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Rob Case  Principal Transportation Engineer  
Samuel S. Belfield  Senior Transportation Engineer  
Stephanie L. Shealey  Transportation Engineer  
Michael R. Long  Assistant General Services Manager  
Christopher W. Vaigneur  Reprographics Coordinator
The City of Suffolk requested the Hampton Roads Transportation Planning Organization (HRTPO) staff undertake a study to identify any roadway capacity, traffic signal, access management and other near-term improvements that will be necessary along Carolina Road (US 13/SR 32) in Suffolk, Virginia within the next ten years. The objectives of this study include an assessment of the corridor and the identification of alternatives to improve traffic flow in the future with anticipated traffic growth and further development of the area. Eight intersections were studied in detail along Carolina Road.

Traffic analysis was performed for three scenarios to determine the necessity of improvements that will be necessary to maintain acceptable traffic flow. These scenarios included 2010 Existing, 2010 Existing Optimized, and 2020 No Build scenarios. The study includes an evaluation of the access management conditions along the length of the corridor and presents a methodology for controlling the access of future development.
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Turn Left” Signs and Pavement Markings ............................. 19
INTRODUCTION

The City of Suffolk requested that the Hampton Roads Transportation Planning Organization (HRTPO) staff undertake a study to identify any roadway, traffic signal, and access management improvements that will be necessary along Carolina Road (US 13/SR 32) within the next ten years.

The Carolina Road study corridor begins at Obici Industrial Boulevard (A) and continues southwest approximately 2.9 miles to the intersection of Carolina Road and Whaleyville Boulevard (B) as shown in Map 1. Carolina Road is an urban principle arterial that is a 4-lane, median divided roadway south of the Suffolk Bypass, and a 4-lane roadway with a two-way left-turn lane (TWLTL) north of the Suffolk Bypass.

The Carolina Road study corridor serves as a connection between downtown Suffolk and the Suffolk Bypass (US 13), Suffolk Municipal Airport, and many southern points of the City. Some developments that are underway or planned to be built in the near future include the Waverton Commerce Park, Liberty Property, and Southside Baptist Church. By 2020, it is anticipated that the afternoon peak hour traffic volumes will increase as much as 55% for a majority of the study corridor over the existing conditions and even higher for selected locations around the developments.

Four signalized intersections are analyzed in this study along Carolina Road for existing afternoon peak hour traffic conditions as well as ten-year projected conditions (2020) (See Map 2 on page 2):

- Obici Industrial Boulevard/Forest Oak Lane
- Dill Road
- SW Suffolk Bypass
- Turlington Road
Introduction

Four unsignalized intersections were also included in the study analysis (Map 2):

- Judkins Court (This intersection is planned to become signalized by 2020)
- SW Suffolk Bypass
- Old Somerton Road/Airport Road
- Whaleyville Boulevard

Map 2 – Intersections Included in Analysis
Map Source: Bing, Microsoft
LAND USE AND SOCIOECONOMIC DATA

This section examines the land use and socioeconomic characteristics of the Carolina Road Study Area in order to understand its transportation requirements. Population, households and employment patterns facilitate the characterization of the study area. Since transportation networks influence where people live and work, population, household and employment patterns need to be identified and considered in order to address changing commuting patterns and habits of the study area’s population.

The Hampton Roads Transportation Planning Organization (HRTPO) and area localities have developed population, household, and employment forecasts through the year 2034. This socioeconomic data shows how neighborhoods, work centers and undeveloped land will develop over the next 20 years. For socioeconomic characteristic purposes, the Carolina Road Study Area will be defined by the seven Transportation Analysis Zones (TAZs) as shown in Map 3. TAZs are the basic unit of geography used in the regional travel demand model. Socioeconomic forecasting and allocation to the TAZ level is conducted as part of the process of developing the Long-Range Transportation Plan.

