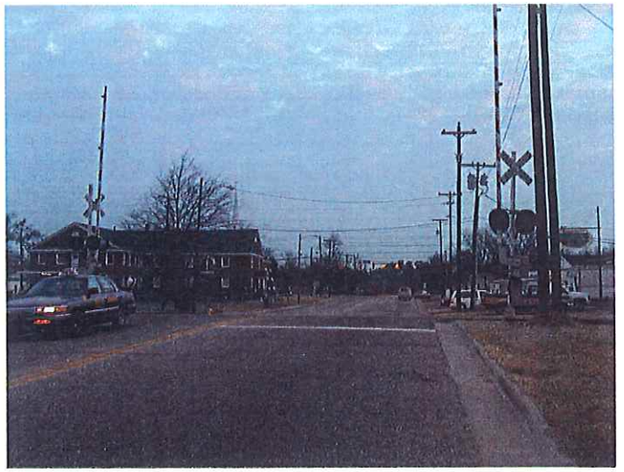


Figure B-47a

Crossing# 641 791J (Broad Street)

Looking East



Looking North

Looking West

Looking South

Figure B-47b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 792R	AF 211.32	CSX	SR 2200 Deep Creek Road	Local	Gates	Industrial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
2060	2	1-injury	Yes	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	Low

Aerials

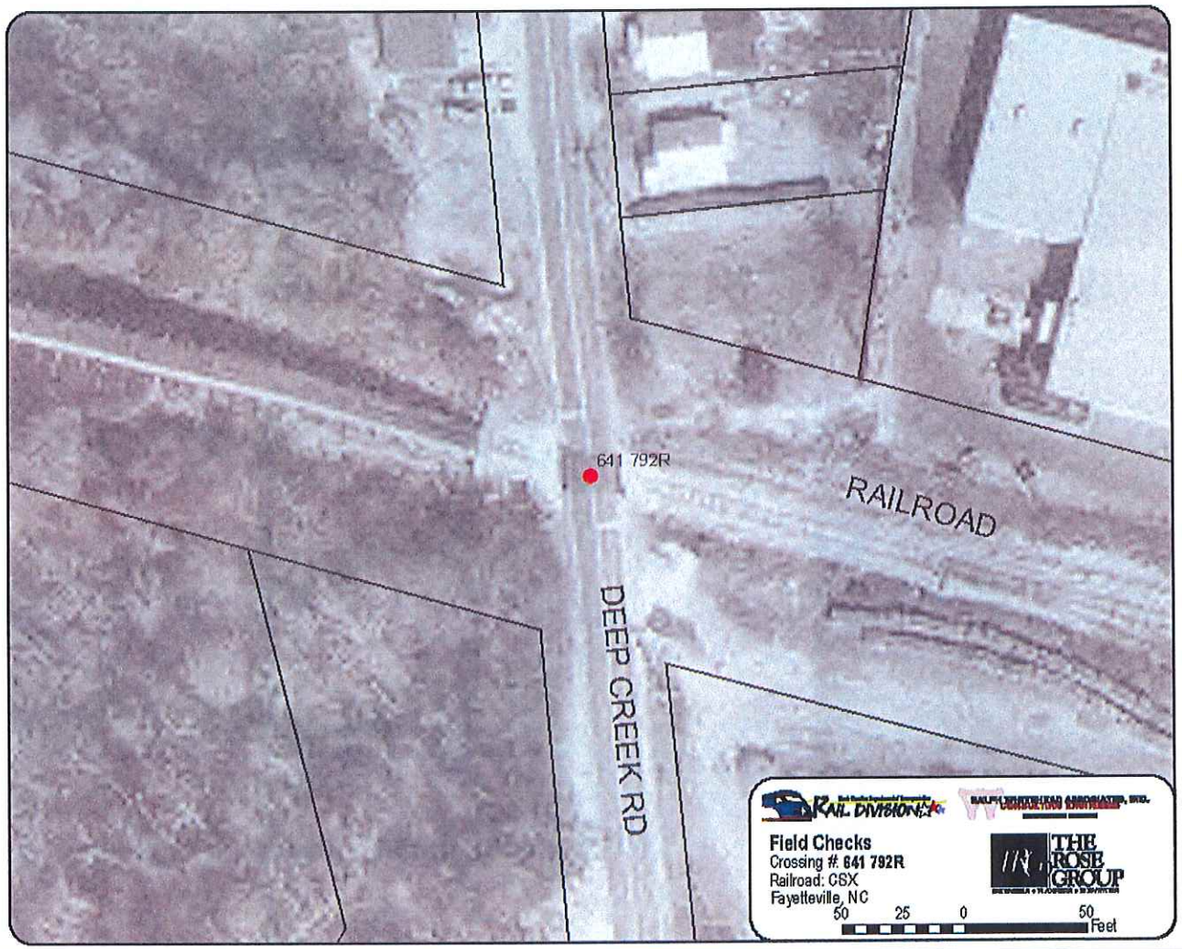
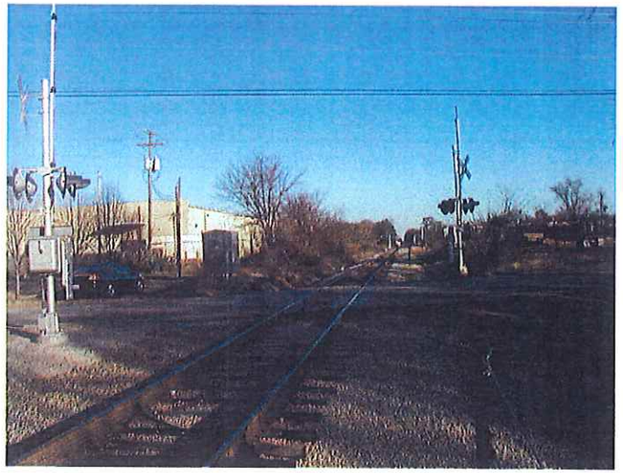


Figure B-48a

Crossing# 641 792R (Deep Creek Road)



Looking East

Looking North

Looking West

Looking South

Figure B-48b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 793X	AF 212.5	CSX	NC 53/NC 210	Major Tfare	Cantilevers	Commercial

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
16180	2		No	Yes	Through

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	High	High

Aerials

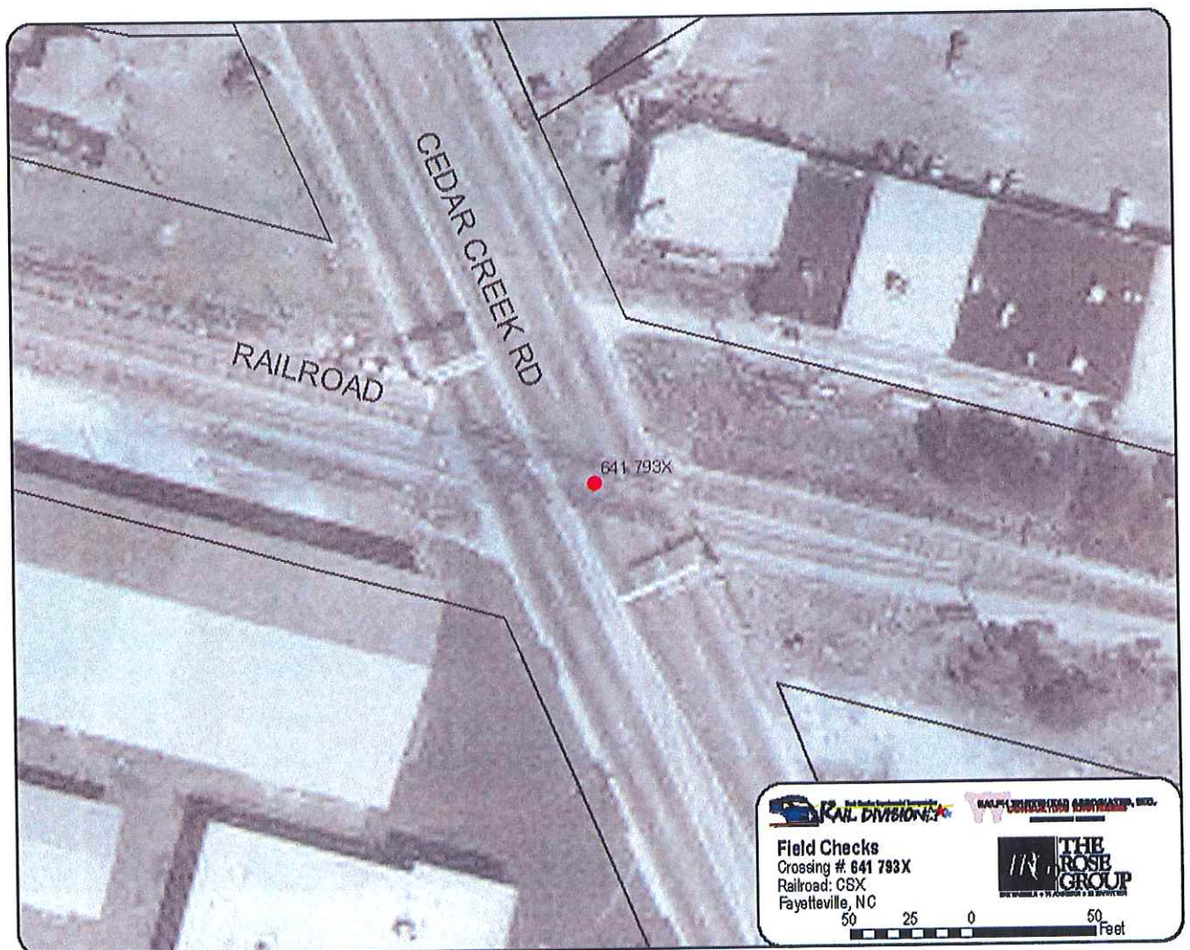
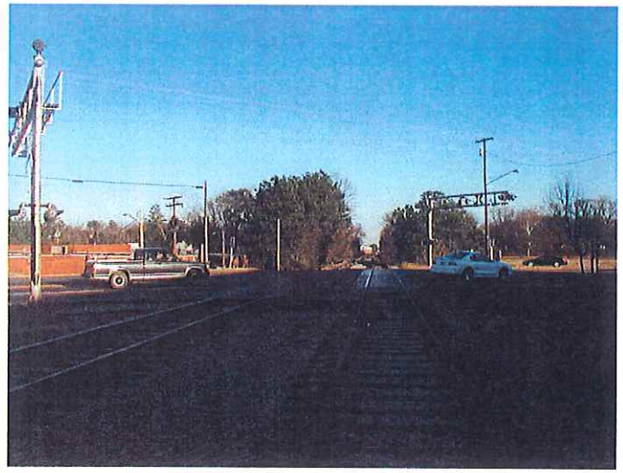


Figure B-49a

Crossing# 641 793X (NC 53/NC 210)



Looking East

Looking North

Looking West

Looking South

Figure B-49b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
641 794E	AF 211.98	CSX	SR 1839 (Plymouth Street)	Minor Tfare	Flashers	Residential

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
1290	2		No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	High

Aerials

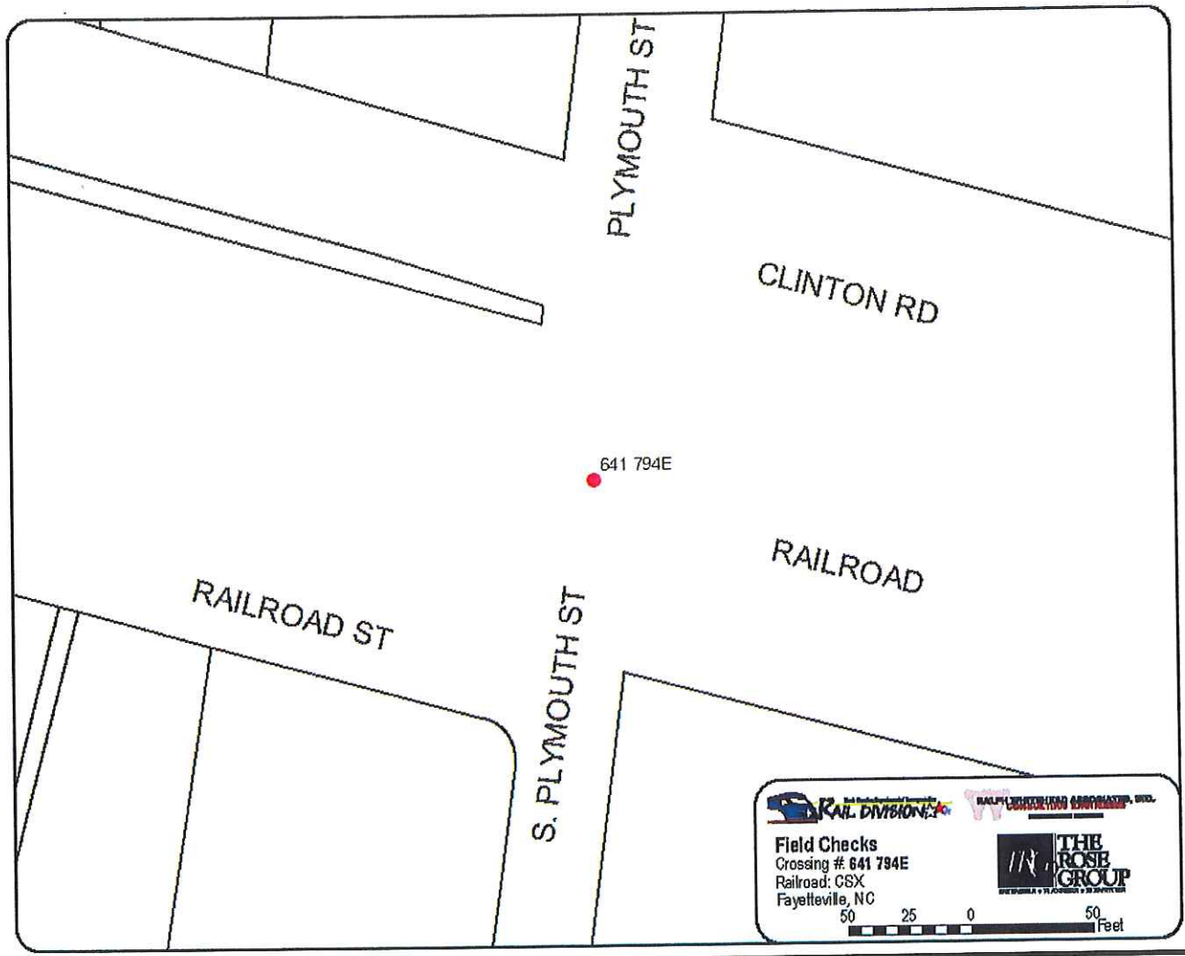


Figure B-50a

Crossing# 641 794E (Plymouth Street)

Looking East

Looking North

Looking West

Looking South

Figure B-50b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
904 419J	VF 39.7	NS	Eastwood Avenue	Local	Crossbucks	Residential

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
750	4		No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	Low

Aerials

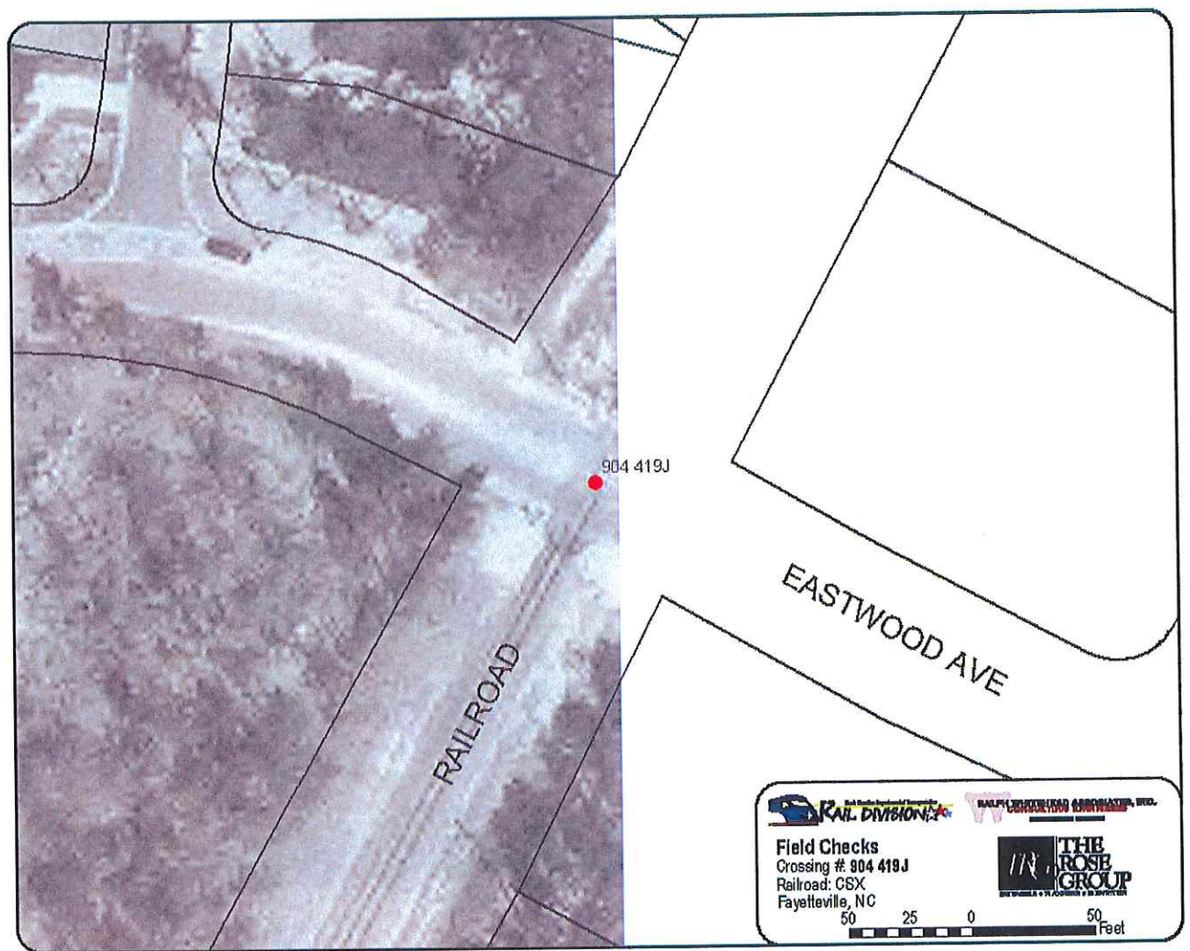
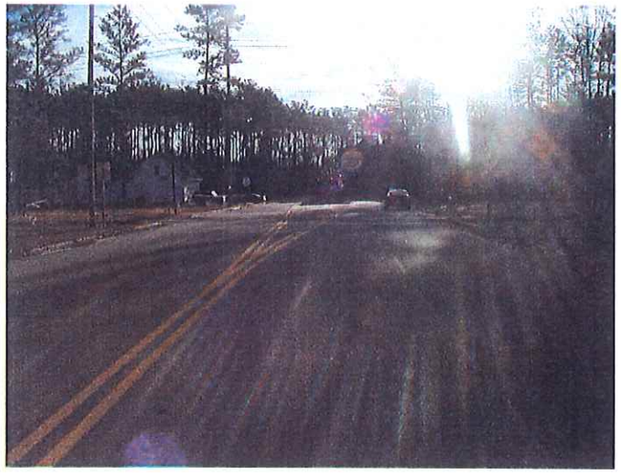


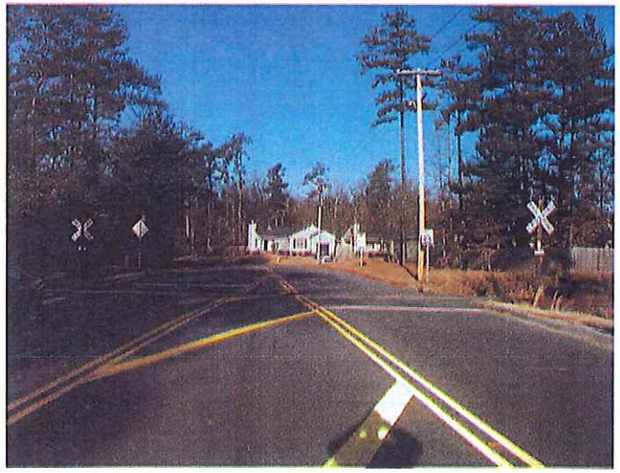
Figure B-51a

Crossing# 904 419J (Eastwood Avenue)



Looking East

Looking North



Looking West

Looking South

Figure B-51b

Crossing Number	Milepost	Railroad	Street Name	Street Classification	Warning Device	Land Use
904 420D	VF 39.7	NS	Dobson Drive	Local	Crossbucks	Residential

24 Hour ADT	24 Hour Train Volume	Accident History	Transit Route	School Bus Route	Truck Route
410	2		No	Yes	No

Preemption	Humped Crossing	Crossing Condition_Geometry	Crossing Surface Condition	Crossing Condition_Sight	Redundant Crossing
☐	☐	Good	Good	Good	No

Economic Impact if Closed	Feasibility of Roadway Improvements	Grade Separation Investigation	Need for Enhanced Warning Devices
High	Low	Low	Low

Aerials

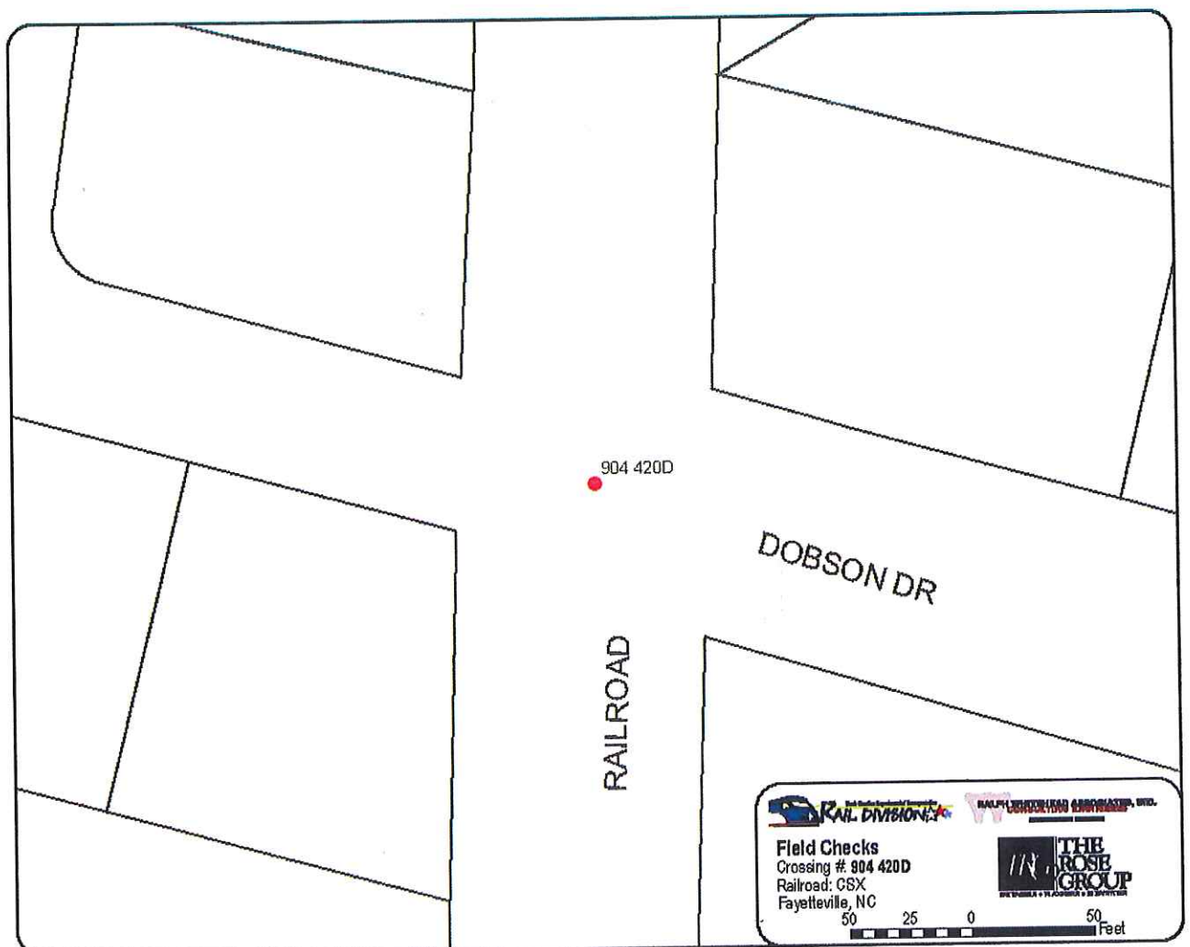
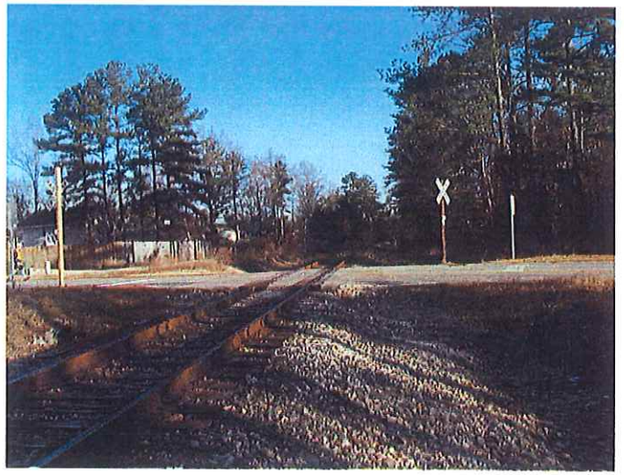


Figure B-52a

Crossing# 904 420D (Dobson Drive)

Looking East



Looking North

Looking West

Looking South

Figure B-52b

C. CROSSING ANALYSIS

1. Exposure Index

NCDOT uses an exposure index to determine if a grade separation structure is warranted at highway/rail grade crossings. The exposure index is calculated by multiplying the number of trains per day by the number of vehicles per day that use the crossing. As a general rule, grade separations should be considered in RURAL areas when the exposure index is 15,000 or more. In URBAN areas grade separations should be considered when the exposure index is 30,000 or more. Other factors that need to be considered in the feasibility of grade separations are:

- Accident history
- Topography
- Adjacent land use
- Construction impacts
- Costs

The exposure index was calculated for each of the 52 crossings for the year 2002 traffic volumes.

Table C-1 contains the exposure index calculations for each of the 52 crossings for 2002. Twelve (12) crossings exceeded the exposure index of 30,000 for the year 2002.

2. Delay Analysis

Level of Service is a measure of the operational efficiency of the highway/rail grade crossing. It is determined using procedures from the *Highway Capacity Manual* procedures. Level of service is expressed as a letter ranging from A (free flowing) to F (severely congested) and is determined using the average delay for all vehicles. Table C-2 summarizes the average delay and corresponding level of service.

TABLE C-2 - LOS

Level of Service	Avg. Delay/Vehicle (seconds)
A	5.0
B	>5.0 to 15.0
C	>15.0 to 25.0
D	>25.0 to 40.0
E	>40.0 to 60.0
F	>60.0

The delay calculations are based on the methodology developed for the Proposed Conrail Acquisition Draft Environmental Impact Statement (DEIS) by the Surface Transportation Board's Sections of Environmental Analysis (SEA) and modified as needed for this project.

The following values were calculated for existing and future conditions.

- Blocked crossing time per train
- Event time
- Average delay per day
- Maximum vehicle queue
- Total stopped vehicle delay per day
- Average delay for all vehicles
- Traffic level of service (LOS)

The level of service (LOS) for each of the 52 crossings was determined based on these computed values and the Highway Capacity Manual procedures. Table C-3

summarizes the delay and LOS results for the existing conditions.

The four following highway/rail grade crossings had a LOS F (> 60 seconds of avg. delay/vehicle) for the year 2002:

- Hay Street (Crossing # 629 881F)
- SR 2299 West Russell Street (Crossing # 629 883U)
- US 301 Eastern Boulevard (Crossing # 641 788B)
- NC 53/NC 210 (Crossing #641 793X)

3. Accident Analysis

Thirty-eight accidents involving train/vehicle collisions have been reported at 18 of the 52 crossings within the past ten years.

Accidents are summarized using the following classifications:

Fatality
Class A Injury – transported to hospital
Class B Injury – treated at scene
Class C Injury – complains of pain, no sign of injury
PDO – property damage only

Table C-4 summarizes the accident data for the past ten years.

TABLE C-1 - Exposure Index

CROSSING NO.	STREET NAME	TRAINS/24 HOUR YEAR 2002	2002 ADT	EXPOSURE INDEX YEAR 2002
465 903W	Fayetteville City Park	2	430	860
465 904D	Hofer Road	6	170	1,020
465 905K	North Drive	6	560	3,360
465 906S	US 401 Ramsey Street	2	38,860	77,720
465 911N	Hillsboro Street	2	3,860	7,720
465 912V	Cumberland Street	2	2,760	5,520
465 913C	Chance Street	2	550	1,100
465 914J	Moore & Bruner Streets	2	2,530	5,060
465 915R	NC 210 Hillsboro and Rowan Streets	4	5,120	20,480
629 569K	Malden Lane	2	1,600	3,200
629 570E	Hay Street	3	8,090	24,270
629 571L	Franklin Street	2	3,030	6,060
629 572T	SR 2299 Russell Street	2	8,990	17,980
629 574G	Blount Street	8	1,850	14,800
629 877R	Cumberland Street	23	2,840	65,320
629 878X	Chance Street	22	510	11,220
629 879E	Moore Street	22	2,610	57,420
629 881F	Hay Street	22	10,810	237,820
629 882M	Franklin Street	33	3,050	100,650
629 883U	SR 2299 West Russell Street	33	8,880	293,040
629 884B	Rankin Street	33	1,780	58,740
629 885H	Blount Street	33	2,120	69,960
629 886P	SR 1168 Whitfield Street	33	10,430	344,190
629 904K	Hillsboro Street	2	1,810	3,620
629 905S	Moore Street	2	1,050	2,100
629 907F	Cumberland Street	2	4,400	8,800
629 910N	Langdon Street	2	9,670	19,340
629 911V	Jasper Street	4	5,320	21,280
629 912C	McLamb Street	2	1,540	3,080
629 913J	US 401	2	30,150	60,300
629 914R	SR 1614 Shawmill Road	2	13,170	26,340
641 772E	SR 2299 Russell Street	2	8,900	17,800
641 773L	Maxwell	2	390	780
641 774T	Donaldson Street	2	790	1,580
641 775A	SR 2311 Gillespie Street	2	9,300	18,600
641 776G	Dick	2	1,250	2,500
641 778V	SR 2299 Cool Springs Road	2	1,360	2,720
641 780W	Alexander	2	960	1,920
641 781D	Kennedy	2	910	1,820
641 782K	SR 2299 Wilmington Street	2	3,930	7,860
641 783S	Burns	2	260	520
641 785F	C	2	110	220
641 787U	SR 2299 East Russell Street	2	6,640	13,280
641 788B	US 301 Eastern Boulevard	2	26,130	52,260
641 789H	King	2	410	820
641 790C	Racepath	2	680	1,360
641 791J	Broad Street	2	3,520	7,040
641 792R	SR 2200 Deep Creek Road	2	2,060	4,120
641 793X	NC 53/NC 210	2	16,180	32,360
641 794E	SR 1839 (Plymouth Street)	2	1,290	2,580
904 419J	Eastwood Avenue	4	750	3,000
904 420D	Dobson Drive	2	410	820

TABLE C-3 - 2002 Delay and LOS

Crossing #	Street Name	No. Lanes (one-way direction)	ADT	Arrival Rate (Veh/Min) 2x uniform	Departure Rate	Trains per day	Train Speed (miles/hr)	Train Length (feet)	Crossing Blockage Time (min) T_c	Event (Queue) Time (min) T_e	Total Stopped Vehicle Delay Per Day (min/day) D_T	Number Vehicles Delayed/Day V_D	Max. Peak Hr. Queue (veh/lane) Q	Average Delay /Stopped Veh. (mins) D_{avg}	Avg. Delay/Veh. In Secs. (All Vehicles) D_V	LOS
465 903W	Fayetteville City Park	1.00	430	0.60	30.00	2	10.00	1,000	1.14	1.16	0.40	1	0	0.58	0.11	A
465 904D	Hofer Road	1.00	170	0.24	30.00	6	10.00	1,000	1.14	1.15	0.46	1	0	0.57	0.33	A
465 905K	North Drive	1.00	560	0.78	30.00	6	10.00	1,000	1.14	1.17	1.59	3	1	0.58	0.34	A
465 906S	US 401 Ramsey Street	2.00	38860	53.97	60.00	2	10.00	1,000	1.14	-1.42	54.58	-77	22	-0.71	0.17	A
465 911N	Hillsboro Street	1.00	3860	5.36	30.00	2	5.00	1,000	2.27	2.77	20.53	15	9	1.38	0.64	A
465 912V	Cumberland Street	1.00	2760	3.83	30.00	2	5.00	1,000	2.27	2.61	13.01	10	6	1.30	0.57	A
465 913C	Chance Street	1.00	550	0.76	30.00	2	5.00	1,000	2.27	2.33	2.08	2	1	1.17	0.45	A
465 914J	Moore & Bruner Streets	1.00	2530	3.51	30.00	2	5.00	1,000	2.27	2.57	11.64	9	6	1.29	0.55	A
465 915R	NC 210 Hillsboro and Rowan Streets	1.00	5120	7.11	30.00	4	5.00	1,000	2.27	2.98	63.10	42	12	1.49	1.48	A
629 569K	Maiden Lane	1.00	1600	2.22	30.00	2	15.00	9,000	6.82	7.36	60.25	16	11	3.68	4.52	A
629 570E	Hay Street	2.00	8090	11.24	60.00	3	15.00	9,000	6.82	10.90	1001.41	184	28	5.45	14.85	B
629 571L	Franklin Street	1.00	3030	4.21	30.00	2	10.00	9,000	10.23	11.90	297.77	50	31	5.95	11.79	B
629 572T	SR 2299 Russell Street	2.00	8990	12.49	60.00	2	10.00	9,000	10.23	17.52	1915.99	219	46	8.76	25.58	D
629 574G	Blount Street	1.00	1850	2.57	30.00	8	10.00	9,000	10.23	11.19	642.93	115	19	5.59	41.70	E
629 877R	Cumberland Street	1.00	2840	3.94	30.00	23	15.00	9,000	6.82	7.85	1397.76	356	19	3.93	59.06	E
629 878X	Chance Street	1.00	510	0.71	30.00	22	25.00	9,000	4.09	4.19	68.39	33	2	2.09	16.09	C
629 879E	Moore Street	1.00	2610	3.63	30.00	22	25.00	9,000	4.09	4.65	431.69	186	11	2.33	19.85	C
629 881F	Hay Street	2.00	10810	15.01	60.00	22	10.00	9,000	10.23	20.47	34613.07	3381	55	10.24	384.23	F
629 882M	Franklin Street	1.00	3050	4.24	30.00	33	25.00	9,000	4.09	4.76	793.01	333	12	2.38	31.20	D
629 883U	SR 2299 West Russell Stree	2.00	8880	12.33	60.00	33	25.00	9,000	4.09	6.95	4910.29	1414	18	3.47	66.36	F
629 884B	Rankin Street	1.00	1780	2.47	30.00	33	25.00	9,000	4.09	4.46	405.40	182	7	2.23	27.33	D
629 885H	Blount Street	1.00	2120	2.94	30.00	33	35.00	9,000	2.92	3.24	255.02	157	6	1.62	14.43	C
629 886P	SR 1168 Whitfield Street	1.00	10430	14.49	30.00	33	40.00	9,000	2.56	4.94	2921.50	1182	27	2.47	33.61	D
629 904K	Hillsboro Street	1.00	1810	2.51	30.00	2	10.00	9,000	10.23	11.16	156.62	28	19	5.58	10.38	B
629 905S	Moore Street	1.00	1050	1.46	30.00	2	10.00	9,000	10.23	10.75	84.26	16	11	5.37	9.63	B
629 907F	Cumberland Street	1.00	4400	6.11	30.00	2	10.00	9,000	10.23	12.84	504.03	78	45	6.42	13.75	B
629 910N	Langdon Street	2.00	9670	13.43	60.00	2	10.00	9,000	10.23	18.52	2302.56	249	49	9.26	28.57	D
629 911V	Jasper Street	2.00	5320	7.39	60.00	4	10.00	9,000	10.23	13.57	1360.50	201	27	6.78	30.69	D
629 912C	McLamb Street	1.00	1540	2.14	30.00	2	10.00	9,000	10.23	11.01	129.70	24	16	5.51	10.11	B
629 913J	US 401	2.00	30150	41.88	60.00	2	10.00	9,000	10.23	-25.84	13977.19	-1082	154	-12.92	55.63	E
629 914R	SR 1614 Shawmill Road	1.00	13170	18.29	30.00	2	10.00	9,000	10.23	26.21	6280.52	479	135	13.10	57.23	E
641 772E	SR 2299 Russell Street	2.00	8900	12.36	60.00	2	10.00	9,000	10.23	17.39	1870.02	215	46	8.70	25.21	D
641 773L	Maxwell	2.00	390	0.54	60.00	2	10.00	9,000	10.23	10.42	29.38	6	2	5.21	9.04	B
641 774T	Donaldson Street	1.00	790	1.10	30.00	2	10.00	9,000	10.23	10.62	61.82	12	8	5.31	9.39	B
641 775A	SR 2311 Gillespie Street	2.00	9300	12.92	60.00	2	10.00	9,000	10.23	17.96	2083.23	232	48	8.98	26.88	D
641 776G	Dick	1.00	1250	1.74	30.00	2	10.00	9,000	10.23	10.86	102.29	19	13	5.43	9.82	B
641 778V	SR 2299 Cool Springs Road	1.00	1360	1.89	30.00	2	10.00	9,000	10.23	10.91	112.51	21	14	5.46	9.93	B
641 780W	Alexander	1.00	960	1.33	30.00	2	10.00	9,000	10.23	10.70	76.37	14	10	5.35	9.55	B
641 781D	Kennedy	1.00	910	1.26	30.00	2	10.00	9,000	10.23	10.68	72.04	13	9	5.34	9.50	B
641 782K	SR 2299 Wilmington Street	1.00	3930	5.46	30.00	2	10.00	9,000	10.23	12.50	426.56	68	40	6.25	13.02	B
641 783S	Burns	1.00	260	0.36	30.00	2	10.00	9,000	10.23	10.35	19.35	4	3	5.18	8.93	B
641 785F	C	1.00	110	0.15	30.00	2	10.00	9,000	10.23	10.28	8.07	2	1	5.14	8.81	B
641 787U	SR 2299 East Russell Street	2.00	6640	9.22	60.00	2	10.00	9,000	10.23	14.77	1005.47	136	34	7.38	18.17	C
641 788B	US 301 Eastern Boulevard	2.00	26130	36.29	60.00	2	10.00	9,000	10.23	-48.77	43152.67	-1770	134	-24.38	198.18	F
641 789H	King	1.00	410	0.57	30.00	2	10.00	9,000	10.23	10.43	30.94	6	4	5.21	9.06	B
641 790C	Racepath	1.00	680	0.94	30.00	2	10.00	9,000	10.23	10.56	52.66	10	7	5.28	9.29	B
641 791J	Broad Street	1.00	3520	4.89	30.00	2	10.00	9,000	10.23	12.22	364.93	60	36	6.11	12.44	B
641 792R	SR 2200 Deep Creek Road	1.00	2060	2.86	30.00	2	10.00	9,000	10.23	11.31	182.84	32	21	5.65	10.65	B
641 793X	NC 53/NC 210	2.00	16180	22.47	60.00	2	10.00	9,000	10.23	40.76	18665.71	916	83	20.38	138.44	F
641 794E	SR 1839 (Plymouth Street)	1.00	1290	1.79	30.00	2	10.00	9,000	10.23	10.88	105.98	19	13	5.44	9.86	B
904 419J	Eastwood Avenue	1.00	750	1.04	30.00	4	30.00	1,000	0.38	0.39	0.16	1	0	0.20	0.03	A
904 420D	Dobson Drive	1.00	410	0.57	30.00	2	20.00	1,000	0.57	0.58	0.10	0	0	0.29	0.03	A

TABLE C-4 - Accident Summary

Crossing Number	Railroad	Street Name	Total # of Accidents	# of Fatalities	# of Class A Injury	# of Class B Injury	# of Class C Injury	# of PDO	Unknown	Remarks
465 906S	NS	US 401 Ramsey Street	3					2	1	vehicles did not stop
465 913C	NS	Chance Street	1						1	
465 915R	NS	NC 210 Hillsboro and Rowan Streets	1					1		vehicle did not stop
629 570E	CSX	Hay Street	1				1			vehicle did not stop
629 571L	CSX	Franklin Street	1					1		vehicle stopped on crossing
629 572T	CSX	SR 2299 Russell Street	1						1	vehicle did not stop
629 877R	CSX	Cumberland Street	1	1						vehicle drove around gates
629 879E	CSX	Moore Street	2					2		vehicles stopped on crossing
629 881F	CSX	Hay Street	9		2	1	1	3	2	vehicles did not stop or vehicles stoppped on crossing
629 882M	CSX	Franklin Street	2					2		vehicles did not stop or vehicles stoppped on crossing
629 883U	CSX	SR 2299 West Russell Street	2				1	1		vehicles did not stop
629 884B	CSX	Rankin Street	7			1		3	3	vehicles stopped on crossing
629 910N	CSX	Langdon Street	1					1		vehicle did not stop
629 911V	CSX	Jasper Street	1					1		vehicle did not stop
641 782K	CSX	SR 2299 Wilmington Street	1					1		vehicle did not stop
641 789H	CSX	King	1						1	vehicle did not stop
641 791J	CSX	Broad Street	2					2		vehicle did not stop and vehicle stoppped on crossing
641 792R	CSX	SR 2200 Deep Creek Road	1						1	

D. SAFETY AND MOBILITY ISSUES

There are several methods available to enhance railroad-crossing safety. This chapter discusses some of these methods in more detail.

