FEASIBILITY STUDY

City of Wilmington

Independence Blvd. Extension from Randall Parkway to Martin Luther King, Jr. Parkway

New Hanover County

Division 3

FS-9903 G

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

Nicole M. Hackler
Feasibility Studies Engineer

Derrick W. Lewis, P.E.
Feasibility Studies Engineer

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Date

Independence Blvd. Extension from Randall Parkway to Martin Luther King, Jr. Parkway in Wilmington
New Hanover County
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I. General Description

This feasibility study describes the extension of Independence Blvd. from Randall Parkway to Martin Luther King, Jr. Parkway in Wilmington, a distance of approximately 1.7 miles. The project location is shown on Figure 1. The southern portion of this project utilizes the existing alignments of Covil Avenue and Montgomery Avenue, with the northern-most portion being a new section of roadway. As part of this study two different cross-sections were investigated. The details of each are as follows:

- ***ALTERNATIVE #1*:** Four-lane divided curb and gutter section on 100-feet of right of way, transitioning to a four-lane shoulder section on 150-feet of right of way.

- ***ALTERNATIVE #2*:** Six-lane divided curb and gutter section on 120-feet of right of way, transitioning to a four-lane shoulder section on 150-feet of right of way.

Both of these alternatives included the cost of a new trumpet-type interchange at Martin Luther King, Jr. Parkway, as well as a partial-cloverleaf interchange at Princess Place.

This study is the initial step in the planning and design process for this project and is not the product of exhaustive environmental or design investigations. The purpose of this study is to describe the proposed project including costs, and to identify potential problems that may require consideration in the planning and design phases.

II. Background

The purpose of this project is to provide improved north-south access in Wilmington by extending Independence Blvd. to Martin Luther King, Jr. Parkway. This extension is also expected to improve the intermodal access between various facilities in and around Wilmington, such as the Wilmington International Airport, Port of Wilmington, Central Business District, I-40, etc.

Independence Blvd. is designated as a major thoroughfare in the Greater Wilmington Urban Area Thoroughfare Plan, and a minor arterial in the North

Carolina Statewide Functional Classification System. Covil Avenue and Montgomery Avenue are currently two-lane facilities with 24 feet of pavement and intermittent curb and gutter. The development along this road is a combination of residential and commercial.

Multi-lane improvements to Independence Blvd. from US 76 (Oleander Drive) to Randall Parkway have been recently completed under TIP Project U-3116.

CSX Transportation (CSXT) currently operates a railway which crosses the project at two locations. The first location is an existing at-grade crossing on the proposed Independence Blvd. extension just north of Randall Parkway. The second crossing is on the new location section of the project just north of Princess Place. This railway carries two trains per day at an average speed of 10 miles per hour. Based on the Policy and Procedures Manual, the exposure index for both of these crossings is 62,000. Given this information it would be very desirable to provide a railroad grade separation at both of these locations. However, the portion of Independence Blvd. just south of Randall Parkway has just undergone major construction under TIP Project U-3116. At this time reconstruction of this new facility does not appear reasonable, therefore this feasibility study does not include a railroad grade separation at the crossing just north of Randall Parkway.

There are three existing traffic signals within the project limits, one at Randall Parkway, one at Market Street and the third at Princess Place.

The current year Average Daily Traffic (ADT) along Independence Blvd. within the project limits ranges from 18,700 vehicles per day (vpd) to 26,700 vpd. For the design year 2025, the estimated traffic volumes on Independence Blvd. will range from 31,000 vehicles per day (vpd) to 39,000 vpd. Truck traffic is estimated to make up approximately eight percent of the daily traffic.

With the proposed extension of Independence Blvd., the intersections along this corridor operate at a Level of Service (LOS) "D" or better in both the current year and design year 2025, provided Alternative #2 is constructed with the recommended intersection and interchange improvements.