LAND USE

The Carolina Road Corridor is located within the Central Suburban/Urban Growth Area as identified by the City of Suffolk’s 2026 Comprehensive Plan. North of the SW Suffolk Bypass, Carolina Road is located in the Inner Ring Suburban District, where planned land use is primarily single family homes, light manufacturing, neighborhood retail commerce, civic buildings, and community facilities. South of the SW Suffolk Bypass, Carolina Road is located in the suburban district, where planned land use is primarily residential subdivisions, small convenience retail, professional offices, industrial uses, civic buildings, and community facilities.

SOCIOECONOMIC DATA

The Hampton Roads 2000 and 2034 Socioeconomic Data by TAZ (HRTPO, May 2008) provides population, household, employment, automobile, and worker forecasts. Overall, the City of Suffolk is expected to be one of the fastest growing cities in Hampton Roads over that time frame, growing by approximately 200-300% in each of the five categories. The population and households in the Carolina Road Study Area are expected to grow at approximately the same pace as the City of Suffolk. However, the employment within the Carolina Road Study area is expected to increase by approximately 700%, increasing the share of employment of the City of Suffolk within the study corridor from 2.1% to 5.0%. See Table 1 on page 4 for detailed socioeconomic data by TAZ for the study area.

1 City of Suffolk, 2026 Comprehensive Plan
Table 1 – Socioeconomic Data by TAZ for the Carolina Road Corridor

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ROADWAY CHARACTERISTICS AND TRAFFIC VOLUMES

ROADWAY GEOMETRY AND CHARACTERISTICS

Roadway geometry and characteristics for the entire Carolina Road study corridor were obtained from a combination of online aerial photos and field observations by HRTPO staff (Fall 2009). The entire corridor is 4 lanes, with a speed limit of 55 mph for the majority of the corridor. The northernmost intersection, Obici Industrial Boulevard, is in a 35 mph zone. The speed limit increases to 45 mph approximately 300’ south of the Obici Industrial Boulevard Intersection, and increases to 55 mph after an additional 1,600’ feet. From Whaleyville Boulevard to the Suffolk Bypass (1.48 miles), there is a physical median. The rest of the corridor, from the Suffolk Bypass to Obici Industrial Boulevard (1.39 miles) has a two-way left-turn lane (TWLTL). Shoulders on Carolina Road are approximately 4’ wide, providing a safe place for bicyclists on the corridor. There is a sidewalk on the north end of the corridor, from Obici Industrial Boulevard to Greenfield Crescent. South of Greenfield Crescent, the density of land development does not support pedestrian travel on the corridor, and there were no indications of pedestrians walking along the rest of the corridor during site visits. This data was used in the development of the Synchro 7.0 Traffic Signal Coordination / SimTraffic Model for the study corridor for the existing and future traffic conditions.

HISTORIC TRAFFIC GROWTH

Average Daily Traffic (ADT) volumes were obtained from the Virginia Department of Transportation (VDOT) for count stations along Carolina Road (US 13/SR 32) and surrounding side streets. The Average Daily Traffic (ADT) ranged between 11,450 and 15,611 vehicles per day in 2008 for the study area on Carolina Road. The annual growth rate for the majority of the Carolina Road study corridor has been 1% since the late 90’s.

2010 EXISTING TRAFFIC VOLUMES

Weekday afternoon peak hour turning movement counts (Spring 2010) were provided by the City of Suffolk Traffic Engineering Division for the intersections of Carolina Road and Obici Industrial Boulevard, Old Somerton Road, and Whaleyville Road.

These turning movement counts were supplemented with counts and projected counts from recent Traffic Impact Analysis (TIA) studies along Carolina Road, which were also obtained from the City of Suffolk Traffic Engineering Division. The Waverton Commerce Park (2008-2009), Liberty Property (2007), and Southside Baptist Church (2009) studies were used to develop the 2010 Existing traffic volumes.

Once all turning movement volumes were entered, the HRTPO staff adjusted and balanced volumes at specific locations along the corridor to ensure reasonable traffic flow from intersection to intersection for the Synchro traffic model. All turning movements for this study were reviewed and approved by the City of Suffolk Traffic Engineering Division. The 2010 Existing Traffic Volumes for the Carolina Road study corridor for the PM weekday peak hour is provided on Map 4 on page 7.

