

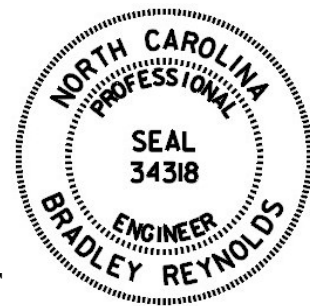
## Bridge Approach Speed Investigation

Bridge # 040160 over Little Naked Creek on SR 1155 (Frank Dillard Rd)  
Ashe County  
Project Number 17BP.11.R.123



Document Prepared By:

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**Principal Investigator**

DocuSigned by:

*Sheena Green*

1/5/2017

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Sheena Green  
Traffic Engineer

**Project Manager**

DocuSigned by:

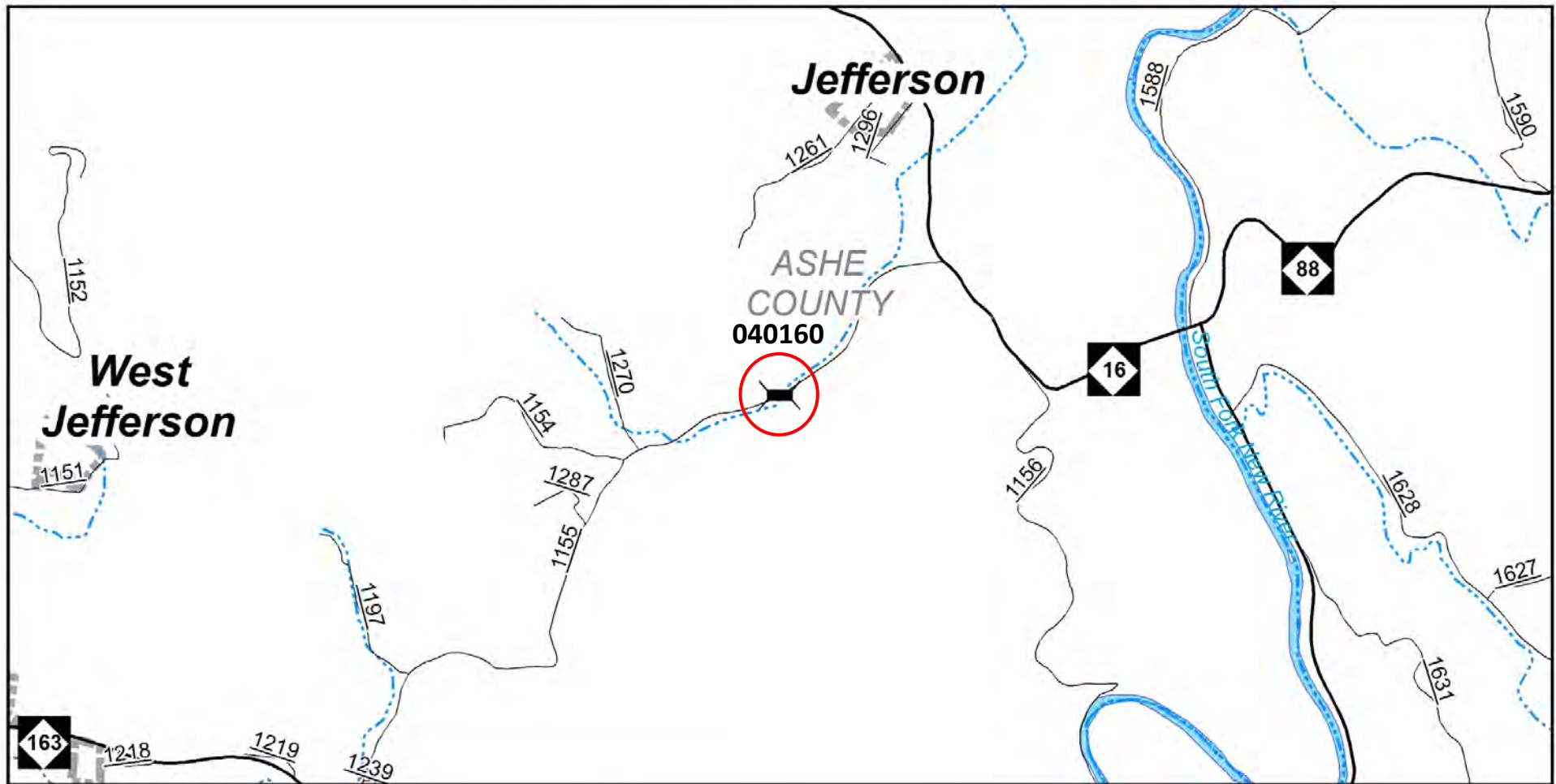
*Bradley Reynolds*

1/5/2017

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Bradley Reynolds, PE  
Project Manager