1. Vehicles Queueing Across Railroad Tracks

The presence of nearby traffic signals, intersections, or parallel roadways can result in queues of stopped vehicles extending onto or across a highway/rail crossing. During the site inspections there were no crossings that had queueing of vehicles across the tracks when trains were present.

2. Traffic Signal Preemption

Standard practice (based on *The Manual on Uniform Traffic Control Devices*) requires that traffic signals located within 200 feet of a highway/rail at-grade crossing be coordinated with the crossing's train detection and warning system to preempt normal operations of the traffic signal. The following locations within the study area currently have traffic signal preemption:

- NC 210 Hillsboro and Rowan Streets (Crossing # 465 915R)
- Hay Street (Crossing # 629 570E)
- Hay Street (Crossing # 629 881F)
- Rankin Street (Crossing # 629 884B)
- Blount Street (Crossing Number 629 885H)
- SR 1168 Whitfield Street (Crossing # 629 886P)
- SR 1614 Shawmill Road (Crossing # 629 914R)
- SR 2311 Gillespie Street (Crossing # 641 775A)
- SR 2299 Cool Springs Road (Crossing # 641 778V)
- SR 2299 Wilmington Street (Crossing # 641 782k)
- US 301 Eastern Boulevard (Crossing # 641 788B)

The following crossings are currently scheduled for signal improvements and are found in the NCDOT's 2004-2010 Transportation Improvement Program (TIP):

- Hillsboro Street (Crossing # 465 911N, Z-4406AD)
- Cumberland Street (Crossing # 465 912V, Z-4406AE)
- NC 210 Hillsboro and Rowan Streets (Crossing # 465 915R, Z-3144B)
- Hay Street (Crossing # 629 570E, Z-4106D)
- Franklin Street (Crossing # 629 571L, Z-3344C)
- Hillsboro Street (Crossing # 629 904K, Z-3144B)
- US 401 (Crossing # 629 913J, Z-4406E)

The following crossings are recommended, as part of this study, for traffic signal improvements:

- Blount Street (Crossing # 629 885H)
- Langdon Street (Crossing # 629 910N)
- SR 2311 Gillespie Street (Crossing # 641 775A)

3. Humped Crossings

A "humped" crossing exists where the elevation of the railroad is significantly higher than the crossing roadway, causing vehicles to ascend on one side of the tracks and descend on the other. The severity of this condition can range from discomfort at normal speeds, to "bottoming out" of vehicles with long wheelbases or low clearances. This dragging can damage vehicles, or cause them to become stuck on the crossing, creating a serious hazard. Routine track maintenance tends to exacerbate the problem over

time, as track ballast work typically adds about three inches per occurrence. Over a ten-year period, the railroad may rise as much as one foot as a result of this routine maintenance.

Crest vertical curves across the tracks that do not create a need for the driver to reduce speed are not considered to be a humped profile. The combination of short crest and sag vertical curves caused by a buildup of the ballast and raising of the track create a need to reduce speed across the crossing. The following crossing has a humped profile:

- Blount Street (Crossing # 629 885H)

4. Grade Crossing Condition

A poor grade crossing surface can result in a rough, uneven ride. This can increase wear and tear on vehicles, potentially create a traffic safety hazard, and may add to congestion by reducing travel speeds. The crossing materials used on these grade crossings include asphalt, concrete slab, and rubber. Even though some materials provide a slightly improved ride and longer term maintenance, the main safety issue is the condition of the crossing. The following crossings have surfaces that are deemed to be in substandard condition:

- Blount Street (Crossing # 629 574G)
- US 401 (Crossing # 629 913J)
- US 301 Eastern Boulevard (Crossing # 641 788B)

5. Vehicles Driving Around Automated Gates

Several situations can lead to the circumvention of automated gates by motorists:

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

It was noted in the NCDOT and FRA accident reports that one accident had occurred within the last ten years at the following location due to vehicles driving around automated gates:

- Cumberland Street (Crossing # 629 877R)

The remainder of the accidents in Fayetteville were attributed to either vehicles not stopping at highway/rail grade crossings or vehicles being stopped on the tracks.

6. Improved Signs and Markings

The effectiveness of required warning signs, markings, signals, and other devices depends heavily on proper installation and maintenance by state and municipal transportation departments and the railroads. Sign improvements are recommended at the following location:

- Fayetteville City Park (Crossing # 465 903W)

7. Roadway Grade Separation

To fully eliminate the potential for train/vehicle collisions while still maintaining access across the tracks, construction of grade separations should be evaluated. However, modifications to mainline railway grades or profiles are severely constrained by strict design standards. Highway overpasses of railroads require a vertical clearance of 23 feet, while railroad overpasses of highways typically require 16 to 17 feet. Due to sight

distance requirements for safe stopping, a "crest" curve on a roadway overpass is longer than a "sag" curve at a comparable underpass, thereby involving a longer approach distance. This can have important implications with respect to property access and street network connectivity. Other considerations include visual and noise impacts of roadway overpasses, especially in neighborhoods, downtowns, or historic areas.

Using the NCDOT *Exposure Index (EI)* formula, the following 12 crossings exceed the relevant threshold for urban conditions (30,000) that result from multiplying the number of vehicles per day by the number of trains per day (See Table D-1):

TABLE D-1 – Exposure Index

Street	Crossing #	2002 EI
US 401 Ramsey St.	465 906S	77,720
Cumberland St	629 877 R	65,320
Moore St.	629 879E	57,420
Hay St.	629 881F	237,820
Franklin St.	629 882M	100,650
SR 2299 W. Russell St.	629 883U	293,040
Rankin St.	629 884B	58,740
Blount St.	629 885H	69,960
SR 1168 Whitfield St.	629 886P	344,190
US 401	629 913J	60,300
US 301 Eastern Blvd.	641 788B	52,260
NC 53/NC 210	641 793X	32,360

There are many factors that need to be considered along with the exposure index when looking at grade separations. These include accident history, topography, adjacent land uses, construction impacts, and costs. The following crossing is being recommended, as part of this study, for further investigation to determine the feasibility for a grade separation :

- SR 2299 West Russell Street (Crossing # 629 883U)

8. Community Services

Hospitals, schools, fire and rescue stations, and parks have been located as part of this study to determine the potential impacts on Fayetteville residents who would be affected by changes in the crossing status of the 52 existing highway/rail grade crossings. The studies included a field survey in the vicinity of the identified rail crossings and an investigation of all adjacent neighborhoods on foot and photography to establish general demographic patterns in the neighborhoods. Community facilities and/or other features that may have a focal role in the neighborhood or add to the sense of community are identified.

This study is intended only to provide basic data, to assist in deciding the need for additional studies; it will not include any statistical analysis of demographic data, or attempt to analyze the ramifications of proposed highway/rail grade crossing modifications on the communities identified.

E. SYSTEM ENHANCEMENT OPTIONS

1. Grade Separation Structures

Many factors must be considered before suggesting grade separation, including:

- Traffic volumes (both vehicle and train)
- Accident history
- Topography
- Adjacent land use
- Construction impacts
- Costs

a. Traffic Volumes

An ***exposure index*** is employed by NCDOT as one factor in determining whether or not grade separation should be considered in place of highway/rail crossings. This index is calculated by multiplying the number of trains per day by the number of crossing vehicles per day, in the design year. Current policy identifies an exposure index of 15,000 as the threshold for considering grade separation in rural areas. In urban areas, an exposure index of 30,000 or greater identifies a potential grade separation. Using this formula in Fayetteville, twelve locations currently exceed the exposure index. (See Table C-1 in Section C).

b. Accident History

In some cases, the accident history of a low-volume crossing may contribute to justification of a grade separation, even with a low exposure index. If the crossing cannot be closed, or other safety provisions made, a physical separation between the road and tracks may be the only feasible solution.

c. Topography

The relationship between elevations and slopes in the vicinity of the crossing greatly influence the viability of constructing a grade separation. Where existing topography facilitates a highway overpass, minimizing earthwork and ROW requirements, the cost of grade separation can be significantly reduced. When topography is relatively flat, costs (and other impacts) can escalate significantly.

d. Adjacent Land Use

In heavily developed areas, such as a central business district (CBD) impacts to the existing land use may be severe enough that it results in grade separations being considered not feasible. Costs for right-of-way acquisition and socio-economic impacts associated with loss of business and jobs can result in less than a favorable project benefit-cost ratio.

e. Construction Impacts

While the impacts of constructing a new grade separation can be significant, retrofitting a grade separation to comply with current design criteria is typically more disruptive during and after construction. Visual, noise, and access degradation can be severe, and the separation may require the relocation of businesses or dwellings. Other potential impacts can

involve wetlands/woodlands, historic/archaeological sites, and hazardous materials.

f. Costs

Grade separation structures represent substantial, long-term infrastructure investments, often exceeding several million dollars. Careful analysis and planning is required to insure that this alternative is the most cost-effective and beneficial solution.

2. Crossing Protection Device Upgrades

The most common, and cost-effective, way to increase the safety at a railway crossing is to upgrade existing warning devices at the crossing. Typical warning devices include signs, gate arms, flashing lights and bells. *Passive* devices, such as advanced warning signs and crossbucks, merely warn the motorist of the existence of a railroad crossing. These devices are most suitable where train and traffic volumes and speeds are low, and where sight distance is adequate. *Active* devices that warn motorists of approaching trains include flashing lights, bells, and automated gates. Such devices are usually employed at locations exhibiting higher volumes or speeds, or greater potential for accidents. The hierarchy of standard warning treatments, from least to most protected is:

1. Unmarked;
2. Railroad crossbucks;
3. Standard STOP signs (limited sight distance) and crossbucks;
4. Flashing signals and bells;
5. Flashing signals, bells and gates.

a. Advanced Crossing Protection Devices

The NCDOT Rail Division and Norfolk Southern Railway have been testing advanced crossing protection devices on the main line from Raleigh to Charlotte since 1995. These devices are most appropriate where high-volume multi-lane roadways cross railroad main lines, and where significant numbers of motorists are ignoring or circumventing existing warning devices. The advanced warning devices being considered are described below, along with some initial NCDOT Rail Division test results from Charlotte, NC.

b. Median Barriers

Median barriers consist of markers mounted on raised islands along the roadway centerline to discourage motorists from driving in opposing travel lanes to "go around" lowered gate arms. Median treatments typically extend 70 feet to 100 feet back from the gates, but may be precluded by driveways or intersecting roads within this distance.

c. Four-Quadrant Gates

This crossing treatment requires an additional gate on each approach, completely "sealing" the crossing. Several measures are employed to prevent vehicles from becoming "trapped" inside the gates, including careful timing of the gates to allow traffic to clear; providing 16 feet of clearance between track center and gates; leaving adequate space between gate tips for a vehicle to "squeeze" out; and use of breakaway arms. In tests at the Sugar Creek Rd. crossing in Charlotte, four-quadrant gates alone reduced violations

by 86%; in combination with median barriers, the reduction in violations rose to 98%.

c. Long Gate Arms

Extra-long arms cover at least ¾ of the crossing width. When tested at the Orr Road crossing in Charlotte, the installation of long gate arms reduced crossing violations by 67%.

d. Articulated Gates

Articulated gates are hinged arms that unfold to cover at least ¾ of crossing width. They are typically warranted where overhead obstructions prevent the use of long gate arms. Articulated gates installed at Orr Road in Charlotte reduced crossing violations by 78%.

e. Remote Video Detection

The Crossing Law Enforcement and Research of (CLEAR) Violations program employs video cameras to monitor selected crossings. The recordings provide information on crossing operations, violations, and accidents for both enforcement and research purposes.

f. Crossing Consolidation & elimination

Many low-volume crossings are unnecessary due to the availability of alternative access across the tracks. These alternative crossings can often be made safer, since many low-volume crossings lack adequate warning devices. Resources are not available to upgrade warning devices on all existing crossings, and grade separation would be even less feasible. Therefore, consolidation and closure of these minor crossings is an effective strategy in terms of both costs and safety benefits. Typically, a crossing is considered redundant (and therefore a candidate for elimination) if it is within ¼-mile of another crossing connected to the same street network.

Crossing consolidations eliminate the potential for train/vehicle collisions. Crossing-related installation and maintenance costs are reduced, and by concentrating traffic at fewer, higher-volume crossings, more expensive active warning treatments and roadway improvements can be justified.

Crossings with high potential for elimination include:

- Redundant crossings near parallel crossings or grade separations, or where traffic can be safely and efficiently diverted to another crossing;
- Skewed crossings, or those where sight distance is limited by horizontal/vertical curvature, vegetation, or permanent obstructions;
- Crossings with a history of frequent accidents;
- Crossings adjacent to a newly constructed crossing or grade separation;
- Private crossings with no identifiable owner, or where the owner is unwilling or unable to fund crossing upgrades (and where alternative access is reasonably available); Since NCDOT does not currently have jurisdiction over private crossings, closing of these crossings is determined by the railroad and property owner if identified.
- Complex crossings that cannot be effectively served by warning devices due to multiple tracks, extensive switching operations, etc.

g. Roadway Improvements

Roadway improvements can reduce both accident potential and traffic delay at railroad crossings. Realignment and re-grading can improve visibility and reduce the time required to traverse a crossing. Additional lanes significantly increase capacity, reducing the residual delay following a crossing event. New roadways can provide alternative routes, allowing crossings to occur at more desirable locations, and potentially eliminate the number of crossing trips.

h. Traffic Signals

Traffic signals are not specifically intended as warning devices at railroad crossings. However, when an highway/rail grade crossing is located near a signalized intersection (typically within 200 feet), special steps should be taken to insure that vehicles do not get trapped on the tracks due to queues resulting from a red signal. The normal sequence of traffic signal indications should be preempted by the approach of a train, eliminating the possibility of entrapment due to conflicting traffic and railroad crossing signals. Ideally, the preempted signal phasing should be designed to allow non-conflicting movements to proceed during a train crossing, thereby minimizing overall traffic delay.

F. PUBLIC INVOLVEMENT

A Public Involvement program was established as part of this study. This program involved:

- Two Stakeholder Group Meetings
- Four Public Meetings
- One Public Hearing

1. Stakeholders Meeting #1

A stakeholders committee was established so key individuals could participate and provide critical input on reaching consensus on grade crossing recommendations. The following agencies participated on the Stakeholder Committee:

- City of Fayetteville Planning
- City of Fayetteville Police
- City of Fayetteville Fire
- City of Fayetteville Traffic
- Cumberland County Schools
- NCDOT Division 6
- CSX Transportation
- Norfolk Southern Railroad

The first stakeholder meeting was held on April 23, 2003. The purpose of this meeting was to present to the committee the preliminary recommendations and receive comments before going to the public meetings.

The committee requested one modification to the initial grade crossing recommendations. The City is currently extending Ray Avenue and requested gates at Crossing #629 572T (Russell Street, See Figure B-13a and Figure G-13).

2. Public Meetings

Four public meetings were held throughout the City in June and July 2003. The meeting schedule was as follows

- June 25, 2003 (4:00-7:00 PM) – Smith Recreation Center
- June 26, 2003 (4:00-7:00 PM) – City Hall
- July 9, 2003 (4:00-7:00 PM) - Smith Recreation Center
- July 10, 2003 (4:00-7:00 PM) - City Hall

The objective of the public meetings was to present the recommendations and potential affect on traffic movements resulting from improvement scenarios under consideration for each of the 52 crossings and to receive public comment on the recommendations.

3. Stakeholders Meeting #2

The second meeting of the Stakeholder Committee was on August 25, 2003. The purpose of this meeting was to discuss the comments received from the public on the recommendations and to finalize the recommendations to be carried forward into the implementation phase.

4. Newsletters

The first newsletter was created and distributed at the public meetings. This newsletter discussed the phases of a Traffic Separation Study (TSS), described the public

involvement program, and presented the preliminary list of recommendations.

The second newsletter summarized the discussions and actions that took place at the second stakeholders committee meeting. This newsletter was mailed out to all of the citizens that attended the public meetings, as well as all of the stakeholders.

5. Public Hearing

The final recommendations were presented at a Public Hearing held in conjunction with the City of Fayetteville's City Council Meeting on October 27, 2003. A formal presentation of the project was made and staff was available to answer questions from the Council and the general public. The City Council approved all of the final recommendations.

G. RECOMMENDATIONS

1. Highway/Rail Grade Crossing Recommendations

This section describes the recommendations on a crossing-by-crossing basis. Relevant information, data, and findings are included for each. Conceptual designs were placed on aerials for specific recommendations and can be found in Figures G-1 to G-52. Table G-1 summarizes all of the highway/rail grade crossing recommendations, including estimated costs.

For the purposes of this report, recommendations are classified as follows:

- Near-Term (0-2 years)
- Mid-Term (2-5 years)
- Long-Term (5-10 years)

2. Railroad Realignments

The primary objective of these improvements is to eliminate the highway/rail grade crossings and the interference that now exists between railroad operations and vehicular traffic on Hillsboro, Hay, Franklin, and Russell Streets. The following track improvements are included as long-term recommendations:

- Construct a connection track from the Norfolk Southern Main Track to Milan Yard and expand yard facilities at Milan Yard. This would allow the track to be removed from Hillsboro Street. (See Figure G-53)
- Construct a connection track from the CSX Main line across Hillsboro Street to the CSX A & Y line that leads into Fort Bragg. This connection will take the train traffic on the CSX A & Y Line over to Milan Yard thereby eliminating trains from going into downtown Fayetteville. (See Figure G-53)

3. Winslow Street Improvements

The grade separation potential of West Russell Street and the closing of the highway/rail grade crossing at Rankin Street would allow a number of improvement opportunities along Winslow Street, between Hay Street and Blount Street.

If Russell Street is grade separated, the highway/rail grade crossing at Franklin Street could be closed. This would allow the western side of Winslow Street to change its traffic flow to run one-way in the opposite direction. This would make Winslow act as a two way street. There is also potential for on-street parking, continuous sidewalks, and streetscaping along the corridor. (See Figures G-54 and G-55)

4. Franklin Street Improvements

Franklin Street is currently a one-way street between Gillespie Street and Dick Street. If this final section of Franklin Street was converted to a two-way street and the traffic signal at the Gillespie Street/Franklin Street intersection was modified to allow the two-way operation; this improvement would give vehicles currently using Russell Street an alternative option. This would be beneficial in reducing the number of vehicles that would be traveling on Russell Street and that are using the grade crossings along Russell Street in this area, such as Dick Street. (See Figure G-36)

5. Benefit/Cost Ratios

Benefit/cost ratios were determined using the Federal Railroad Administration's "GradeDec 2000 System for Grade Crossing Investment Analysis." GradeDec determines the effects rail corridor investments will have on safety, and highway delay and queuing. Improvements will result in the following economic benefits:

- Improvements in safety and reduced accident cost;
- Reduced travel time costs;
- Improved air quality;
- Reduced vehicle operating costs; and
- Network benefits.

The program was used to evaluate the rail lines separately and with all combined as a regional model. The benefit/cost ratio is based on a factor of 1.00 with a benefit of $1.00 for every $1.00 spent. The following results are based on our recommendations outlined in this section:

- Near Term Recommended Improvements
  Average Benefit/Cost Ratio = 1.37

- All Recommended Improvements (Near, Mid, and Long Term)
  Average Benefit/Cost Ratio = 0.76

Figures G-56 and G-57 contain the results of the benefit/cost calculations.

TABLE G-1 - Recommendations

Crossing Reference Number	Crossing Number	Street Name	Near Term Recommendation	Est. Near Term Cost	
1	465 903W	Fayetteville City Park	Add signage for pedestrians	$ 600.00	
2	465 904D	Hofer Drive	Add private access gate for city employees only	$ 9,000.00	
3	465 905K	North Street	No Action		
4	465 906S	US 401 Ramsey Street	No Action		
5	465 911N	Hillsboro Street	Current Project: construct signal and gates (Z-4406AD)		
6	465 912V	Cumberland Street	Current Project: construct signal and gates (Z-4406AE)		
7	465 913C	Chance Street	Close crossing and channelize Chance St. to right-in/right-out	$ 12,000.00	
8	465 914J	Moore & Bruner Streets	No Action		
9	465 915R	NC 210 Hillsboro and Rowan Streets	Current Project: add gates to crossing (Z-3144B)		
10	629 569K	Maiden Lane	Add gates	$ 145,000.00	
11	629 570E	Hay Street	Current Project: construct signal and gates (Z-4106D)		
12	629 571L	Franklin Street	Current Project: construct signal and gates (Z-3344C)		
13	629 572T	SR 2299 Russell Street	Add gates	$ 145,000.00	
14	629 574G	Blount Street	Add gates	$ 145,000.00	
15	629 877R	Cumberland Street	Add 4 quadrant gates	$ 220,000.00	
16	629 878X	Chance Street	Close crossing	$ 12,000.00	
17	629 879E	Moore Street	Add 4 quadrant gates	$ 220,000.00	
18	629 881F	Hay Street	Add gates	$ 145,000.00	
19	629 882M	Franklin Street	Add 4 quadrant gates and signal preemption	$ 220,000.00	
20	629 883U	SR 2299 West Russell Street	Add 4 quadrant gates and signal preemption	$ 220,000.00	Condu
21	629 884B	Rankin Street	Close crossing and change traffic patterns on Winslow Street	$ 225,000.00	
22	629 885H	Blount Street	Add 4 quadrant gates and adjust vertical profile of the roadway	$ 220,000.00	
23	629 886P	SR 1168 Whitfield Street	Add 4 quadrant gates	$ 220,000.00	
24	629 904K	Hillsboro Street	Current Project: construct signal and gates (Z-3144B)		
25	629 905S	Moore Street	Add gates	$ 145,000.00	
26	629 907F	Cumberland Street	Add gates	$ 145,000.00	
27	629 910N	Langdon Street	Add gates and upgrade traffic signal on Murchison Road	$ 185,000.00	
28	629 911V	Jasper Street	No Action		
29	629 912C	McLamb Street	No Action		
30	629 913J	US 401	Current Project: add gates (Z-4406E)		
31	629 914R	SR 1614 Shawmill Road	No Action		
32	641 772E	SR 2299 Russell Street	Remove crossing	$ 12,000.00	
33	641 773L	Maxwell	Add flashers and cantilevers	$ 160,000.00	
34	641 774T	Donaldson Street	Close crossing	$ 12,000.00	
35	641 775A	SR 2311 Gillespie Street	Upgrade traffic signal to current NCDOT standards	$ 40,000.00	
36	641 776G	Dick	No Action		Make Franklin two-w
37	641 778V	SR 2299 Cool Springs Road	No Action		
38	641 780W	Alexander	No Action		
39	641 781D	Kennedy	Close crossing	$ 12,000.00	
40	641 782K	SR 2299 Wilmington Street	No Action		
41	641 783S	Bums	Close crossing	$ 12,000.00	
42	641 785F	C	Make improvements to intersection	$ 50,000.00	
43	641 787U	SR 2299 East Russell Street	Close median crossing and add gates in WB direction	$ 32,000.00	
44	641 788B	US 301 Eastern Boulevard	No Action		
45	641 789H	King	Close crossing	$ 12,000.00	
46	641 790C	Racepath	Close crossing	$ 12,000.00	
47	641 791J	Broad Street	No Action		
48	641 792R	SR 2200 Deep Creek Road	No Action		
49	641 793X	NC 53/NC 210	Add gates and median barrier. Upgrade traffic signal and cantilevers	$ 225,000.00	
50	641 794E	SR 1839 (Plymouth Street)	Add gates	$ 20,000.00	
51	904 419J	Eastwood Avenue	No Action		
52	904 420D	Dobson Drive	No Action		

INDEX FOR GRADE CROSSING FIGURES

Crossing Reference Number	Crossing Number	Street Name	Existing Conditions Figure #	Crossing Photos	Recommendations Figure #
1	465 903W	Fayetteville City Park	B-1a	B-1b	G-1
2	465 904D	Hofer Road	B-2a	B-2b	G-2
3	465 905K	North Drive	B-3a	B-3b	G-3
4	465 906S	US 401 Ramsey Street	B-4a	B-4b	G-4
5	465 911N	Hillsboro Street	B-5a	B-5b	G-5
6	465 912V	Cumberland Street	B-6a	B-6b	G-6
7	465 913C	Chance Street	B-7a	B-7b	G-7
8	465 914J	Moore & Bruner Streets	B-8a	B-8b	G-8
9	465 915R	NC 210 Hillsboro and Rowan Streets	B-9a	B-9b	G-9
10	629 569K	Maiden Lane	B-10a	B-10b	G-10
11	629 570E	Hay Street	B-11a	B-11b	G-11
12	629 571L	Franklin Street	B-12a	B-12b	G-12
13	629 572T	SR 2299 Russell Street	B-13a	B-13b	G-13
14	629 574G	Blount Street	B-14a	B-14b	G-14
15	629 877R	Cumberland Street	B-15a	B-15b	G-15
16	629 878X	Chance Street	B-16a	B-16b	G-16
17	629 879E	Moore Street	B-17a	B-17b	G-17
18	629 881F	Hay Street	B-18a	B-18b	G-18
19	629 882M	Franklin Street	B-19a	B-19b	G-19
20	629 883U	SR 2299 West Russell Street	B-20a	B-20b	G-20
21	629 884B	Rankin Street	B-21a	B-21b	G-21
22	629 885H	Blount Street	B-22a	B-22b	G-22
23	629 886P	SR 1168 Whitfield Street	B-23a	B-23b	G-23
24	629 904K	Hillsboro Street	B-24a	B-24b	G-24
25	629 905S	Moore Street	B-25a	B-25b	G-25
26	629 907F	Cumberland Street	B-26a	B-26b	G-26
27	629 910N	Langdon Street	B-27a	B-27b	G-27
28	629 911V	Jasper Street	B-28a	B-28b	G-28
29	629 912C	McLamb Street	B-29a	B-29b	G-29
30	629 913J	US 401	B-30a	B-30b	G-30
31	629 914R	SR 1614 Shawmill Road	B-31a	B-31b	G-31
32	641 772E	SR 2299 Russell Street	B-32a	B-32b	G-32
33	641 773L	Maxwell	B-33a	B-33b	G-33
34	641 774T	Donaldson Street	B-34a	B-34b	G-34
35	641 775A	SR 2311 Gillespie Street	B-35a	B-35b	G-35
36	641 776G	Dick	B-36a	B-36b	G-36
37	641 778V	SR 2299 Cool Springs Road	B-37a	B-37b	G-37
38	641 780W	Alexander	B-38a	B-38b	G-38
39	641 781D	Kennedy	B-39a	B-39b	G-39
40	641 782K	SR 2299 Wilmington Street	B-40a	B-40b	G-40
41	641 783S	Burns	B-41a	B-41b	G-41
42	641 785F	C	B-42a	B-42b	G-42
43	641 787U	SR 2299 East Russell Street	B-43a	B-43b	G-43
44	641 788B	US 301 Eastern Boulevard	B-44a	B-44b	G-44
45	641 789H	King	B-45a	B-45b	G-45
46	641 790C	Racepath	B-46a	B-46b	G-46
47	641 791J	Broad Street	B-47a	B-47b	G-47
48	641 792R	SR 2200 Deep Creek Road	B-48a	B-48b	G-48
49	641 793X	NC 53/NC 210	B-49a	B-49b	G-49
50	641 794E	SR 1839 Plymouth Street	B-50a	B-50b	G-50
51	904 419J	Eastwood Avenue	B-51a	B-51b	G-51
52	904 420D	Dobson Drive	B-52a	B-52b	G-52

Figures included in this section

Fayetteville City Park *(Crossing #465 903W)*

This road is a local gravel road that is only used by the park and is only open during park hours. This crossing allows pedestrians, handicap and elderly drivers, and park vehicles to access the nature center. The current average daily traffic volume (ADT) is 430 and the warning devices consist of crossbucks. No accidents have occurred at this location during the previous ten-year period.

Near-Term Recommendation: Add signage for pedestrians (Look signs on crossbucks)
Estimated Cost: $600.00