2020 PROJECTED TRAFFIC VOLUMES

The 2020 background traffic volumes were obtained by increasing the 2010 existing traffic volumes using a 1% annual growth rate throughout the corridor.

Traffic associated with three new developments was added to the background traffic to create the 2020 projected traffic volumes. These three developments, Waverton Commerce Park, Liberty Property, and Southside Baptist Church, all have build out dates prior to 2020. The HRTPO staff adjusted and balanced the 2020 volumes at specific locations along the corridor to ensure reasonable traffic flow from intersection to intersection for the 2020 future Synchro traffic model. All turning movements were reviewed and approved by the City of Suffolk Traffic Engineering Division. The
2020 Projected Traffic Volumes for the Carolina Road study corridor for the PM weekday peak hour is provided on Map 5 on page 8.
Map 4 – 2010 PM Weekday Peak Hour Turning Movement Counts
Map Source: Bing, Microsoft
Map 5 – 2020 PM Weekday Peak Hour Turning Movement Counts
Map Source: Bing, Microsoft
CAPACITY ANALYSIS

ANALYSIS SCENARIOS

Several analysis scenarios – 2010 Existing, 2010 Existing Optimized, and 2020 No Build – were assessed to determine where capacity improvements may be justified.

2010 Existing

The 2010 Existing scenario includes the traffic volumes, geometry, and traffic signal timings as they exist today.

2010 Existing Optimized

The 2020 Existing Optimized scenario includes the traffic volumes and geometry as they exist today, and the optimized traffic signal timings (intersection cycle lengths, splits, and offsets).

2020 No Build

The 2020 No Build scenario includes the 2020 projected traffic volumes, plus traffic signal timings (intersection cycle lengths, splits, and offsets) reoptimized for the 2020 traffic volumes. This scenario does not include any geometric or traffic signal improvements to improve safety or capacity along the corridor except for those included in the Traffic Impact Analysis (TIA) for Waverton Commerce Park:

- Additional turn lanes at the Judkins Court and Turlington Road intersections
- Installation of a traffic signal at the intersection of Carolina Road and Judkins Court.

METHODOLOGY

The intersections within the study area were modeled using Synchro 7.0 Traffic Signal Coordination / SimTraffic Model Software. Synchro uses Highway Capacity Manual\(^2\) methods to calculate control delay (the delay resulting from slowing and stopping on the approaches of an intersection) and Levels of Service. Each scenario was modeled to determine where improvements were needed to provide an acceptable level of service to drivers on the corridor.

The 2010 Existing roadway model includes roadway geometry, existing signal timings, and turning movement volumes (PM peak hour), as provided by the City. For the 2010 Existing Optimized roadway model, Synchro was used to optimize signal timings and offsets for the existing conditions. For the 2020 scenarios, the model includes the projected traffic volumes, the improvements included in the Waverton Commerce Park TIA, and optimized signal timings and network offsets after the improvements were added.

The peak hour intersection Level of Service (LOS) is a measure of the adequacy of the lanes and signalization at an intersection for the particular peak hour. Level of Service is measured on a scale of “A” through “F,” with LOS A representing the best operating conditions and LOS F representing the worst. This measure is based upon the average control delay experienced by vehicles traveling through the intersection during the peak hour. “Control Delay” is the portion of total delay attributed to traffic control measures or devices, such as traffic signals or stop signs, including deceleration and stop time. Level of Service A has control delays of less than 10 seconds per vehicle at signalized intersections. Level of Service F has control delays greater than 80 seconds per vehicle at signalized intersections. Table 2 on page 10 lists the range of control delay values that define the Levels of Service. Levels of Service A through D are generally considered to be acceptable operating conditions, while Levels of Service E and F (indicated in red in upcoming maps and tables) are generally considered to be unacceptable operating conditions.

