

**CORRIDOR REVIEW**

**US ROUTE 119**

**CHARLESTON - CLENDENIN**

**November 30, 2001**

**Regional Intergovernmental Council**

## **INTRODUCTION**

RIC's 1999 Metropolitan Transportation Plan recommended corridor studies for several routes in the region, including US119, and to develop a low cost transportation system management improvement plan. The WVDOT prepares a "Critical Rate Report" each year that identifies high accident areas by comparing accident rates with statewide averages. The most recent report covering the three-year period (1998-2000) identified several segments of US119 between Charleston and Clendenin with accident rates far exceeding the critical rate for similar roadways. Based on that report, RIC selected the US119 corridor between Charleston and Clendenin to determine if low cost improvements are feasible to expedite traffic flow and reduce accidents on this corridor.

The pertinent information was collected for this corridor which stretches from Virginia Street in Charleston at milepost 17.95 to the Roane County line at milepost 43.89 a total distance of about 26 miles (Map 1). This included cultural diagrams, daily traffic and geometry from the WVDOT 1988 Road Inventory Log, and accident records for the most recent 4-year period.

The main purpose of the study is to identify the problem areas on this corridor and to come up with low cost recommendations, if feasible, to correct the problem. Following is the analysis and rationale for adopting the procedure for this analysis.

### **Segmentation**

The entire corridor was divided into segments on the basis of average daily traffic<sup>1</sup> for analysis purposes. These segments were designated from I to VIII as shown in Attachment I. Also shown on this Attachment are accidents and injury records as compiled by WVDOT from the accident reports. The accident and injury rates, per 100 million-vehicle miles, were calculated for each segment. The segments with above average rates, when compared to the 1998 statewide average, were identified with shaded background on Attachment I. It was discovered that accident and injury rates for most segments were above average.

In the interest of time, due to available resources and the fact that areas located within the metropolitan boundary have already been studied from time to time, it was decided to analyze rural area segments<sup>2</sup>. As shown in attachment I the entire rural portion of the corridor, with the exception of the northern most segments from Clendenin to the Roane County line, has above average accident rate. Thus, it was decided to analyze the three segments of the corridor, namely V, VI and VII from WV114 in Big Chimney (milepost 25.46) to WV4 in Clendenin (milepost 39.13). These three segments were further subdivided into 0.1 mi. sub-segments to reflect the accident location more precisely. Those sub-segments with high accident concentrations were grouped into 7 discontinuous segments. These seven segments will also be referred to as accident-prone segments.

### **Travel Time Study**

In order to identify the operational inadequacies, a travel time analysis was performed for the entire corridor from Virginia Street in Charleston to the Roane County line. As shown on attachment 1 the travel time for the 26 mile run varied from a low of 38:06 min. to a high of 43:47 min. resulting in an average speed of 36-41 mph for morning/evening peak and mid-day traffic. As the maximum posted speed limit anywhere between Charleston and Clendenin on the corridor is no more than 45mph. the

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<sup>1</sup> Average Daily Traffic (ADT) as shown in WVDOH Inventory Log – 1998.

<sup>2</sup> The Charleston Metro Urban Area map shows urban/rural split for US119 at Milepost 27.62.

corridor was considered operationally adequate. Therefore, further analysis will be limited to accident reduction efforts only.

**Rural Corridor**

As stated above, the rural portion of the corridor located from WV114 to WV4 in Clendenin experienced an above average accident rate. Attachment II depicts the number and type of accidents occurring on this portion of the corridor. During the last four years there were 339 accidents on this 13.67-mile segment from MP 25.46 to MP 39.13. In order to locate the accidents, the corridor was further subdivided into 0.1 mile sub-segments. Then, all 339 accidents were assigned to the appropriate sub-segments showing number and type of accidents as shown in Attachment III. This attachment also shows the total number of accidents assigned to each sub-segment.

