

FEASIBILITY STUDY

**City of Monroe
Proposed Relocation/Upgrades to SR 1349 (Airport Road)
From NC 84 (Weddington Road)
To SR 1162 (Goldmine Road).**

Union County

Division 10

FS-0210A



**Prepared by the
Program Development Branch
N. C. Department of Transportation**

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**R. N. Prince
Feasibility Studies Engineer**

A handwritten signature in black ink, appearing to read "Derrick W. Lewis", is written over a horizontal line.

**Derrick W. Lewis, P.E.
Feasibility Studies Unit Head**

9/24/2010

Date

City of Monroe

Proposed Relocation/Upgrades to SR 1349 (Airport Road) From NC 84 (Weddington Road) To SR 1162 (Goldmine Road).

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I. General Description

This feasibility study describes the operational and safety improvements to SR 1349 (Airport Road) from NC 84 (Weddington Road) to SR 1162 (Goldmine Road), a distance of approximately 1.1-miles. The project location is shown on the Location Map. As part of the study several different cross-sections were considered, the details of which are as followed:

- ◆ **Alternative 1:** Two-lane shoulder section, 32 feet wide from edge of pavement to edge of pavement including 6-foot shoulders 4-foot which is paved on 150' of right-of-way. The roadway will be constructed asymmetrical about the centerline except for some new location as indicated from existing NC 84 (Weddington Road) to SR 1162 (Goldmine Road), a distance of approximately 1.1-miles.
- ◆ **Alternative 2:** Two-lane shoulder section, 32 feet wide from edge of pavement to edge of pavement including 6-foot shoulders 4-foot which is paved on 150' of right-of-way. The roadway will be constructed asymmetrical about the centerline of the proposed right-of-way to permit future widening to a four-lane divided section with a narrow grass median, a distance of approximately 1.1-miles.
- ◆ **Alternative 3:** Four-lane divided shoulder section, consisting of 12-foot lanes, 23-foot raised grass median, 6-foot shoulders of which 4-foot are paved on 150' of right-of-way. The alignment will be symmetrical about the centerline, a distance of approximately 1.1-miles.

II. Background

The purpose of this project is to improve the traffic carrying capacity, drainage and access along Airport Road as well as promote a safer environment for motorists, pedestrians and cyclists. It will also improve access to the Monroe Regional Airport and the Monroe Corporate Center.

SR 1349 (Airport Road) is classified as a rural local route in the North Carolina functional classification system.

SR 1349 (Airport Road) is currently a two-lane shoulder section with 20' to 21' of pavement with 10' lanes from NC 84 (Weddington Road) to SR 1162 (Goldmine Road).

The development along Airport Road (SR 1349) is primarily residential with access to the Monroe Regional Airport and the Monroe Corporate Center as well as access to NC 84.

It should be noted that the City of Monroe has proposed to extend the Monroe Regional Airport runway and re-align SR 1162 (Goldmine Road) that will affect the requested improvements to SR 1349 (Airport Road).

The City of Monroe and the Division 10 Engineer requested improvements to the horizontal alignment.

The City of Monroe supports this project.

III. Traffic and Safety

The current year Average Daily Traffic (ADT) along Airport Road between NC 84 and Goldmine Road is 4,500 vehicles per day (vpd) in 2009 and is projected to be 13,700 vpd. in the 2035 Design Year (DY). Truck traffic along Airport Road is estimated to be up to 6% of the ADT.

The existing two-lane section on Airport Road currently is un-signalized, with a flashing traffic signal located at the SR 1349 and SR 1162 intersection.

With no improvements, Airport Road presently operates at an acceptable LOS "C" in the 2010 Design year and LOS "E" in the 2035 Design year. The proposed two-lane alternatives function at a LOS "D" thru the 2030 design year while it is anticipated to function at a LOS "E" in the 2035 design year. The four-lane divided alternative functions at a LOS "A" in the 2035 design year.