\(^2\) Highway Capacity Manual, Transportation Research Board, 2000
This study analyzed the PM peak hour during a typical weekday. It is important to note that although AM peak, off-peak, weekend, and special events traffic conditions are not included in this analysis, they should be considered in order to optimize traffic flow throughout the day.

RESULTS

Synchro was used to produce optimal signal timings and phasing for each intersection in the study corridor for the 2010 Existing Optimized and 2020 No Build scenarios. These timings and phasing maximized the LOS and minimized control delay for each intersection. The detailed Synchro reports can be found in Appendices A, B, and C. The intersection control delay values and Levels of Service for each scenario can be found in Table 3 on page 11. The intersection LOS results are also provided by individual turning movement for each scenario on Maps 6-8 on pages 12-14.

All of the intersections along the Carolina Road study corridor operate at acceptable Levels of Service today (LOS A-D) during the PM peak hour. However, optimizing the signal timings at Obici Industrial Boulevard can substantially lower the delay for vehicles on the side streets without significantly impacting the delay for the main line.

In the 2020 No Build scenario, all intersections operate at an acceptable level of service. However, the Old Somerton Road eastbound approach to Carolina Road operates at level of service F, with a delay of 144.5 seconds per vehicle. This approach is expected to have 7 vehicles per hour; this is not enough vehicles for a turn-bay to reduce the delay, nor enough vehicles to warrant a traffic signal. The delay is due to the lack of acceptable gaps for vehicles to turn onto Carolina Road, and delays of this length could encourage drivers to accept insufficient gaps, causing an increase in angle accidents. Adjusting the 2020 No Build alternative to prohibit left-turns at this intersection will improve safety at this intersection and reduce delay from 144.5 seconds per vehicle (LOS F) to less than 20 seconds per vehicle (LOS C). As a result, the vehicle prohibited from turning left will be required to make a U-turn at the Route 13/32 split or use the signal at Turlington Road, extending the length of their desired trip.

RECOMMENDED IMPROVEMENTS

Short-term:

- Optimize signal timing at Obici Industrial Boulevard/Forest Oak Lane intersection to reduce side street vehicle delay without significantly impacting Carolina Road. (Reduce minimum split time from 36 to 16 seconds for northbound and southbound approaches along Carolina Road.)

By 2020, three recommended improvements are necessary to maintain acceptable traffic operations:

- Implement the planned improvements for Waverton Commerce Park.
  - Additional turn lanes at the Judkins Court and Turlington Road intersections
  - Installation of a traffic signal at the intersection of Carolina Road and Judkins Court.
- Re-optimize signal timings along the study to provide an acceptable level of service for all approaches with the increased traffic volumes.
- Prohibit left-turns from Old Somerton Road onto Carolina Road.
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<td>Carolina Rd SB</td>
<td>12.0 B</td>
<td>12.0 B</td>
<td>21.0 C</td>
</tr>
<tr>
<td>Bypass Ramps EB</td>
<td>15.4 B</td>
<td>15.4 B</td>
<td>15.7 B</td>
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<tr>
<td>City Driveway WB</td>
<td>14.8 B</td>
<td>14.8 B</td>
<td>12.8 B</td>
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<tr>
<td>Intersection Total</td>
<td>11.8 B</td>
<td>11.8 B</td>
<td>17.8 B</td>
</tr>
<tr>
<td>Carolina Rd NB</td>
<td>5.5 A</td>
<td>3.4 A</td>
<td>7.5 A</td>
</tr>
<tr>
<td>Carolina Rd SB</td>
<td>8.8 A</td>
<td>2.6 A</td>
<td>14.7 B</td>
</tr>
<tr>
<td>Turlington Rd EB</td>
<td>22.6 C</td>
<td>19.7 B</td>
<td>24.3 C</td>
</tr>
<tr>
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<td>- -</td>
<td>- -</td>
<td>47.7 D</td>
</tr>
<tr>
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<td>7.6 A</td>
<td>15.3 B</td>
</tr>
<tr>
<td>Old Somerton Rd EB</td>
<td>31.3 D</td>
<td>31.3 D</td>
<td>144.5 F</td>
</tr>
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<td>Airport Rd WB</td>
<td>11.2 B</td>
<td>11.2 B</td>
<td>15.2 C</td>
</tr>
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<td>- -</td>
<td>- -</td>
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<tr>
<td>Whaleyville Blvd NB</td>
<td>Free flow</td>
<td>Free flow</td>
<td>Free flow</td>
</tr>
<tr>
<td>Carolina Rd WB</td>
<td>11.5 B</td>
<td>11.5 B</td>
<td>17.8 B</td>
</tr>
<tr>
<td>Intersection Total</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
</tbody>
</table>