III. Description of Project

It is proposed to extend Independence Blvd. from Randall Parkway to Martin Luther King, Jr. Parkway, a distance of approximately 1.7 miles. For the section of roadway from Randall Parkway to Market Street, the existing alignment of Covil Avenue will be used to place the new alignment of

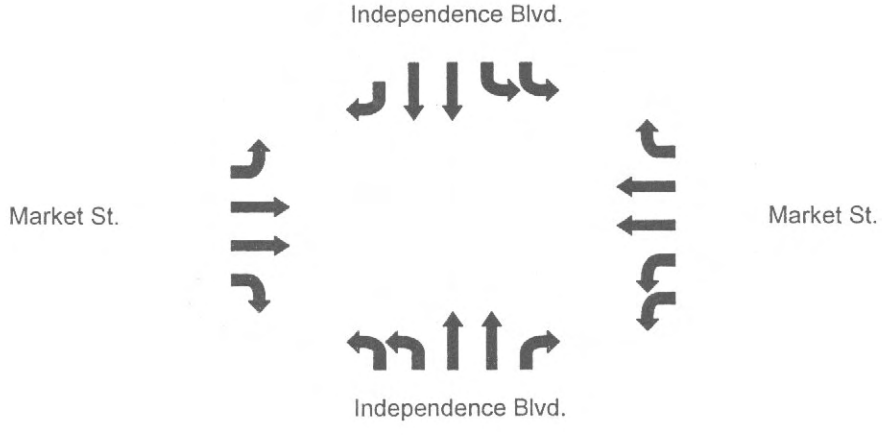
Independence Blvd. At the intersection of Market Street, Covil Avenue and Montgomery Avenue form an offset intersection. Therefore, the new Independence Blvd. alignment will continue north and follow the Montgomery Avenue alignment asymmetrically to the east, in order to alleviate the offset intersection condition. This alignment along Montgomery Avenue will continue north to Princess Place. The section of roadway from Princess Place to Martin Luther King, Jr. Parkway will be on new alignment as shown on Figure 1. Two cross-sections were studied for this project and are as follows:

ALTERNATIVE #1: Four-lane divided curb and gutter section with an 18-foot raised grass median, 70-feet wide face to face of curbs, with 10-foot berms on 100-feet of right of way. This section will transition to a four-lane divided shoulder section with an 18-foot raised grass median, on 150-feet of right of way, from Princess Place to Martin Luther King, Jr. Parkway. This alternative includes full control of access from Market Street to Martin Luther King, Jr. Parkway. An evaluation of the Railroad Index Exposure at Princess Place showed warrants were met for a grade-separated crossing, therefore this alternative includes the construction of a partial cloverleaf interchange at Princess Place (with ramps and loops in the southwest and northeast quadrants, and spanning the CSX Railroad crossing). A trumpet interchange at Martin Luther King, Jr. Parkway was also included.

With this proposed cross-section, it is anticipated there will be 89 residences and 6 businesses relocated due to this project. The total cost of this alternative, including construction and right-of-way, is estimated to be $ 35,400,000.

Construction.....	$ 18,900,000
Right-of-Way.....	$ 16,500,000
Total Project Cost (Alternative 1).....	$ 35,400,000

Along with the cross-section described above, the following intersection improvements at Market Street were also included:



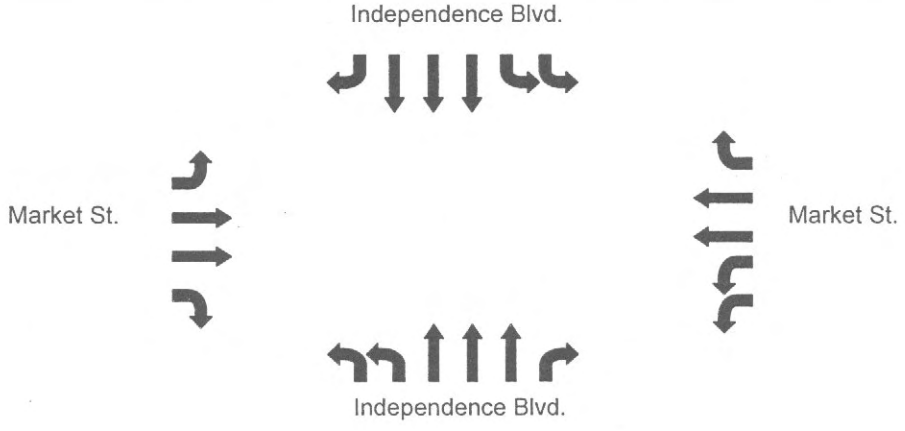
Please note that although the design year turning movements were accommodated by this configuration, the through capacity on Independence Blvd. was unable to provide an acceptable Level of Service (LOS) for 2025. Therefore, the configuration in Alternative #2 is preferred since all design year demands can be met with the intersection improvements described below.

