

FEASIBILITY STUDY

Wilmington
US 74-76 Intersection
At Plaza East Shopping Center
New Hanover County
U-2726

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


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I. GENERAL DESCRIPTION

This is a feasibility study for interim improvements to the US 74-US 76 intersection. On US 74, an additional 12 foot lane is required for the eastbound approach starting 2,200 feet west of the intersection. On US 76, an additional 14 foot lane is required for the eastbound approach extending 1500 feet west of SR 1417. (See Figure 1.) Eastbound right turns on US 76 currently have a free flowing movement to US 74-US 76, but the recommended improvements require US 76 to be brought under signal control. The total estimated cost for the recommended improvements is \$500,000.

This is not an exhaustive environmental or design investigation but a preliminary study to define feasible project alternatives and determine estimated right-of-way and construction costs for these alternatives.

II. NEED FOR PROJECT

The purpose of this project is to improve traffic flow at the US 74-US 76 intersection. Presently, a weaving problem exists in the vicinity of Plaza East Shopping Center and at the intersection of US 74-US 76 west of the Intracoastal Waterway Bridge. The heavier traffic counts occur on US 74, yet US 76 eastbound traffic is a free-flowing movement while US 74 traffic is signalized. Another indication of a problem is an accident rate 2 to 3 times the statewide accident rate on other US highways in urban areas.

US 74 and US 76 are classified as Urban Principal Arterial routes in the North Carolina Statewide Functional Classification System. US 74 is a Federal Aid Urban route (5849) and US 76 is a also Federal Aid Urban route (5841). Both US 74 and US 76 are shown as major thoroughfares on the Wilmington Thoroughfare Plan. Land use is primarily retail/commercial around the Plaza East Shopping Center and the US 74-US 76 intersection.

The cross section of US 74 varies from a 4 lane median divided section west of Plaza East Shopping Center to a 4 lane shoulder section with 3 travel lanes and an auxiliary lane at the US 74-US 76 intersection (See Figure 2). The basic shoulder section also has raised medians and areas of curb and gutter in the vicinity of Plaza East Shopping Center. Pavement width is approximately 48 feet. Right-of-way width is 150 feet and the width increases to 300 feet in the area of the US 74-US 76 intersection.

US 76 is a two lane shoulder section with an auxiliary lane from SR 1409 to US 74. In the area of the US 74-US 76 intersection,

a raised median of variable width separates the eastbound and westbound traffic through the intersection. (See Figure 2.) Another triangular shaped median permits the US 76 eastbound lane to merge with US 74 without interruption. Right-of-way width along US 76 is 100 feet.

Bridge #12 over the Intracoastal Waterway is located approximately 0.2 miles east of the US 74-US 76 intersection. The roadway width is 56.0 feet with 5 foot sidewalks. Bridge #12 is a draw bridge and interrupts the efficiency of the US 74-US 76 intersection hourly when ships pass. The signal and geometrics of the US 74-US 76 intersection must operate as efficiently as possible to clear the queued traffic caused by the bridge opening.

US 76, as well as US 74-US 76 east of the intersection, are part of the River-to-the-Sea bicycle route and are designated bike routes on the Wilmington Bike Map. The Bicycle Program has requested that 14 foot outer lanes be included as part of improvements recommended by this study.

Traffic volumes on US 74, west of the intersection of US 74-US 76, are 15,700 vehicles per day (vpd) in 1991 and are projected to reach 28,200 vpd by the year 2011. Along US 76, west of the intersection of US 74/76, traffic volumes are 12,600 vpd in 1991 and are projected to reach 22,600 vpd by the year 2011.

Capacity analysis on the US 74-US 76 intersection indicates a Level of Service D based on existing geometrics and 1991 traffic volumes. Using these same traffic volumes with the recommended intersection improvements, the intersection functions at a Level of Service B. With the recommended interim improvements, the intersection is expected to operate at Level of Service D through the year 2001.

Dual westbound left turn lanes from US 74-US 76 onto US 76 will accommodate the future (20 year) traffic volumes through the intersection and provide a Level of Service D. However, extending the left turn lanes through the intersection is not advisable without providing dual westbound lanes on US 76 from US 74 to SR 1409. Significant improvements to US 76, such as an additional lane for westbound traffic, are beyond the scope of this project. The recommended US 74-US 76 intersection improvements, without the dual left turn lanes onto US 76, will likely be effective for 15 years.