*Indicates left-turn movement only, other movements are free flow

Table 3 – Approach and Intersection Delay and Level of Service Results
Map 6 – 2010 Existing Scenario Level of Service Results
Map Source: Bing, Microsoft
Map 7 – 2010 Optimized Scenario Level of Service Results
Map Source: Bing, Microsoft
SAFETY ANALYSIS

GEOMETRIC IMPROVEMENTS

Observations at the intersection of Carolina Road and Dill Road revealed an insufficient turning radius for trucks turning from northbound Carolina Road onto Dill Road, forcing trucks to begin their right-turn from the through lane, and crossing into the westbound lane on Dill Road, as seen in Figure 1. These wide turning movements by trucks could create safety problems with other vehicles using this intersection, leading to rear-end collisions, angle collisions, and head-on collisions. The intersection meets the AASHTO Policy on Geometric Design of Highways and Streets minimum turning radius for a 90° turn, with a WB-50 design vehicle, as shown in Table 4. However, none of the trucks observed were able to successfully complete the turn properly, such as the truck in Figure 2 that began the turn from the proper lane, but was not able to stay in the eastbound lane on Dill Road. Due to the impact which this situation may have on safety, HRTPO staff recommends increasing the turning radius at this intersection to allow trucks to complete the turn properly.

<table>
<thead>
<tr>
<th>Angle of turn (degrees)</th>
<th>Design vehicle</th>
<th>Simple Curve Radius (ft)</th>
<th>Simple Curve radius with taper</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>P</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>SU</td>
<td>50</td>
<td>40</td>
<td>2.0</td>
</tr>
<tr>
<td>WB-40</td>
<td>-</td>
<td>45</td>
<td>4.0</td>
</tr>
<tr>
<td>WB-50</td>
<td>-</td>
<td>60</td>
<td>4.0</td>
</tr>
<tr>
<td>WB-62</td>
<td>-</td>
<td>120</td>
<td>4.5</td>
</tr>
<tr>
<td>WB-67</td>
<td>-</td>
<td>125</td>
<td>4.5</td>
</tr>
<tr>
<td>WB-100T</td>
<td>-</td>
<td>85</td>
<td>2.5</td>
</tr>
<tr>
<td>WB-109D</td>
<td>-</td>
<td>115</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Table 4 – Edge of Traveled Way Designs for Turns at Intersections
Source: AASHTO Policy on Geometric Design of Highways and Streets
ACCESS MANAGEMENT

Access management is the control of the number, location, and spacing of entryways onto a roadway in order to ensure the future safety and mobility along the corridor. These entryways include intersections, driveways, and median openings.

The Carolina Road corridor has a two-way left-turn lane (TWLTL) from Obici Industrial Boulevard to Suffolk Bypass and a grassy median from the Suffolk Bypass and Whaleyville Boulevard. The median physically separates traffic traveling in opposite directions and helps channelize turning vehicles at designated median openings. Table 5 provides an existing inventory of driveways, minor roadways, and median openings along the study corridor. Along Carolina Road, there are 91 driveways, 8 unsignalized roadways, and 6 median openings.

There are currently four signalized intersections within the Carolina Road study corridor, with one additional signal (Judkins Court) expected by 2020.