**Selection of Accident Prone Segments**

The adjacent sub-segments showing a high number of accidents on Attachment III were grouped together to form accident-prone segments. This is shown in Attachment IV where the following 7 accident-prone segments are identified by grouping the 0.1mi. long adjacent sub-segments. These seven accident-prone segments vary in length from 0.1mi to 1.3 mi. It should be noted that the location references for each segment are not at the exact termini of the segment but they are the closest identifiable references available at those locations. For example first segment is located from milepost 25.40 to 26.30 and the closest reference to 25.40 is WV114 which is actually at milepost 25.46. Similarly the closest reference to milepost 26.30 is Galen Drive which is actually located at milepost 26.22.

**Accident Prone Segments**

Segment	Milepost		Length Mi.	Total Accidents 1997-00	Acc. Rate Per 100 Mil. Veh. Mi.
	From	To			
WV114 - Galen Dr	25.40	26.30	0.9	44	568
Grant St. - Westwood	27.20	27.90	0.7	35	580
Elk Plaza - Bridge Elem.	29.90	31.20	1.3	87	552
Halliburton - Elk Riv Com Church	31.60	32.30	0.7	27	365
Holsclaw - Young's Bottom	34.00	34.50	0.5	26	512
Herbert Hoover High School	36.30	36.40	0.1	15	*
Kelly Hill - Dairy Queen	38.20	39.00	0.8	18	266
<b>Total</b>			<b>5.0</b>	<b>252</b>	

\* - Not meaningful

As shown in the above table, 252 of 339 accidents or ¾ of all accidents on the 13.67 mile high accident rural corridor (From WV114 to WV4) are concentrated on segments that add up to 5 miles in length. These will be referred to as accident-prone segments in the remainder of this report. The accident rate on these segments varied from 266 to 1771 accidents per 100 million-vehicle miles. The accident-prone segments are identified on the attached map (Map 2) with heavy lines along with the marked mileposts. These segments will be analyzed in detail to determine why the accidents are concentrated on these segments and whether there is a low cost solution to alleviate or reduce the number of these accidents.

## **Comparison of Accident Types with Statewide Averages**

Attachment V compares the type of accidents on accident-prone segments with the statewide averages. This comparison was done to find out if any segment is prone to some peculiar accidents. As an illustration, the segment between mileposts 27.21-27.90 had 8 animal hit type accidents that amounted to 23% of the accidents on this segment, whereas the statewide average for this type of accident is only 3%.

Following is the description of each segment including existing conditions, analysis of accidents, and any recommendations. Pages A-1 through A-7 show the significant landmarks/businesses and the number of accidents at each sub-segment, shown in circles. The sketches are approximately to scale.

### **WV114 to Galen Drive (25.40-26.30)**

#### **Existing Conditions:**

According to the 1998 inventory log, the pavement width for 75% of this section is 18 ft with a total grade width of 26 ft. For the remaining segment the road pavement is mostly 19-ft wide and as much as 30 ft at some locations. The average daily traffic on US119 decreases from 6800 to 5900 at the intersection of WV114. The posted speed limit is 45 mph except close to the intersection with WV114 where it is 35 mph. Most of the roadway is narrow with little or no shoulders on either side of the road but there is newly installed guardrail. There are a number of businesses on this segment, particularly close to WV114, including a bank, library, gas station, church, post office and a large Smiths Super Value store. The approach from Chimney Drive (119/69) is awkward as it joins the main road at an angle with a slope (Picture # 1). The sight distance from the doctor's office next to Galen Drive is short, particularly for traffic approaching from the north, due to a steep vertical curve (Picture # 2).

#### **Accident Record:**

A portion of this segment from milepost 25.40 to 25.90 is included in DOH's recent Critical Rate Report. There were 44 accidents reported on this segment during the last four years but only 6 during the year 2000. The types of accidents are not much different on this segment than the ones shown in the statewide averages (Attachment V) except for the loss of control type accidents, which amounted to more than 11%. A further investigation revealed that 4 of 5 loss of control type accidents occurred in 1999. For the entire rural corridor, more than 50% of loss of control type accidents occurred in 1999 (Attachment II).