Accident records for both US 74 and US 76 were used to assess accidents at this intersection. The US 74 records reveal 120 accidents reported during the past 3 year period in the area of the bridge and extending 0.5 miles west along US 74. The accident rate is calculated to be 928.79 accidents per 100 million vehicle miles (Acc/100 MVM), compared to a statewide average of 306.3 Acc/100 MVM in 1989 for US routes in urban areas. Approximately 77% of the accidents were listed as a "rear-end slow or stop" condition or angle accidents.

For the same three year period along US 76, 45 accidents were reported along US 76 from its intersection with US 74 to a location 0.3 miles west. The accident rate is calculated to be 626.74 Acc/100 MVM, again compared to a state wide average of 306.3 Acc/100 MVM. Approximately 42% of the accidents were listed as a "rear-end slow or stop" condition and 26% were angle collisions.

Of the total 165 accidents, none resulted in fatalities. Westbound, northbound and southbound traffic account for less than 50% of accidents at this intersection. East bound traffic, in both the US 74 and US 76 records, accounts for over 50% of accidents. The additional lane to allow for turning movements into the shopping area for east bound traffic and dual lanes approaches through the US 76-US 74 intersection will reduce the potential for these types of accidents.

III. RECOMMENDATIONS

An additional eastbound lane is recommended in the area of Plaza East Shopping Center on both US 74 and US 76. (See limits of project on Figure 1.) The intersection of US 74-US 76 is signalized and all westbound and US 74 eastbound traffic is under signal control. However, the US 76 eastbound lane merges with US 74 without interruption. (See Figure 2.) The recommended improvements require all movements to be regulated by the signal. (See Figure 3.) Therefore, US 76 will be realigned to go through the signalized area and the existing merge lane will be closed.

Beginning approximately 0.5 miles west of the US 74-US 76 intersection, US 74 will require a 500 foot taper and the addition of a 12 foot wide outside lane. The additional pavement will be added to the eastbound side of US 74. The cross section for US 74 will be a 5 lane shoulder section with 12 foot wide lanes and 2 foot paved shoulders for a total pavement width of 64 feet. The center lane will be a shared left turn lane.

Beginning approximately 0.35 miles west of the US 74-US 76 intersection, US 76 will require a 500 foot taper and a 14 foot eastbound outside lane to accommodate automobile and bicycle traffic. The additional pavement will be added to the eastbound side of US 76. US 76 will be realigned through the intersection. (See Figure 2 for Existing Lanes and Figure 3 for Proposed Lanes.) The existing US 76 eastbound right lane that permits the merge with US 74 without interruption will be closed. The proposed lanes on US 76 will have one lane for westbound traffic, two lanes for eastbound traffic, and a shared through/left turn lane.

Minimal improvements are recommended east of the US 74-US 76 intersection. The outside eastbound lane will be widened an additional 2 feet for a length of approximately 200 feet to provide a 14 foot outside lane from the intersection of US 74-US 76 to SR 1417. Similar to US 74, the US 74-US 76 cross section will be a 5 lane shoulder section with a 12 foot wide lanes, a 14 foot wide

eastbound outside lane, and 2 foot paved shoulders for a total pavement width of 66 feet. The center lane will be a shared left turn lane. The transition to existing cross section will end opposite SR 1417.

No additional right-of-way is required for this project. The right-of-way cost is for relocation of electrical poles and underground telephone cables.

The total estimated cost for the recommended improvements is:

R/W Cost	:	\$ 40,000
Construction Cost	:	460,000

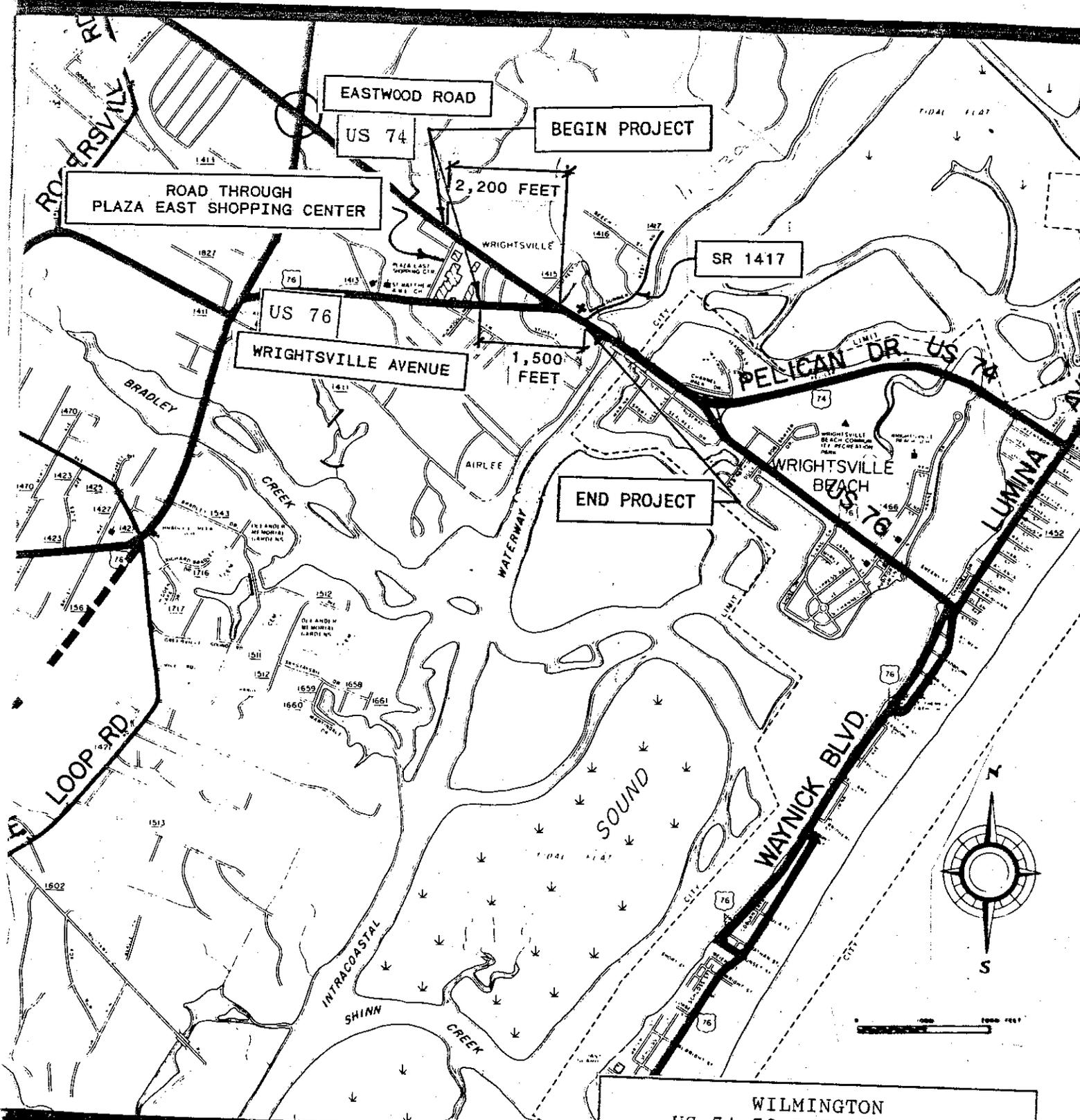
Total Cost: \$500,000

Utility conflicts are low and no residential or business relocations are anticipated.