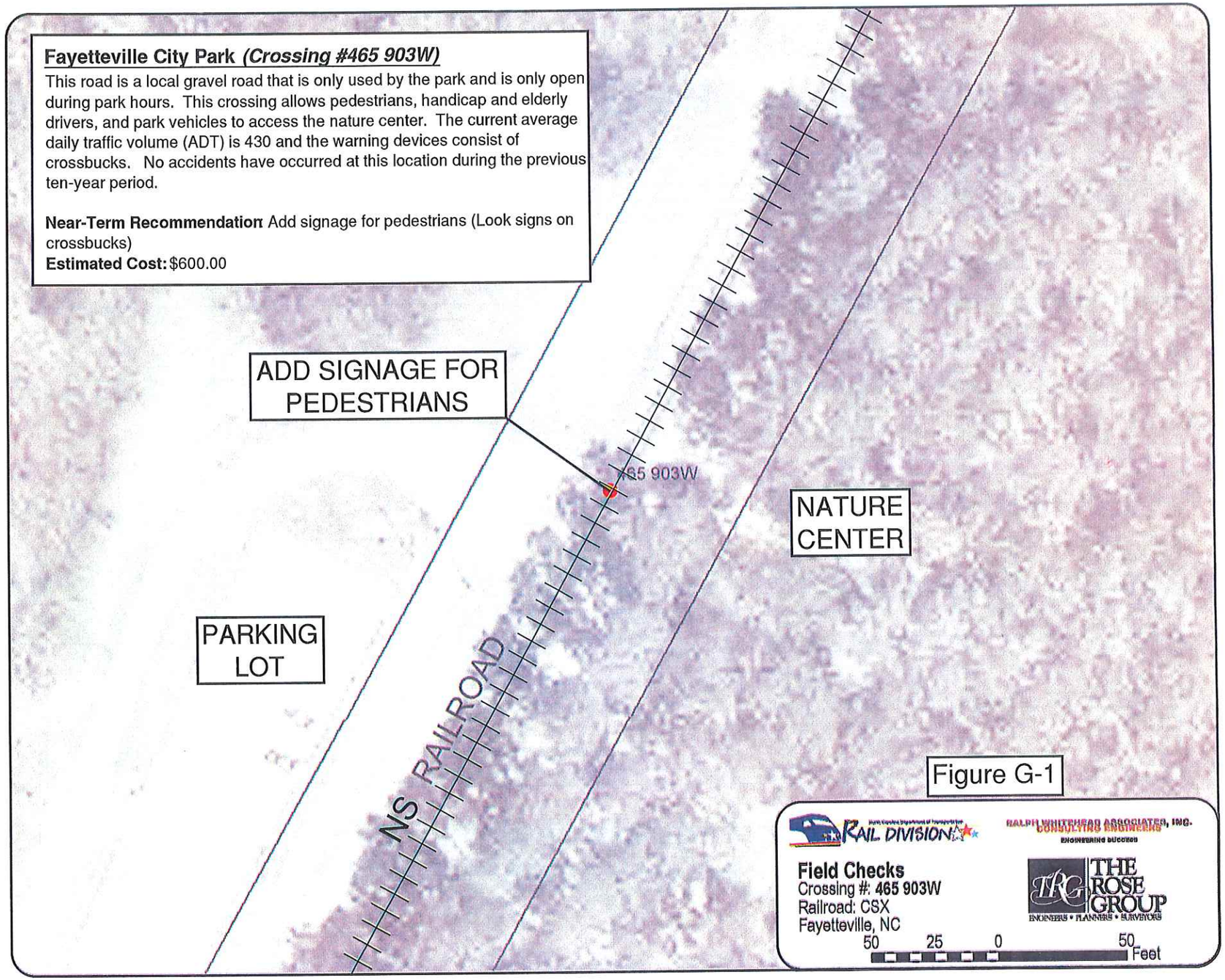
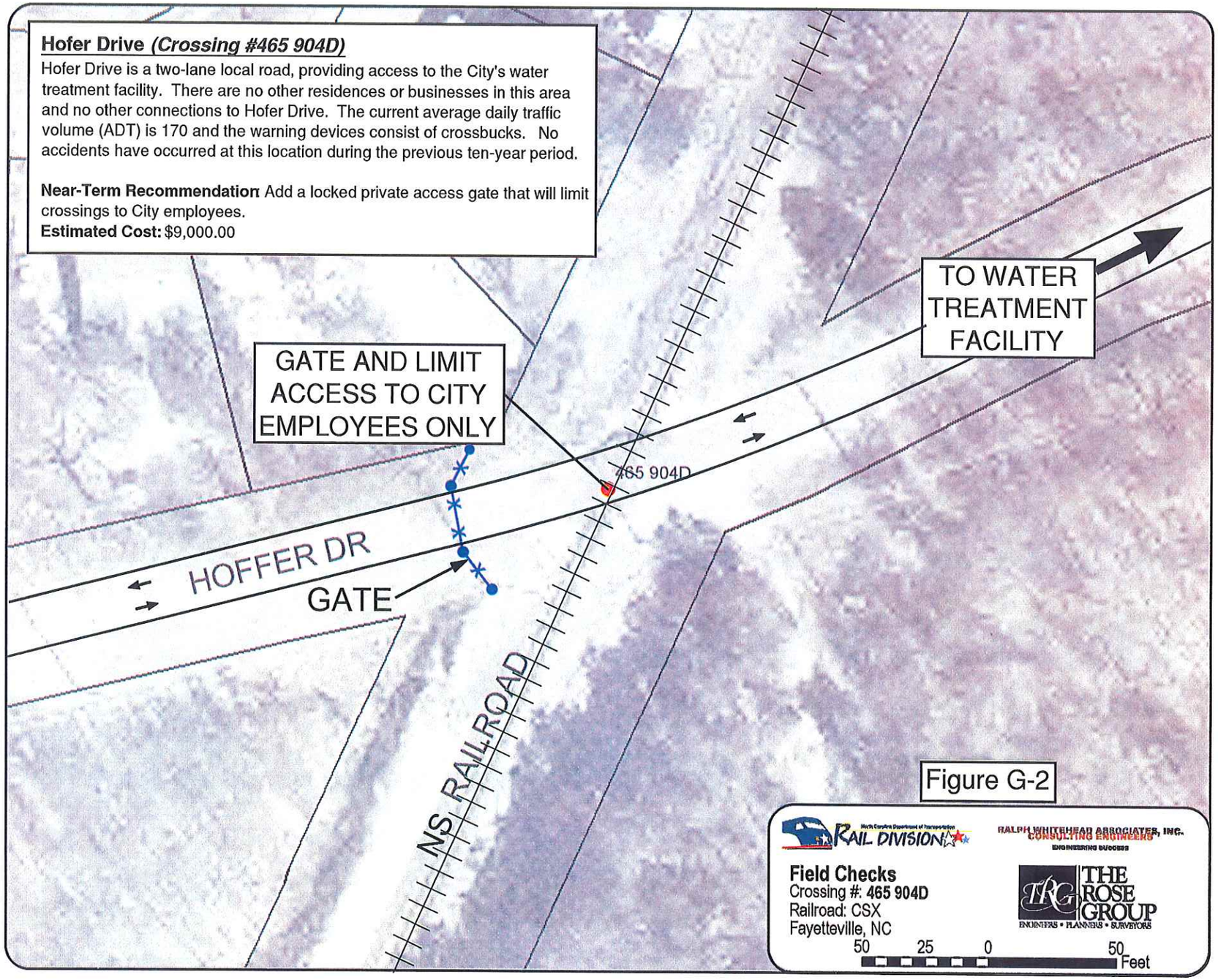
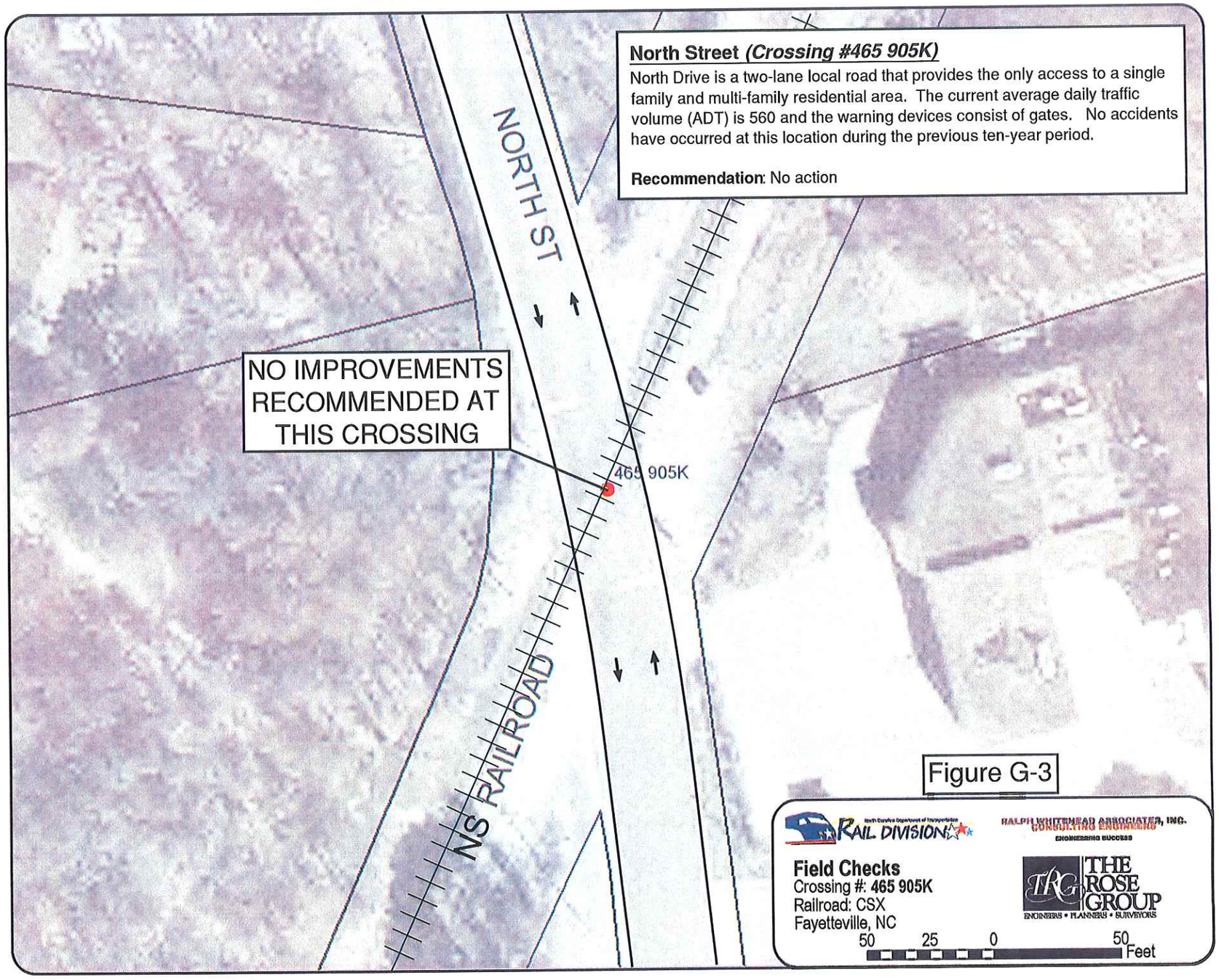
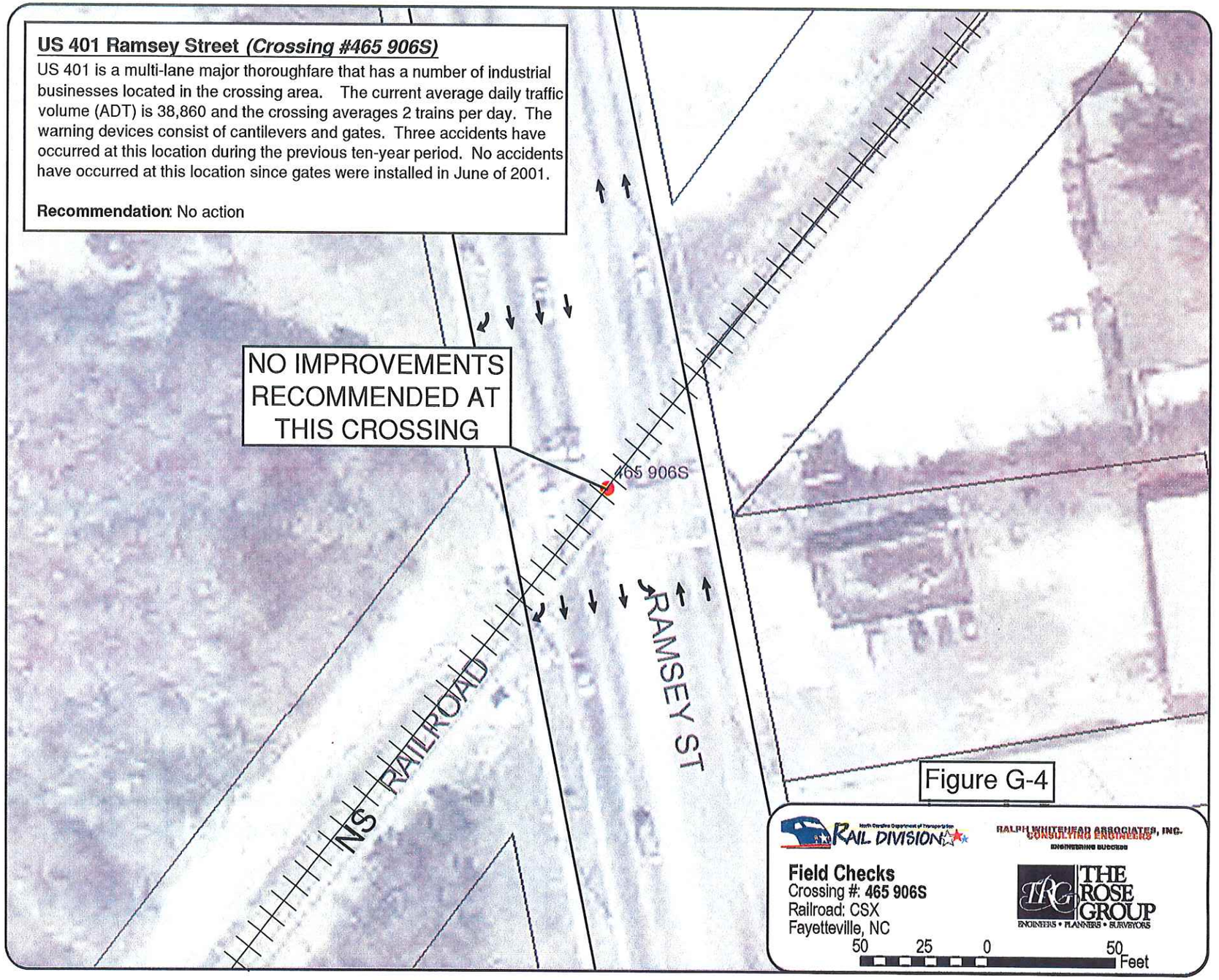


Figure G-1


Hofer Drive (Crossing #465 904D)
Hofer Drive is a two-lane local road, providing access to the City's water treatment facility. There are no other residences or businesses in this area and no other connections to Hofer Drive. The current average daily traffic volume (ADT) is 170 and the warning devices consist of crossbucks. No accidents have occurred at this location during the previous ten-year period.
Near-Term Recommendation: Add a locked private access gate that will limit crossings to City employees.
Estimated Cost: $9,000.00
TO WATER TREATMENT FACILITY
GATE AND LIMIT ACCESS TO CITY EMPLOYEES ONLY
465 904D
HOFFER DR
GATE
NS RAILROAD
Figure G-2
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 465 904D
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50
Feet


North Street (Crossing #465 905K)
North Drive is a two-lane local road that provides the only access to a single family and multi-family residential area. The current average daily traffic volume (ADT) is 560 and the warning devices consist of gates. No accidents have occurred at this location during the previous ten-year period.
Recommendation: No action
NORTH ST
NO IMPROVEMENTS RECOMMENDED AT THIS CROSSING
465 905K
NS RAILROAD
Figure G-3
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 465 905K
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet


US 401 Ramsey Street (Crossing #465 906S)
US 401 is a multi-lane major thoroughfare that has a number of industrial businesses located in the crossing area. The current average daily traffic volume (ADT) is 38,860 and the crossing averages 2 trains per day. The warning devices consist of cantilevers and gates. Three accidents have occurred at this location during the previous ten-year period. No accidents have occurred at this location since gates were installed in June of 2001.
Recommendation: No action
NO IMPROVEMENTS RECOMMENDED AT THIS CROSSING
465 906S
NS RAILROAD
RAMSEY ST
Figure G-4
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
Field Checks
Crossing #: 465 906S
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet

Hillsboro Street *(Crossing #465 911N)*

Hillsboro Street is a two-lane minor thoroughfare that has some industrial businesses located around the crossing area. The current average daily traffic volume (ADT) is 3,860 and the warning devices consist of crossbucks. No accidents have occurred at this location during the previous ten-year period.

Current Project: Construct signals and gates (Z-4406AD)

Long-Term Recommendation: Rail realignment project that would take the Norfolk Southern rail traffic into Milan Yard.
Estimated Cost: To be determined

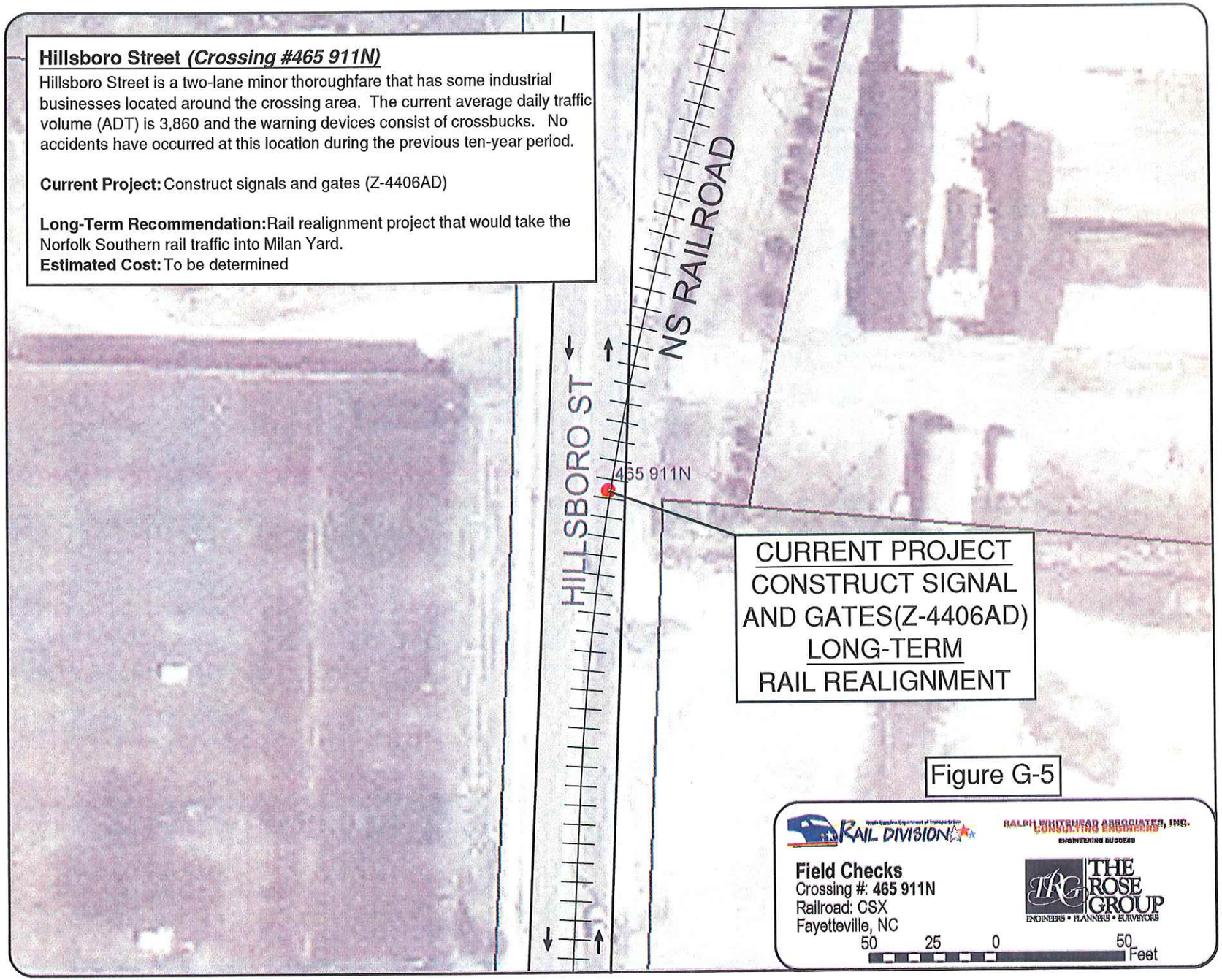
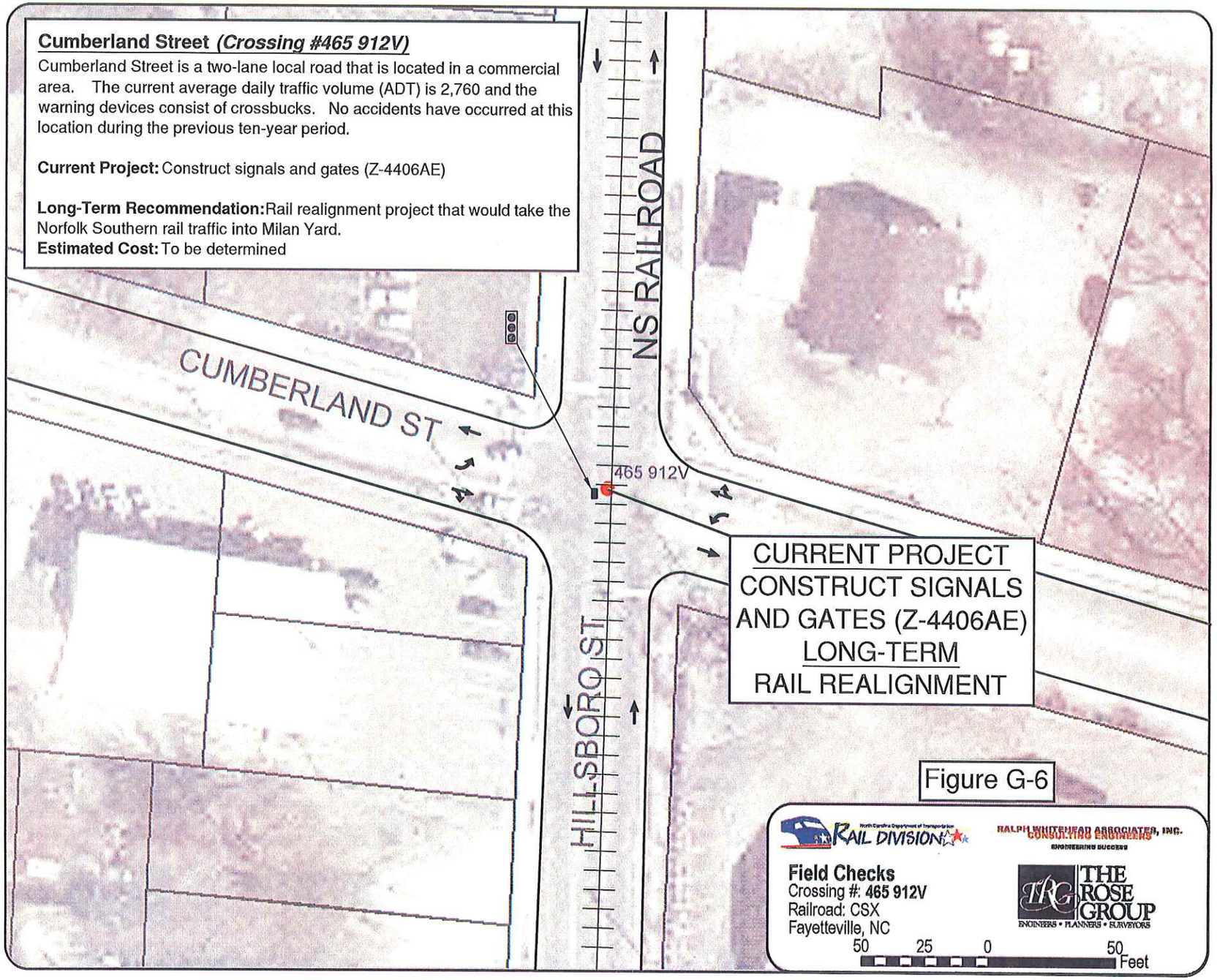


Figure G-5


Cumberland Street (Crossing #465 912V)
Cumberland Street is a two-lane local road that is located in a commercial area. The current average daily traffic volume (ADT) is 2,760 and the warning devices consist of crossbucks. No accidents have occurred at this location during the previous ten-year period.
Current Project: Construct signals and gates (Z-4406AE)
Long-Term Recommendation: Rail realignment project that would take the Norfolk Southern rail traffic into Milan Yard.
Estimated Cost: To be determined
CUMBERLAND ST
NS RAILROAD
HILLSBORO ST
465 912V
CURRENT PROJECT
CONSTRUCT SIGNALS AND GATES (Z-4406AE)
LONG-TERM
RAIL REALIGNMENT
Figure G-6
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 465 912V
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet

Chance Street *(Crossing #465 913C)*

Chance Street is a two-lane local road that is located in a residential area. The current average daily traffic volume (ADT) is 550 and the warning devices consist of crossbucks. One accident has occurred at this location during the previous ten-year period. This crossing is redundant due to it's proximity to Cumberland Street and Moore Street.

Near-Term Recommendation: Close crossing and channelize Chance Street to allow right-in/right-out operations only
Estimated Cost: $12,000
Long-Term Recommendation: Rail realignment project that would take the Norfolk Southern rail traffic into Milan Yard and remove rail from Hillsboro Street
Estimated Cost: To be determined

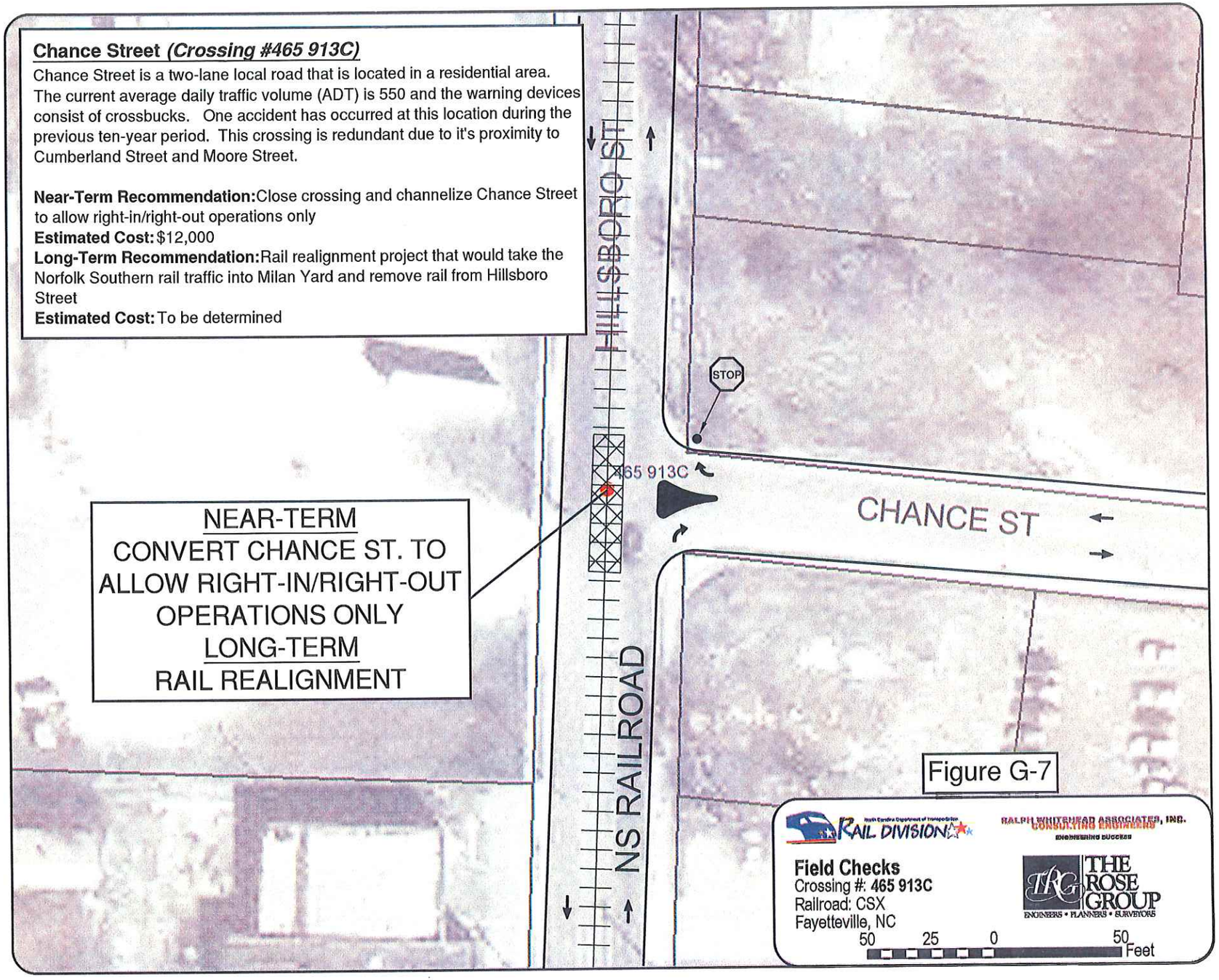
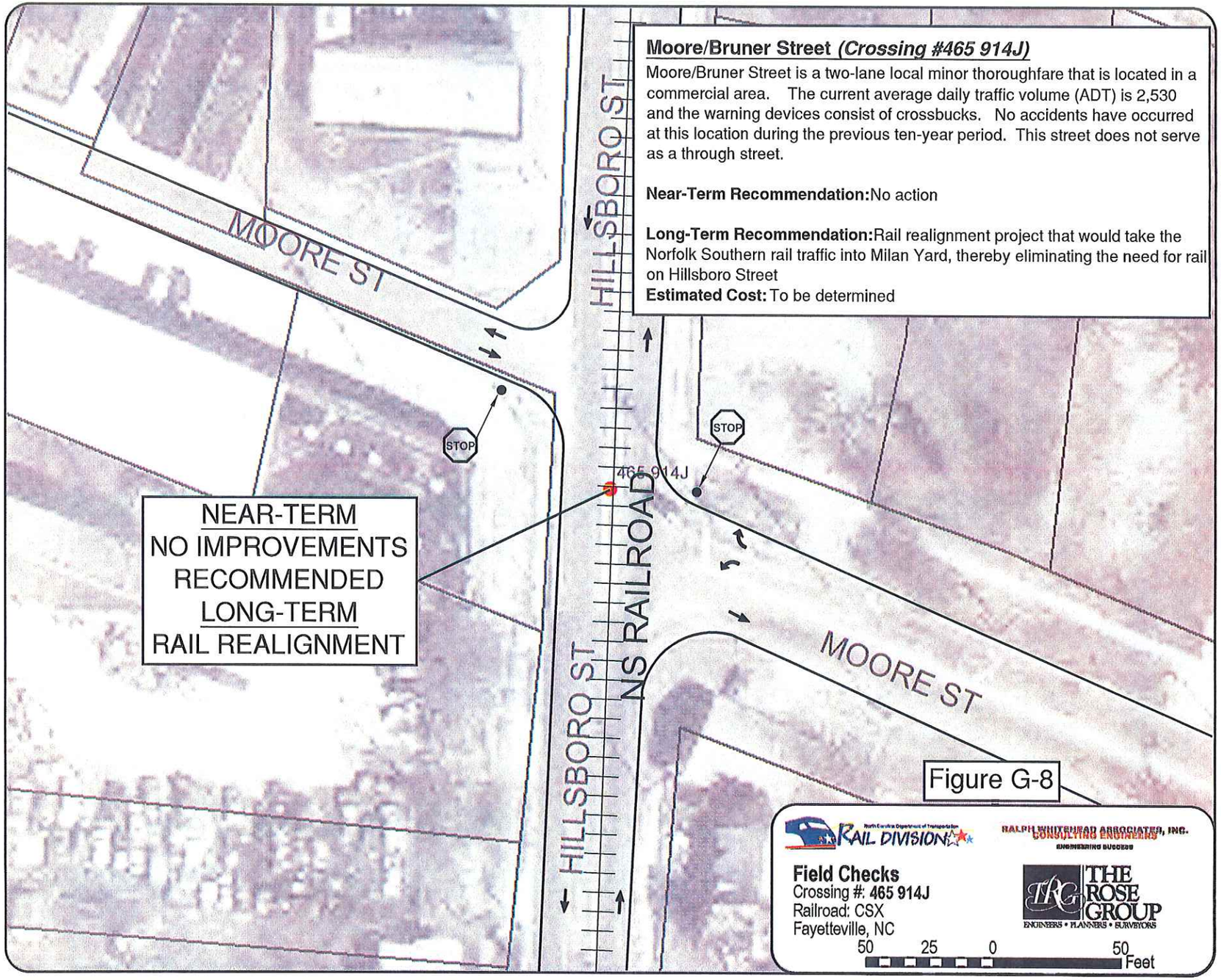
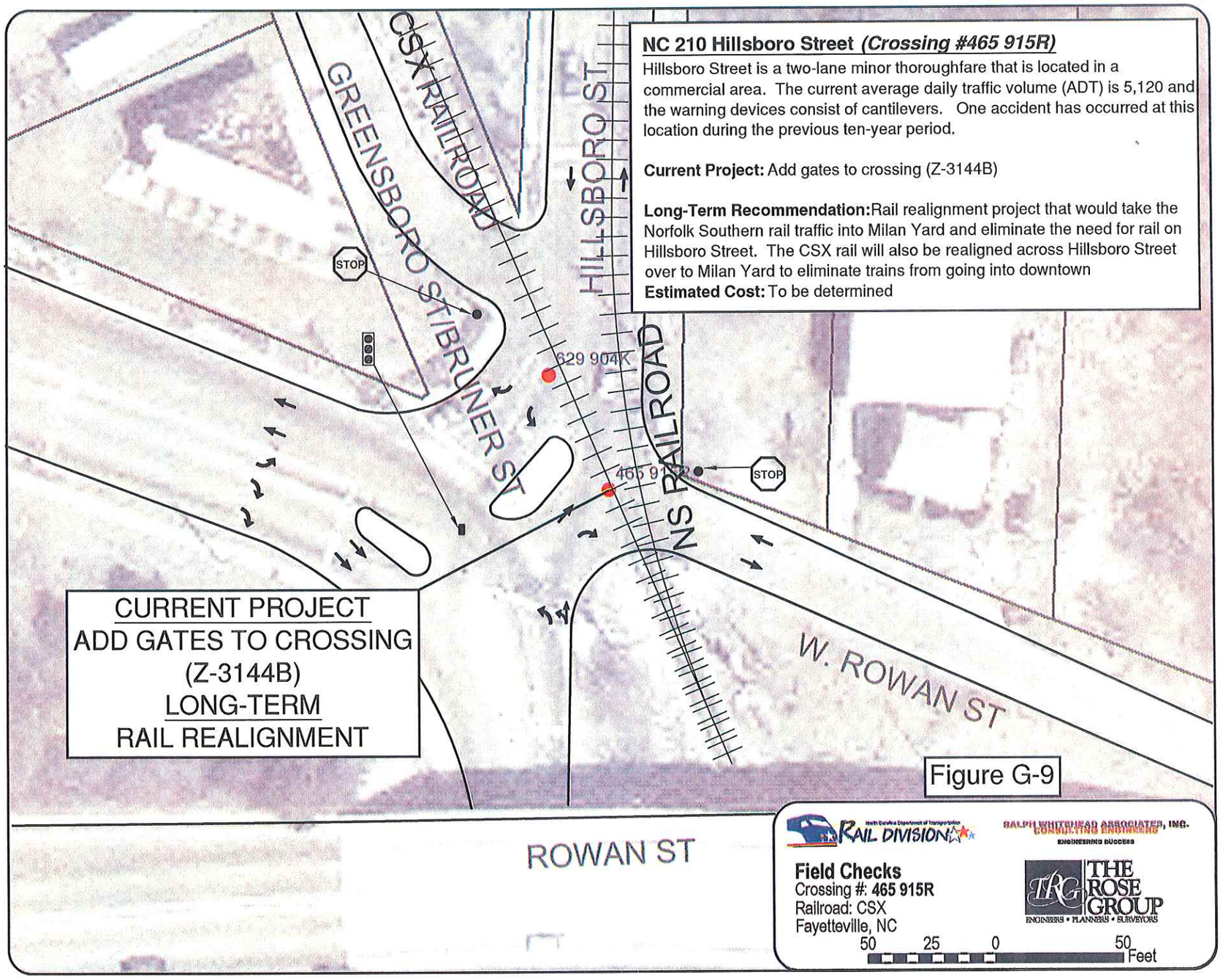


Figure G-7

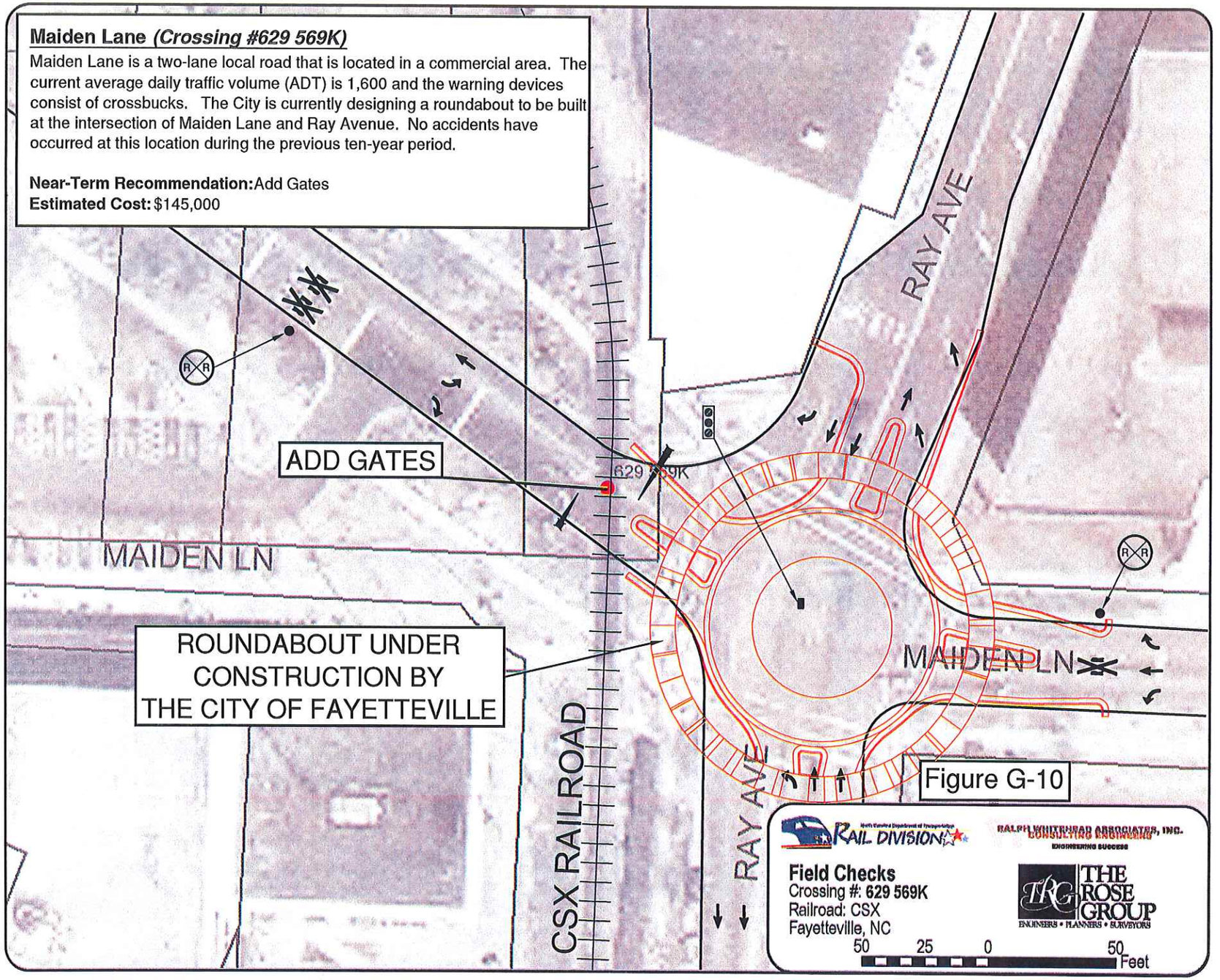

MOORE ST
HILLSBORO ST
NS RAILROAD
HILLSBORO ST
MOORE ST
STOP
STOP
465 914J
NEAR-TERM
NO IMPROVEMENTS
RECOMMENDED
LONG-TERM
RAIL REALIGNMENT
Moore/Bruner Street (Crossing #465 914J)
Moore/Bruner Street is a two-lane local minor thoroughfare that is located in a commercial area. The current average daily traffic volume (ADT) is 2,530 and the warning devices consist of crossbucks. No accidents have occurred at this location during the previous ten-year period. This street does not serve as a through street.
Near-Term Recommendation: No action
Long-Term Recommendation: Rail realignment project that would take the Norfolk Southern rail traffic into Milan Yard, thereby eliminating the need for rail on Hillsboro Street
Estimated Cost: To be determined
Figure G-8
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 465 914J
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet

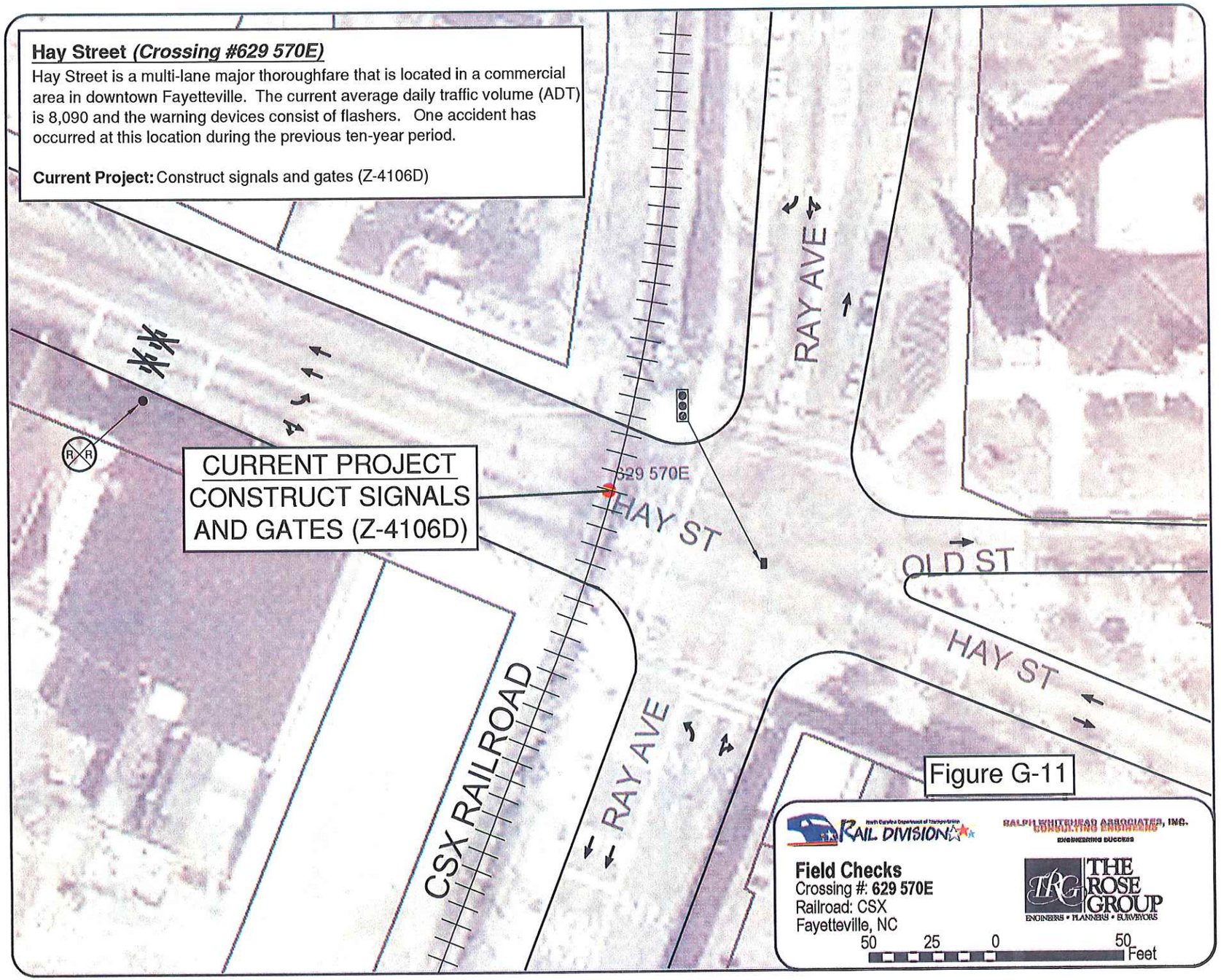

NC 210 Hillsboro Street (Crossing #465 915R)
Hillsboro Street is a two-lane minor thoroughfare that is located in a commercial area. The current average daily traffic volume (ADT) is 5,120 and the warning devices consist of cantilevers. One accident has occurred at this location during the previous ten-year period.
Current Project: Add gates to crossing (Z-3144B)
Long-Term Recommendation: Rail realignment project that would take the Norfolk Southern rail traffic into Milan Yard and eliminate the need for rail on Hillsboro Street. The CSX rail will also be realigned across Hillsboro Street over to Milan Yard to eliminate trains from going into downtown
Estimated Cost: To be determined
CSX RAILROAD
GREENSBORO ST/BRUNER ST
HILLSBORO ST
NS RAILROAD
W. ROWAN ST
ROWAN ST
STOP
STOP
629 904K
465 915R
CURRENT PROJECT
ADD GATES TO CROSSING
(Z-3144B)
LONG-TERM
RAIL REALIGNMENT
Figure G-9
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 465 915R
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50
Feet

Maiden Lane *(Crossing #629 569K)*

Maiden Lane is a two-lane local road that is located in a commercial area. The current average daily traffic volume (ADT) is 1,600 and the warning devices consist of crossbucks. The City is currently designing a roundabout to be built at the intersection of Maiden Lane and Ray Avenue. No accidents have occurred at this location during the previous ten-year period.