#### **Analysis and Recommendations:**

The high number of accidents could be attributed to a large number of businesses located on both sides of the road particularly close to the intersection with WV114. Average daily traffic is only 5900 but the roadway is narrow, about 19 feet wide, with little or no shoulders on either side. The approach for Chimney Drive (119/69) is awkward (see Picture 1) as it joins the main road at an angle with a slope.

A combination of a large number of businesses, narrow road and lack of shoulders is probably responsible for the excessive number of accidents and no low cost solution can be identified.

## **Grant Street to Westwood Drive (27.20-27.90)**

### Existing Conditions:

The pavement of this segment is narrow, only 18ft wide with little or no shoulders on either side. Grant Street does not have a street sign but it is across from a business named Brickyard in the cultural diagram. There are no obvious problems on this roadway except that there are eight intersecting small roads within a distance of half a mile. The average daily traffic for 1998 was 5900. The posted speed limit on this segment is 45 mph.

### Accident Record:

During the last four years there were 35 accidents on this segment including 11 each during 1997 and 1999. An extremely large number of accidents involved hitting an animal – 23% of the total accidents compared to the statewide average of less than 3% (Attachment V). However all but two of this animal hit type accidents occurred during 1997 and the other two during 1999. Most of these accidents occurred when it was dark. There were 3 head-on accidents recorded on this section during the last two years.

### Analysis and Recommendations:

Assuming the animal hit was a one-time phenomenon when the animal population may be high, the number of remaining accidents, considering the narrow roadway with so many intersections, is not that high. The head-on accidents on this road, 3 in the past two years, is a serious matter though we do not yet know if this is a trend. All three accidents occurred on different sub-segments. If there are more head-on collisions on this section in future, then widening of certain sections should be considered. No other recommendation is offered at this time.

## **Elk Shopping Plaza to Bridge Elementary School (29.90-31.20)**

### Existing Conditions:

This segment starts at the south end of the Elk Shopping Plaza on US119 and ends near Bridge Elementary School. The first 0.4 mi. segment has a pavement width of 18 feet, with little or no shoulders, to the intersection of CR119/47 (Bill Young Auto). An approach to the Elkview Baptist Church across the road is also located here. At this point the roadway pavement widens to 32 feet for the remainder of the segment. At the intersection of Frame Road (CR43), controlled with a 4-way stop sign, turning lanes are provided on both approaches of US119 (Picture # 3). The roadway has adequate shoulders on US119 for about one-tenth of a mile on both sides of the intersection with Frame Road. The average daily traffic south of Frame Road intersection is 5900 where it increases to 9800 vehicles per day north of the intersection on US119. I-79 is about a mile from this intersection and can be accessed via Frame Road. US119 is used as an alternate route to I-79.

The entire segment is about 1 ¼ miles long. For the first ¼ mile on the East Side is the Elk Shopping Plaza with two entrances from US119. There are several other businesses including the large Elkview Baptist church. For the next ½ mile from Frame Road intersection, in addition to Elkview Middle School and Mt. Pleasant Baptist Church, there are a number of large businesses including Poca Valley Bank, Charleston Auto Auction and Maynor's supermarket. Northern end of this section is Walker subdivision and Bridge Elementary school. The posted speed limit is 45 mph for the entire section. There is a 15mph school speed limit sign at Elkview Middle School.

### Accident Record:

A major portion of this segment from milepost 29.90 to 30.90 is included in DOH's recent Critical Rate Report. During the last four years, 87 accidents occurred on this segment. They were concentrated at three distinct locations. Nine accidents were at the entrance to the shopping plaza near milepost 29.95. Fifty-four accidents occurred between Pinch and Frame Roads and the remaining 24 occurred on the northern ½ mile section with a concentration (9 accidents) in the area near Charleston Auto Auction at milepost 30.75. About one-third of all accidents were various access conflict types. The statewide average for these type accidents is only 20% (see Attachment V).