ALTERNATIVE #2: From Randall Parkway to Princess Place, a six-lane divided curb and gutter section with an 18-foot raised grass median, 94-feet wide face to face of curbs with 10-foot berms, on 120-feet of right of way. This section will transition to a four-lane shoulder section with an 18-foot raised grass median, on 150-feet of right of way from Princess Place to Martin Luther King, Jr. Parkway. This alternative includes full control of access from Market Street to Martin Luther King, Jr. Parkway. An evaluation of the Railroad Index Exposure at Princess Place showed warrants were met for a grade-separated crossing, therefore this alternative includes the construction of a partial cloverleaf interchange at Princess Place (with ramps and loops in the southwest and northeast quadrants, and spanning the CSX Railroad crossing). A trumpet interchange at Martin Luther King, Jr. Parkway was also included.

With this proposed cross-section, it is anticipated there will be 89 residences and 8 businesses relocated due to this project. The total cost of this alternative, including construction and right-of way, is estimated to be $ 37,200,000.

Construction.....	$20,000,000
Right-of-Way.....	$17,200,000
Total Project Cost (Alternative 2).....	$ 37,200,000

Along with the cross-section described above, the following intersection improvements at Market Street were also included with this alternative:



It should also be noted that two bicycle alternatives were investigated for this project. The first was a "Share the Road" alternative, which includes two additional feet of unmarked pavement on each side of the roadway from Randall Parkway to Princess Place. The cost for this option would add an additional $150,000 to the project cost.

The second bicycle alternative investigated was a four-foot marked bicycle lane on each side of the roadway, also from Randall Parkway to Princess Place. This option would add an additional $300,000 to the project cost.

Finally, a separate cost was provided for the installation of a five-foot sidewalk to be installed on one side of the roadway, from Market Street to Princess Place. This addition would add $23,000 to the project cost. Sidewalks from Princess Place north to Martin Luther King, Jr. Parkway were not deemed appropriate since this segment was recommended to be a shoulder section with full control of access.

IV. Other Alternatives Considered

ALTERNATIVE #3: Alternative #3 is the same as Alternative #1 with the exception of an at-grade intersection and rail crossing at Princess Place rather than a grade separation. This alternative includes full control of access from Princess Place to Martin Luther King, Jr. Parkway. All other factors remain the same including the section description, the required right of way widths, the recommended intersection improvements at Market Street (and the resulting Level of Service failure for the design year) and the inclusion of the trumpet interchange at Martin Luther King, Jr. Parkway. The items which changed with this alternative are outlined below.

With this option, it is anticipated there will be 27 residences and 5 businesses relocated due to this project. The total cost of this alternative, including construction and right-of-way, is estimated to be $ 23,300,000.

Construction.....	$ 14,900,000
Right-of-Way.....	$ 8,400,000
Total Project Cost (Alternative 3).....	$ 23,300,000.