Near-Term Recommendation: Add Gates
Estimated Cost: $145,000




Hay Street (Crossing #629 570E)
Hay Street is a multi-lane major thoroughfare that is located in a commercial area in downtown Fayetteville. The current average daily traffic volume (ADT) is 8,090 and the warning devices consist of flashers. One accident has occurred at this location during the previous ten-year period.
Current Project: Construct signals and gates (Z-4106D)
CURRENT PROJECT
CONSTRUCT SIGNALS
AND GATES (Z-4106D)
629 570E
HAY ST
RAY AVE
OLD ST
HAY ST
CSX RAILROAD
RAY AVE
Figure G-11
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING EXCELLENCE
Field Checks
Crossing #: 629 570E
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet

Franklin Street *(Crossing #629 571L)*

Franklin Street is a two-lane major thoroughfare that is located in a commercial area in downtown Fayetteville. The current average daily traffic volume (ADT) is 3,030 and the warning devices consist of crossbucks. One accident has occurred at this location during the previous ten-year period.

Current Project: Construct signals and gates (Z-3344C)

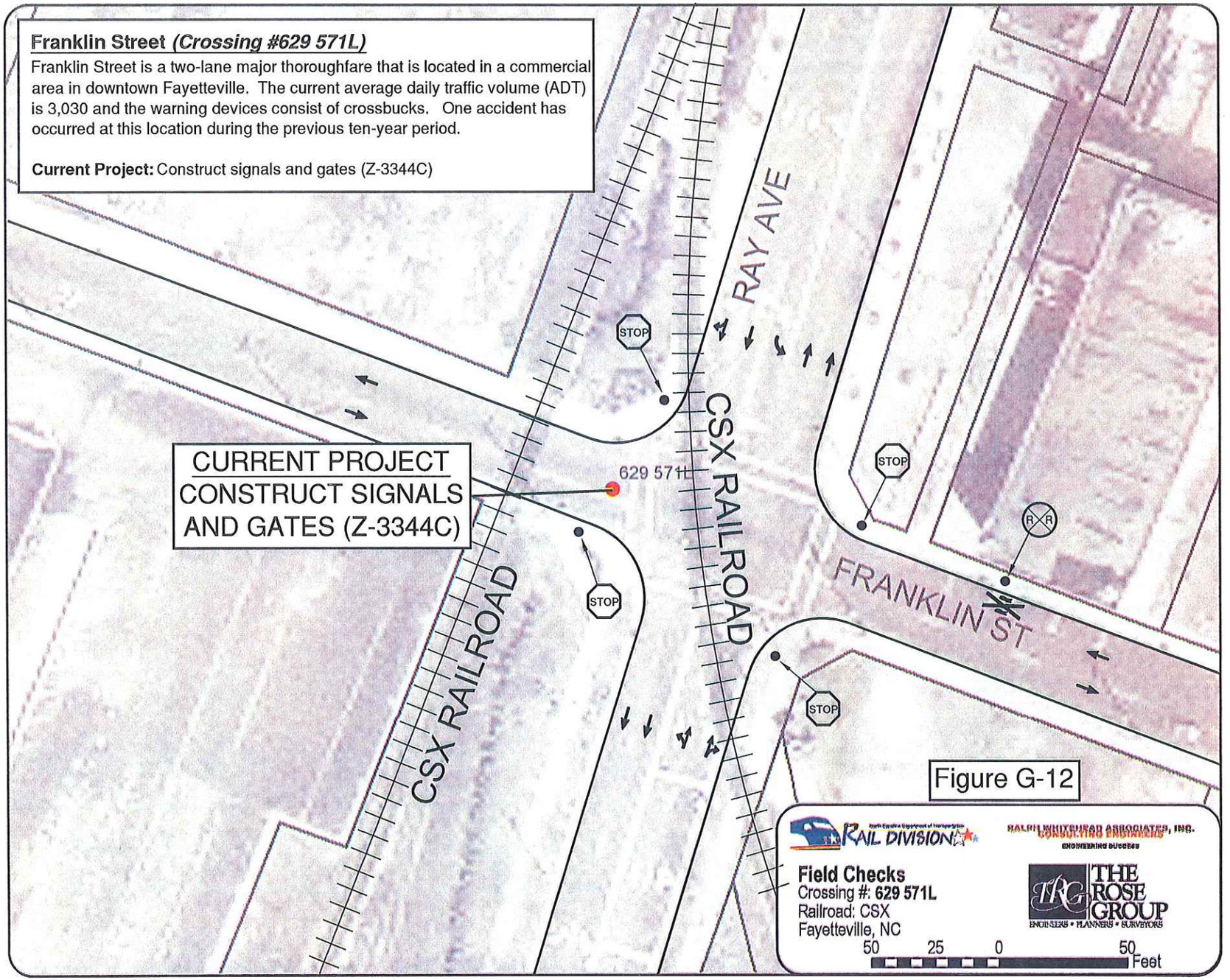


Figure G-12

SR 2299 Russell Street *(Crossing #629 572T)*

Russell Street is a multi-lane major thoroughfare that is located in a commercial area in downtown Fayetteville. The current average daily traffic volume (ADT) is 8,990 and the warning devices consist of crossbucks. The City is currently designing an extension of Ray Avenue that will intersect Russell Street in this area. One accident has occurred at this location during the previous ten-year period.

Near-Term Recommendation: Add Gates
Estimated Cost: $145,000

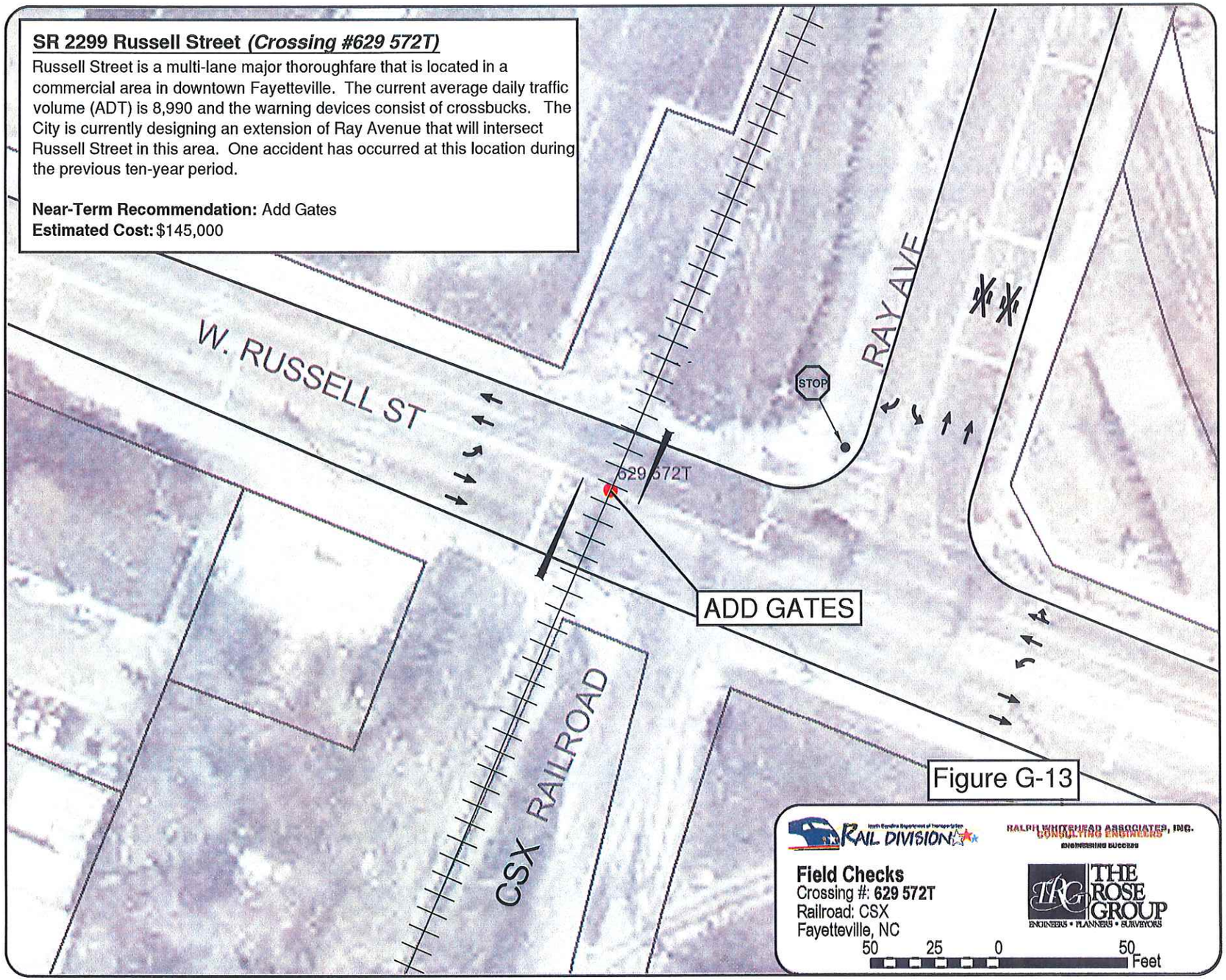
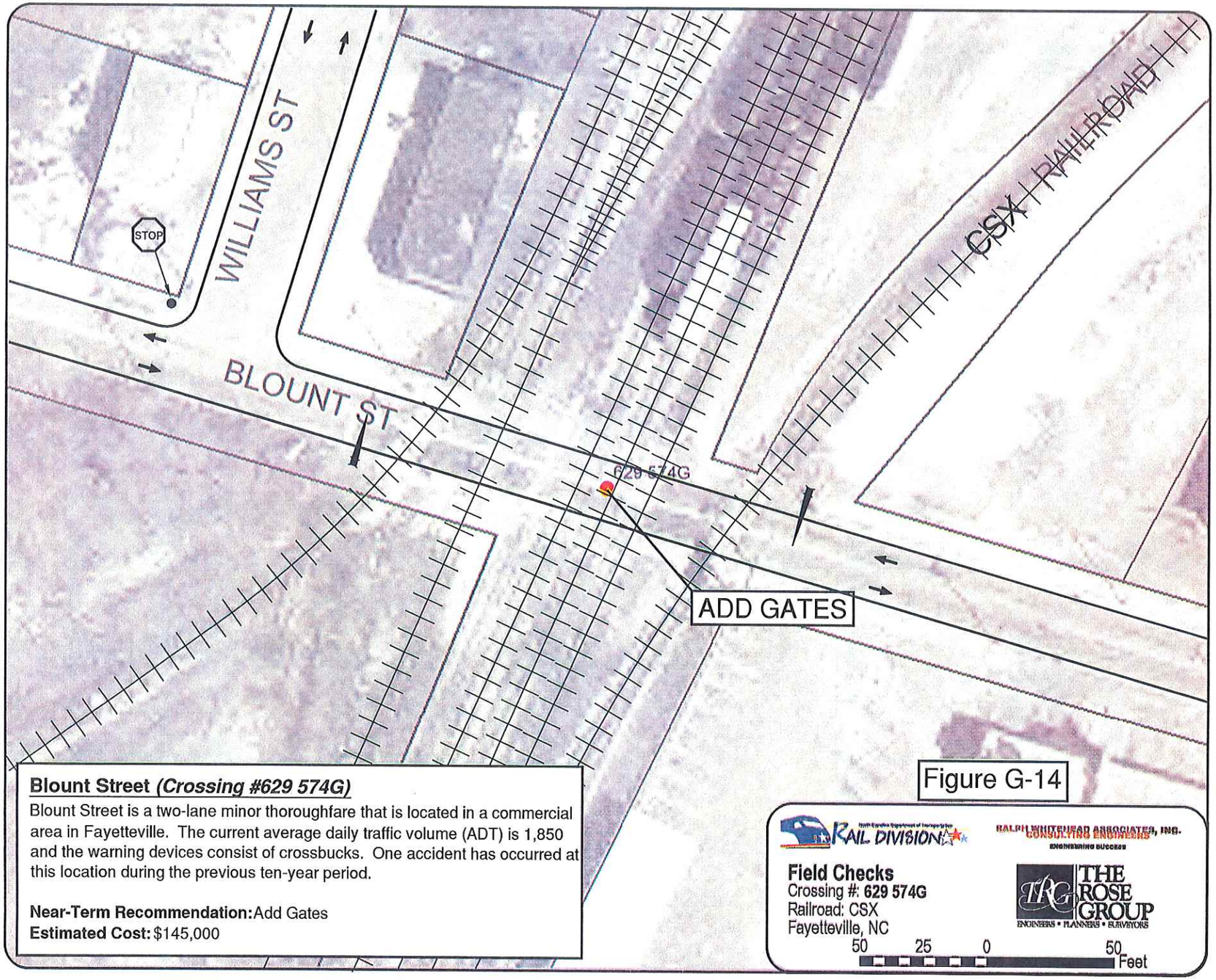


Figure G-13



Blount Street ***(Crossing #629 574G)***

Blount Street is a two-lane minor thoroughfare that is located in a commercial area in Fayetteville. The current average daily traffic volume (ADT) is 1,850 and the warning devices consist of crossbucks. One accident has occurred at this location during the previous ten-year period.

Near-Term Recommendation: Add Gates
Estimated Cost: $145,000

Figure G-14

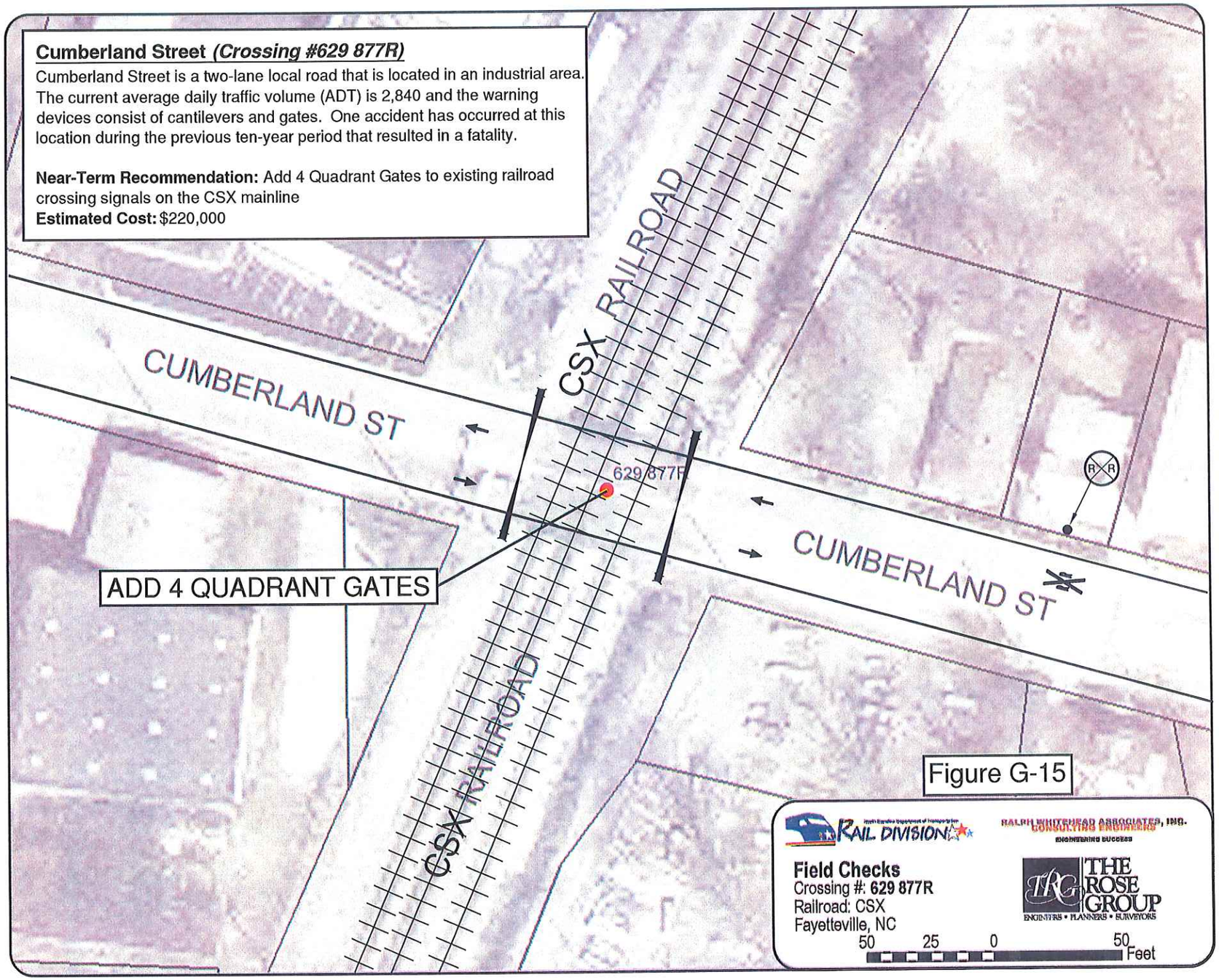
RAIL DIVISION

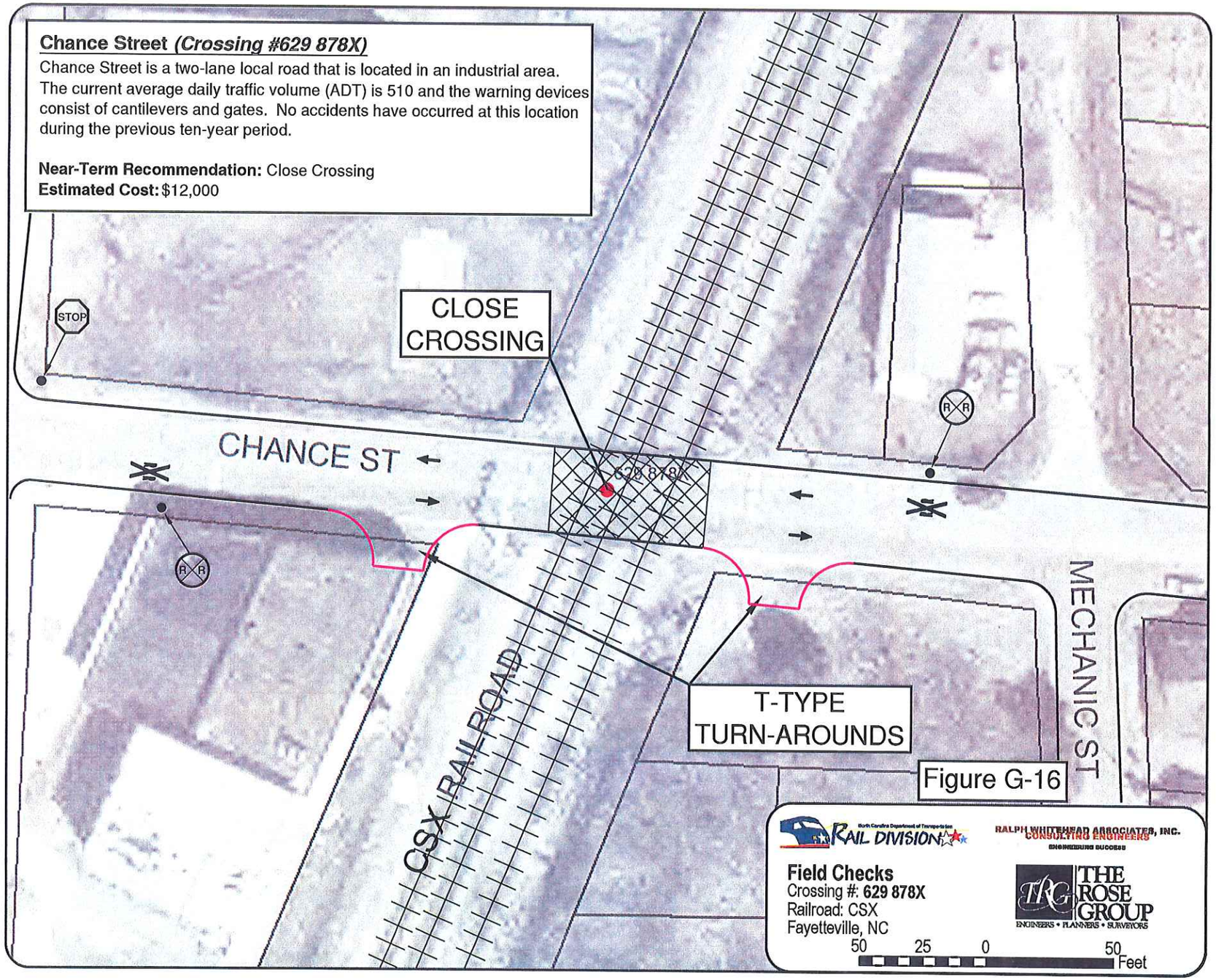
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS

Field Checks
Crossing #: **629 574G**
Railroad: CSX
Fayetteville, NC

THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS

50 25 0 50 Feet


Cumberland Street (Crossing #629 877R)
Cumberland Street is a two-lane local road that is located in an industrial area. The current average daily traffic volume (ADT) is 2,840 and the warning devices consist of cantilevers and gates. One accident has occurred at this location during the previous ten-year period that resulted in a fatality.
Near-Term Recommendation: Add 4 Quadrant Gates to existing railroad crossing signals on the CSX mainline
Estimated Cost: $220,000
CUMBERLAND ST
CSX RAILROAD
629 877R
CUMBERLAND ST
ADD 4 QUADRANT GATES
CSX RAILROAD
Figure G-15
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 629 877R
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet


Chance Street (Crossing #629 878X)
Chance Street is a two-lane local road that is located in an industrial area. The current average daily traffic volume (ADT) is 510 and the warning devices consist of cantilevers and gates. No accidents have occurred at this location during the previous ten-year period.
Near-Term Recommendation: Close Crossing
Estimated Cost: $12,000
STOP
CLOSE CROSSING
CHANCE ST
629 878X
R R
R R
CSX RAILROAD
T-TYPE TURN-AROUNDS
MECHANIC ST
Figure G-16
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
Field Checks
Crossing #: 629 878X
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet

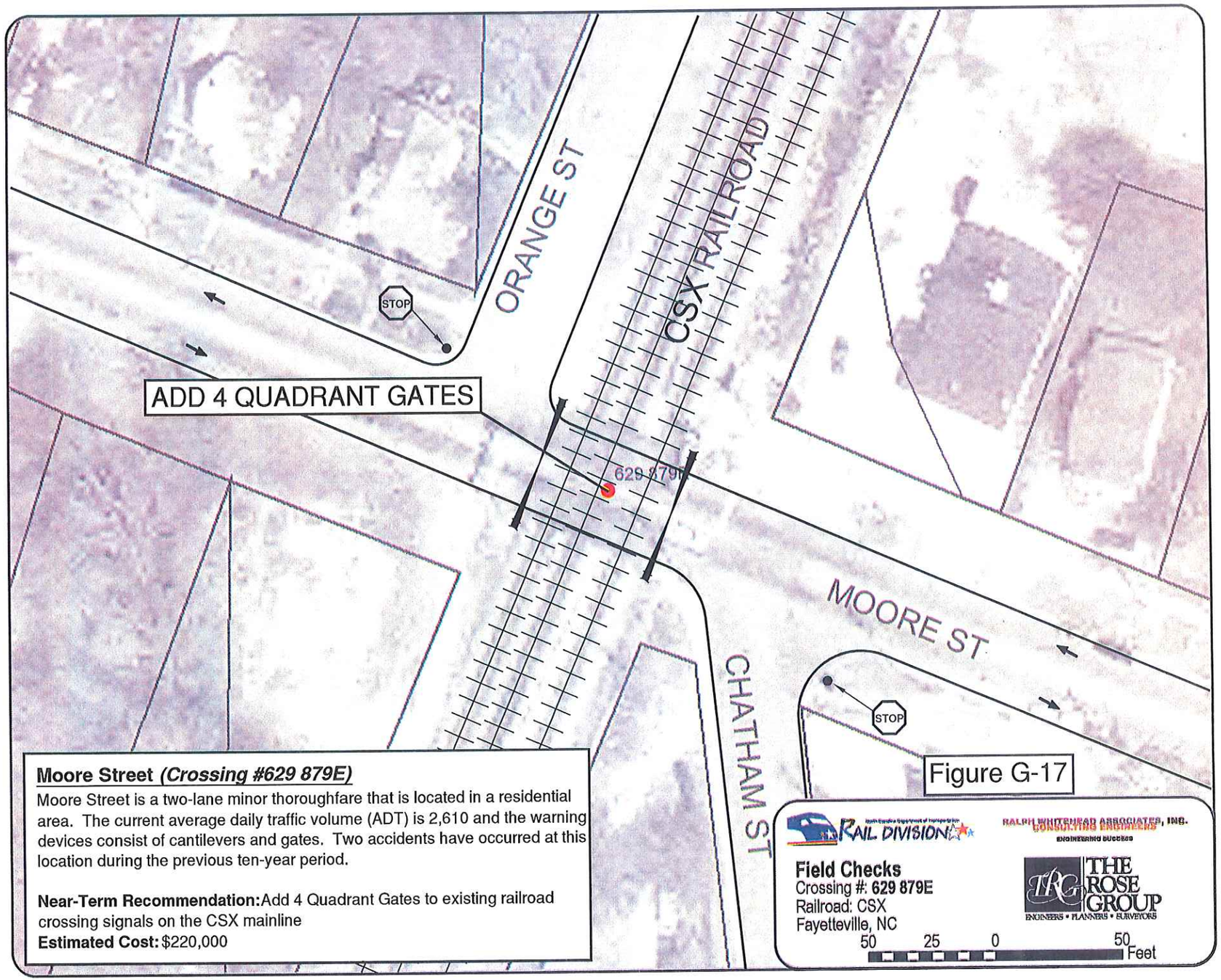
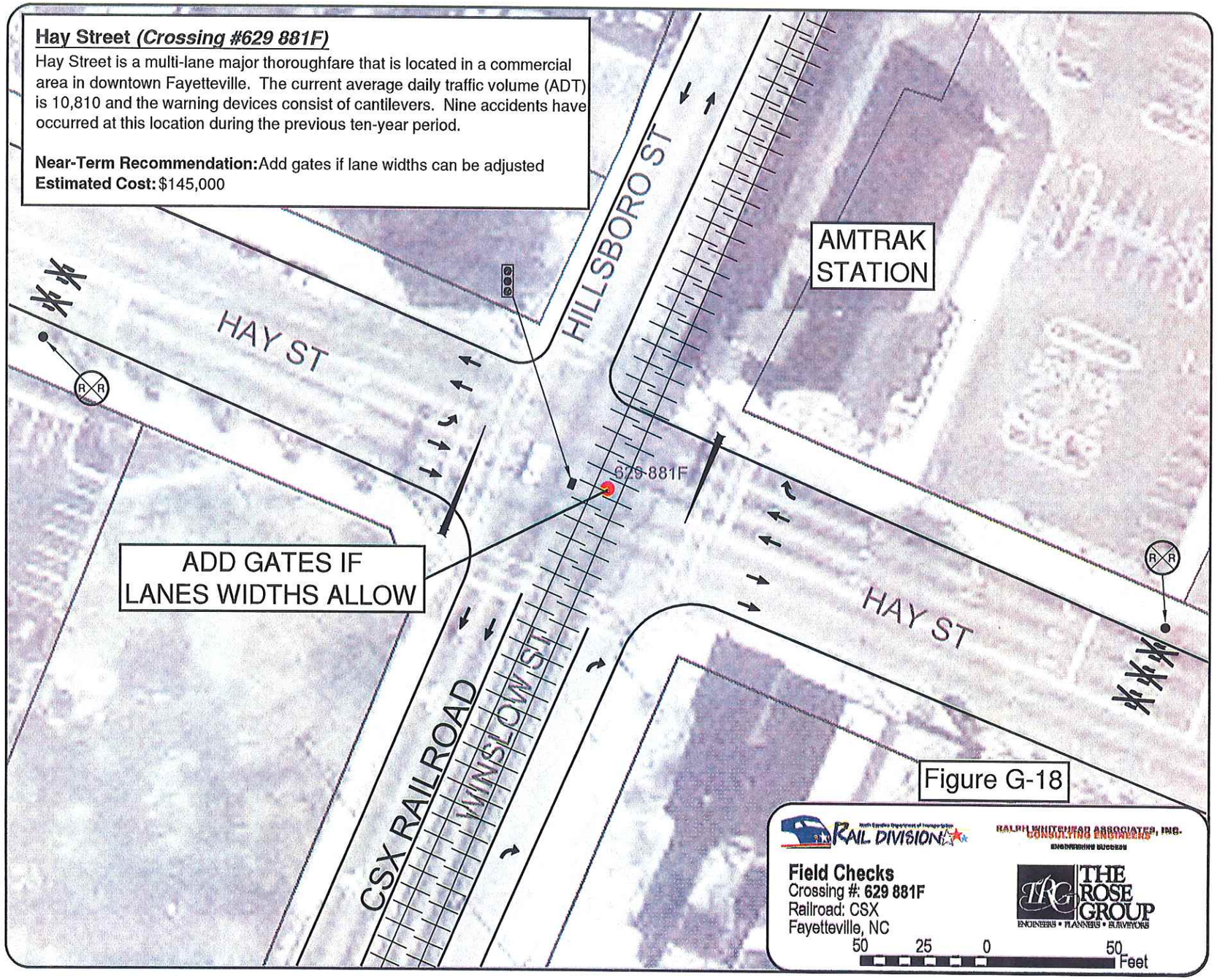
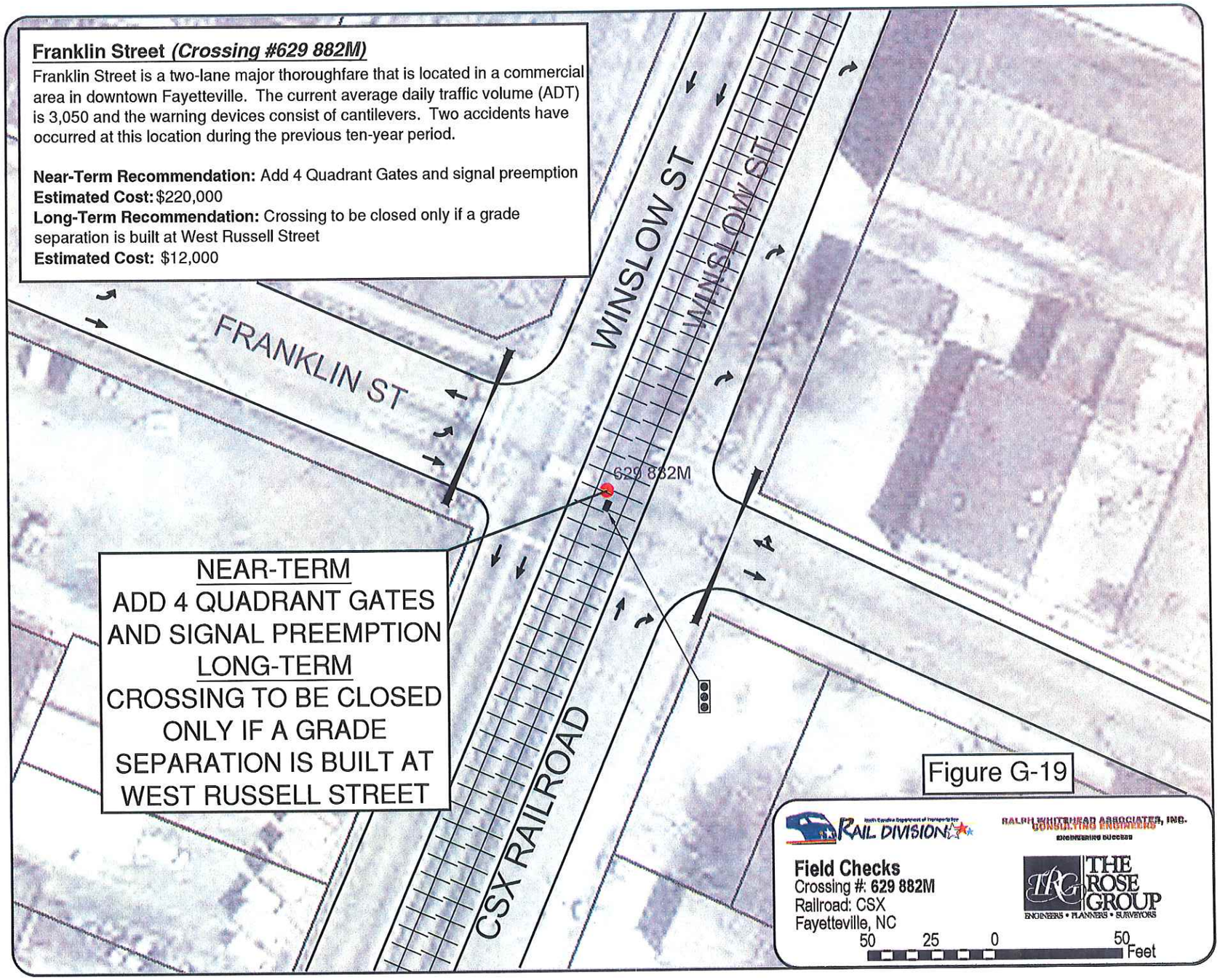
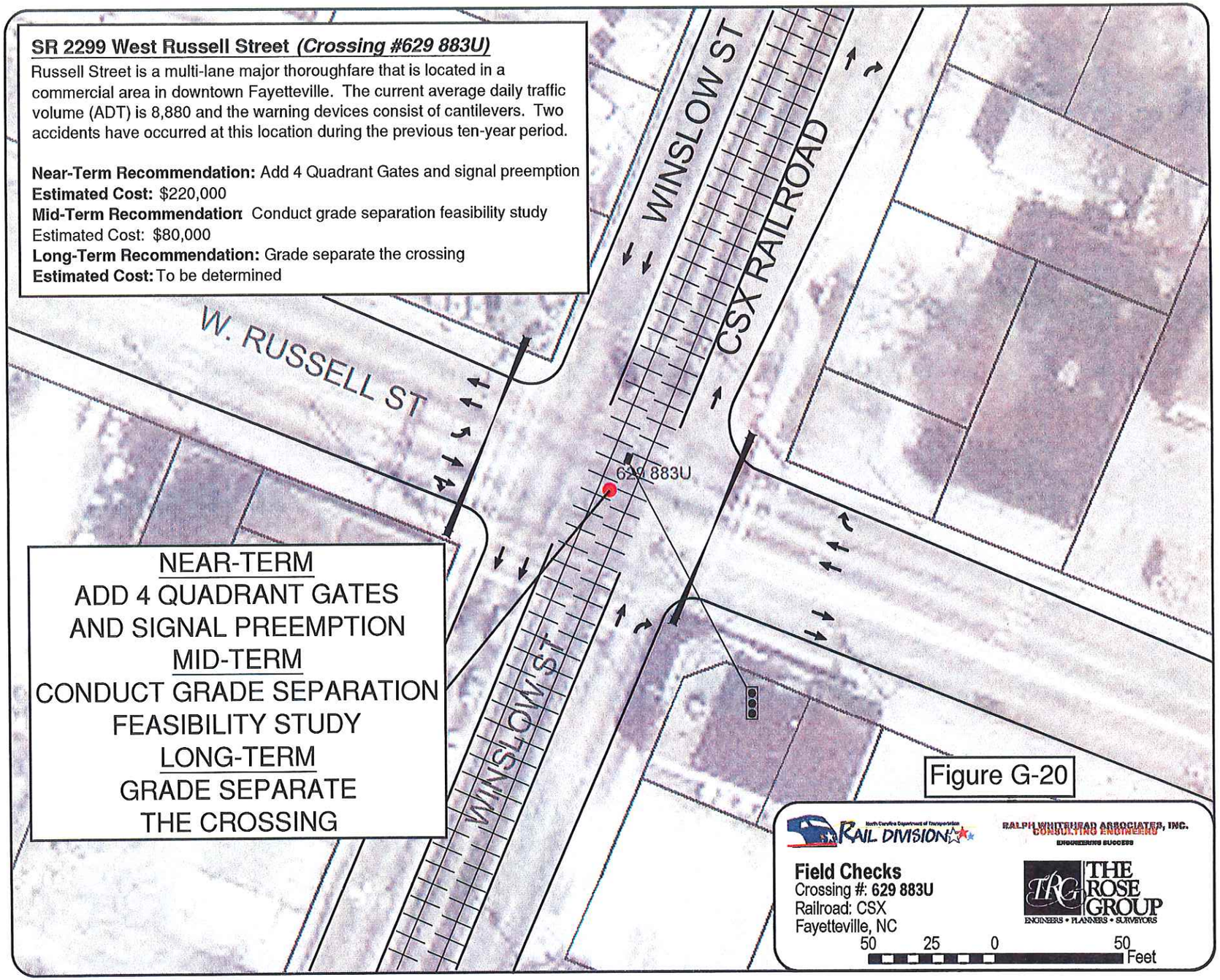
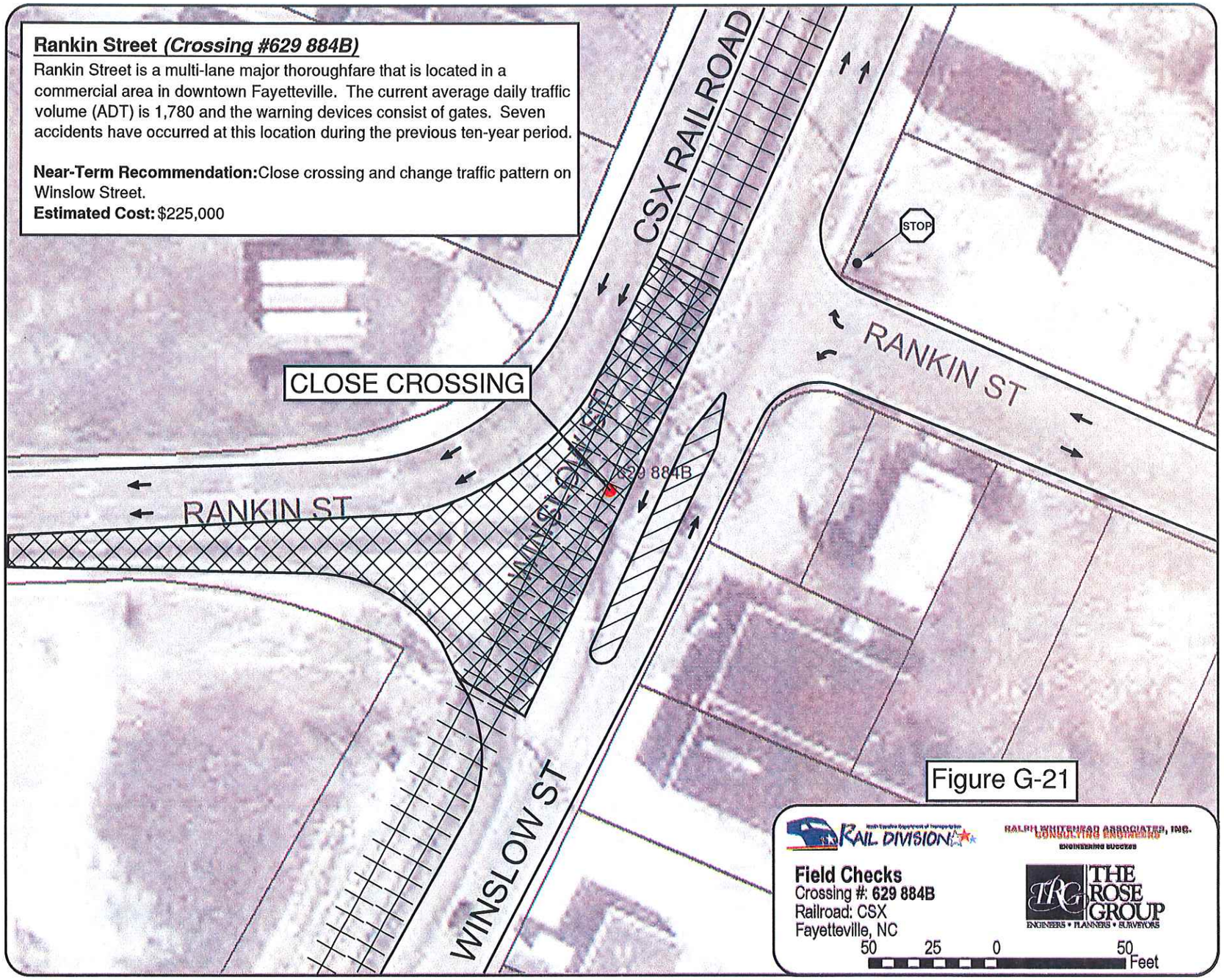