### Analysis and Recommendations:

The nine accidents near the entrance to Elk Shopping Plaza do not show any peculiarity and the number is not high considering the traffic and road conditions. Fifty-four accidents between Pinch and Frame Roads, a distance of 1/3 mile, are excessive. They could be attributed to several reasons including major intersections with high traffic (5400 ADT at CR47 and 8100 ADT for Frame Road), number of businesses, existence of a school, and changes in traffic and road geometry. Thirty-one of the 54 accidents were within 0.1 mi. of the Frame Road intersection where the Middle School is located. They were mainly rear-end (10) and access conflict (11) type accidents. These accidents are probably caused by the four way stop sign at the intersection of Frame Road and US119. The STOP sign on US119 North is 0.1 mi. from where the road widens from 18ft to 32ft and motorists may not be expecting the STOP sign that soon. Additionally, there are two lanes at the intersection and there is only one STOP sign that is located far right due to the wide shoulder and some drivers may not be noticing it. According to the Manual of Uniform Traffic Control Devices (MUTCD), observance of the STOP sign may be improved by the erection of an additional sign on the left side of the approach if the intersection has wide throat. Also, where two lanes of traffic are subject to the STOP sign, a second sign should be placed where it is visible to traffic in the inner lane.

The high number of accident (24) on the northern section may be attributed to the businesses, school and churches. A large number of these accidents (10) are rear-ended type and may be caused by vehicles waiting to enter the school or businesses. It is noted that these rear-end type accidents were evenly split between the north and south directions.

In order to improve the observance of STOP signs, and to comply with the MUTCD, a second STOP sign should be placed on the left side of both approaches of US119 where they will be visible to the traffic in the inner lanes. Also, the stop lines should be painted at this intersection.

A deteriorated STOP AHEAD sign in the northbound approach also needs to be replaced.

It is also recommended that WVDOH perform a feasibility study to provide a turning lane in front of the school.

### **Halliburton Entrance to Elk River Community Church (31.60-32.30)**

#### Existing Conditions:

This 0.7 mile long segment is located in the Blue Creek area from the Halliburton facility to Elk River Community Church. The southern part of the section has a pavement width of 23 ft with a 40-ft grade width. The businesses located on this section include the Halliburton facility, Clendenin Lumber, a restaurant and the post office. The only major road intersecting with US119 on this segment is Blue Creek Road (CR57) which is past the Halliburton facility. At this intersection there is a fence on private

property (a mini storage business) that inhibits the sight distance toward the south side of US119 (Picture # 4). The average daily traffic on US119 south of Blue Creek Road is 9800. The northern part of the section, starting near the post office has a narrow pavement of about 18 feet with no shoulders. The average daily traffic on this section is 5200. This section has many residences with driveways on US119. The posted speed limit for the entire section is 45 mph.

Accident Record:

A total of 27 accidents were recorded on this segment during the past four years. A majority (16) of these were within 0.1 mile of Blue Creek Road intersection, which is controlled by a stop sign on that road. Many of these accidents (8) were of access conflict 9, 10 and 12 types and only 3 were of rear-end type.

The northern section with numerous residential driveways on US119 recorded 9 accidents of varying types over a length of 0.4mile. These accidents were concentrated at the very north end of the segment where 5 of the 9 accidents occurred and 4 of the 5 accidents were recorded in 1999, probably a one time phenomenon.

Analysis and Recommendation:

If the year 1999 is excluded the accident rate on the northern segment is not excessive. Therefore, no recommendation is offered at this time except that a request should be made to the owner of Mini Storage Business for removal of the fence at the intersection of Blue Creek Road to improve the sight distance. An earlier request from DOH to remove the fence was ignored.