IV. OTHER COMMENTS

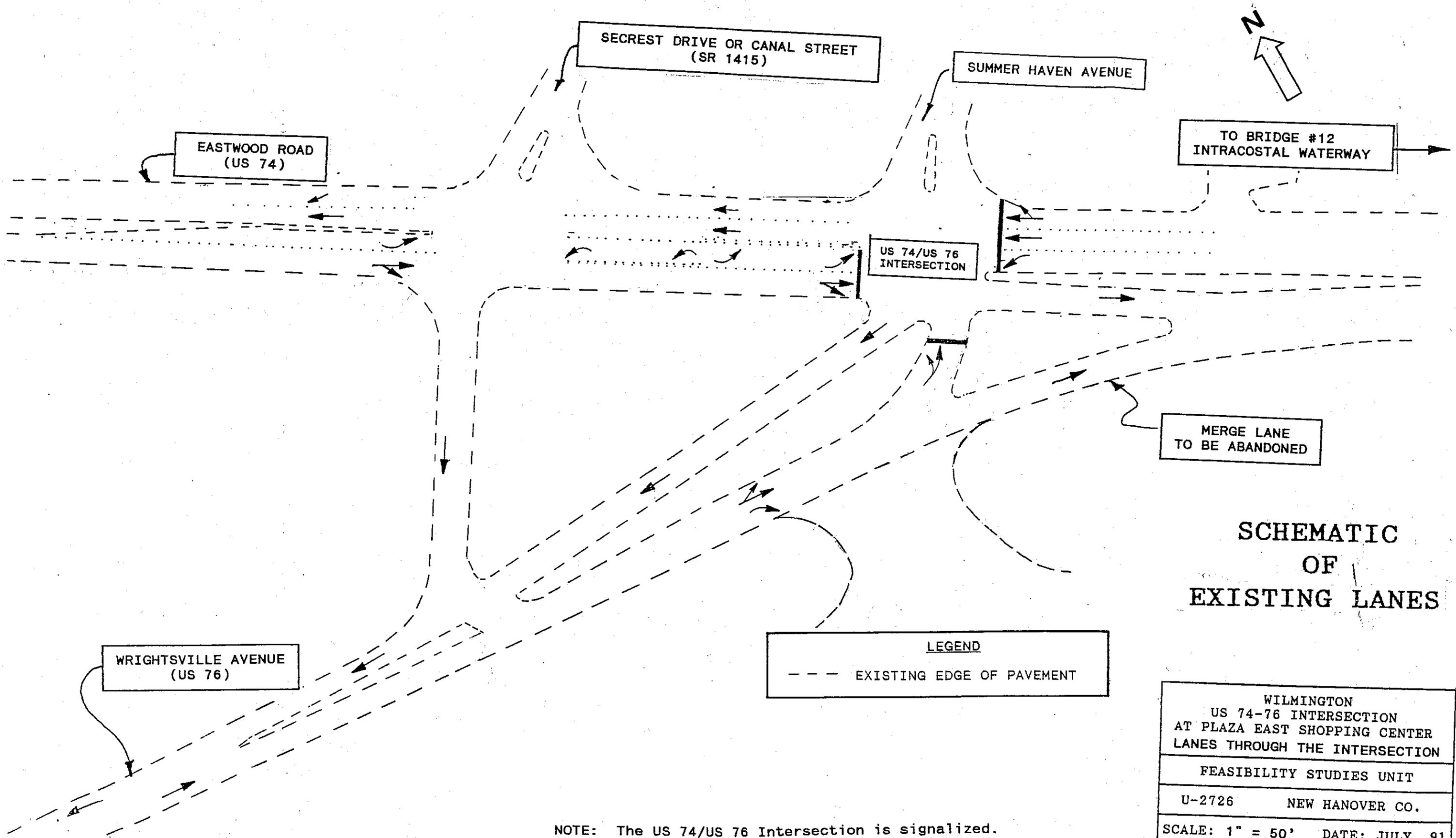
No environmental screening was made. No wetlands or public parks are likely affected by this project.

The future land use and development of this area will likely be heavy. Feasibility studies are currently in progress for several other projects in the vicinity of the US 74-US 76 intersection. US 74 is being studied west of the US 74 and SR 1409 intersection. Also, SR 1409 is being studied from the US 76 intersection to north of the US 74 intersection.



WILMINGTON US 74-76 INTERSECTION AT PLAZA EAST SHOPPING CENTER	
FEASIBILITY STUDIES UNIT	
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SCALE: 1" = 2000' DATE: JULY, 91	