ORANGE ST
CSX RAILROAD
STOP
ADD 4 QUADRANT GATES
629 879E
MOORE ST
CHATHAM ST
STOP
Moore Street (Crossing #629 879E)
Moore Street is a two-lane minor thoroughfare that is located in a residential area. The current average daily traffic volume (ADT) is 2,610 and the warning devices consist of cantilevers and gates. Two accidents have occurred at this location during the previous ten-year period.
Near-Term Recommendation: Add 4 Quadrant Gates to existing railroad crossing signals on the CSX mainline
Estimated Cost: $220,000
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 629 879E
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet

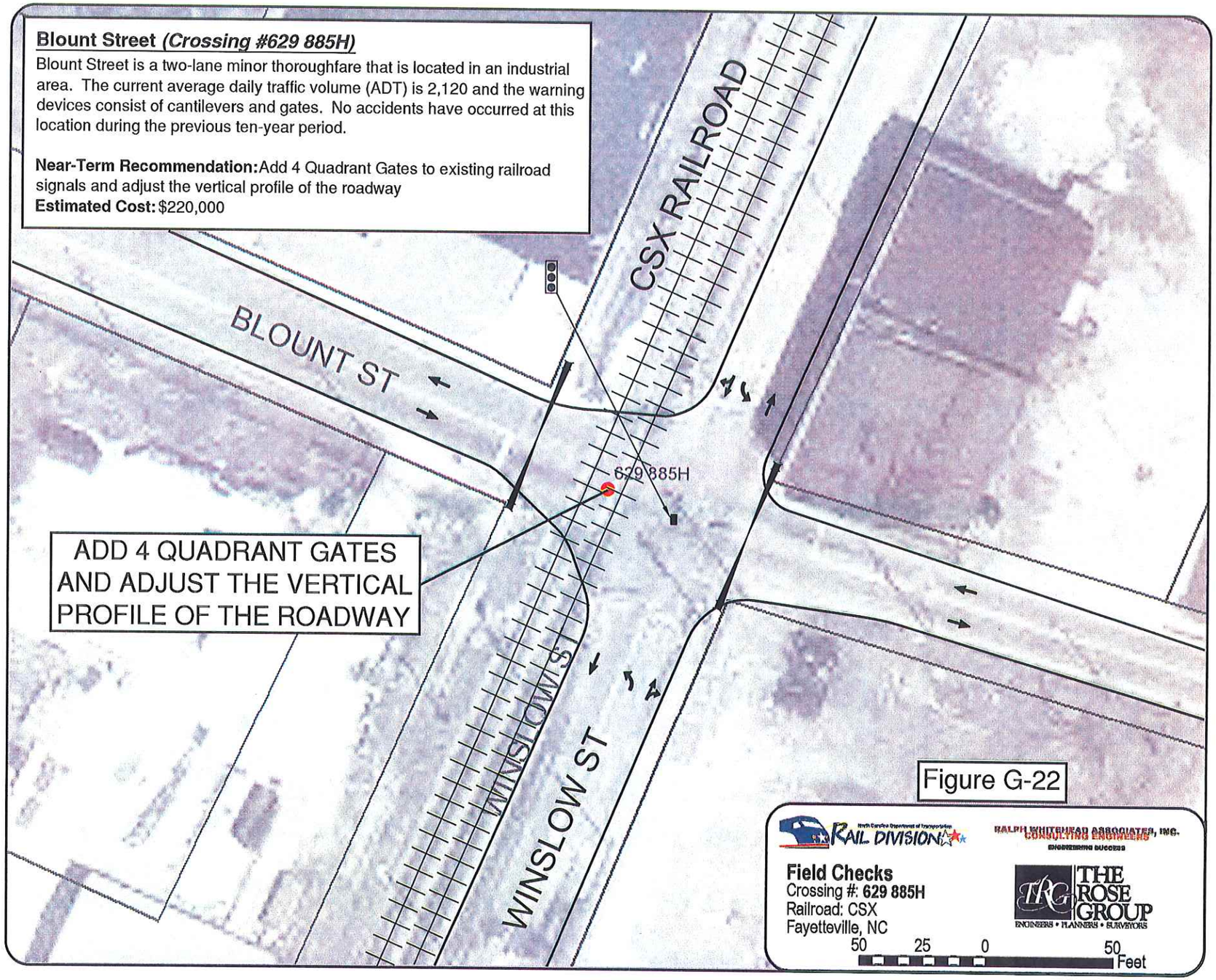
Figure G-17

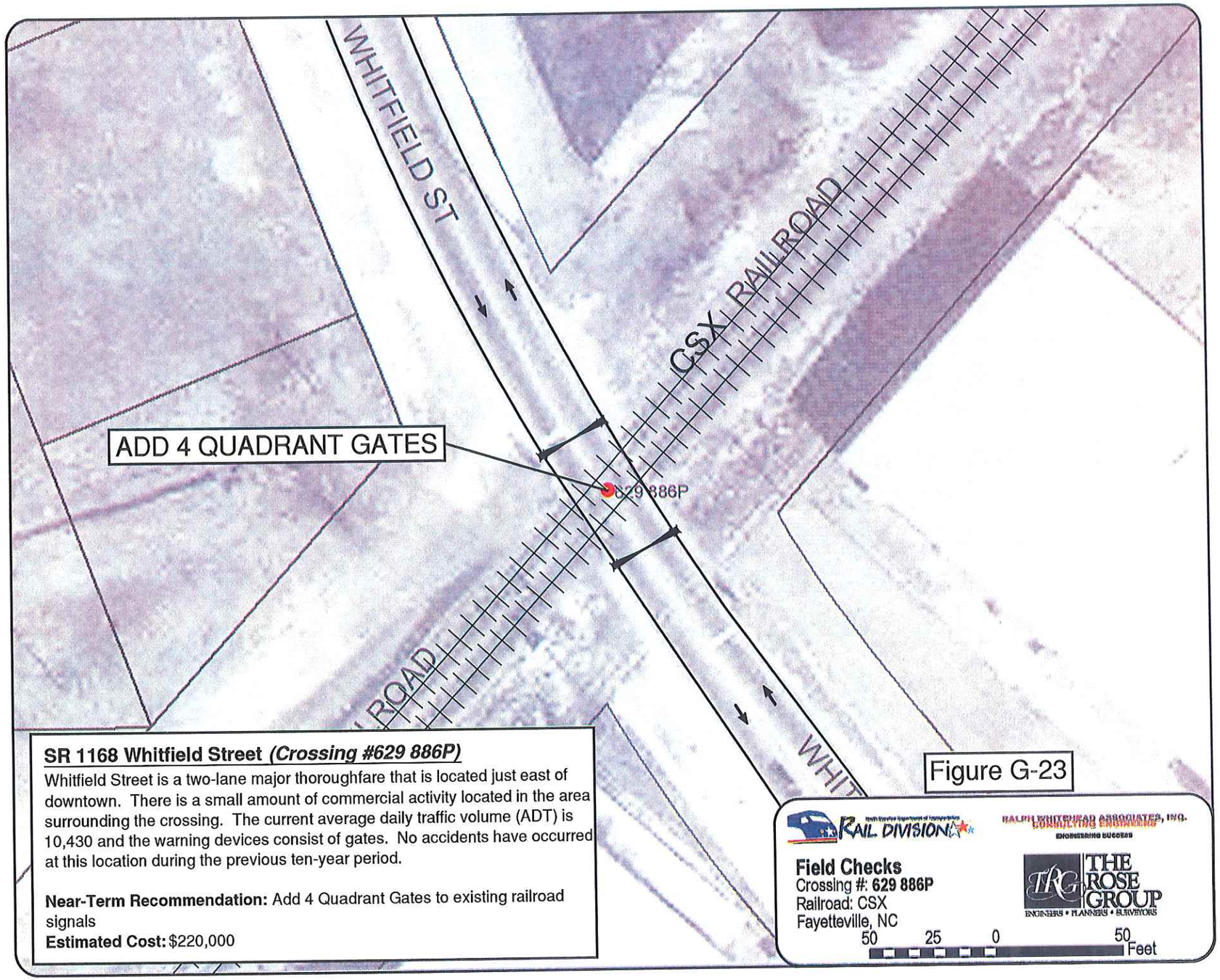

Hay Street (Crossing #629 881F)
Hay Street is a multi-lane major thoroughfare that is located in a commercial area in downtown Fayetteville. The current average daily traffic volume (ADT) is 10,810 and the warning devices consist of cantilevers. Nine accidents have occurred at this location during the previous ten-year period.
Near-Term Recommendation: Add gates if lane widths can be adjusted
Estimated Cost: $145,000
AMTRAK STATION
HAY ST
HILLSBORO ST
629 881F
ADD GATES IF LANES WIDTHS ALLOW
CSX RAILROAD
WINSLOW ST
HAY ST
Figure G-18
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS
Field Checks
Crossing #: 629 881F
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet


Franklin Street (Crossing #629 882M)
Franklin Street is a two-lane major thoroughfare that is located in a commercial area in downtown Fayetteville. The current average daily traffic volume (ADT) is 3,050 and the warning devices consist of cantilevers. Two accidents have occurred at this location during the previous ten-year period.
Near-Term Recommendation: Add 4 Quadrant Gates and signal preemption
Estimated Cost: $220,000
Long-Term Recommendation: Crossing to be closed only if a grade separation is built at West Russell Street
Estimated Cost: $12,000
FRANKLIN ST
WINSLOW ST
WINSLOW ST
629 882M
CSX RAILROAD
NEAR-TERM
ADD 4 QUADRANT GATES
AND SIGNAL PREEMPTION
LONG-TERM
CROSSING TO BE CLOSED
ONLY IF A GRADE
SEPARATION IS BUILT AT
WEST RUSSELL STREET
Figure G-19
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
Field Checks
Crossing #: 629 882M
Railroad: CSX
Fayetteville, NC
50 25 0 50 Feet


SR 2299 West Russell Street (Crossing #629 883U)
Russell Street is a multi-lane major thoroughfare that is located in a commercial area in downtown Fayetteville. The current average daily traffic volume (ADT) is 8,880 and the warning devices consist of cantilevers. Two accidents have occurred at this location during the previous ten-year period.
Near-Term Recommendation: Add 4 Quadrant Gates and signal preemption
Estimated Cost: $220,000
Mid-Term Recommendation: Conduct grade separation feasibility study
Estimated Cost: $80,000
Long-Term Recommendation: Grade separate the crossing
Estimated Cost: To be determined
W. RUSSELL ST
WINSLOW ST
CSX RAILROAD
629 883U
WINSLOW ST
NEAR-TERM
ADD 4 QUADRANT GATES
AND SIGNAL PREEMPTION
MID-TERM
CONDUCT GRADE SEPARATION
FEASIBILITY STUDY
LONG-TERM
GRADE SEPARATE
THE CROSSING
Figure G-20
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
Field Checks
Crossing #: 629 883U
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50
Feet


Rankin Street (Crossing #629 884B)
Rankin Street is a multi-lane major thoroughfare that is located in a commercial area in downtown Fayetteville. The current average daily traffic volume (ADT) is 1,780 and the warning devices consist of gates. Seven accidents have occurred at this location during the previous ten-year period.
Near-Term Recommendation: Close crossing and change traffic pattern on Winslow Street.
Estimated Cost: $225,000
CSX RAILROAD
STOP
RANKIN ST
CLOSE CROSSING
629 884B
RANKIN ST
WINSLOW ST
Figure G-21
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 629 884B
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50
Feet


Blount Street (Crossing #629 885H)
Blount Street is a two-lane minor thoroughfare that is located in an industrial area. The current average daily traffic volume (ADT) is 2,120 and the warning devices consist of cantilevers and gates. No accidents have occurred at this location during the previous ten-year period.
Near-Term Recommendation: Add 4 Quadrant Gates to existing railroad signals and adjust the vertical profile of the roadway
Estimated Cost: $220,000
CSX RAILROAD
BLOUNT ST
629 885H
ADD 4 QUADRANT GATES AND ADJUST THE VERTICAL PROFILE OF THE ROADWAY
WINSLOW ST
WINSLOW ST
Figure G-22
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
Field Checks
Crossing #: 629 885H
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet



SR 1168 Whitfield Street ***(Crossing #629 886P)***

Whitfield Street is a two-lane major thoroughfare that is located just east of downtown. There is a small amount of commercial activity located in the area surrounding the crossing. The current average daily traffic volume (ADT) is 10,430 and the warning devices consist of gates. No accidents have occurred at this location during the previous ten-year period.

Near-Term Recommendation: Add 4 Quadrant Gates to existing railroad signals

Estimated Cost: $220,000

Figure G-23

RAIL DIVISION

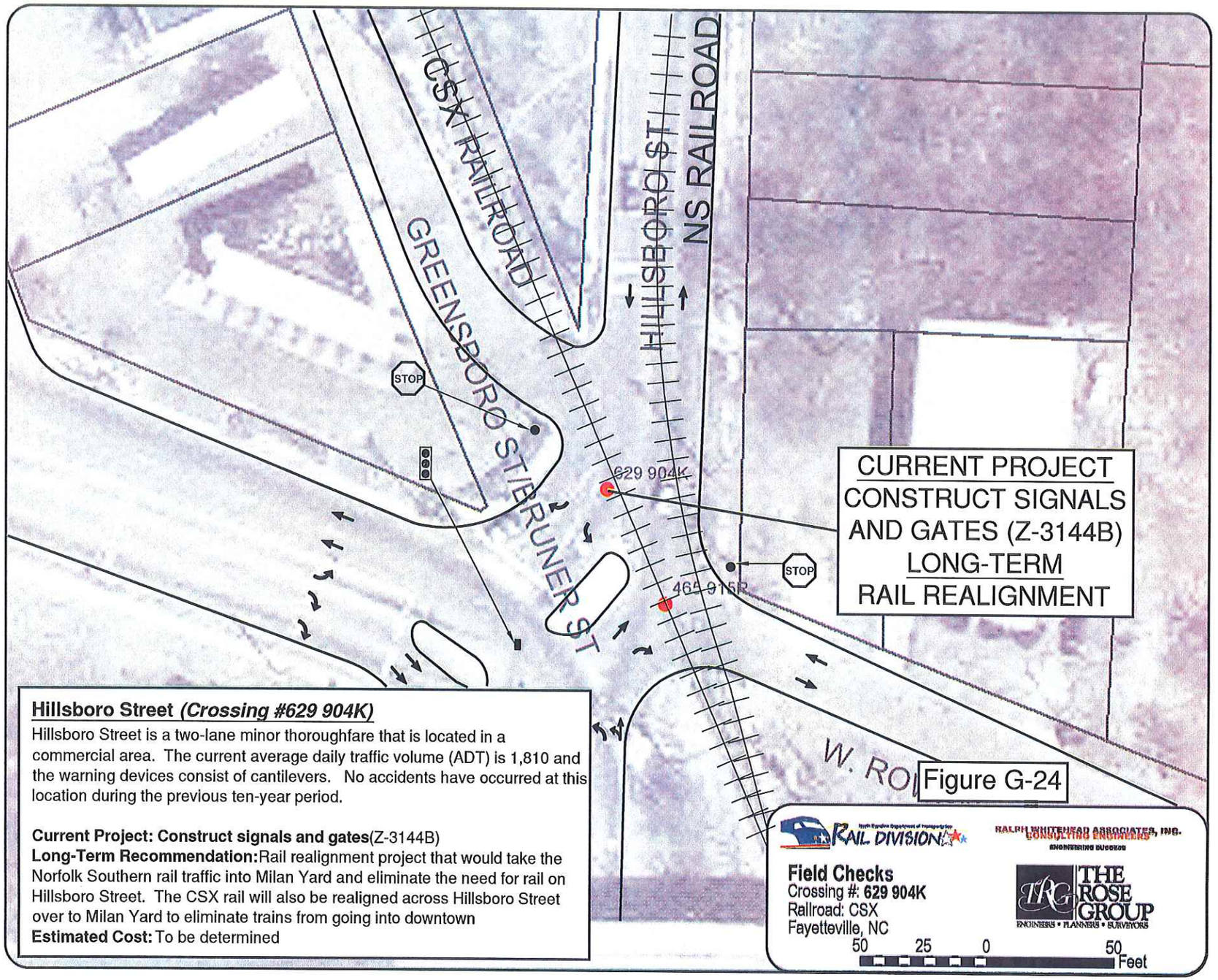
RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS

ENGINEERING SUCCESS

Field Checks
Crossing #: **629 886P**
Railroad: CSX
Fayetteville, NC

THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS

50 25 0 50 Feet



Hillsboro Street *(Crossing #629 904K)*

Hillsboro Street is a two-lane minor thoroughfare that is located in a commercial area. The current average daily traffic volume (ADT) is 1,810 and the warning devices consist of cantilevers. No accidents have occurred at this location during the previous ten-year period.

Current Project: Construct signals and gates(Z-3144B)
Long-Term Recommendation: Rail realignment project that would take the Norfolk Southern rail traffic into Milan Yard and eliminate the need for rail on Hillsboro Street. The CSX rail will also be realigned across Hillsboro Street over to Milan Yard to eliminate trains from going into downtown
Estimated Cost: To be determined

Moore Street *(Crossing #629 905S)*

Moore Street is a two-lane minor thoroughfare that is located in a residential area. The current average daily traffic volume (ADT) is 1,050 and the warning devices consist of crossbucks. No accidents have occurred at this location during the previous ten-year period.

Near-Term Recommendation: Add gates
Estimated Cost: $145,000

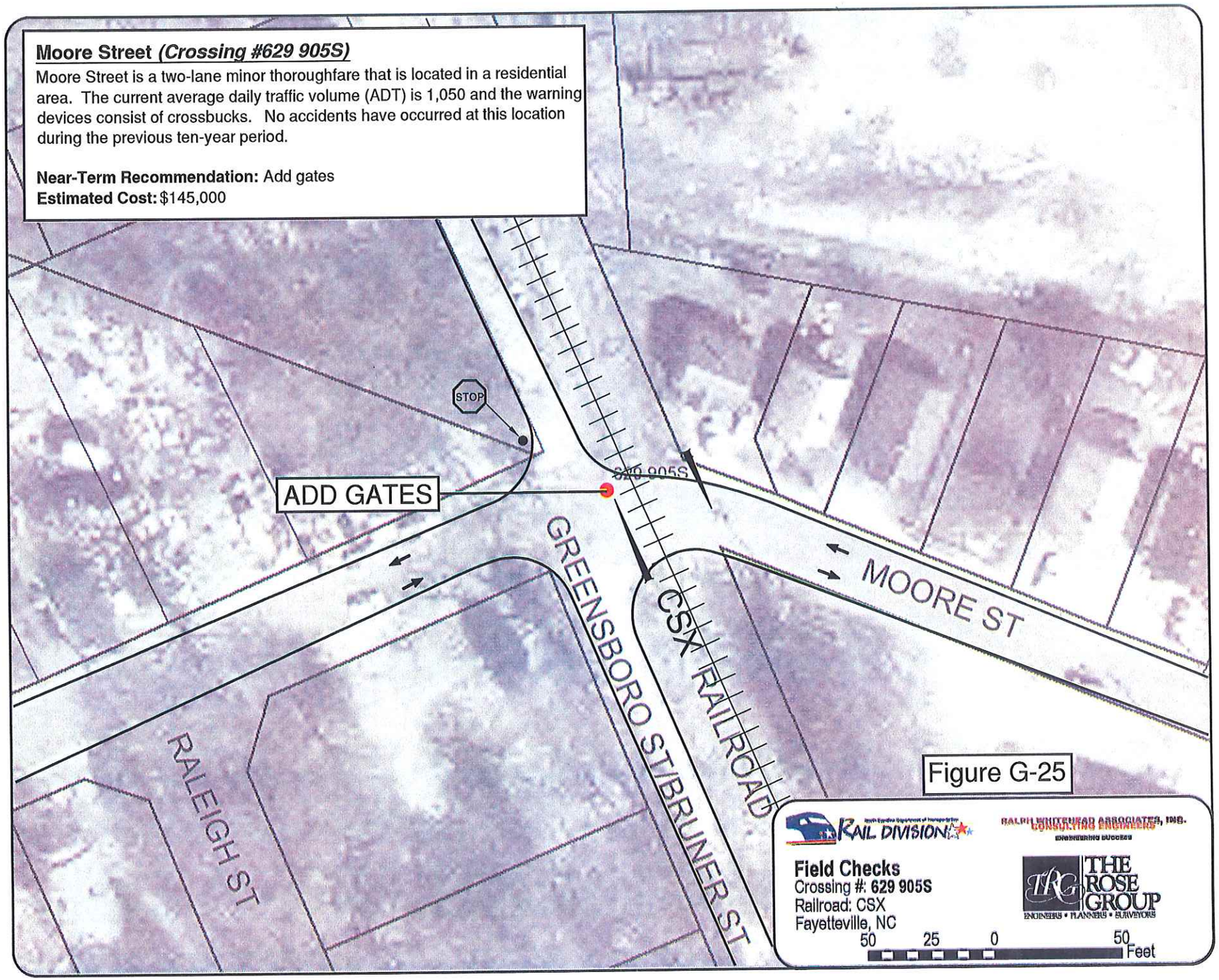


Figure G-25

RAIL DIVISION

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS

Field Checks
Crossing #: **629 905S**
Railroad: CSX
Fayetteville, NC

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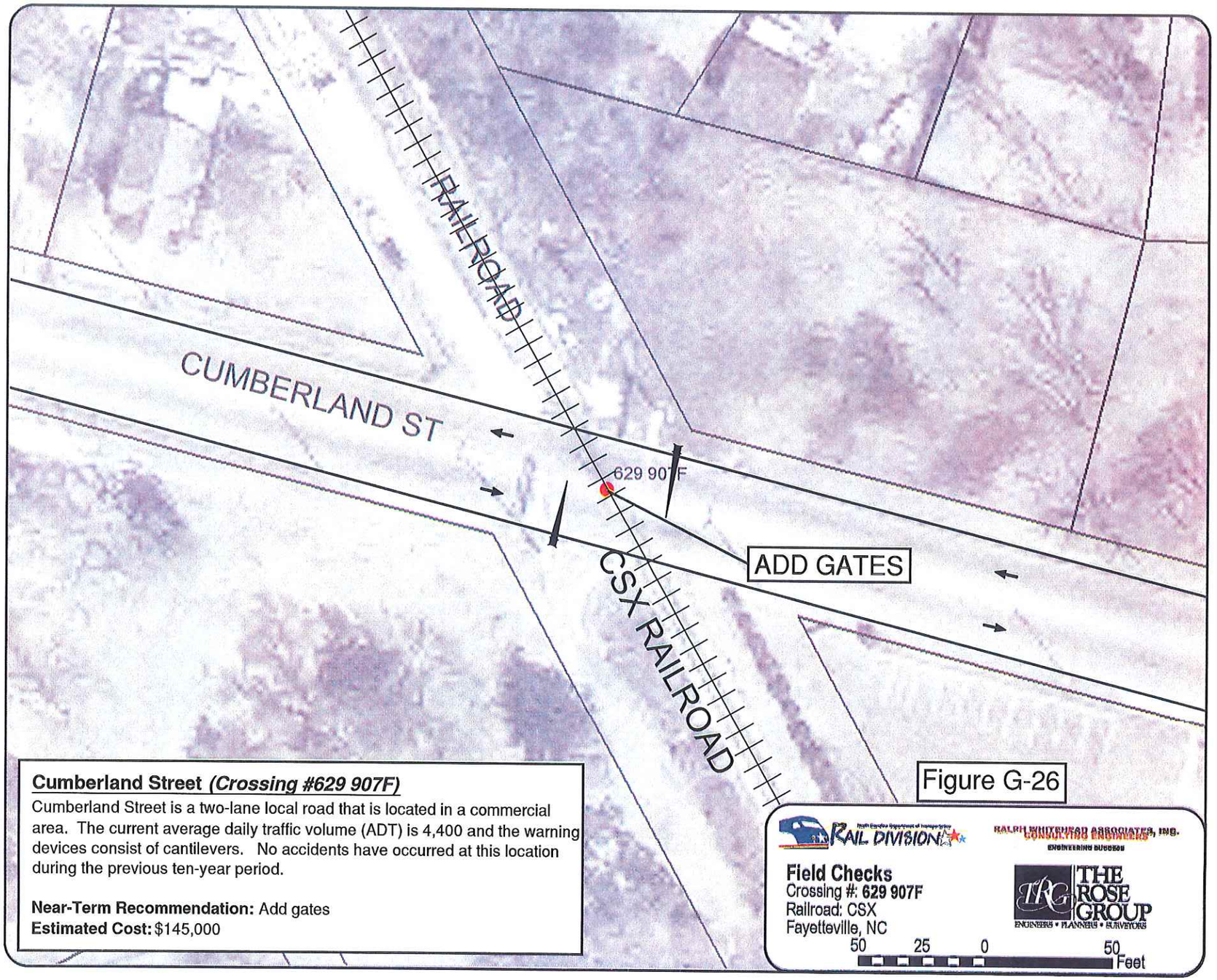
50 25 0 50 Feet



Cumberland Street ***(Crossing #629 907F)***

Cumberland Street is a two-lane local road that is located in a commercial area. The current average daily traffic volume (ADT) is 4,400 and the warning devices consist of cantilevers. No accidents have occurred at this location during the previous ten-year period.

Near-Term Recommendation: Add gates
Estimated Cost: $145,000

Figure G-26

RAIL DIVISION

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING EXCELLENCE

Field Checks
Crossing #: **629 907F**
Railroad: CSX
Fayetteville, NC

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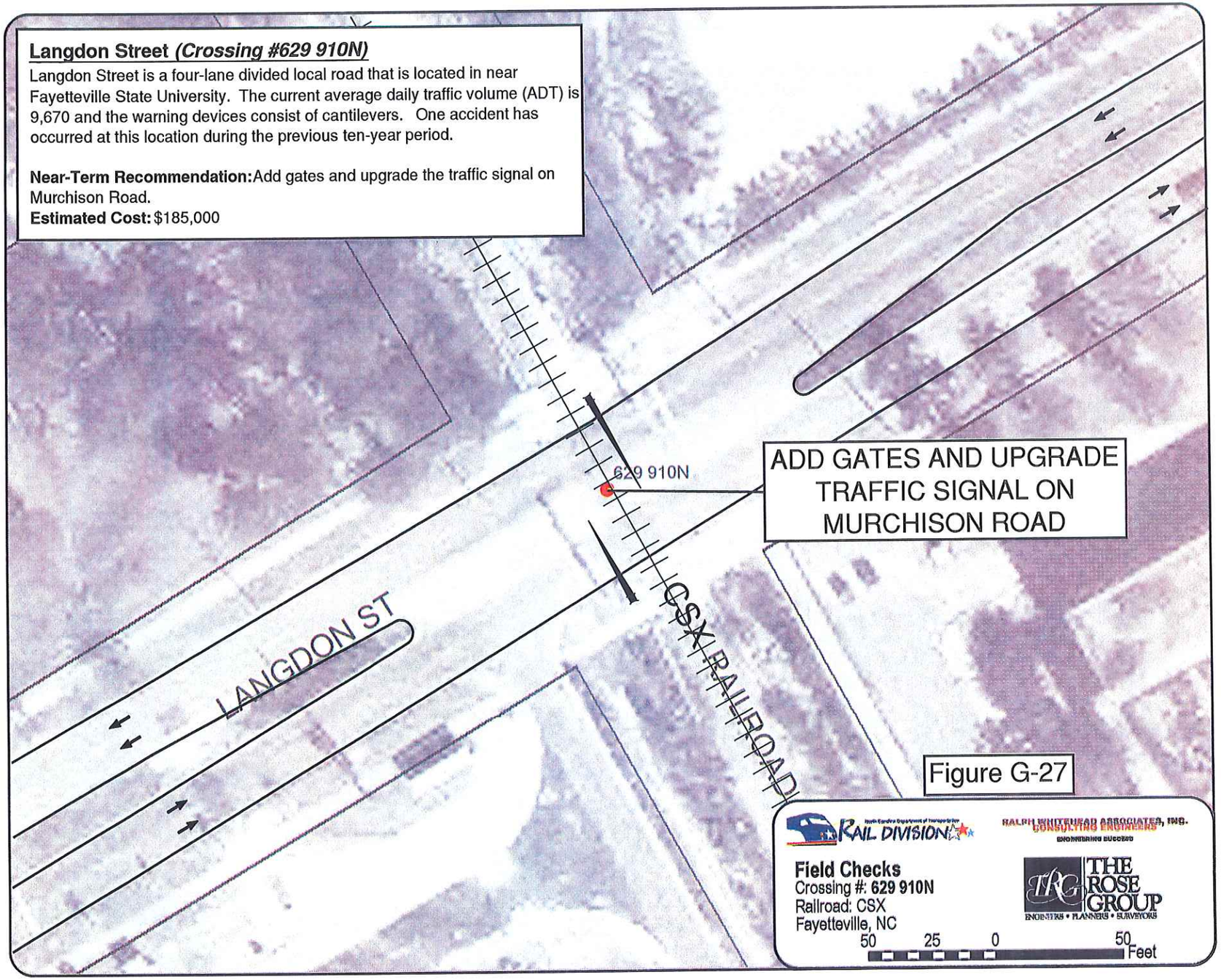
ENGINEERS • PLANNERS • SURVEYORS

50 25 0 50 Feet

Langdon Street *(Crossing #629 910N)*

Langdon Street is a four-lane divided local road that is located in near Fayetteville State University. The current average daily traffic volume (ADT) is 9,670 and the warning devices consist of cantilevers. One accident has occurred at this location during the previous ten-year period.

Near-Term Recommendation: Add gates and upgrade the traffic signal on Murchison Road.
Estimated Cost: $185,000



Jasper Street *(Crossing #629 911V)*

Jasper Street is a four-lane minor thoroughfare that is located in a residential area. The current average daily traffic volume (ADT) is 5,320 and the warning devices consist of cantilevers and gates. One accident has occurred at this location during the previous ten-year period. No accidents have occurred at this location since gates were installed in February of 1992.