**Holsclaw Road to Youngs Bottom (34.00-34.60)**

Existing Conditions:

This 0.6mile segment, located at Youngs Bottom, has sharp blind curves and is 18 feet wide with little or no shoulders. The entire segment is included in DOH's recent Critical Rate Report. The two approaches on this segment, CR119/65 and CR119/68 directly across from each other near Sand Run Gospel Church have dangerously short sight distances (Picture # 5). The other problem location is near CR119/36 (Picture # 6).

Accident Record:

Since this segment has large number of blind curves, the most common type accidents were run off road and loss of control types. Altogether, there were 26 accidents during the last four years including 5 run off road, 3 loss of control, 4 rear-end, 3 unknown and 6 access conflict of various types. There were six accidents reported near Sand Run Gospel Church (between milepost 34.2 and 34.3) during the last four years, all of them occurring in 1999-2000. Another 8 accidents, all of them of different types, were reported at the other high accident location between milepost 34.4-34.5 during the last three years. Five of these accidents occurred in 2000 alone.

Analysis and Recommendation:

The whole segment has many sharp turns and short sight distances with very limited shoulders. There is no room to provide shoulders at a reasonable cost. Straightening the alignment of the road will be even

more expensive because of the terrain. Therefore, the only solution to decrease the number of accidents on this road is to drive slowly.

It is recommended that additional caution signs be posted on this segment and reduce the speed limit from 45 to 35 mph.

### **Herbert Hoover High School (36.30-36.40)**

#### Existing Conditions:

Both entrance and exit to Herbert Hoover High School are located on this 0.1mi segment. The roadway pavement is only 18 ft wide and has guardrails but no shoulders. The average daily traffic is 5200 and the posted speed is 45 mph. For traffic exiting the north Herbert Hoover access, the sight distance is good on the south side but it is limited on the north side due to utility poles and road geometry (Picture # 7). The football field next to the school building is adjacent to US119 but it does not have a separate entrance. No school zone warning or traffic control is noted on US119.

#### Accident Record:

During the last four years a total of 15 accidents were reported on this segment with 10 of them referenced at commercial driveways. Only one accident occurred in 2000 and the remaining were in 1997-99. The largest number of accidents, 3 each, were loss of control and unknown reason.

#### Analysis and Recommendation:

Most of the accidents are related to school activity as they occurred during weekdays and during school hours. Five accidents, of varying types, occurred at 7am. No peculiar pattern of accidents was discovered on this segment. Accidents could be attributed partly to the fact that much of the traffic is concentrated during school hours.

It is recommended that school zone signs, designating appropriate speed limit, should be installed at both ends of the school.

### **Kelly Hill to Dairy Queen (38.20-39.00)**

#### Existing Conditions:

This 0.8mi section within the city limits of Clendenin is a commercial area having many businesses on both sides of the roadway. The roadway pavement is 18 ft. wide with average daily traffic of 5800. Many businesses have parking adjacent to the roadway. Near the north end of this segment, the traffic pattern was changed in 1998 when 3-way stop signs were installed at French Street that joins US119 with a "T" intersection just south of the Dairy Queen.

#### Accident Record:

A total of 18 accidents were recorded during the last four-year period and 7 of them were at the northern end, from French Street to the Dairy Queen. A majority of these accidents (10) was rear-end type. Other accident types included 5 access-conflict, one head-on and the remaining two unknown. Also 9 of the 18 accidents occurred in 1999.

### Analysis and Recommendation:

Other than the 7 accidents concentrated at the northern end, the accident rate for the remainder of the segment is somewhat less than the statewide average for similar narrow roads in commercial areas. The 7 accidents in the vicinity of the French Street intersection occurred after the stop signs were installed in 1998 as 5 of these accidents occurred in 1999 and two in 2000. Again, most of these accidents were either rear-ends or access-conflict type, which is common at intersections controlled by stop signs. It is possible that these accidents were caused by the change in the traffic pattern after the stop signs were installed in 1998. As the drivers became accustomed to this traffic pattern the accident rate decreased drastically as noted in the year 2000 when only 2 accidents occurred at this intersection. Unless the accident rate goes up in the future, no recommendation is offered for this segment.