Driveway Width

According to the VDOT Access Management guidelines for principle arterials, all commercial entrances should have width that is sufficient for the particular land use and anticipated traffic flow. The minimum width should be 16 feet for a one-way drive and 30 feet for a two-way drive. The maximum width should be 20 feet for a one-way drive and 40 feet for a two-way drive.

In order to avoid random driveway entry and exit, widths should not be too large. Driveway widths must, however, be wide enough so that vehicular conflicts do not occur as a result of normal vehicle turning paths.

Driveway, Median Opening, and Intersection Spacing

According to the Virginia Department of Transportation (VDOT) Road Design Manual, there needs to be a minimum spacing between intersections and driveways as shown in Table 6. As a 55-mph urban principal arterial roadway, there should be 510 feet between driveways/partial median openings, 1,320 feet between full access median openings/ unsignalized intersections, and 2,640 feet between signalized intersections.

The existing signals exceed the minimum spacing requirements for the corridor. The signal at Judkins Road will be approximately 300’ short of the minimum spacing requirement to both the signals at Dill Road and the Suffolk Bypass, but this signal is necessary for the expected traffic at both the Liberty Property and Waverton Commerce Park, and is

<table>
<thead>
<tr>
<th>Highway Functional Classification</th>
<th>Legal Speed Limit (mph)</th>
<th>Centerline to Centerline Spacing (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Signalized Divided</td>
<td>Undivided</td>
</tr>
<tr>
<td>Urban Principal Arterial</td>
<td>≤ 30 mph 1760</td>
<td>1050</td>
</tr>
<tr>
<td></td>
<td>35 to 45 mph 2640</td>
<td>1320</td>
</tr>
<tr>
<td></td>
<td>≥ 50 mph 2640</td>
<td>1320</td>
</tr>
<tr>
<td>Rural Principal Arterial</td>
<td>≤ 30 mph 2640</td>
<td>1320</td>
</tr>
<tr>
<td></td>
<td>35 to 45 mph 2640</td>
<td>1320</td>
</tr>
<tr>
<td></td>
<td>≥ 50 mph 2640</td>
<td>1760</td>
</tr>
<tr>
<td>Urban Minor Arterial</td>
<td>≤ 30 mph 880</td>
<td>660</td>
</tr>
<tr>
<td></td>
<td>35 to 45 mph 1050</td>
<td>660</td>
</tr>
<tr>
<td></td>
<td>≥ 50 mph 1320</td>
<td>1050</td>
</tr>
<tr>
<td>Urban Collector</td>
<td>≤ 30 mph 660</td>
<td>425</td>
</tr>
<tr>
<td></td>
<td>35 to 45 mph 660</td>
<td>425</td>
</tr>
<tr>
<td></td>
<td>≥ 50 mph 1050</td>
<td>495</td>
</tr>
<tr>
<td>Rural Minor Arterial</td>
<td>≤ 30 mph 1050</td>
<td>880</td>
</tr>
<tr>
<td></td>
<td>35 to 45 mph 1320</td>
<td>1050</td>
</tr>
<tr>
<td></td>
<td>≥ 50 mph 1760</td>
<td>1320</td>
</tr>
<tr>
<td>Rural Collector</td>
<td>≤ 30 mph 880</td>
<td>570</td>
</tr>
<tr>
<td></td>
<td>35 to 45 mph 1050</td>
<td>570</td>
</tr>
<tr>
<td></td>
<td>≥ 50 mph 1320</td>
<td>645</td>
</tr>
</tbody>
</table>

Table 6 – Minimum Intersection Spacing
Source: VDOT Road Design Manual
close enough to meeting minimum spacing requirements that the spacing should not make a large impact on the progression of traffic along the corridor.

Most of the driveways throughout the corridor do not meet minimum spacing requirements. For the purposes of spacing requirements, any driveway that has full access onto Carolina Road is considered an unsignalized intersection. For the most part, all driveways north of the Suffolk Bypass should be considered unsignalized intersections (with a minimum spacing of 1,320'), while all driveways south of the Suffolk Bypass are partial access intersections (with a minimum spacing of 510'). Driveway spacing varies between 50-200' for most of the driveways along the corridor, both partial and full access, less than the requirements of 510' or 1,320'.