# Division 11 - Ashe County Design Build Year 6/7 Bridge Program



| Structure Number | Division | County | Structure Description                  | Latitude | Longitude |
|------------------|----------|--------|----------------------------------------|----------|-----------|
| 040160           | 11       | Ashe   | Bridge #040160 over Little Naked Creek | 36.39157 | -81.42957 |



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1 in = 2,500 ft  
SCALE



Bridge and Approach Investigation Checklist

Project 17BP.11.R.123

Description Bridge #040160 over Little Naked Creek

Route SR 1155 (Frank Dillard Rd)

Division 11

County Ashe

Existing Speed Limit 55 ☐ Posted ☒ Statutory

Reasonable & Comfortable Passenger Car Speed 40 mph

Speed Data Twenty-three (23) speed data points were collected: 42, 45, 45, 38, 38, 42, 49, 51, 38, 40, 44, 49, 49, 48, 49, 32, 41, 41, 37, 53, 46, 36 and 45 mph

Ball Bank Speed Study Curve on EB approach ball banks: 13 @ 45 mph and 8 @ 40 mph  
Curve on WB approach ball banks: 13 @ 45 mph and 8 @ 40 mph

Warning Signs at Bridge Object Markers (OM-3L & OM-3R) on each bridge approach  
Weight Limit Signs - 1 x each approach

Roadside Development Rural/Residential/Agricultural

ADT History 870 vpd from Crash Analysis  
870 vpd from 2012 AADT Map, Ashe County

Pedestrian/Bicycle Traffic N/A

Bridge and Approach Digital Photos Attached

Approach Lane Width 19' overall pavement width with +/-9' lanes

Approach Shoulder Width: Varies from 2-6'  
Shoulder Type Grass

Lane Width (existing bridge) 22' overall pavement width with 9' lanes

Shoulder width (existing bridge) 2'

Strategic Corridor / Thoroughfare Designation and Recommended Cross Section Local, Rural

Crash History and Safety Considerations One (1) crash has been reported in the vicinity of the bridge from 11/1/2006 to 10/31/2016 (10 years).  
Incident did not involve the actual bridge.

Comments Power lines cross the roadway just West of the bridge  
Car speeds are not an accurate determination of a comfortable speed, many were well over the centerline while driving across the bridge (two cars passing each other on the bridge at the time of the speed study were going 37 & 38 mph respectively, this is a more accurate account of the safe and comfortable speed).  
Consider a higher design speed of 45-50 mph to be closer to speed data if alignment can be improved or curve flattened.

Reasonable Bridge Speed 40 mph

SR 1155 (Frank Dillard Rd) Northbound  $\pm$  250' from Bridge #160



SR 1155 (Frank Dillard Rd) Northbound  $\pm$  50' from Bridge #160



SR 1155 (Frank Dillard Rd) Southbound  $\pm$  250' from Bridge #160



SR 1155 (Frank Dillard Rd) Southbound  $\pm$  50' from Bridge #160



View of Bridge #160 Looking Southwest



View of Bridge #160 Looking Southeast



Power line across roadway East of bridge





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Traffic Engineering Accident Analysis System  
Strip Analysis Report**

**Summary Statistics**

**High Level Crash Summary**

| <b>Crash Type</b>                 | <b>Number of<br/>Crashes</b> | <b>Percent<br/>of Total</b> |
|-----------------------------------|------------------------------|-----------------------------|
| Total Crashes                     | 1                            | 100.00                      |
| Fatal Crashes                     | 0                            | 0.00                        |
| Non-Fatal Injury Crashes          | 0                            | 0.00                        |
| Total Injury Crashes              | 0                            | 0.00                        |
| Property Damage Only Crashes      | 1                            | 100.00                      |
| Night Crashes                     | 1                            | 100.00                      |
| Wet Crashes                       | 0                            | 0.00                        |
| Alcohol/Drugs Involvement Crashes | 0                            | 0.00                        |