Between 2000 and 2003, 27 accidents occurred within the project limits. There were 6 injury accidents, 20 property damage only accidents and 1 fatality, 6 of these were recorded under wet conditions and 9 were at night as a result of these incidents. The accident rate for this 1.1-mile portion of roadway is 1,157.63 accidents per 100 million vehicle miles of travel (acc/100mvm), which is over 3 times the State crash rate and approximately 50% higher than the Statewide Critical Crash rate. The wet crash rate is 257.25 acc/100mvm), which is significantly higher than the statewide wet accident rate of 57.54 (acc/100mvm) and the night crash rate is 385.88 acc/100mvm which is higher than the 2000-2003 statewide total rate of 347.58 accidents/100mvm for two-lane undivided rural secondary route.

IV. Description of Alternatives

It is proposed to improve the horizontal alignment and to re-align a portion of Airport Road to create a new intersection with NC 84 (Weddington Road). The improvements are from NC 84 (Weddington Road) to SR 1162 (Goldmine Road), a distance of approximately 1.1-miles. The project location is shown on the location map attached.

This study evaluated three different cross-sections, a two-lane shoulder section on a 100-foot right-of-way and a two-lane shoulder section on a 150-foot right-of-way and a four-lane divided shoulder section on a 150-foot right-of-way.

Note: Traffic lights are considered for the intersections of SR 1349 and NC 84, and SR 1349/SR 1394 and at the newly aligned SR 1162 intersection.

The details of the proposed Alternatives are as follows:

- ◆ **Alternative 1 Sections:** Proposed upgrading of Airport Road from NC 84 to Goldmine Road to a two-lane shoulder section 32' edge of pavement (EOP) to EOP, with 12-foot travel lanes and 4-foot paved shoulders, on 100' of right-of-way. The alignment would be symmetrical about the centerline except for some new alignment as well as some re-alignment of curves.

Section A is a new location alignment of Airport Road from NC 84, approximately 2,412-feet southeast of the existing Airport Road intersection to northeast for approximately 0.33 miles (See Figure 1).

Section B is symmetrical about the centerline of the existing alignment except for some curve re-alignment from the end of Section A to SR 1394 (Sanford Road) a distance of approximately 0.42 miles. (See Figure 1).

Section C is symmetrical about the centerline of the existing alignment except for some curve re-alignment from SR 1394 (Sanford Road) to SR 1162 (Goldmine Road) a distance of approximately 0.34 miles. (See Figure 1).

Under the proposed improvements for Alternative 1, it is anticipated there will be Zero (0) residential and Zero (0) business relocated. The total cost of this alternative is estimated to be \$6,400,000.

Construction	\$4,700,000
Utilities	\$400,000
<u>Right-of-Way</u>	<u>\$1,300,000</u>
Estimated Project Cost (Section A, B, C)	\$6,400,000

- ◆ **Alternative 2:** Proposed upgrading of Airport Road from NC 84 to Goldmine Road to a two-lane shoulder section 32' edge of pavement (EOP) to EOP on 150' of right-of-way. The facility would be constructed asymmetrical about the centerline of the alignment in order to permit future widening to a four-lane divided narrow median section with shoulders on the outside. (See Figure 1).

Sections A, B and C are identical to Alternative 1 with the exception of use of a 150' right-of-way.

Under the proposed improvements for Alternative 2, it is anticipated there will be Zero (0) residential and Zero (0) business relocated. The total cost of this alternative is estimated to be \$7,100,000.

Construction	\$5,100,000
Utilities	\$400,000
<u>Right-of-Way</u>	<u>\$1,600,000</u>
Estimated Project Cost (Section A, B, C)	\$7,100,000

- ◆ **Alternative 3 Sections:** Proposed upgrading of Airport Road from NC 84 to Goldmine Road to a Four-lane divided shoulder section 83' edge of pavement (EOP) to EOP on 150' of right-of-way. The alignment would be symmetrical about the centerline except for some new alignment and re-alignment of curves. (See Figure 2).