FIGURE 1



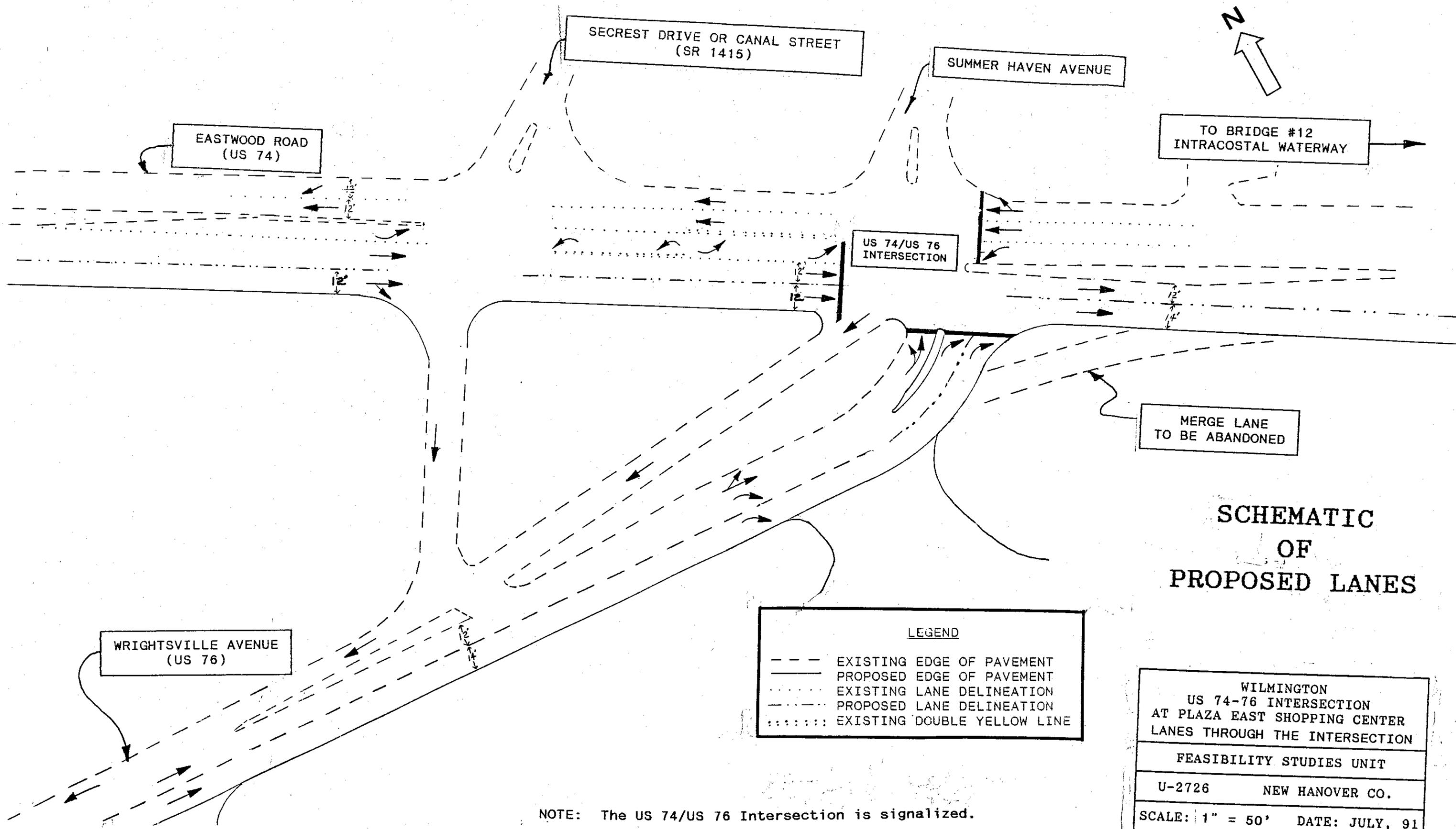
**SCHEMATIC
OF
EXISTING LANES**

LEGEND
- - - EXISTING EDGE OF PAVEMENT

WILMINGTON	
US 74-76 INTERSECTION	
AT PLAZA EAST SHOPPING CENTER	
LANES THROUGH THE INTERSECTION	
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SCALE: 1" = 50'	DATE: JULY, 91

NOTE: The US 74/US 76 Intersection is signalized.

FIGURE 2



SECRET DRIVE OR CANAL STREET
(SR 1415)

SUMMER HAVEN AVENUE

EASTWOOD ROAD
(US 74)

TO BRIDGE #12
INTRACOSTAL WATERWAY

US 74/US 76
INTERSECTION

MERGE LANE
TO BE ABANDONED

WRIGHTSVILLE AVENUE
(US 76)

**SCHEMATIC
OF
PROPOSED LANES**

LEGEND	
---	EXISTING EDGE OF PAVEMENT
—	PROPOSED EDGE OF PAVEMENT
.....	EXISTING LANE DELINEATION
- - - - -	PROPOSED LANE DELINEATION
.....	EXISTING DOUBLE YELLOW LINE

WILMINGTON
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FIGURE 3