Recommendation: No action

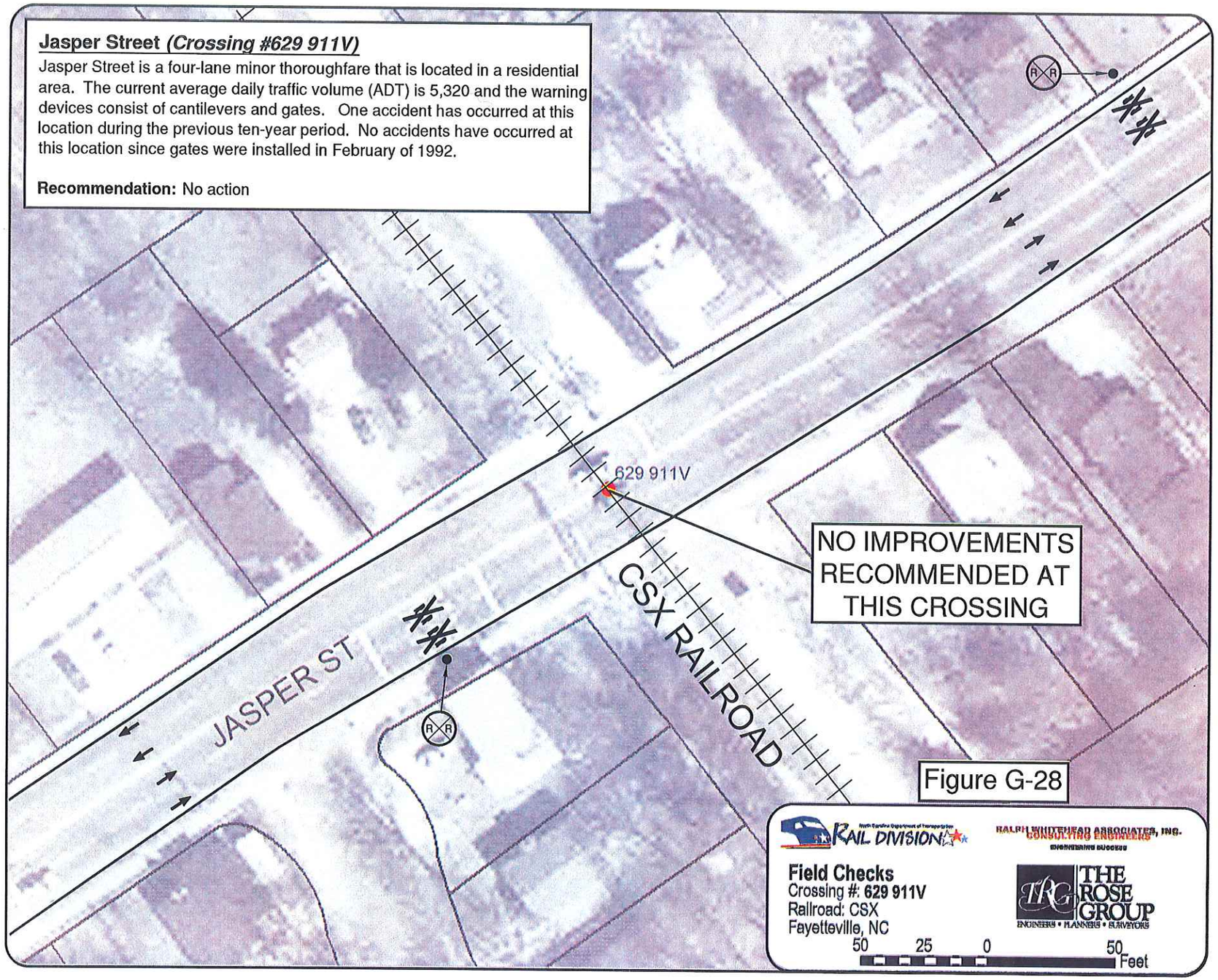
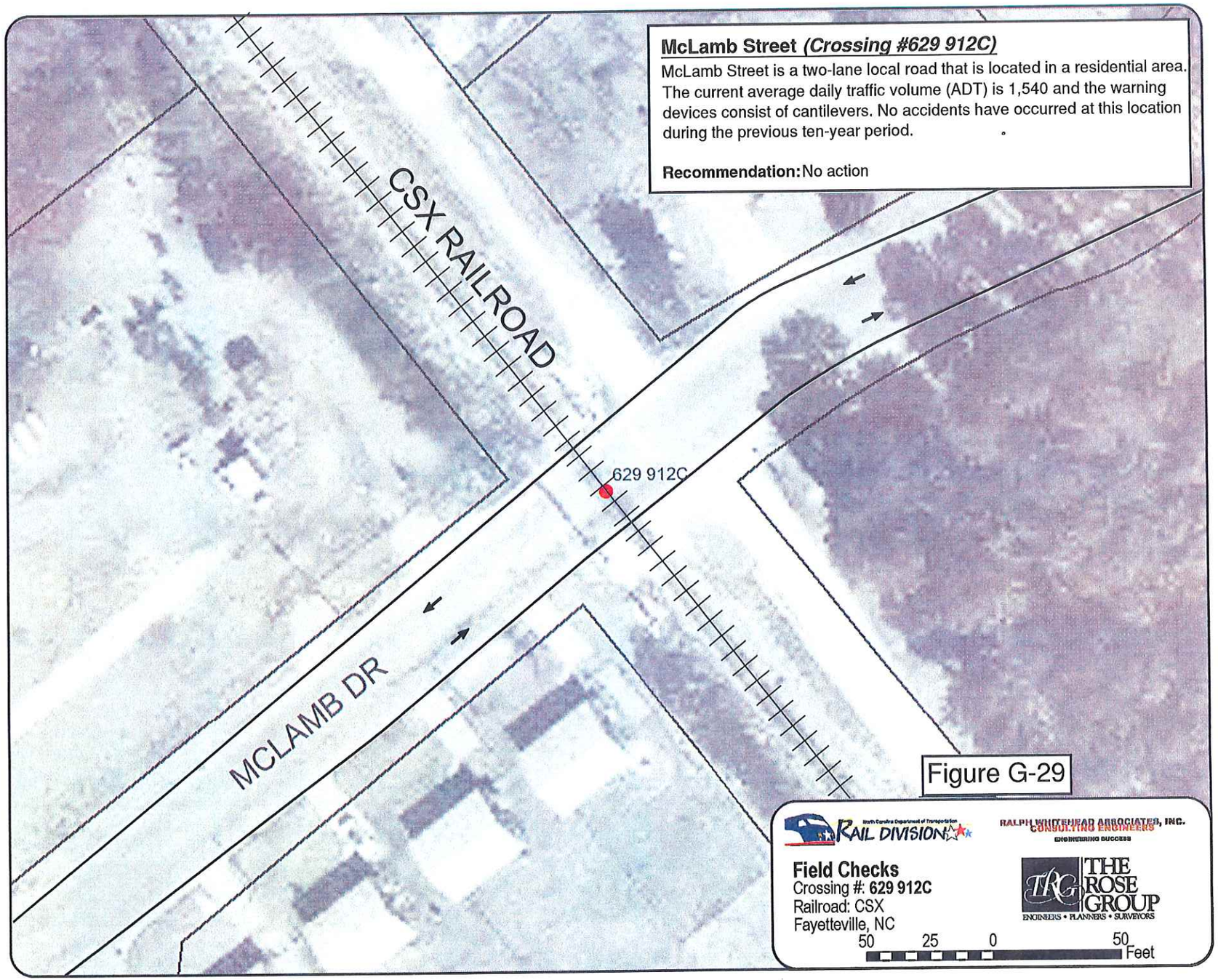


Figure G-28


McLamb Street (Crossing #629 912C)
McLamb Street is a two-lane local road that is located in a residential area. The current average daily traffic volume (ADT) is 1,540 and the warning devices consist of cantilevers. No accidents have occurred at this location during the previous ten-year period.
Recommendation: No action
CSX RAILROAD
629 912C
MCLAMB DR
Figure G-29
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 629 912C
Railroad: CSX
Fayetteville, NC
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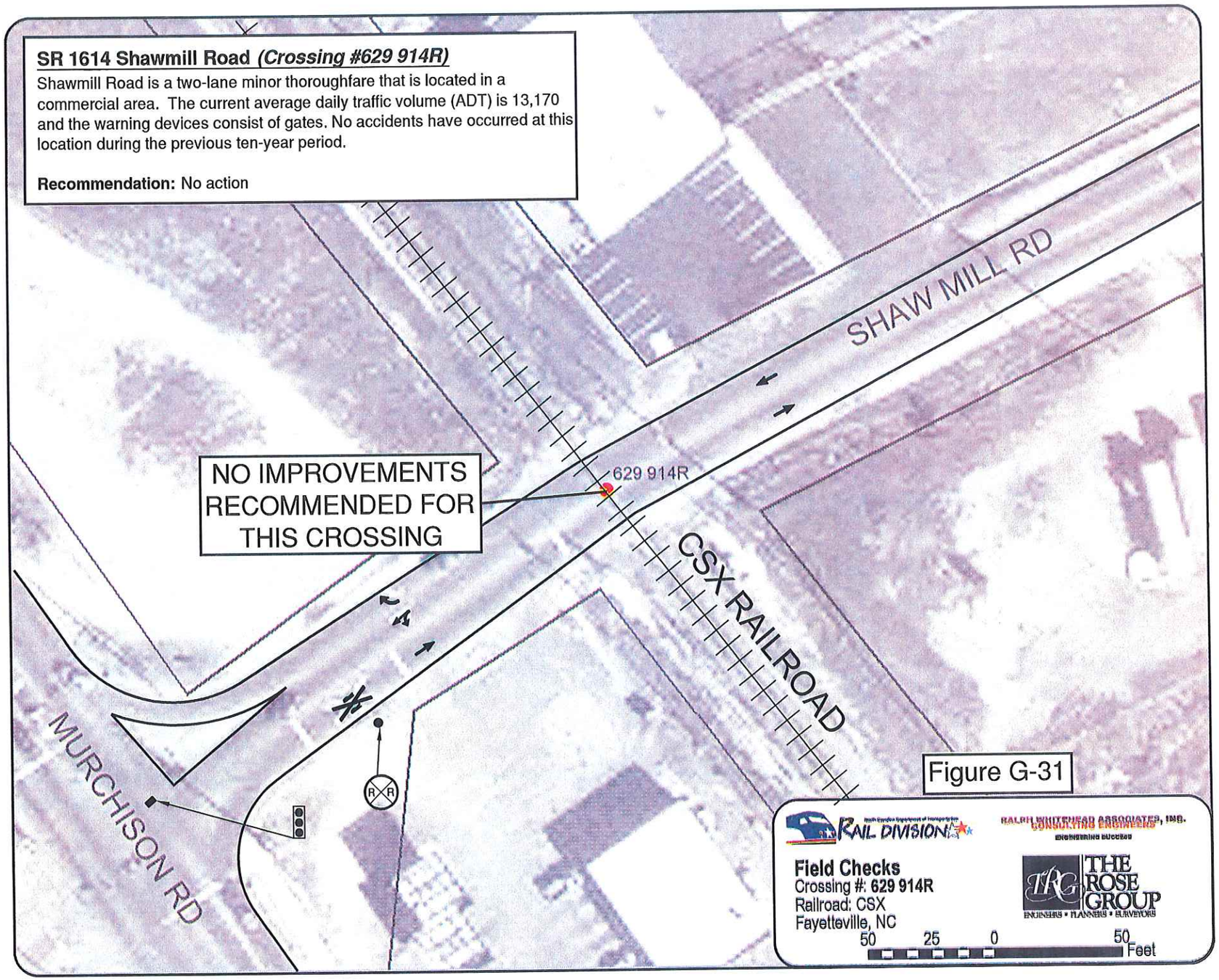
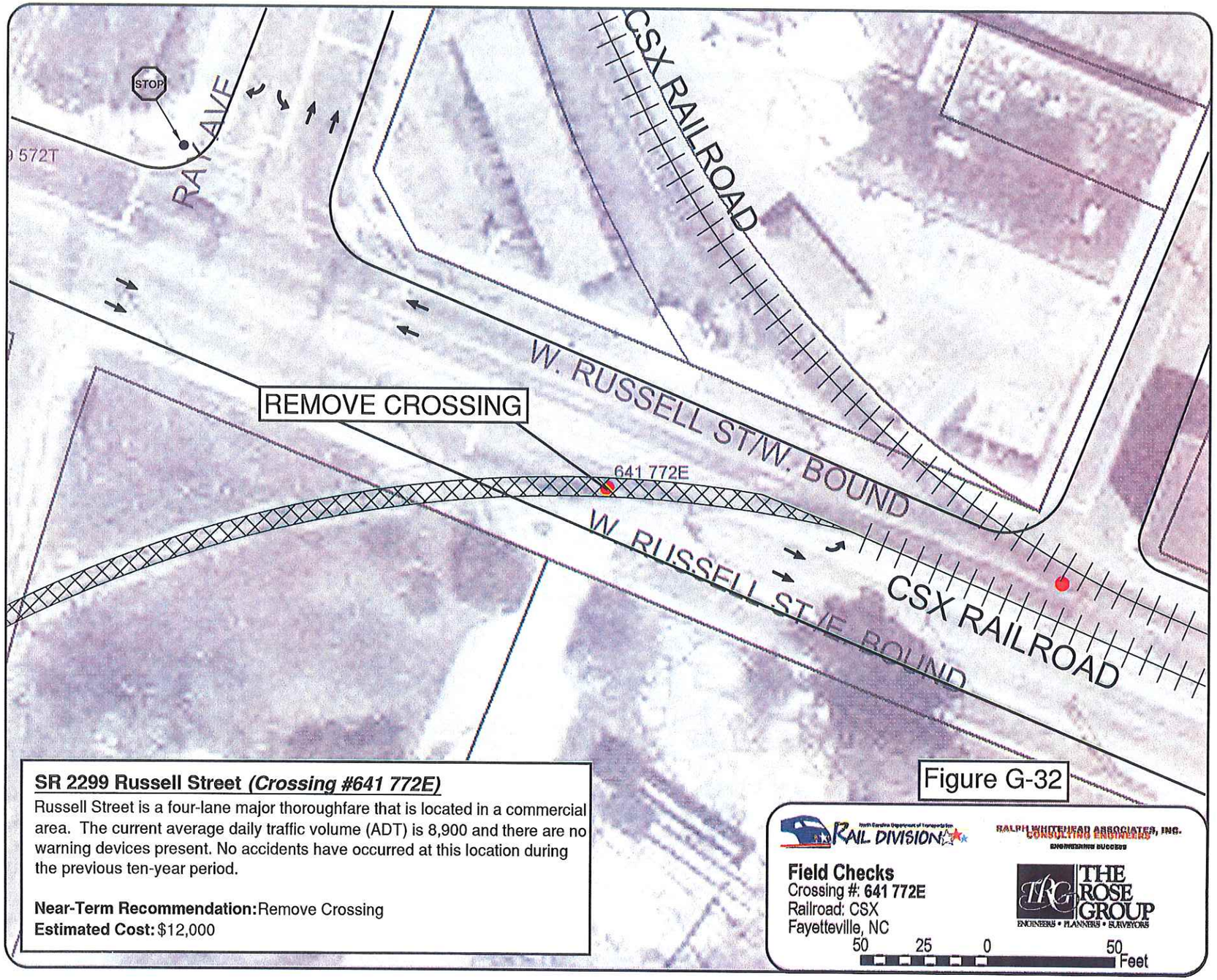
50 25 0 50 Feet


US 401 (Crossing #629 913J)
US 401 is a four-lane major thoroughfare with a center turn lane that is located in a commerical area. The current average daily traffic volume (ADT) is 30,150 and the warning devices consist of cantilevers. No accidents have occurred at this location during the previous ten-year period.
Current Project: Add gates to crossing (Z-4406E)
CSX RAILROAD
629 913J
COUNTRY CLUB DR
CURRENT PROJECT
ADD GATES (Z-4406E)
Figure G-30
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 629 913J
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet


SR 1614 Shawmill Road (Crossing #629 914R)
Shawmill Road is a two-lane minor thoroughfare that is located in a commercial area. The current average daily traffic volume (ADT) is 13,170 and the warning devices consist of gates. No accidents have occurred at this location during the previous ten-year period.
Recommendation: No action
SHAW MILL RD
NO IMPROVEMENTS RECOMMENDED FOR THIS CROSSING
629 914R
CSX RAILROAD
MURCHISON RD
Figure G-31
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 629 914R
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet



SR 2299 Russell Street *(Crossing #641 772E)*

Russell Street is a four-lane major thoroughfare that is located in a commercial area. The current average daily traffic volume (ADT) is 8,900 and there are no warning devices present. No accidents have occurred at this location during the previous ten-year period.

Near-Term Recommendation: Remove Crossing
Estimated Cost: $12,000

Figure G-32

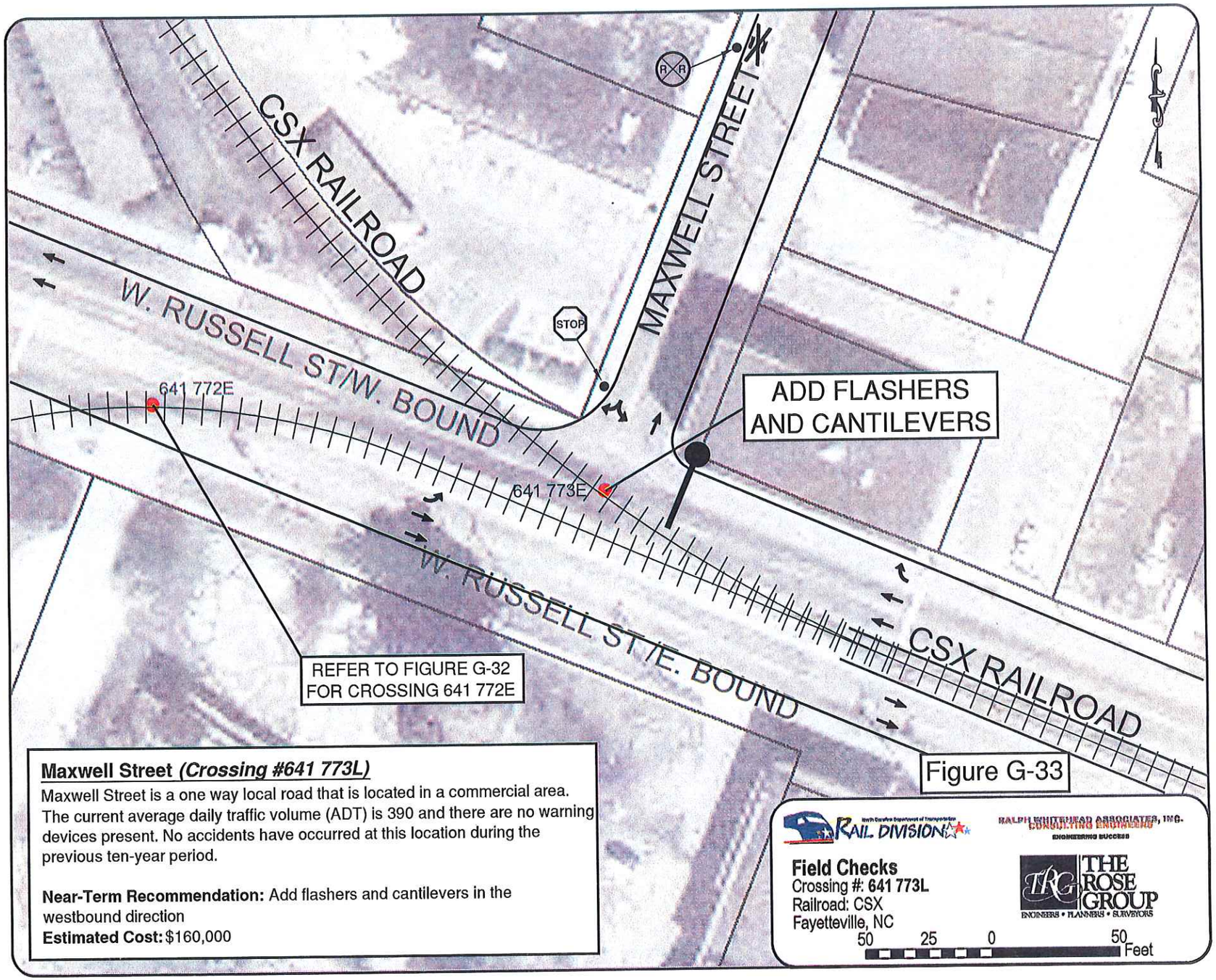
North Carolina Department of Transportation RAIL DIVISION

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS

Field Checks
Crossing #: **641 772E**
Railroad: CSX
Fayetteville, NC

THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS

50 25 0 50 Feet



Maxwell Street *(Crossing #641 773L)*

Maxwell Street is a one way local road that is located in a commercial area. The current average daily traffic volume (ADT) is 390 and there are no warning devices present. No accidents have occurred at this location during the previous ten-year period.

Near-Term Recommendation: Add flashers and cantilevers in the westbound direction

Estimated Cost: $160,000

Figure G-33

RAIL DIVISION

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS
ENGINEERING SUCCESS

Field Checks
Crossing #: **641 773L**
Railroad: CSX
Fayetteville, NC

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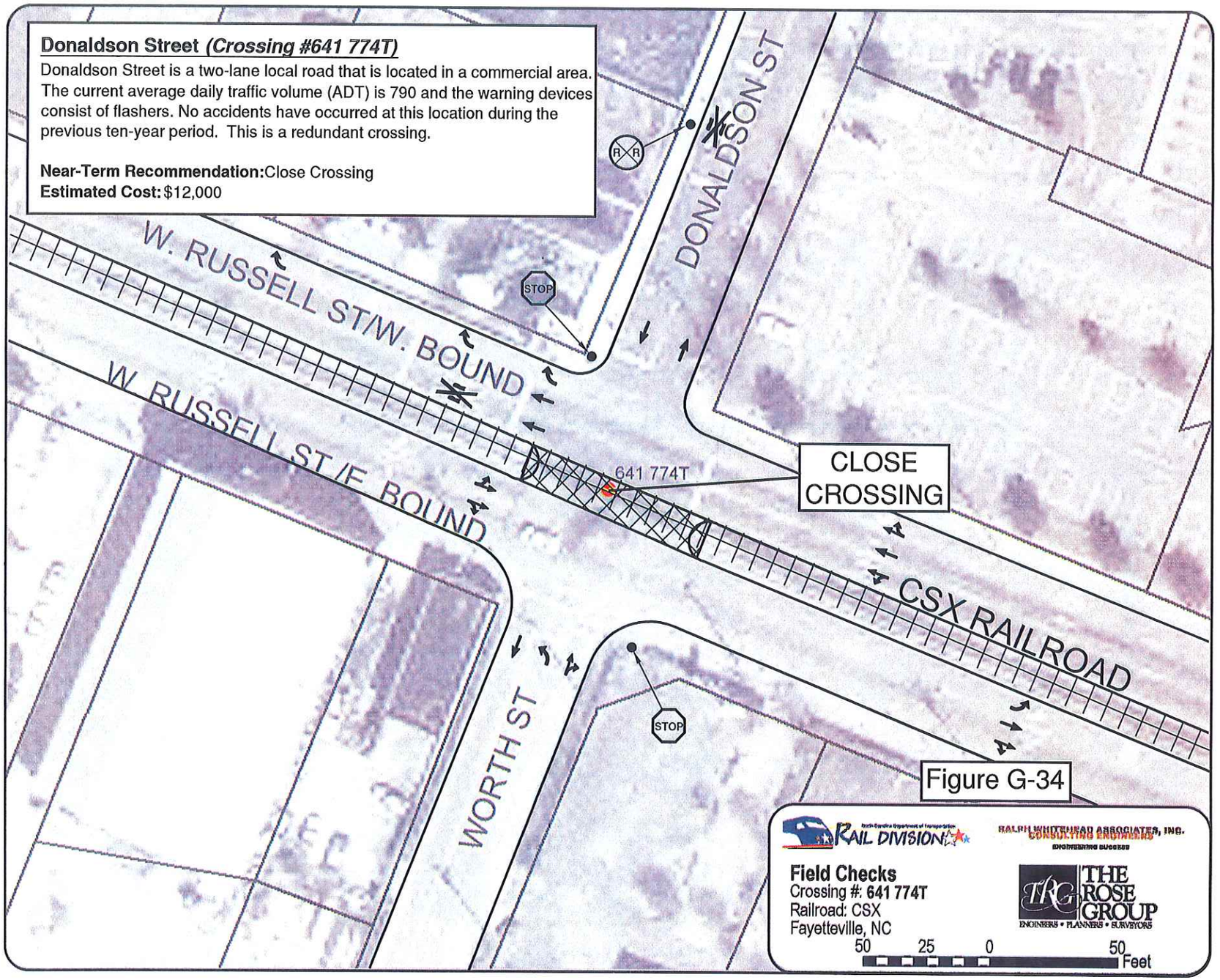
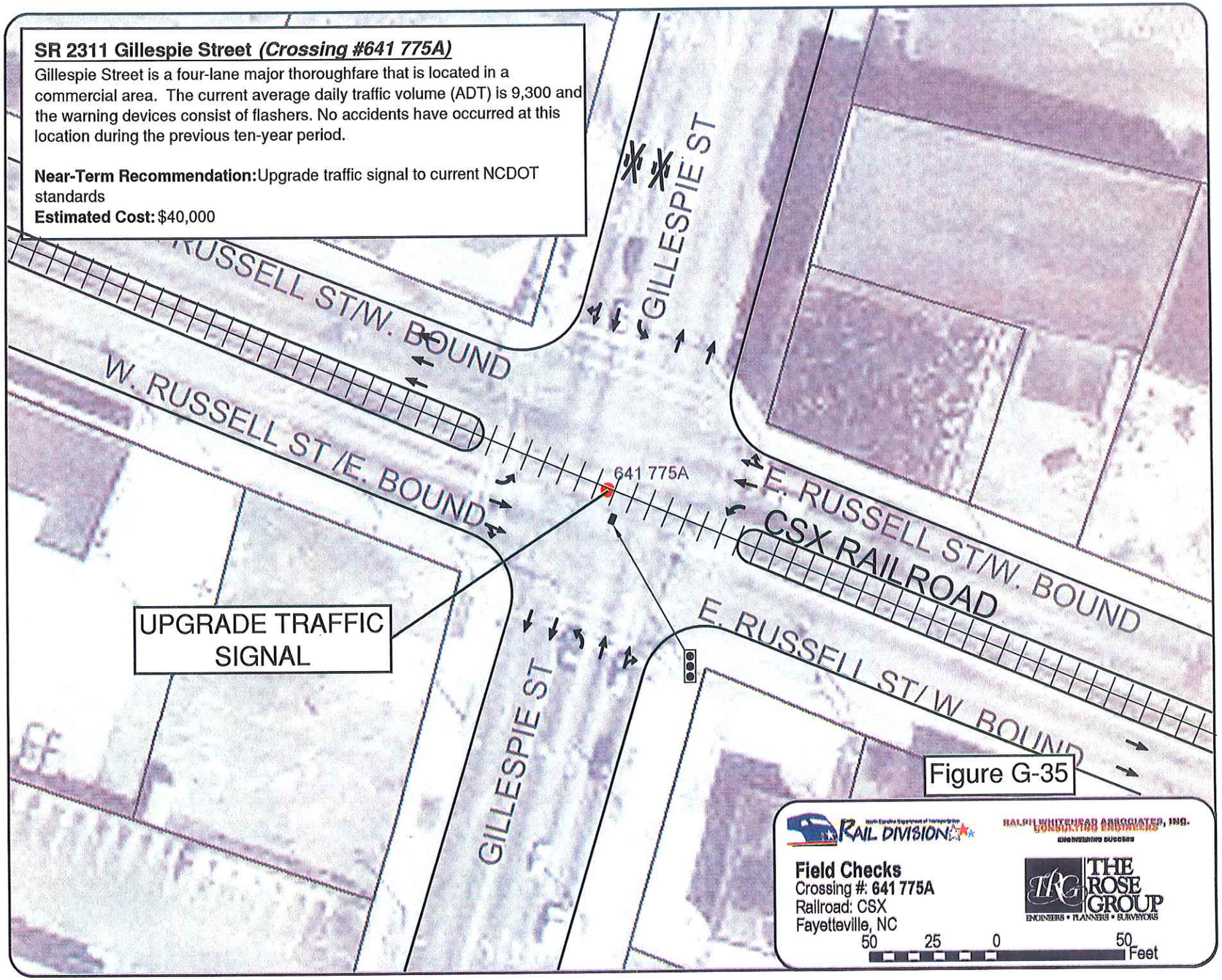
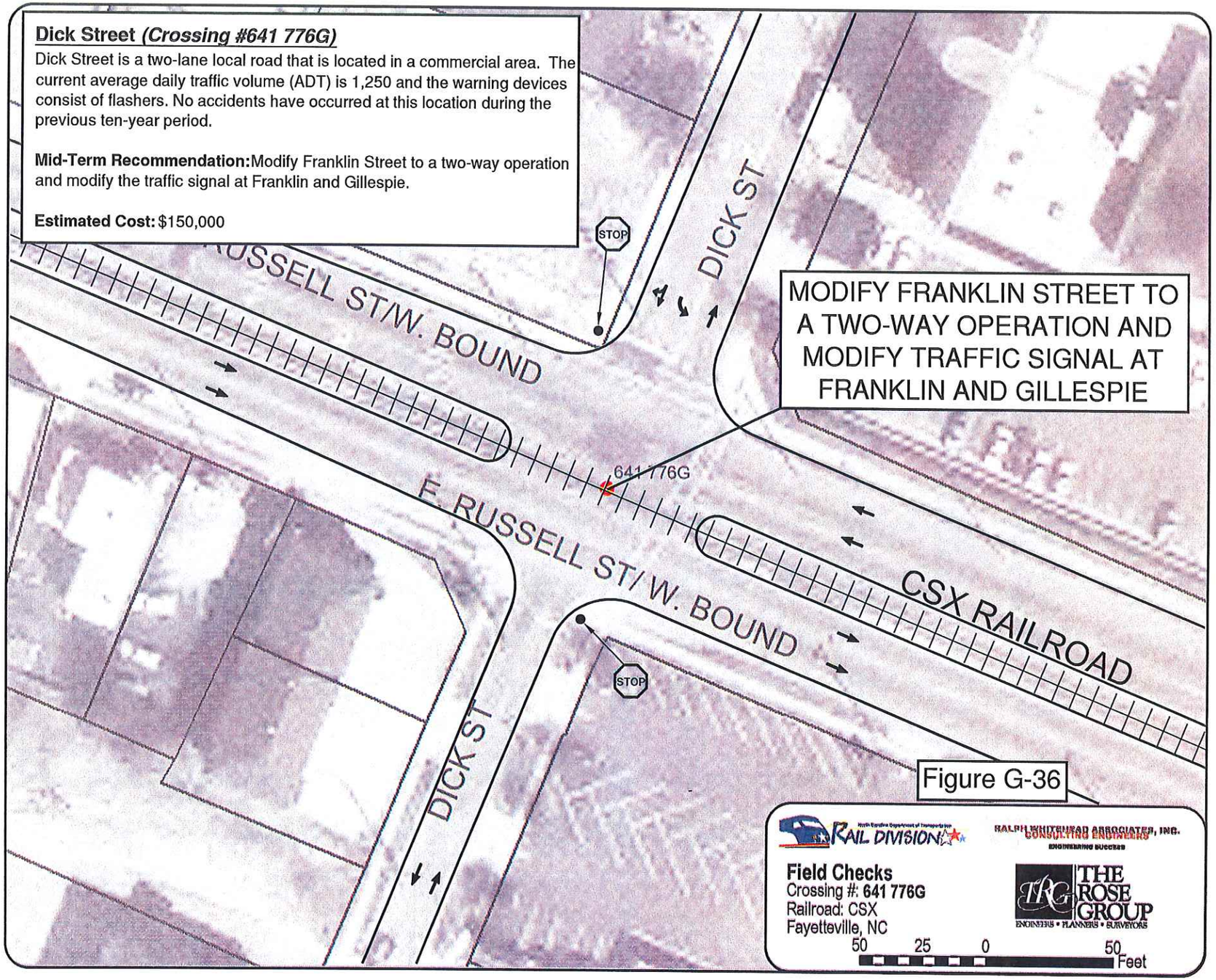
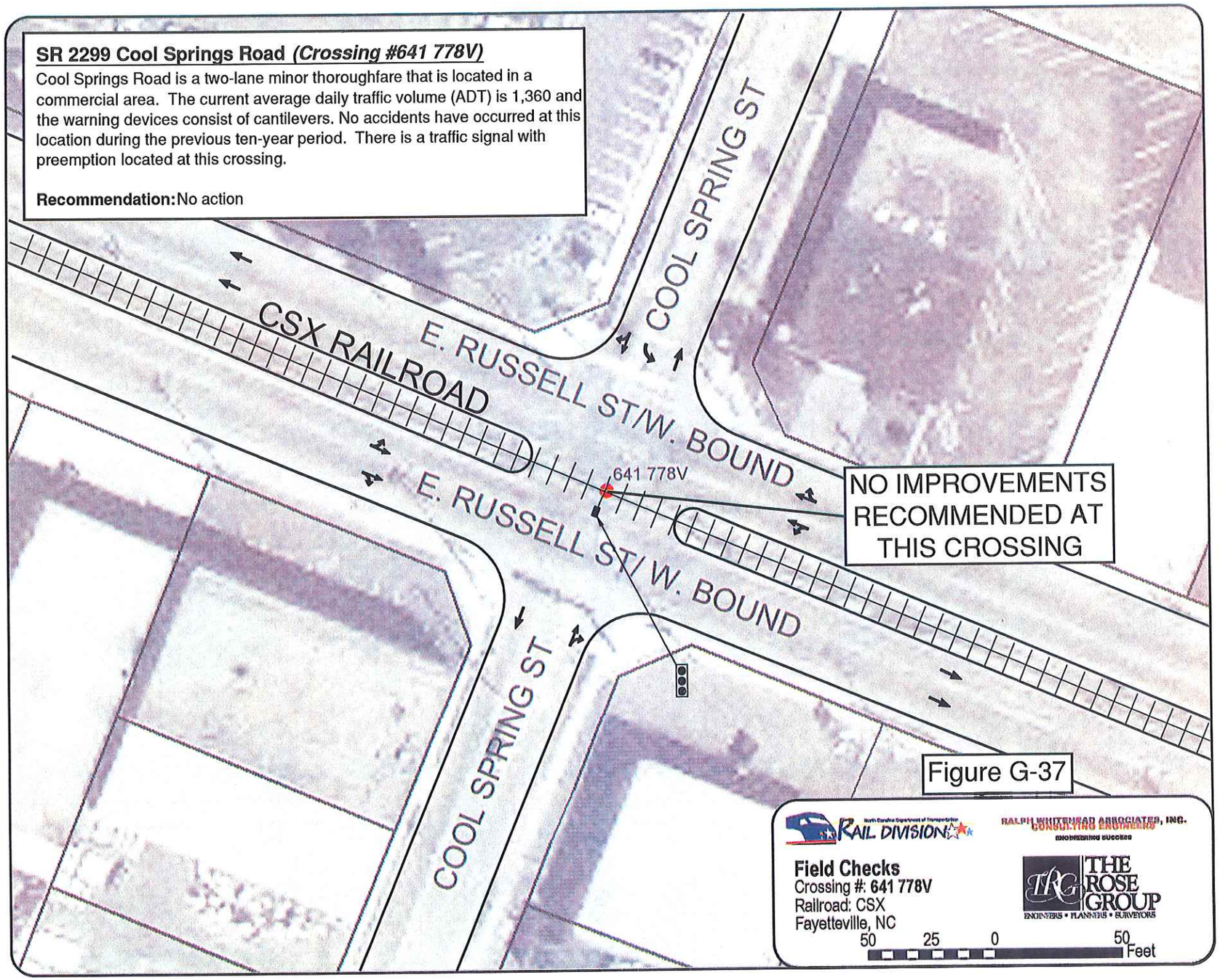
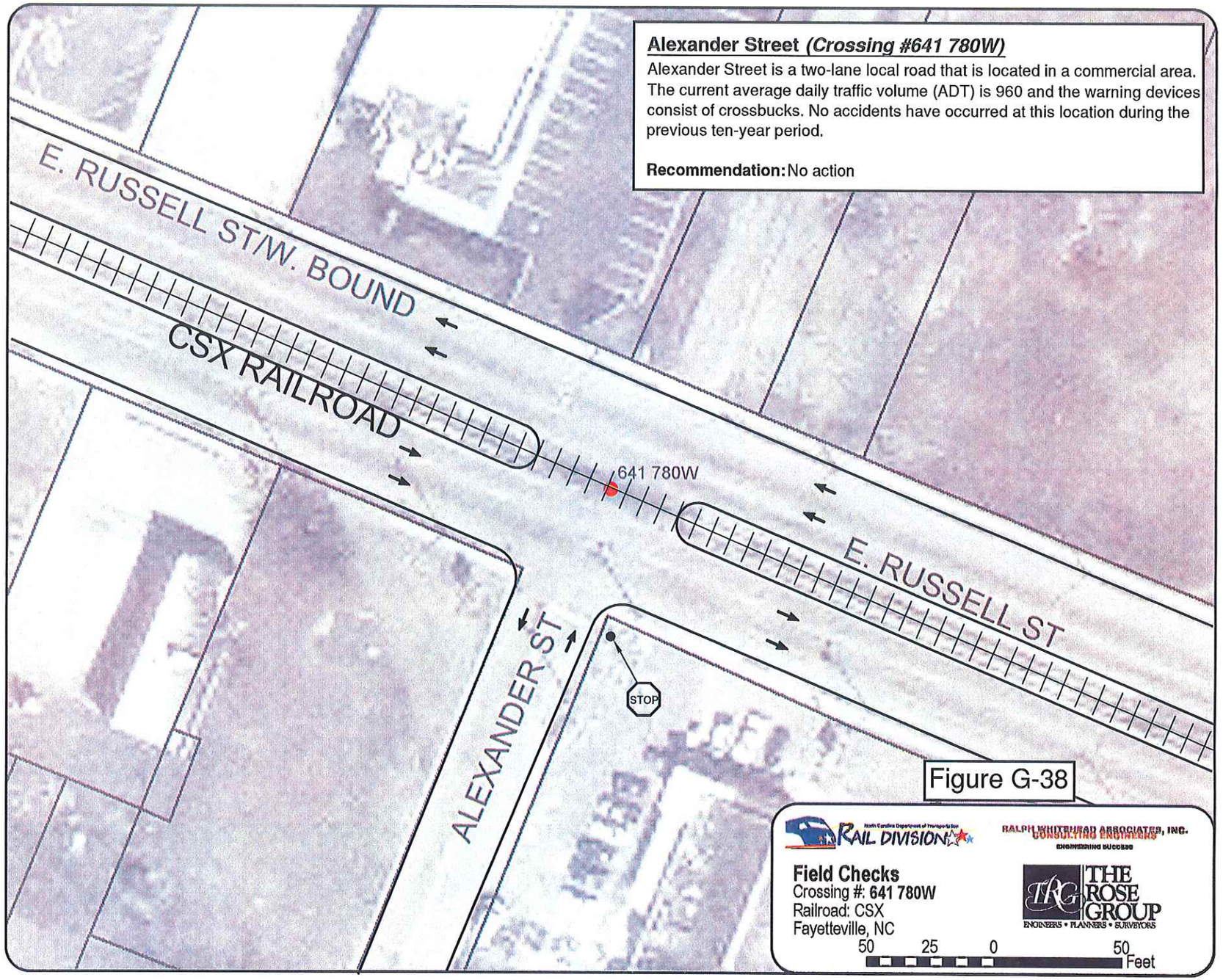
50 25 0 50 Feet


Donaldson Street (Crossing #641 774T)
Donaldson Street is a two-lane local road that is located in a commercial area. The current average daily traffic volume (ADT) is 790 and the warning devices consist of flashers. No accidents have occurred at this location during the previous ten-year period. This is a redundant crossing.
Near-Term Recommendation: Close Crossing
Estimated Cost: $12,000
DONALDSON ST
W. RUSSELL ST/W. BOUND
W RUSSELL ST/E BOUND
WORTH ST
STOP
STOP
641 774T
CLOSE CROSSING
CSX RAILROAD
Figure G-34
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS
Field Checks
Crossing #: 641 774T
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet


SR 2311 Gillespie Street (Crossing #641 775A)
Gillespie Street is a four-lane major thoroughfare that is located in a commercial area. The current average daily traffic volume (ADT) is 9,300 and the warning devices consist of flashers. No accidents have occurred at this location during the previous ten-year period.
Near-Term Recommendation: Upgrade traffic signal to current NCDOT standards
Estimated Cost: $40,000
RUSSELL ST/W. BOUND
GILLESPIE ST
W. RUSSELL ST /E. BOUND
641 775A
E. RUSSELL ST/W. BOUND
CSX RAILROAD
UPGRADE TRAFFIC SIGNAL
GILLESPIE ST
E. RUSSELL ST/W. BOUND
Figure G-35
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 641 775A
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet


Dick Street (Crossing #641 776G)
Dick Street is a two-lane local road that is located in a commercial area. The current average daily traffic volume (ADT) is 1,250 and the warning devices consist of flashers. No accidents have occurred at this location during the previous ten-year period.
Mid-Term Recommendation: Modify Franklin Street to a two-way operation and modify the traffic signal at Franklin and Gillespie.
Estimated Cost: $150,000
STOP
DICK ST
RUSSELL ST/W. BOUND
MODIFY FRANKLIN STREET TO A TWO-WAY OPERATION AND MODIFY TRAFFIC SIGNAL AT FRANKLIN AND GILLESPIE
641 776G
F. RUSSELL ST/ W. BOUND
CSX RAILROAD
STOP
DICK ST
Figure G-36
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 641 776G
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet


SR 2299 Cool Springs Road (Crossing #641 778V)
Cool Springs Road is a two-lane minor thoroughfare that is located in a commercial area. The current average daily traffic volume (ADT) is 1,360 and the warning devices consist of cantilevers. No accidents have occurred at this location during the previous ten-year period. There is a traffic signal with preemption located at this crossing.
Recommendation: No action
COOL SPRING ST
CSX RAILROAD
E. RUSSELL ST/W. BOUND
641 778V
NO IMPROVEMENTS RECOMMENDED AT THIS CROSSING
E. RUSSELL ST/ W. BOUND
COOL SPRING ST
Figure G-37
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 641 778V
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet


Alexander Street (Crossing #641 780W)
Alexander Street is a two-lane local road that is located in a commercial area. The current average daily traffic volume (ADT) is 960 and the warning devices consist of crossbucks. No accidents have occurred at this location during the previous ten-year period.
Recommendation: No action
E. RUSSELL ST/W. BOUND
CSX RAILROAD
641 780W
E. RUSSELL ST
ALEXANDER ST
STOP
Figure G-38
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 641 780W
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet

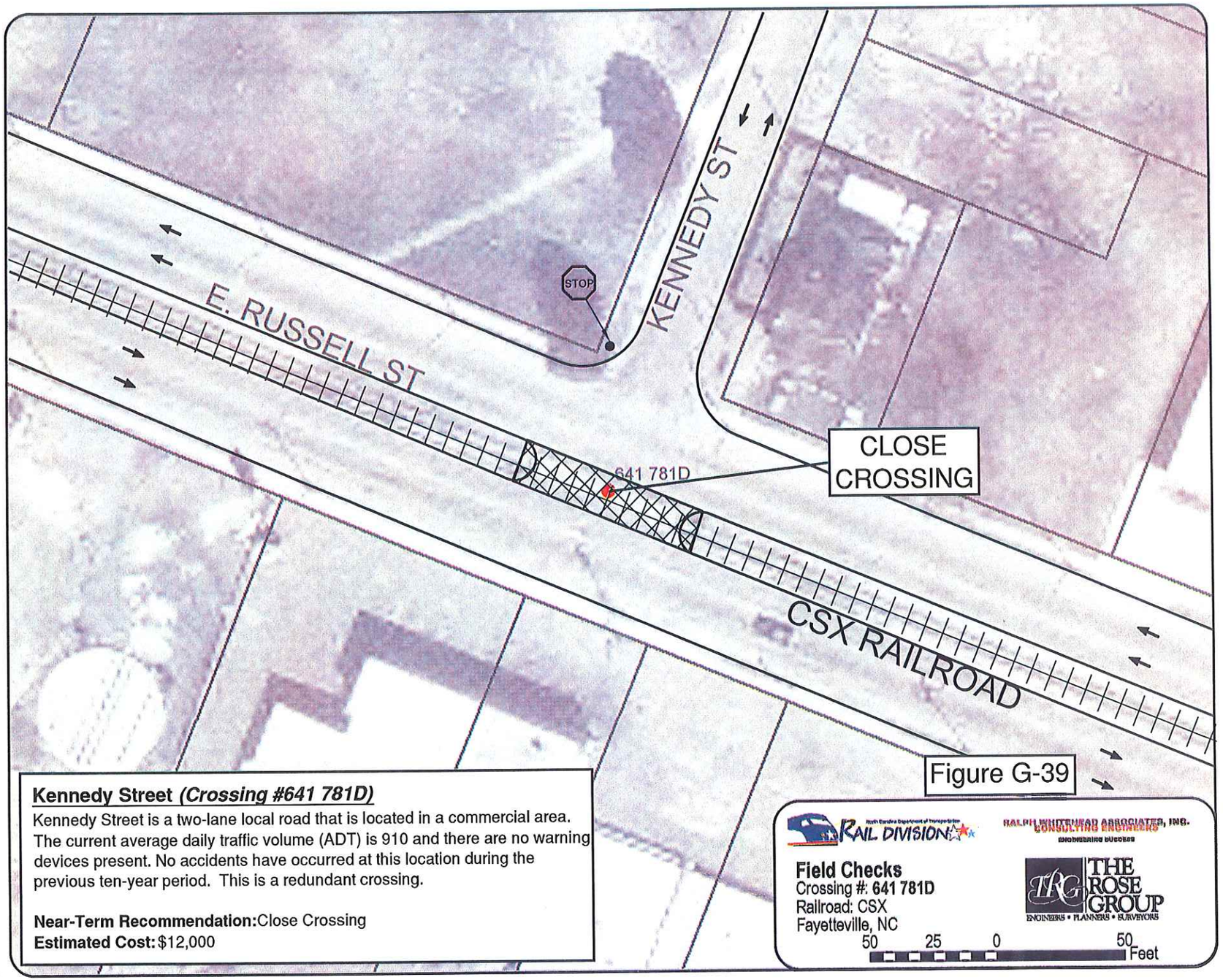


Figure G-39

Kennedy Street *(Crossing #641 781D)*

Kennedy Street is a two-lane local road that is located in a commercial area. The current average daily traffic volume (ADT) is 910 and there are no warning devices present. No accidents have occurred at this location during the previous ten-year period. This is a redundant crossing.