Sections A, B and C are identical to Alternative 1 with the exception of the use of a 150' right-of-way

Under the proposed improvements for Alternative 3, it is anticipated there will be Zero (0) residential and Zero (0) business relocated. The total cost of this alternative is estimated to be \$9,900,000.

Construction	\$7,700,000
Utilities	\$400,000
<u>Right-of-Way</u>	<u>\$1,800,000</u>
Estimated Project Cost (Section A, B, C)	\$9,900,000

Note: Under the proposed improvements to the Alternatives listed above, design considerations must anticipate the proposed construction of FS-0310C represented by Section D in Figure 1 and 2, which upgrades NC 84 (Weddington Road). Also the re-alignment of SR 1162 (Goldmine Road) effected by the proposed Monroe Regional Airport extension in the final design and cost stages.

V. Community Issues

A detailed investigation of community issues was not conducted for this feasibility study. However; no impacts to schools, parks, recreation areas and community facilities are anticipated with this project.

There is a significant residential population growth anticipated that uses the Airport Road corridor.

VI. Natural and Environmental Issues

A detailed environmental study was not conducted for this feasibility study. However, existing information available for this project area has been screened for environmental and historic concerns. There is no indication of threatened or endangered species or historic concerns in the area based on available GIS data maintained by the National Heritage program.

VII. Recommendations

All alternatives provide acceptable levels of service (LOS) during the 2035 design year.

Alternative 1: After analyzing the information available for a two-lane shoulder section on a 100-foot right-of-way it was concluded this section would adequately address safety issues from the narrow two-lane shoulders section. Alternative 1 is anticipated to have a total cost of \$6,400,000. Due to the limitations of the proposed 100-foot right-of-way to accommodate the future geometric needs of the corridor, this option is not recommended.

Alternative 2: This section was developed because current narrow lanes and curvature of SR 1349 present less safe and efficient operating conditions. Union County and the City of Monroe requested an upgrade for widening to accommodate the growing traffic demands of this corridor. This alternative proposes to relocate and upgrade portions of SR 1349 from NC 84 to SR 1162 to a two lane shoulder section with 32 feet of pavement including four foot paved shoulders within a 150-foot of right-of-way. The proposed 150-foot right-of-way is sufficient to contain the ultimate four-lane divided shoulder section with a narrow raised grass median. Alternative 2 is anticipated to have a total cost of 7,100,000.

Alternative 3: After analyzing the information available for a four-lane shoulder section on a 150-foot right-of-way, it was concluded this section would more than adequately address safety and operation issues associated with the existing narrow two-lane shoulder section. The four-lane divided section is expected to operate at an acceptable LOS well beyond the 2035 design year. Alternative 3 is anticipated to have a total cost of \$9,900,000.

The two-lane shoulder section on multilane right-of-way (Alternative 2) is considered an acceptable interim solution because it provides an improved two-lane shoulder section that is expected to function well thru the 2035 design year while still accommodating the right-of-way needs of the ultimate four-lane divided section. In addition, Alternative 2 is anticipated to cost \$2,800,000 less than the long term solution in Alternative 3.