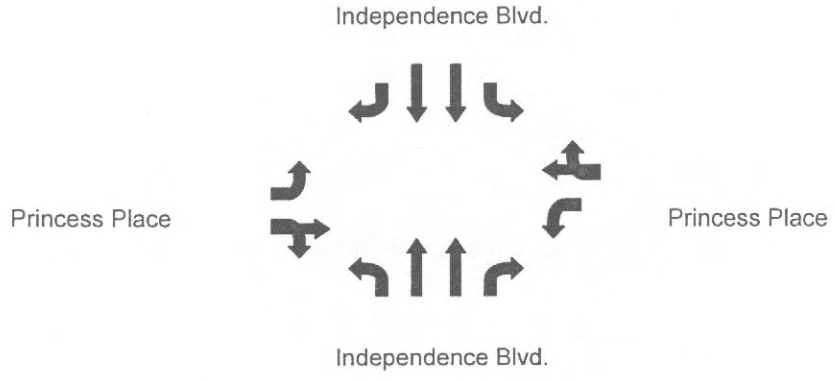
ALTERNATIVE #4: Alternative #4 is the same as Alternative #2 with the exception of an at-grade intersection and rail crossing at Princess Place rather than a grade separation. This alternative includes full control of access from Princess Place to Martin Luther King, Jr. Parkway. All other factors remain the

same including the section description, the required right of way widths, the recommended intersection improvements at Market Street and the inclusion of the trumpet interchange at Martin Luther King, Jr. Parkway. The items which changed with this alternative are outlined below.

With this option, it is anticipated there will be 27 residences and 7 businesses relocated due to this project. The total cost of this alternative, including construction and right-of-way, is estimated to be $ 25,100,000.

Construction.....	$ 16,000,000
Right-of-Way.....	$ 9,100,000
Total Project Cost (Alternative 4).....	$ 25,100,000

The intersection improvements required at Princess Place for both Alternative #3 and Alternative #4 above are as follows:



When these two options were further investigated, several serious constraints came to light which prevented further consideration of these two alternatives:

1. The skew of the existing railroad track would intersect two of the four legs of the intersection at Princess Place and Independence Blvd. This would, in effect, stop all traffic on both Princess Place and Independence Blvd. in the event of a train crossing.

2. It would be extremely difficult to obtain a permit from CSX Railroad for a new at-grade crossing at this location.

V. Recommendations

ALTERNATIVE #1: The analysis for the four-lane divided curb and gutter section transitioning to a four lane shoulder section showed it would not be able to accommodate the projected 2025 design year volumes with an acceptable level of service. For this reason, Alternative #1 was not selected as the recommended option.

ALTERNATIVE #2: It was found that the combination of the six-lane divided curb and gutter section with a four-lane divided shoulder section would be able to accommodate design year 2025 volumes, PROVIDING THE INTERSECTION RECOMMENDATIONS AT MARKET STREET WERE FOLLOWED, THE PARTIAL CLOVERLEAF INTERCHANGE AT PRINCESS PLACE AND THE TRUMPET INTERCHANGE AT MARTIN LUTHER KING, JR. PARKWAY WERE CONSTRUCTED. ***Therefore, Alternative #2 with interchanges at Princess Place and Martin Luther King, Jr. Parkway and intersection modifications at Market Street would be the preferred option for the proposed Independence Blvd. extension.***