Near-Term Recommendation: Close Crossing
Estimated Cost: $12,000

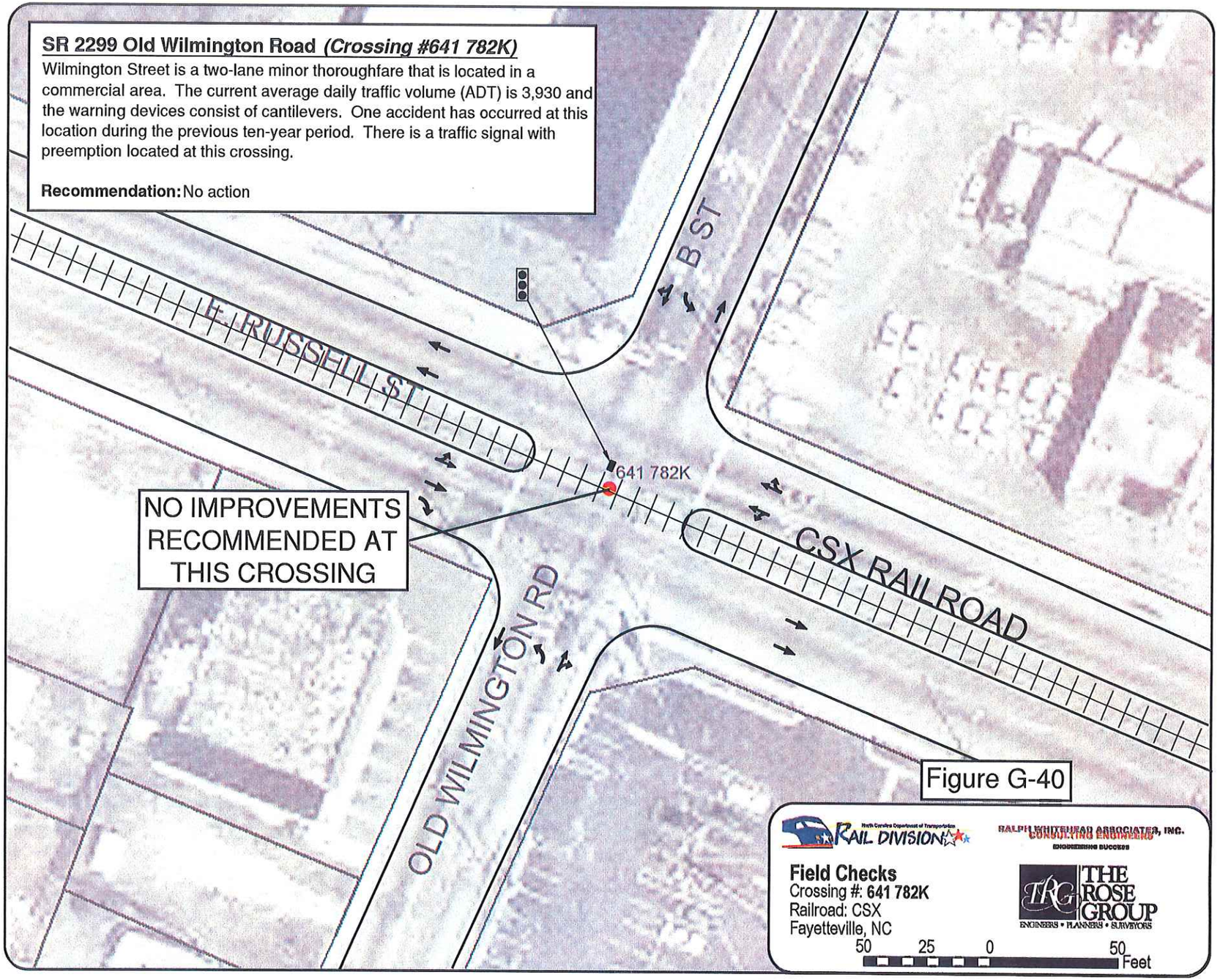
RAIL DIVISION

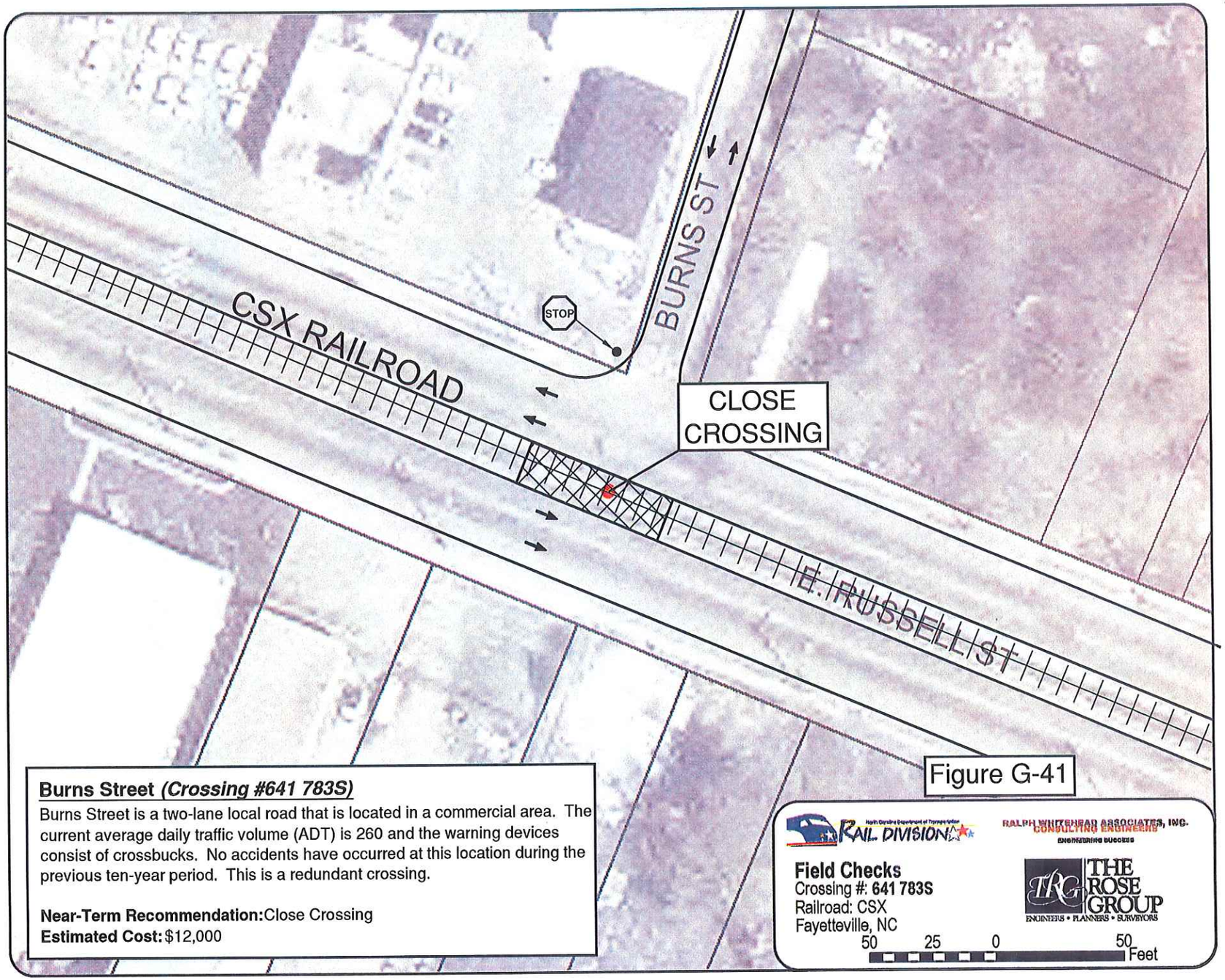
RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS

Field Checks
Crossing #: **641 781D**
Railroad: CSX
Fayetteville, NC

THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS

50 25 0 50 Feet


SR 2299 Old Wilmington Road (Crossing #641 782K)
Wilmington Street is a two-lane minor thoroughfare that is located in a commercial area. The current average daily traffic volume (ADT) is 3,930 and the warning devices consist of cantilevers. One accident has occurred at this location during the previous ten-year period. There is a traffic signal with preemption located at this crossing.
Recommendation: No action
E RUSSELL ST
BST
641 782K
NO IMPROVEMENTS RECOMMENDED AT THIS CROSSING
CSX RAILROAD
OLD WILMINGTON RD
Figure G-40
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
Field Checks
Crossing #: 641 782K
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet



Burns Street *(Crossing #641 783S)*

Burns Street is a two-lane local road that is located in a commercial area. The current average daily traffic volume (ADT) is 260 and the warning devices consist of crossbucks. No accidents have occurred at this location during the previous ten-year period. This is a redundant crossing.

Near-Term Recommendation: Close Crossing
Estimated Cost: $12,000

Figure G-41

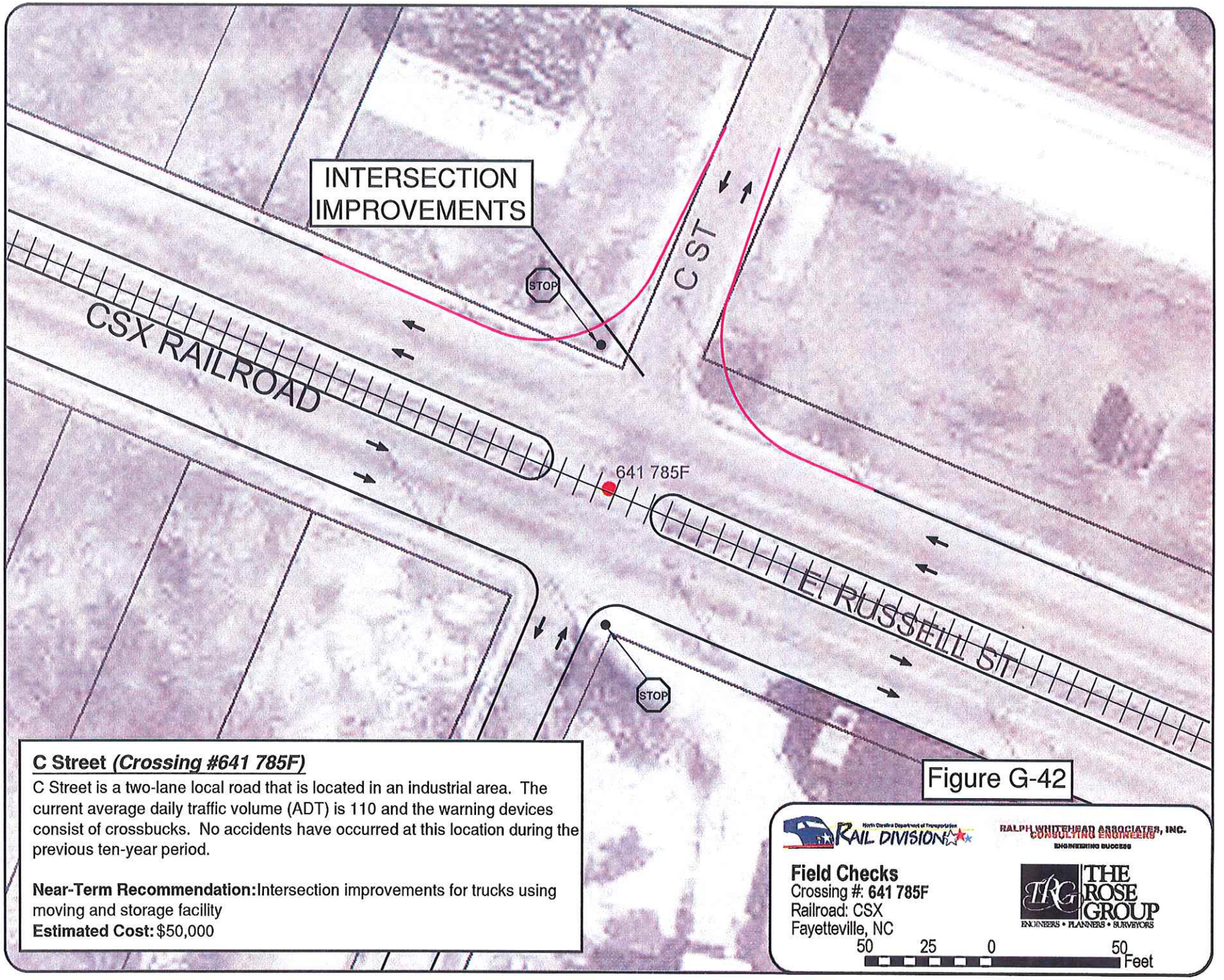
RAIL DIVISION

RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
Engineering Success

Field Checks
Crossing #: **641 783S**
Railroad: CSX
Fayetteville, NC

THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS

50 25 0 50 Feet



C Street *(Crossing #641 785F)*

C Street is a two-lane local road that is located in an industrial area. The current average daily traffic volume (ADT) is 110 and the warning devices consist of crossbucks. No accidents have occurred at this location during the previous ten-year period.

Near-Term Recommendation: Intersection improvements for trucks using moving and storage facility
Estimated Cost: $50,000

Figure G-42

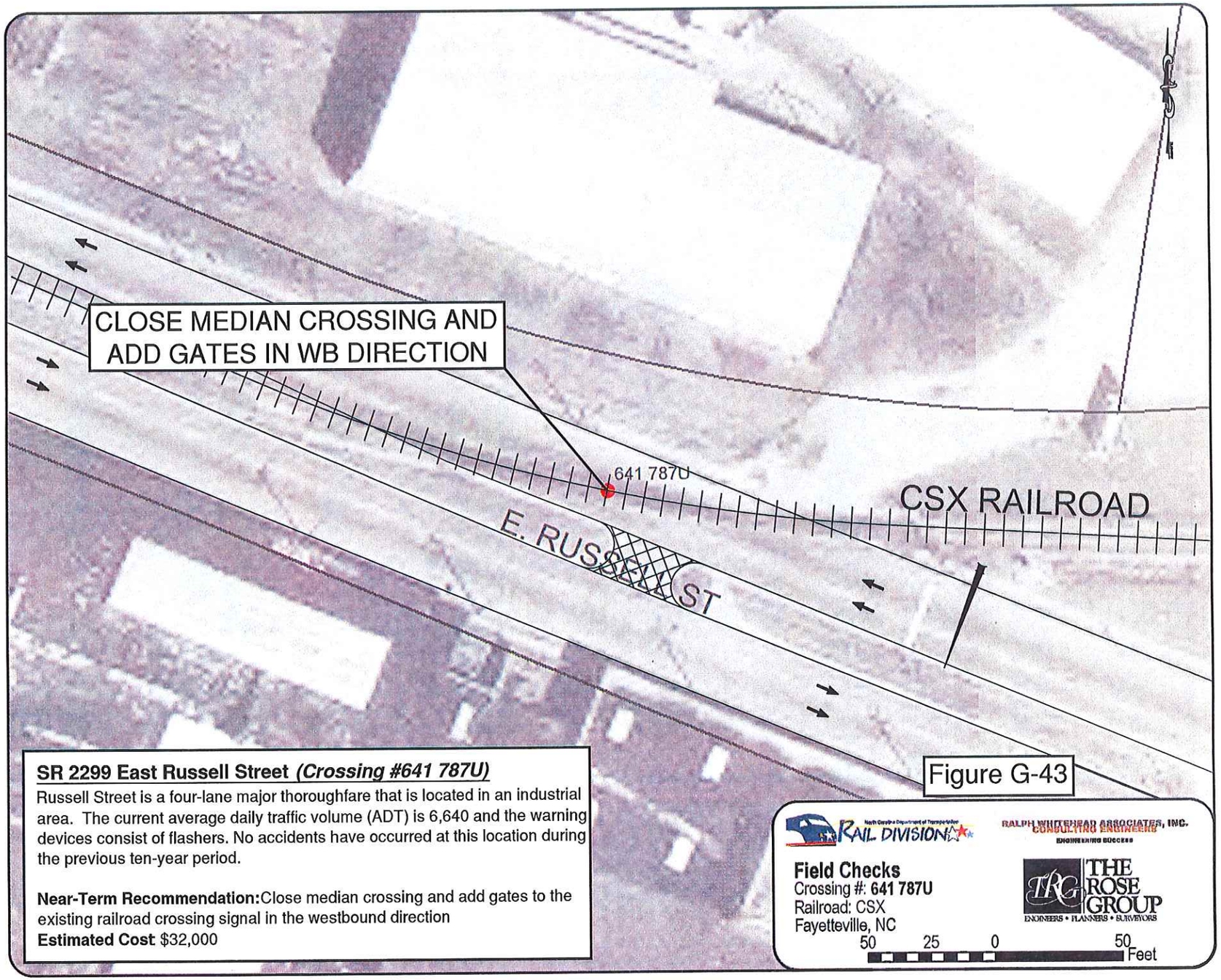
North Carolina Department of Transportation RAIL DIVISION

RALPH WHITEHEAD ASSOCIATES, INC. CONSULTING ENGINEERS ENGINEERING SUCCESS

Field Checks
Crossing #: **641 785F**
Railroad: CSX
Fayetteville, NC

THE ROSE GROUP ENGINEERS • PLANNERS • SURVEYORS

50 25 0 50 Feet



SR 2299 East Russell Street ***(Crossing #641 787U)***

Russell Street is a four-lane major thoroughfare that is located in an industrial area. The current average daily traffic volume (ADT) is 6,640 and the warning devices consist of flashers. No accidents have occurred at this location during the previous ten-year period.

Near-Term Recommendation: Close median crossing and add gates to the existing railroad crossing signal in the westbound direction

Estimated Cost: $32,000

Figure G-43

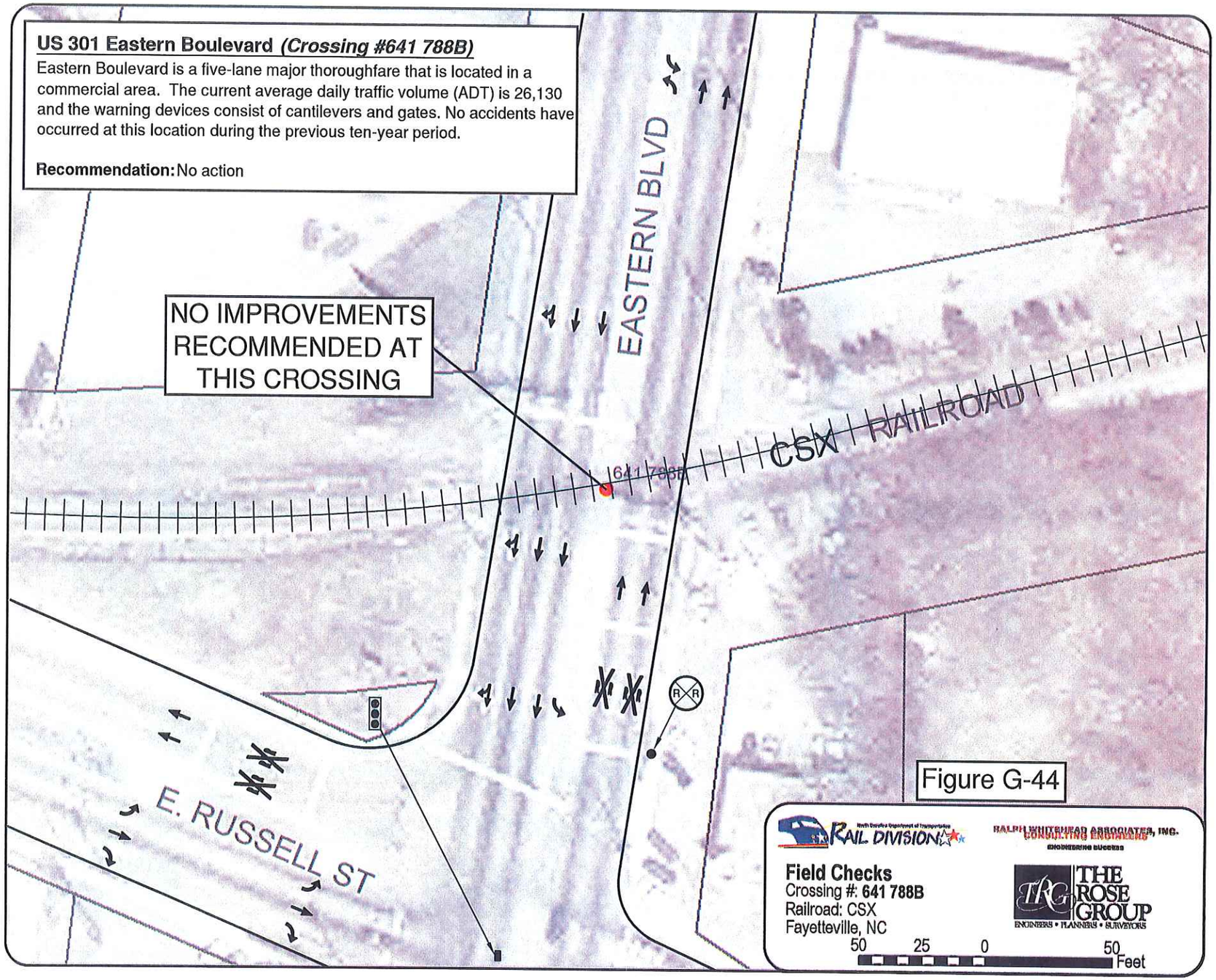
RAIL DIVISION

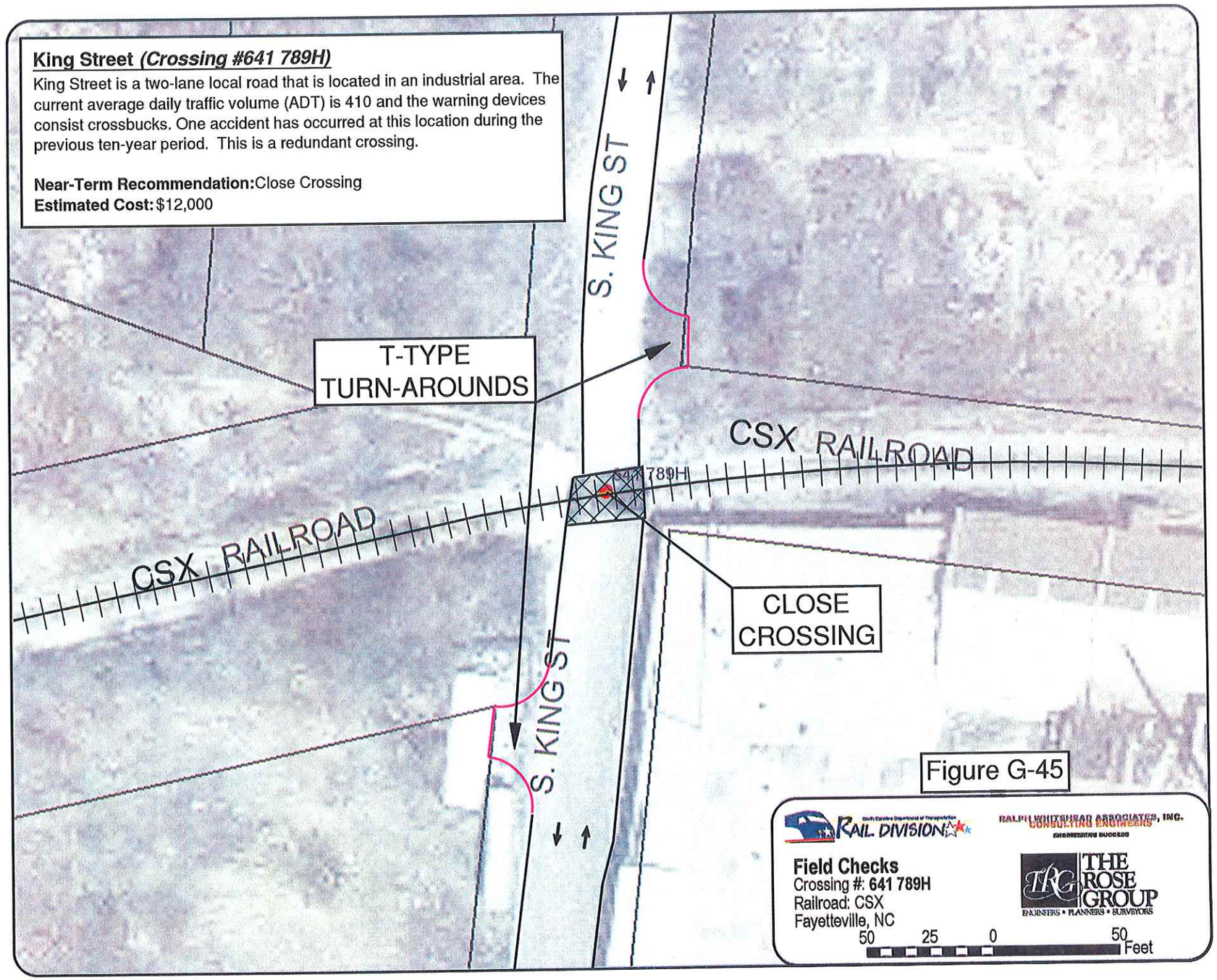
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS

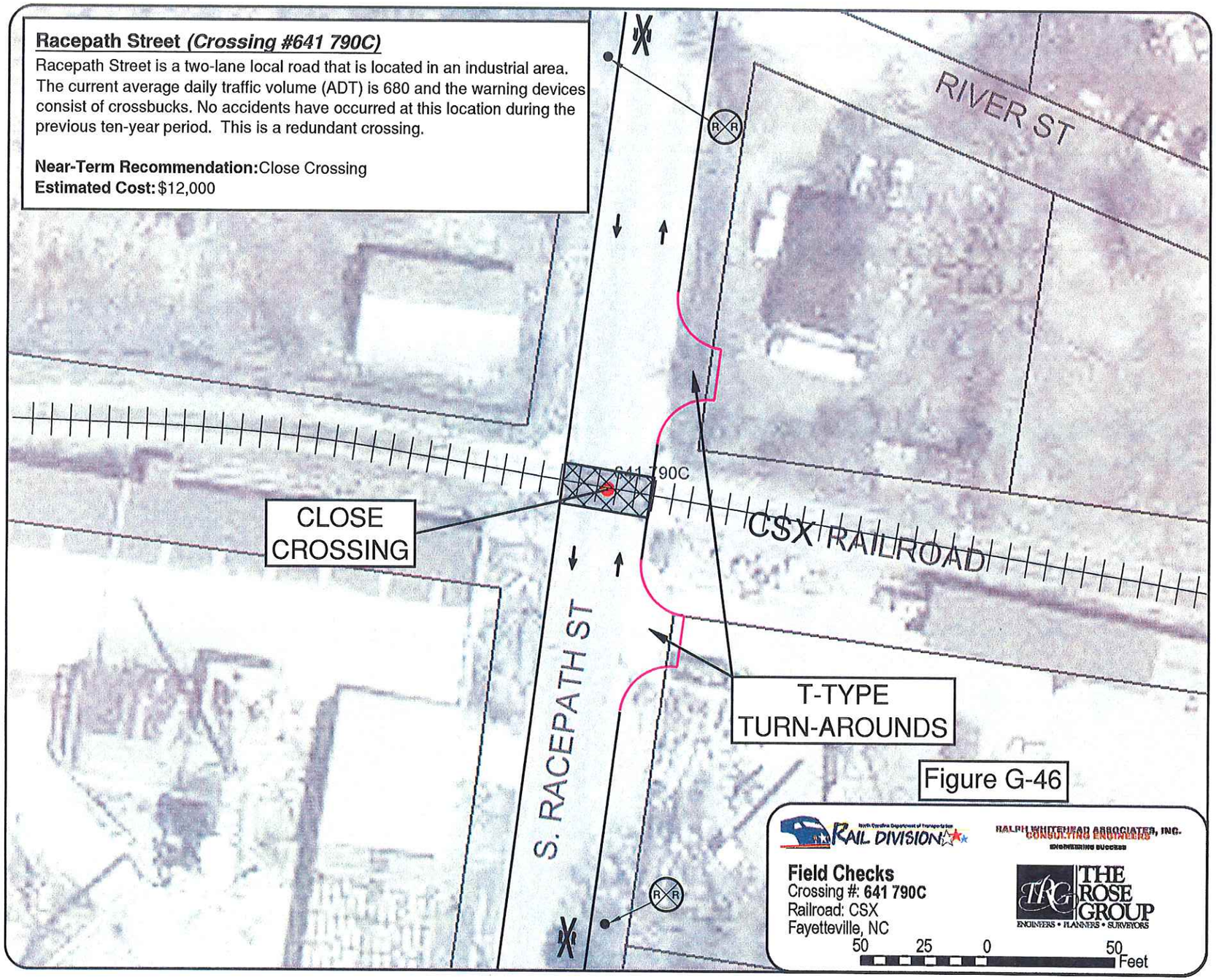
Field Checks
Crossing #: **641 787U**
Railroad: CSX
Fayetteville, NC

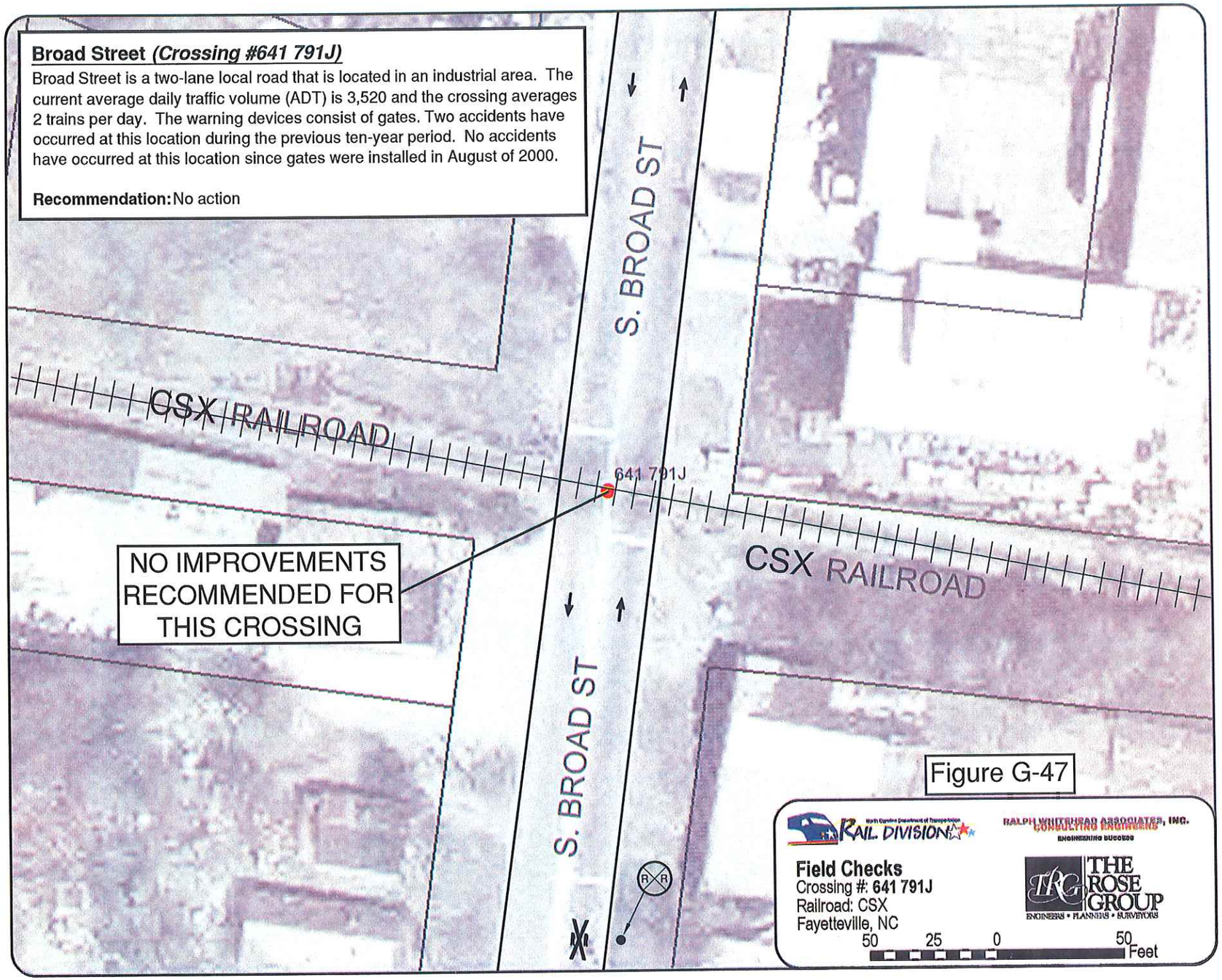
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS