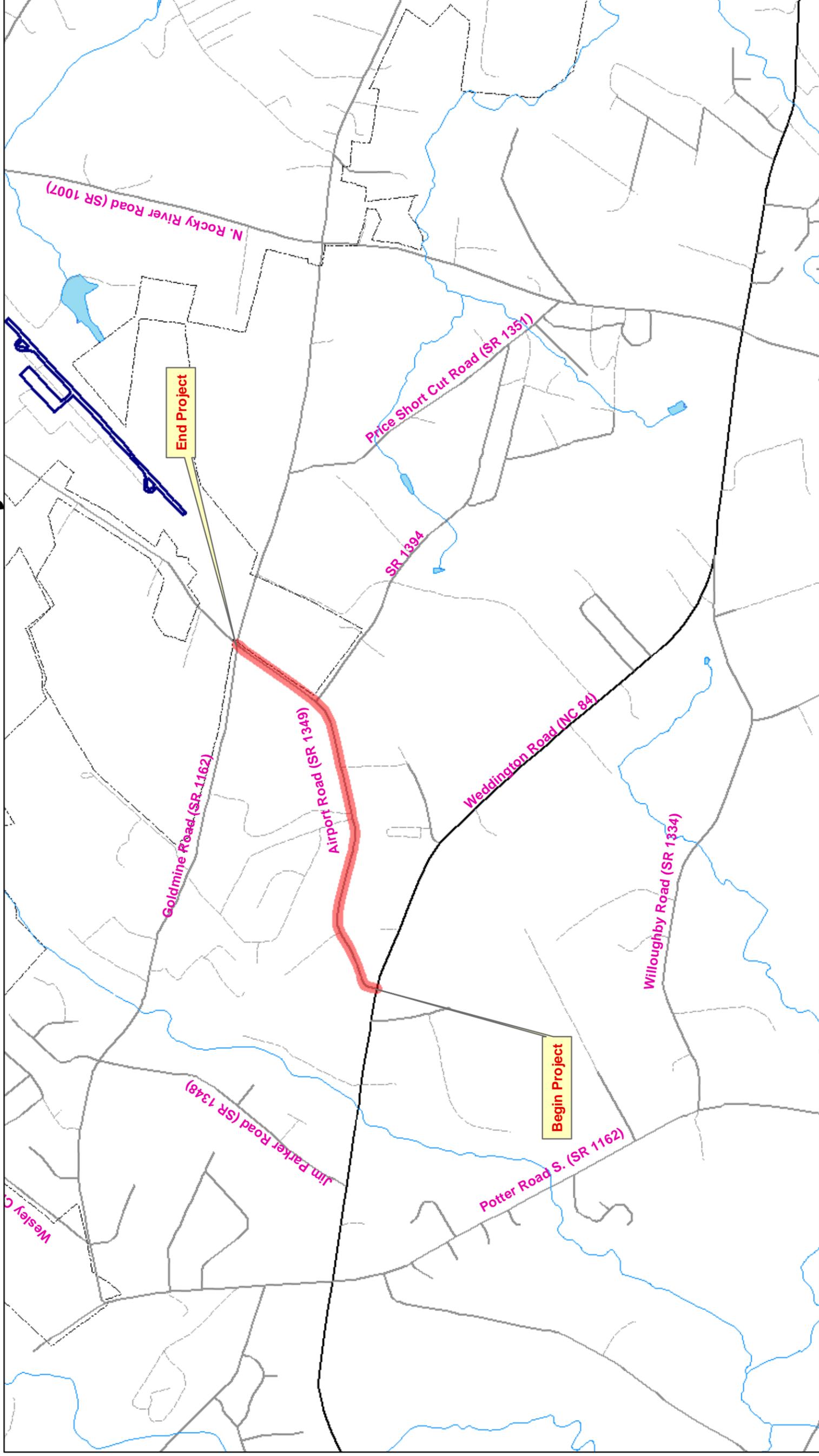
VIII. Additional Comments

Bicycle accommodations are included in this project.