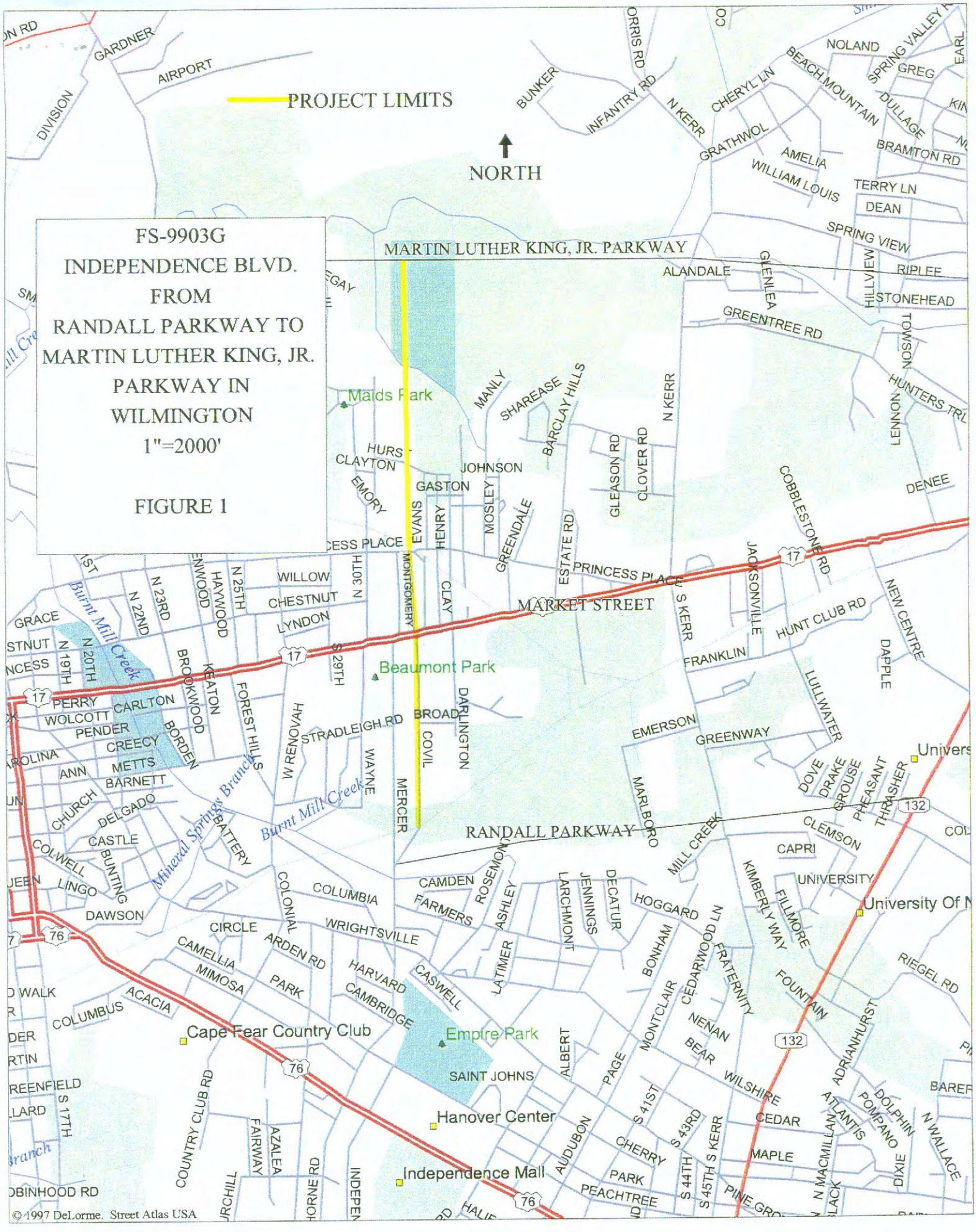
VI. Additional Comments

A detailed environmental study was not conducted for this feasibility study. However, based on maps at the Department of Environment, Health and Natural Resources – National Heritage Section, no threatened or endangered species were identified in the project corridor. In addition, no historic properties are anticipated to be impacted by the recommended alternative.

In the area where the new section of Independence Blvd. is to be constructed (from Princess Place to Martin Luther King, Jr. Parkway), it is anticipated there will be wetlands impacts.

In the area north of Market Street, there are potential environmental justice issues due to the proposed alignment of Independence Blvd., which impacts a minority community.

Based on comments received from the Congestion Management Section, two Dynamic Message Signs may also be needed for this project at a cost of approximately $250,000 each.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INDEPENDENCE BLVD.
FROM
RANDALL PARKWAY TO
MARTIN LUTHER KING, JR.
PARKWAY IN
WILMINGTON
1"=2000'
FIGURE 1
PROJECT LIMITS
NORTH
MARTIN LUTHER KING, JR. PARKWAY
MARKET STREET
RANDALL PARKWAY
Maids Park
Beaumont Park
Empire Park
Cape Fear Country Club
Hanover Center
Independence Mall
University Of N
Univers
Burnt Mill Creek
Mineral Springs Branch
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