In order to improve safety and traffic flow, consolidating and/or closing driveways that do not meet standards should be considered with any new development or redevelopment along the corridor.
SIGNING AND PAVEMENT MARKING IMPROVEMENTS

The “Left Lane Must Turn Left” signs and pavement markings for the Route 13/32 split at Whaleyville Road/Carolina Road could be confusing for drivers along Carolina Road. There are two signs 1/3 mile from the split that state “Left Lane Must Turn Left” and three sets of pavement markings in the left lane that state “Left Turn Only”, 1/2 mile, 1/3 mile, and 1/4 mile before the intersection. While this message is correct at the Route 13/32 intersection, there are 2 locations between the first “Left Turn Only” pavement marking and the Carolina Road/Whaleyville Boulevard intersection where there is a left-turn bay, and vehicles in the “Left Turn Only” lane are able to continue through the intersection.

Figure 3 on page 19 shows the location of the existing signs and pavement markings for this intersection along with the following recommendations:

- Move existing “Left Lane Must Turn Left” signs to between Old Somerton Road and the Route 13/32 split.
- Remove “Left Turn Only” pavement markings at all three locations.

Although these recommendations remove the “Left Turn Only” warnings, there will still be four pairs of “Left Lane” and “Right Lane” route signs north of Old Somerton Road to provide lane use guidance.
Figure 3 – Existing & Proposed Locations of “Left Lane Must Turn Left” Signs and Pavement Markings

Aerial Source: Google Maps
CONCLUSIONS AND RECOMMENDATIONS

This study provides a review of the intersection capacity, safety, and access management improvements that will be necessary along Carolina Road (US 13/SR 32) in Suffolk, Virginia within the next ten years. For the intersection traffic analysis, this study reviewed the existing conditions, optimized signal timings with existing conditions, and analyzed the projected conditions in 2020.

The intersection analysis showed that delay for vehicles on Obici Industrial Boulevard and Forest Oaks Lane can be significantly reduced by retiming the signal at this intersection. The analysis of the 2020 scenario showed that if no additional geometric or traffic signal improvements are made to Carolina Road by 2020 except for those included with the development of Waverton Commerce Park, Liberty Property, and Southside Baptist Church, the westbound approach to Carolina Road from Old Somerton Road will be the only location that does not meet level of service standards. However, due to the low volume of traffic on this approach and the availability of other access points to Carolina Road, this scenario was considered acceptable.

In addition to the intersection traffic analysis, this study included an evaluation of the safety and access management conditions along the length of the corridor.

RECOMMENDATIONS

Summarized below are the recommendations from this study:

- Optimize existing signal timing at Obici Industrial Boulevard (page 10).
- Prohibit left-turns from Old Somerton Road onto Carolina Road (page 10).
- Increase turning radius (northbound right-turn from Carolina Road to Dill Road) at Dill Road interchange (page 10).
- Move existing “Left Lane Must Turn Left” signs to between Old Somerton Road and the Route 13/32 split (page 18).
- Remove “Left Turn Only” pavement markings at all three locations (page 18).
- Implement the planned improvements for the Liberty Property & Waverton Commerce Park (page 10).
  - Add turn lanes at the Judkins Court and Turlington Road intersections.
  - Install traffic signal at the intersection of Carolina Road and Judkins Court.
- Optimize all signal timings along corridor as traffic volumes increase over the next 10 years (page 10).
PUBLIC REVIEW AND COMMENTS

As part of the Hampton Roads Transportation Planning Organization’s (HRTPO) efforts to provide opportunities for the public to review and comment on the draft Carolina Road Corridor Study prior to the final product being published, a 2-week public comment period was provided. The draft Carolina Road Corridor Study was issued from June 2, 2010 through June 16, 2010. No public comments were received.