Location Map

FS - 0210A

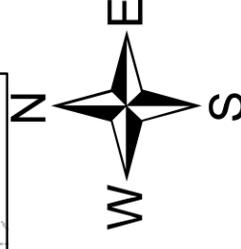
Monroe / Union County

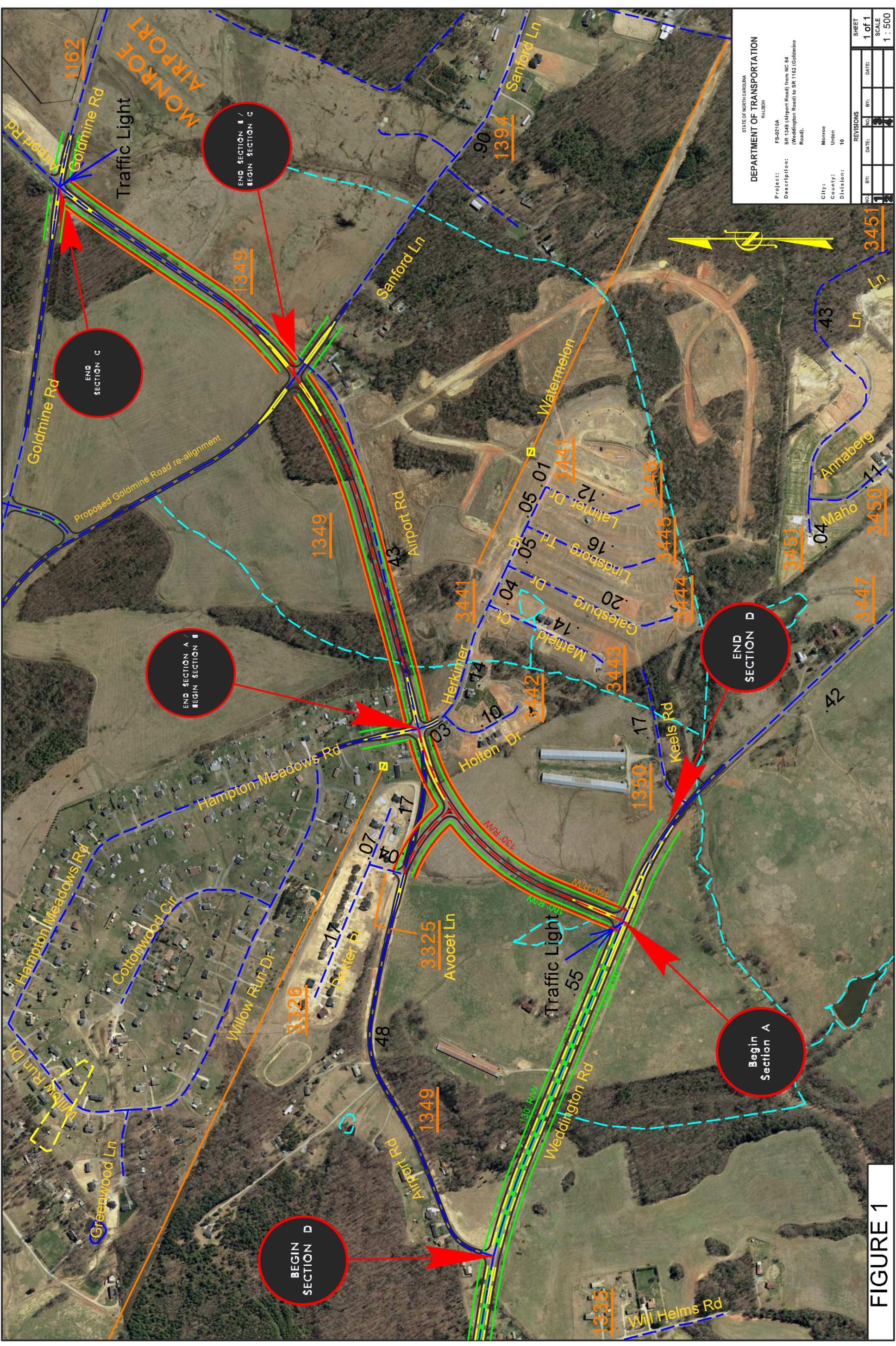


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Miles





STATE OF NORTH CAROLINA
RALEIGH

DEPARTMENT OF TRANSPORTATION

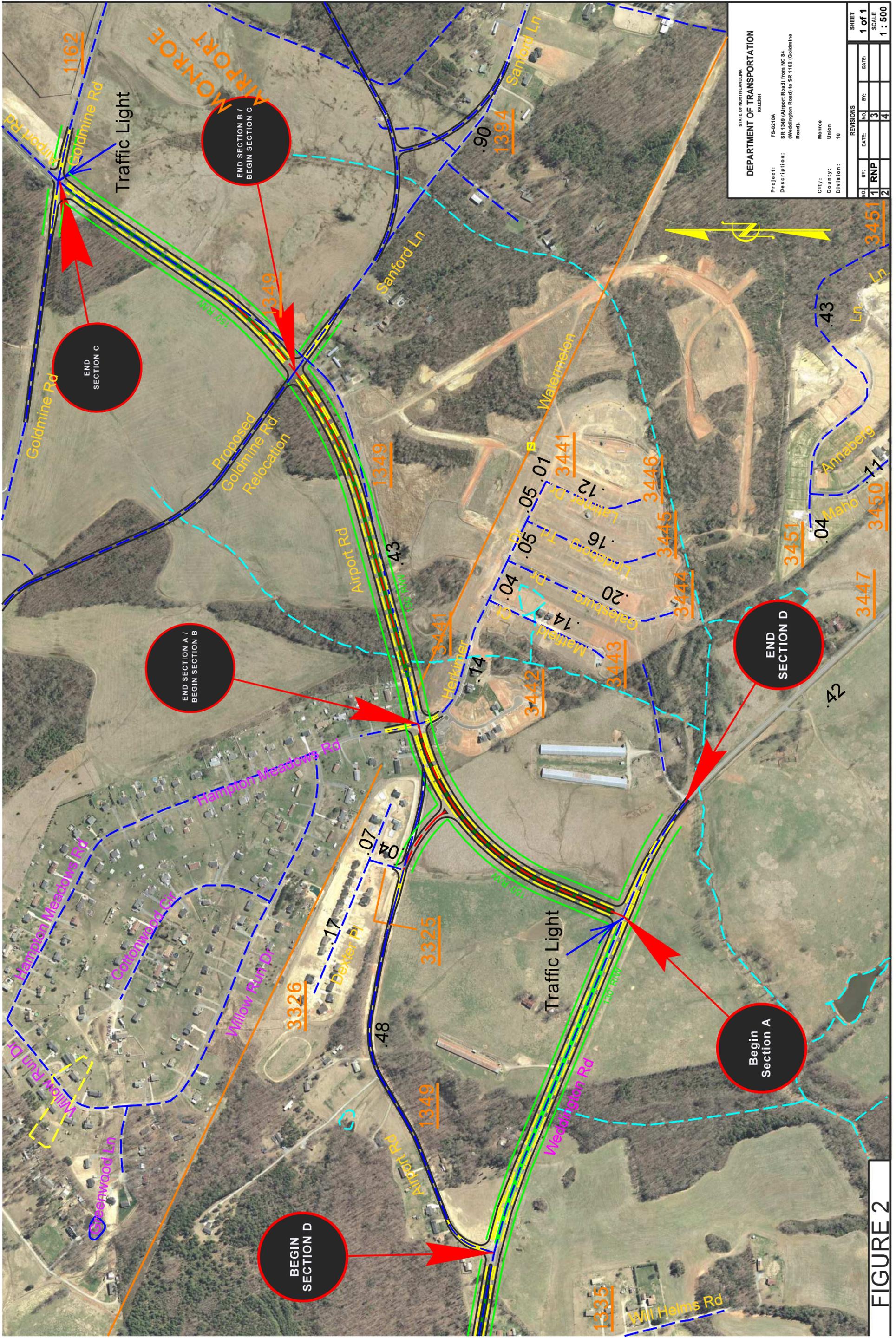
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City: Monroe
County: Union
Division: 10

REVISIONS		NO.	BY:	DATE:	NO.	BY:	DATE:
1							
2							

SHEET 1 OF 1
SCALE 1 : 500

FIGURE 1



STATE OF NORTH CAROLINA
RALEIGH

DEPARTMENT OF TRANSPORTATION

Project: FS-3210A
Description: SR 1349 (Airport Road) from NC 84 (Weddington Road) to SR 1162 (Goldmine Road).

City: Monroe
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REVISIONS		NO.	BY:	DATE:
1	RNP	1		
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SCALE 1 : 500

FIGURE 2