

## Is There Really No Congestion on Johns Island Roads?

Some say there are no traffic problems on Johns Island. They believe everyone's attention should be focused on transportation corridors to the west of the metro area, where there are real problems. After all, traffic volumes on Johns Island roads are only a piddling 12,000 trips per day on our most crowded roads, while those on I-26 west of the Charleston metro area are closer to 120,000 trips per day. Maybe we should quit complaining about our so called traffic problems.

But, not so fast. Traffic engineers and road designers learned in the 1930's that traffic conditions on a road depend not only on the total volume of traffic moving, but also on the characteristics of the road—the width of the lanes, the site distance, the sharpness of curves, the smoothness of the road surface, etc. They reasoned that if drivers didn't have to look out for vehicles entering the roadway, pedestrians and bicycles wandering in front of them or parked cars opening a driver's side door into their path, that driving would be both easier and safer.

This led to highways where access is completely controlled, travel lanes are wide, shoulders are clear, site distance is long, the pavement is smooth and well marked--so-called "freeways." They turned out to be a real breakthrough in highway design. Germany was one of the first to build freeways. They built them in the 1930's to move troops, supplies and equipment quickly between strategic positions. California developed and implemented a state-wide Freeway Plan in the late 40's. The U.S. Interstate and Defense Highway System was adopted and construction of the 51,000 miles of controlled access superhighway was begun in 1956.

Traffic engineers also came up with objective ways to measure the capacity of a road and its level of service. That is, how well the road performs at various traffic volumes and the traffic level at which the road will become congested. They developed mathematical equations that relate the characteristics of the road and its traffic volumes to the level of service. They gave letter grades to these levels of service, like those you know from your grade school days. A road with an "A" level of service is a pleasure to drive on. Traffic volumes are less than 30% of the full capacity of the road. A road that is at full capacity is given a grade of "E" and it is not pleasant to travel on. Driving is nervous but okay until something interferes with traffic flow, at which point it breaks down completely. A road that is over its practical capacity gets an "F" and it has stop and go traffic, long queues and long waits at traffic lights.

So, what do the traffic equations say about the level of service on I-26? Using the number of lanes, lane widths, shoulder width and factors due to percent heavy vehicles, urban/rural conditions, driving environment, directional distribution, etc. the maximum service flow can be computed and compared to the forecast volumes during peak hours. The result is that in the four-lane sections of I-26 the service level is "D" and where there are six lanes the service level is "C". This matches well with our experience.

We can perform the same calculation for the 12,000 vehicles per day on Bohicket Road. Using the appropriate inputs the calculated level of service level during rush hours is “E”—right at the capacity of the road. This is not surprising to those who commute back and forth on Bohicket Road during the rush hours. If a car slows to make a left turn, traffic immediately backs up behind the stopped vehicle. An accident virtually shuts down the road, frequently in both directions. So, the traffic on the more heavily travelled sections of Johns Island roads is as congested during rush hours as those on I-26. Clearly, more travelers are involved on I-26 than on Bohicket, but the cost of fixing the problem is also smaller.

Why does this matter? It matters because as congestion increases, traffic accident levels also increase. Traffic reaches capacity at much lower volumes on two-lane, rural roads than it does on modern, well designed, multi-lane freeways. And, as congestion increases so does the rate of accidents. In addition, on Johns Island roads, there are narrow lanes, uncontrolled access and some of the most beautiful oak trees in the country, within two feet of the edge of the road. So let’s not be fooled by people who say there is no traffic congestion on Johns Island.