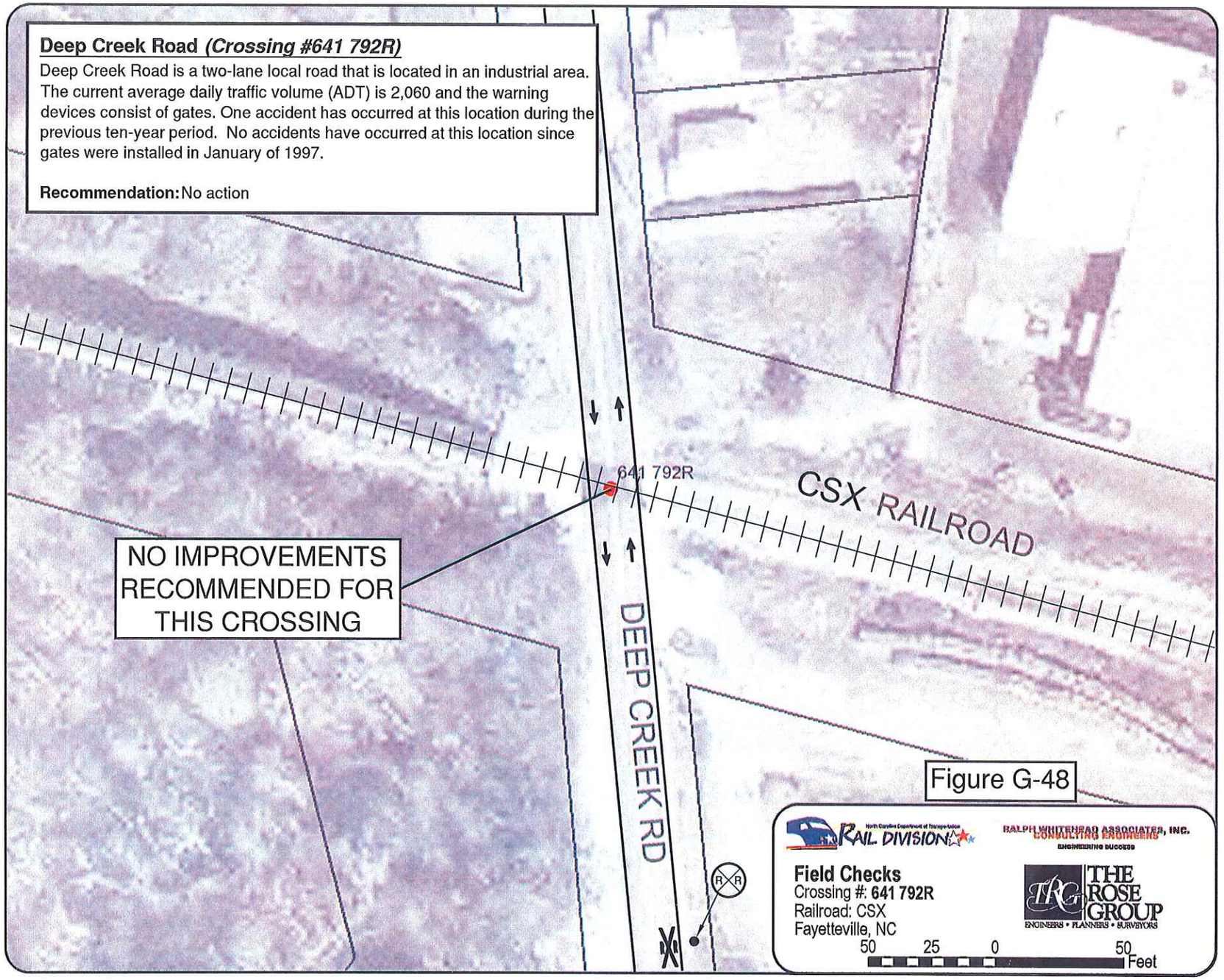
50 25 0 50 Feet

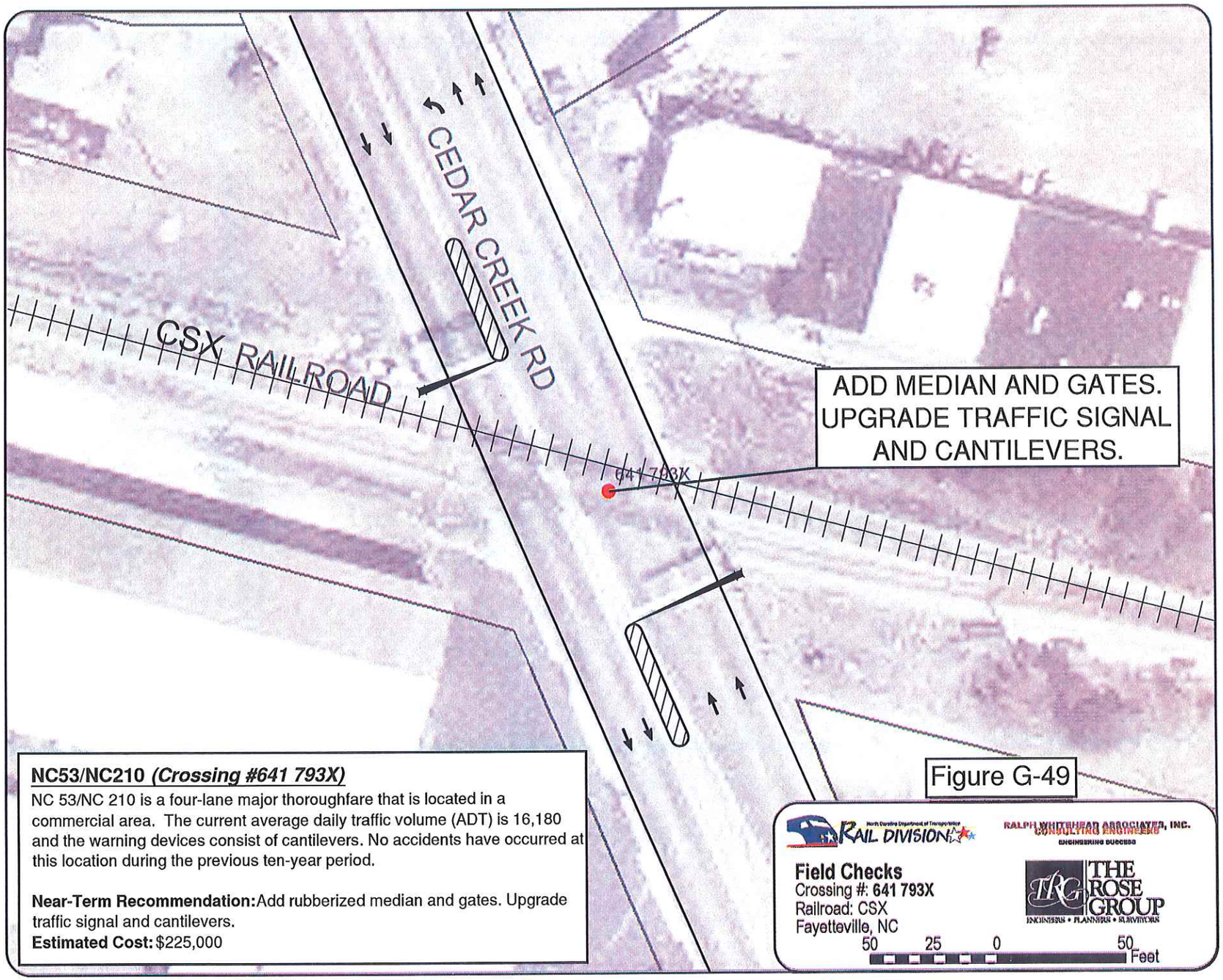

US 301 Eastern Boulevard (Crossing #641 788B)
Eastern Boulevard is a five-lane major thoroughfare that is located in a commercial area. The current average daily traffic volume (ADT) is 26,130 and the warning devices consist of cantilevers and gates. No accidents have occurred at this location during the previous ten-year period.
Recommendation: No action
NO IMPROVEMENTS RECOMMENDED AT THIS CROSSING
EASTERN BLVD
CSX RAILROAD
641 788B
E. RUSSELL ST
R R
Figure G-44
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 641 788B
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet


King Street (Crossing #641 789H)
King Street is a two-lane local road that is located in an industrial area. The current average daily traffic volume (ADT) is 410 and the warning devices consist crossbucks. One accident has occurred at this location during the previous ten-year period. This is a redundant crossing.
Near-Term Recommendation: Close Crossing
Estimated Cost: $12,000
S. KING ST
T-TYPE TURN-AROUNDS
CSX RAILROAD
641 789H
CSX RAILROAD
CLOSE CROSSING
S. KING ST
Figure G-45
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 641 789H
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet


Racepath Street (Crossing #641 790C)
Racepath Street is a two-lane local road that is located in an industrial area. The current average daily traffic volume (ADT) is 680 and the warning devices consist of crossbucks. No accidents have occurred at this location during the previous ten-year period. This is a redundant crossing.
Near-Term Recommendation: Close Crossing
Estimated Cost: $12,000
RIVER ST
641 790C
CSX RAILROAD
CLOSE CROSSING
S. RACEPATH ST
T-TYPE TURN-AROUNDS
Figure G-46
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
Field Checks
Crossing #: 641 790C
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet


Broad Street (Crossing #641 791J)
Broad Street is a two-lane local road that is located in an industrial area. The current average daily traffic volume (ADT) is 3,520 and the crossing averages 2 trains per day. The warning devices consist of gates. Two accidents have occurred at this location during the previous ten-year period. No accidents have occurred at this location since gates were installed in August of 2000.
Recommendation: No action
S. BROAD ST
CSX RAILROAD
641 791J
NO IMPROVEMENTS RECOMMENDED FOR THIS CROSSING
CSX RAILROAD
S. BROAD ST
Figure G-47
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
Field Checks
Crossing #: 641 791J
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet

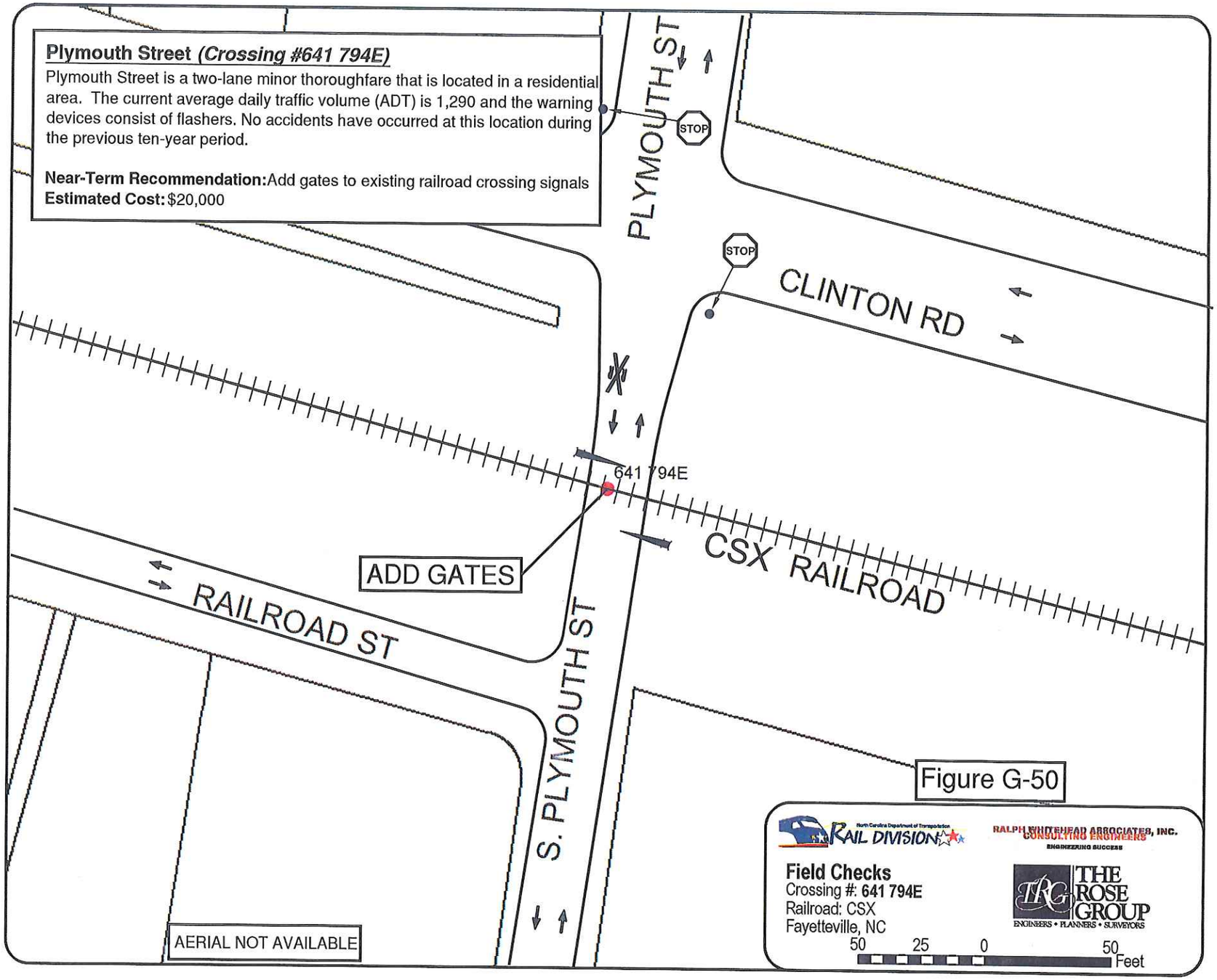

Deep Creek Road (Crossing #641 792R)
Deep Creek Road is a two-lane local road that is located in an industrial area. The current average daily traffic volume (ADT) is 2,060 and the warning devices consist of gates. One accident has occurred at this location during the previous ten-year period. No accidents have occurred at this location since gates were installed in January of 1997.
Recommendation: No action
641 792R
CSX RAILROAD
DEEP CREEK RD
NO IMPROVEMENTS RECOMMENDED FOR THIS CROSSING
Figure G-48
Rail Division
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
Field Checks
Crossing #: 641 792R
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50
Feet

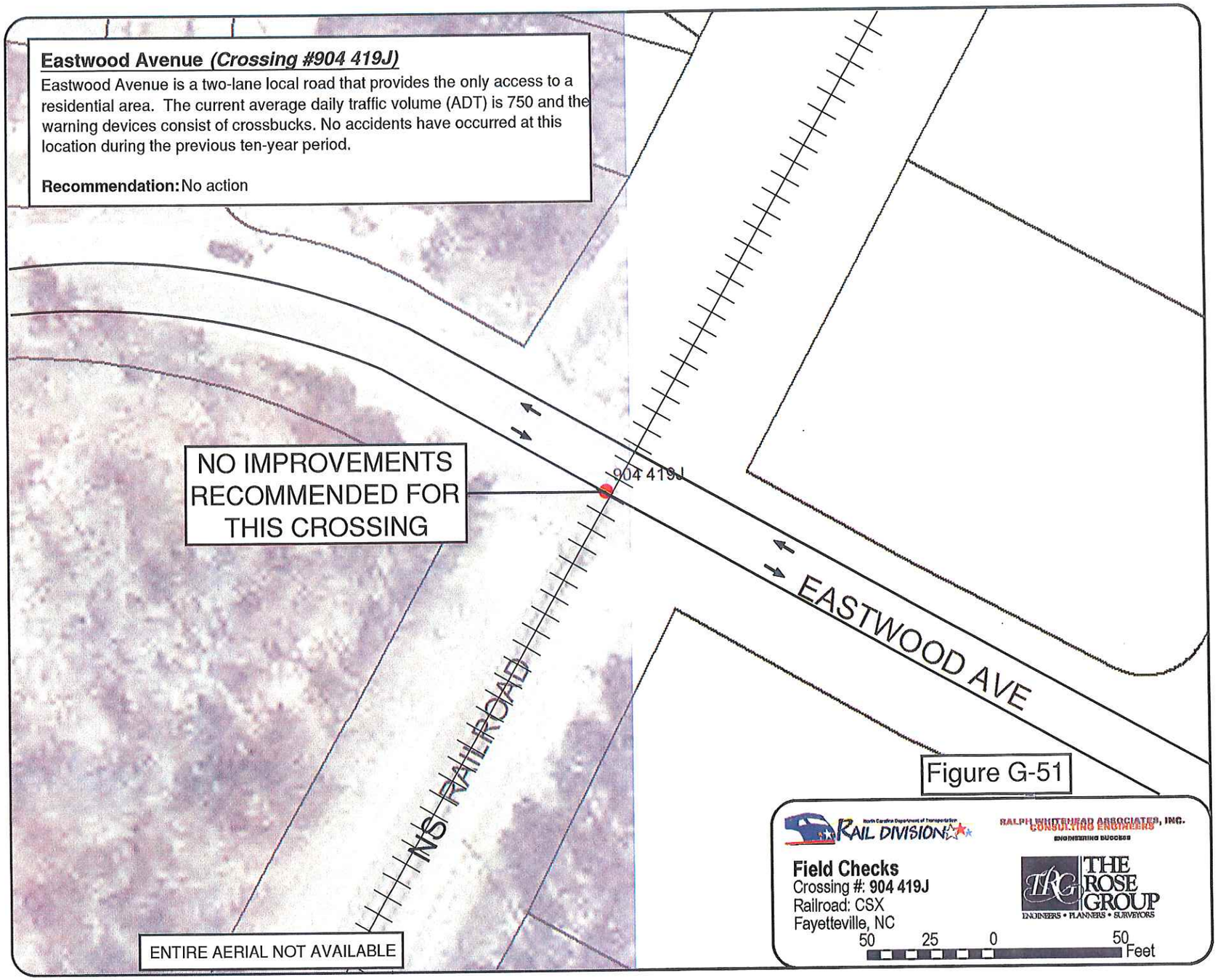


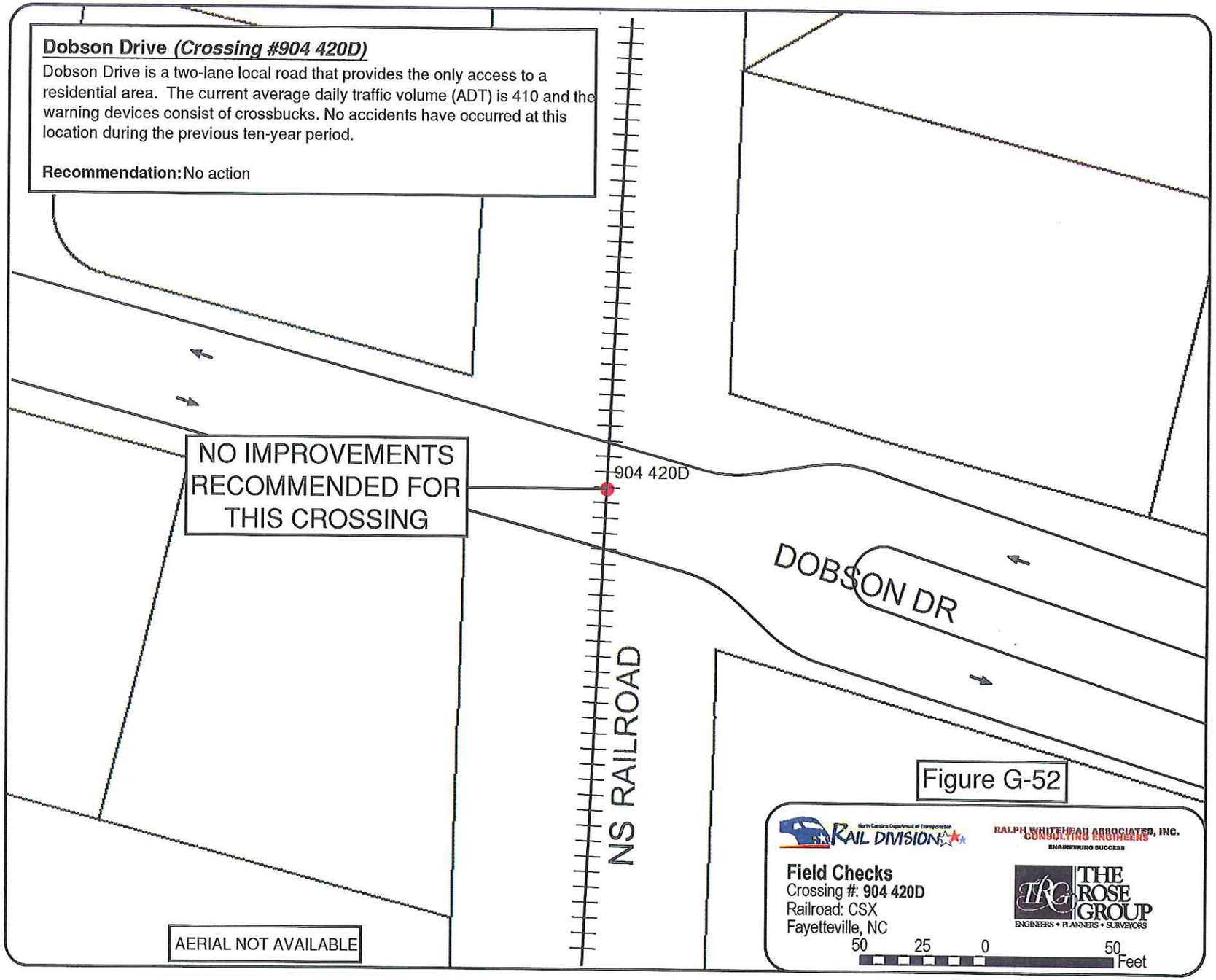
NC53/NC210 ***(Crossing #641 793X)***

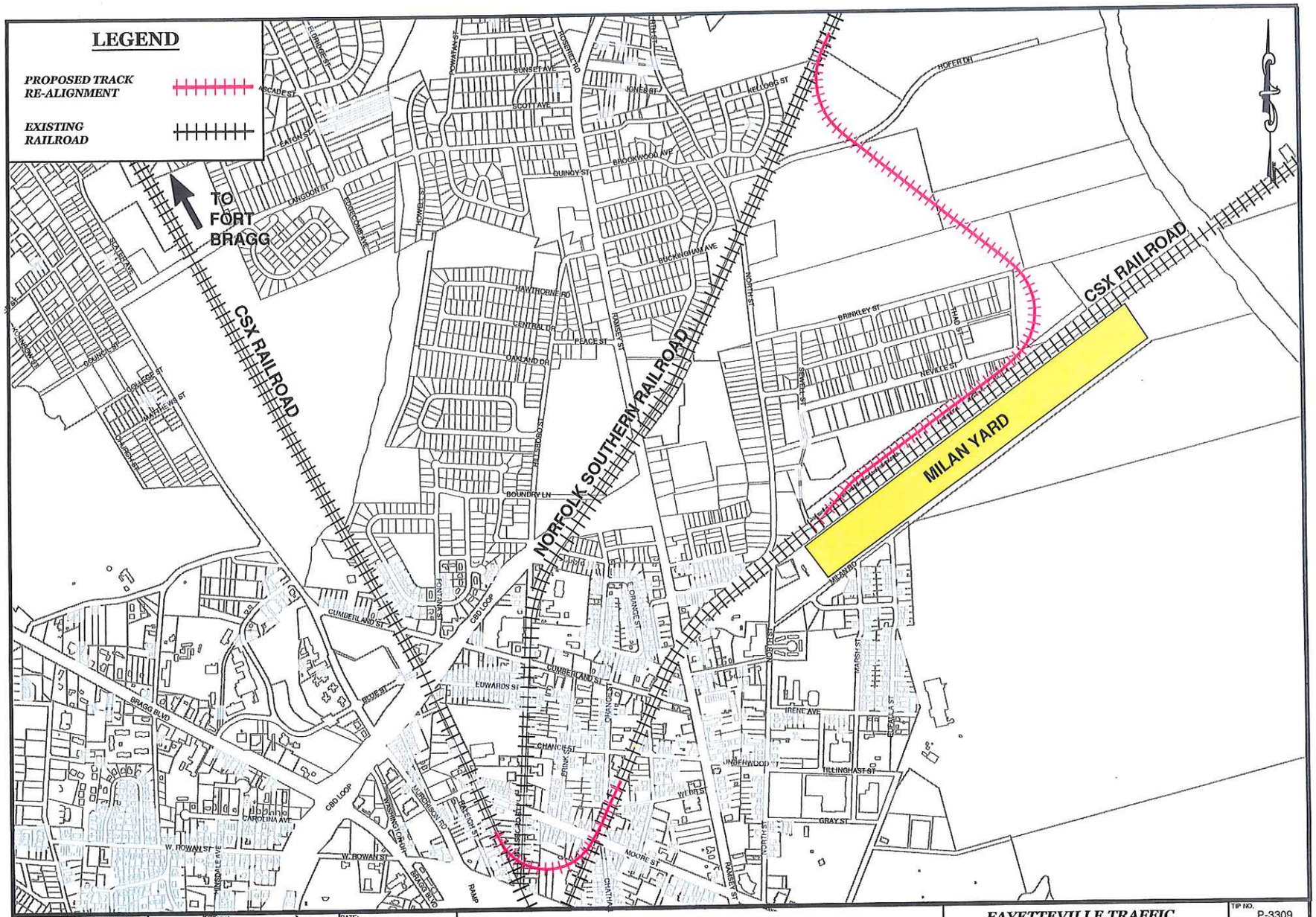
NC 53/NC 210 is a four-lane major thoroughfare that is located in a commercial area. The current average daily traffic volume (ADT) is 16,180 and the warning devices consist of cantilevers. No accidents have occurred at this location during the previous ten-year period.

Near-Term Recommendation: Add rubberized median and gates. Upgrade traffic signal and cantilevers.
Estimated Cost: $225,000

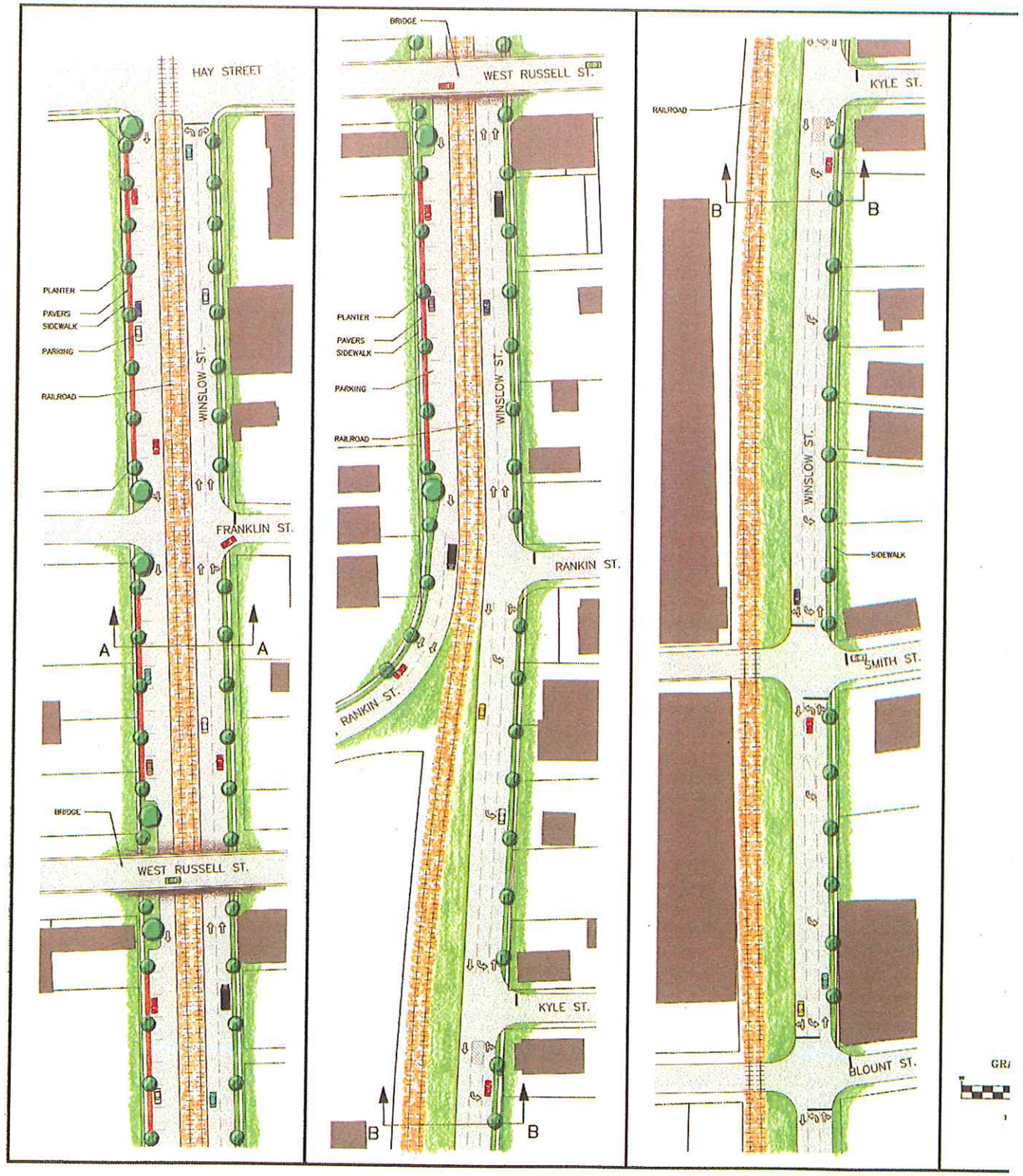

Plymouth Street (Crossing #641 794E)
Plymouth Street is a two-lane minor thoroughfare that is located in a residential area. The current average daily traffic volume (ADT) is 1,290 and the warning devices consist of flashers. No accidents have occurred at this location during the previous ten-year period.
Near-Term Recommendation: Add gates to existing railroad crossing signals
Estimated Cost: $20,000
PLYMOUTH ST
STOP
STOP
CLINTON RD
641 794E
ADD GATES
CSX RAILROAD
RAILROAD ST
S. PLYMOUTH ST
AERIAL NOT AVAILABLE
Figure G-50
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 641 794E
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet


Eastwood Avenue (Crossing #904 419J)
Eastwood Avenue is a two-lane local road that provides the only access to a residential area. The current average daily traffic volume (ADT) is 750 and the warning devices consist of crossbucks. No accidents have occurred at this location during the previous ten-year period.
Recommendation: No action
NO IMPROVEMENTS RECOMMENDED FOR THIS CROSSING
904 419J
EASTWOOD AVE
NS RAILROAD
ENTIRE AERIAL NOT AVAILABLE
Figure G-51
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 904 419J
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet


Dobson Drive (Crossing #904 420D)
Dobson Drive is a two-lane local road that provides the only access to a residential area. The current average daily traffic volume (ADT) is 410 and the warning devices consist of crossbucks. No accidents have occurred at this location during the previous ten-year period.
Recommendation: No action
NO IMPROVEMENTS RECOMMENDED FOR THIS CROSSING
904 420D
DOBSON DR
NS RAILROAD
AERIAL NOT AVAILABLE
Figure G-52
RAIL DIVISION
RALPH WHITEHEAD ASSOCIATES, INC.
CONSULTING ENGINEERS
ENGINEERING SUCCESS
Field Checks
Crossing #: 904 420D
Railroad: CSX
Fayetteville, NC
THE ROSE GROUP
ENGINEERS • PLANNERS • SURVEYORS
50 25 0 50 Feet



NOT TO SCALE	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	DATE: 05/15/03 DRAWN BY: JLS CHECKED BY: BDD	RALPH WHITEHEAD ASSOCIATES, INC.	North Carolina Department of Transportation RAIL DIVISION	*FAYETTEVILLE TRAFFIC SEPARATION STUDY* *RAIL REALIGNMENT*	TIP NO. P-3309 STATE PROJECT NO. 9.9085004 FIGURE NO. G-53


HAY STREET
PLANTER
PAVERS
SIDEWALK
PARKING
RAILROAD
WINSLOW ST.
FRANKLIN ST.
A
A
BRIDGE
WEST RUSSELL ST.
BRIDGE
WEST RUSSELL ST.
PLANTER
PAVERS
SIDEWALK
PARKING
RAILROAD
WINSLOW ST.
RANKIN ST.
RANKIN ST.
KYLE ST.
B
B
RAILROAD
KYLE ST.
B
B
WINSLOW ST.
SIDEWALK
SMITH ST.
BLOUNT ST.

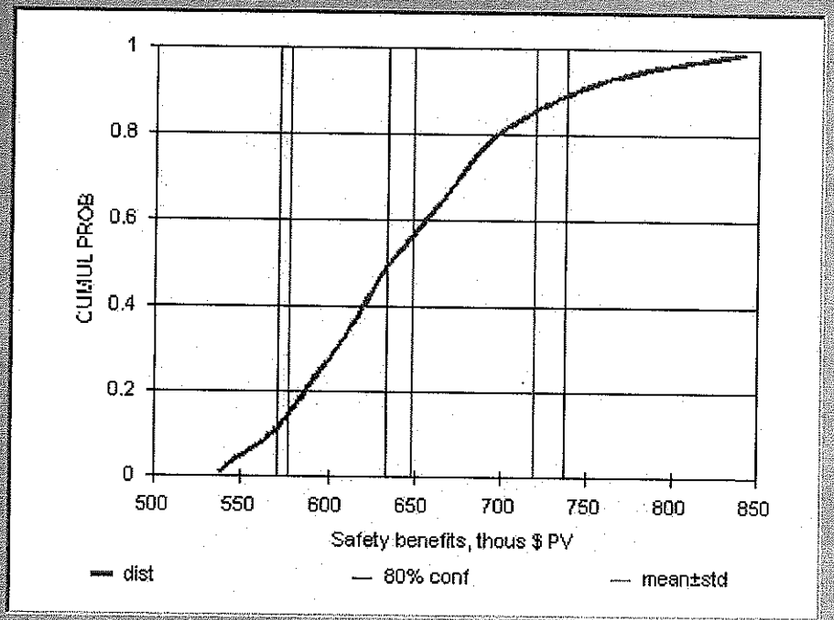
VISUALIZATION OF WEST RUSSELL STREET

NEAR-TERM

Grade Crossing Investment Analysis - Region - Result Variables

Benefits and Benefit-Cost Summary

Results Chart



Cumulative Decumulative Density

Safety benefits, thous $ PV

Summary Stats

Mean	648.4261
Std Dev	71.24619
Minimum	537.1543
Maximum	875.9498
Skewness	0.8961425
Kurtosis	1.033735

Percentiles

1%	538.6779
5%	549.5574
10%	571.1328
20%	586.0117
30%	605.1448
40%	620.293
50%	633.5313
60%	657.182
70%	675.5935
80%	692.9546
90%	737.811
95%	774.5613
99%	841.8185

Full-Screen Charts

Tornado Chart

Fayetteville Region Base Senario

Result Description	Average	StDev	Min	Max
Veh operating cost benefit, thous $ PV	0.00	0.00	0.00	0.00
Total benefits, thous $ PV	625.34	76.05	497.66	869.54
of this, benefits from induced trips, thous $ PV	19.93	3.10	14.86	29.79
of this, disbenefit from induced trips, thous $ PV	-43.02	11.69	-65.76	-11.03
Total costs, thous $ PV	455.09	0.00	455.09	455.09
Net benefits, thous $ PV	170.25	76.05	42.57	414.44
Benefit-cost ratio	1.37	0.17	1.09	1.91
Rate of return (constant dollars), %	10.02	1.76	7.23	15.64
Local benefits (not included in summary), thous $ PV	31.15	10.83	1.14	57.59

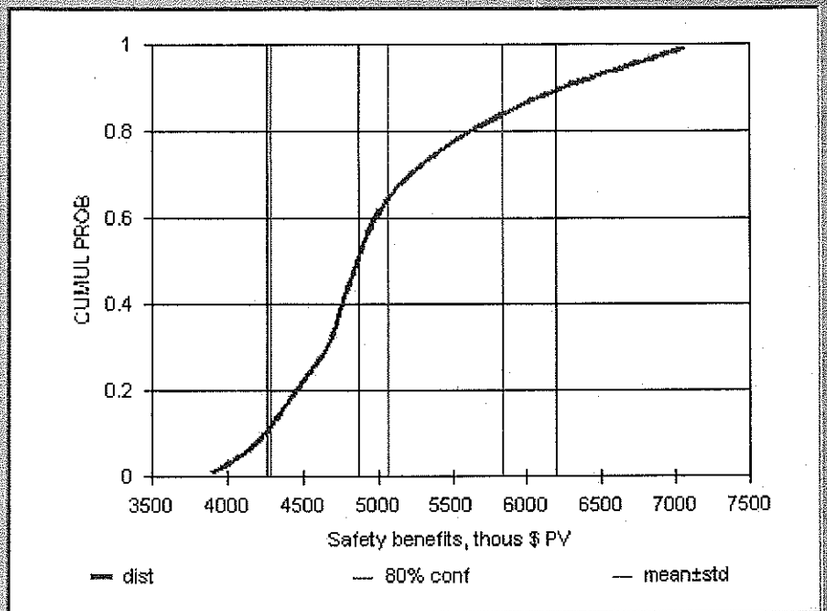
FIGURE G-56

ALL IMPROVEMENTS

Grade Crossing Investment Analysis - Region - Result Variables

Benefits and Benefit-Cost Summary

Results Chart



Cumulative De-cumulative Density

Safety benefits, thous $ PV

Summary Stats

Mean	5058.926
Std Dev	775.5731
Minimum	3861.774
Maximum	7088.259
Skewness	1.017373
Kurtosis	0.6075155

Percentiles

1%	3906.956
5%	4107.086
10%	4257.651
20%	4443.956
30%	4690.691
40%	4751.438
50%	4867.613
60%	4961.293
70%	5178.948
80%	5592.426
90%	6187.286
95%	6675.933
99%	7060.599

Full-Screen Charts

Tornado Chart

Fayetteville Grade Separation

Result Description	Average	StDev	Min	Ma.
Veh operating cost benefit, thous $ PV	7.34	0.44	6.57	8.5
Total benefits, thous $ PV	6515.63	943.65	5026.73	8964.0
of this, benefits from induced trips, thous $ PV	1351.06	169.20	1084.18	1802.0
of this, disbenefit from induced trips, thous $ PV	-48.52	11.94	-80.87	-25.8
Total costs, thous $ PV	8617.81	0.00	8617.81	8617.8
Net benefits, thous $ PV	-2102.18	943.65	-3591.08	346.2
Benefit-cost ratio	0.76	0.11	0.58	1.0
Rate of return (constant dollars), %	-0.80	1.48	-3.36	2.8
Local benefits (not included in summary), thous $ PV	327.18	114.61	95.07	666.5

FIGURE G-57