**Crash Severity Summary**

| <b>Crash Type</b>            | <b>Number of<br/>Crashes</b> | <b>Percent<br/>of Total</b> |
|------------------------------|------------------------------|-----------------------------|
| Total Crashes                | 1                            | 100.00                      |
| Fatal Crashes                | 0                            | 0.00                        |
| Class A Crashes              | 0                            | 0.00                        |
| Class B Crashes              | 0                            | 0.00                        |
| Class C Crashes              | 0                            | 0.00                        |
| Property Damage Only Crashes | 1                            | 100.00                      |

**Vehicle Exposure Statistics**

**Annual ADT = 870**

**Total Length = 0.233 (Miles)**

**0.375 (Kilometers)**

**Total Vehicle Exposure = 0.74 (MVMT)**

**1.19 (MVKMT)**

| <b>Crash Rate</b>    | <b>Crashes Per 100 Million<br/>Vehicle Miles</b> | <b>Crashes Per 100 Million<br/>Vehicle Kilometers</b> |
|----------------------|--------------------------------------------------|-------------------------------------------------------|
| Total Crash Rate     | 135.04                                           | 83.91                                                 |
| Fatal Crash Rate     | 0.00                                             | 0.00                                                  |
| Non Fatal Crash Rate | 0.00                                             | 0.00                                                  |
| Night Crash Rate     | 135.04                                           | 83.91                                                 |
| Wet Crash Rate       | 0.00                                             | 0.00                                                  |
| EPDO Rate            | 135.04                                           | 83.91                                                 |

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**Miscellaneous Statistics**

|                                      |         |
|--------------------------------------|---------|
| Severity Index =                     | 1.00    |
| EPDO Crash Index =                   | 1.00    |
| Estimated Property Damage Total = \$ | 1500.00 |

**Accident Type Summary**

| <b>Accident Type</b> | <b>Number of<br/>Crashes</b> | <b>Percent<br/>of Total</b> |
|----------------------|------------------------------|-----------------------------|
| ANIMAL               | 1                            | 100.00                      |

**Injury Summary**

| <b>Injury Type</b>       | <b>Number of<br/>Injuries</b> | <b>Percent<br/>of Total</b> |
|--------------------------|-------------------------------|-----------------------------|
| Fatal Injuries           | 0                             | 0.00                        |
| Class A Injuries         | 0                             | 0.00                        |
| Class B Injuries         | 0                             | 0.00                        |
| Class C Injuries         | 0                             | 0.00                        |
| Total Non-Fatal Injuries | 0                             | 0.00                        |
| Total Injuries           | 0                             | 0.00                        |

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**Monthly Summary**

| <b>Month</b> | <b>Number of<br/>Crashes</b> | <b>Percent<br/>of Total</b> |
|--------------|------------------------------|-----------------------------|
| Jan          | 0                            | 0.00                        |
| Feb          | 0                            | 0.00                        |
| Mar          | 1                            | 100.00                      |
| Apr          | 0                            | 0.00                        |
| May          | 0                            | 0.00                        |
| Jun          | 0                            | 0.00                        |
| Jul          | 0                            | 0.00                        |
| Aug          | 0                            | 0.00                        |
| Sep          | 0                            | 0.00                        |
| Oct          | 0                            | 0.00                        |
| Nov          | 0                            | 0.00                        |
| Dec          | 0                            | 0.00                        |

**Daily Summary**

| <b>Day</b> | <b>Number of<br/>Crashes</b> | <b>Percent<br/>of Total</b> |
|------------|------------------------------|-----------------------------|
| Mon        | 0                            | 0.00                        |
| Tue        | 0                            | 0.00                        |
| Wed        | 1                            | 100.00                      |
| Thu        | 0                            | 0.00                        |
| Fri        | 0                            | 0.00                        |
| Sat        | 0                            | 0.00                        |
| Sun        | 0                            | 0.00                        |

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**Hourly Summary**

| <b>Hour</b> | <b>Number of<br/>Crashes</b> | <b>Percent<br/>of Total</b> |
|-------------|------------------------------|-----------------------------|
| 0000-0059   | 0                            | 0.00                        |
| 0100-0159   | 0                            | 0.00                        |
| 0200-0259   | 0                            | 0.00                        |
| 0300-0359   | 0                            | 0.00                        |
| 0400-0459   | 0                            | 0.00                        |
| 0500-0559   | 1                            | 100.00                      |
| 0600-0659   | 0                            | 0.00                        |
| 0700-0759   | 0                            | 0.00                        |
| 0800-0859   | 0                            | 0.00                        |
| 0900-0959   | 0                            | 0.00                        |
| 1000-1059   | 0                            | 0.00                        |
| 1100-1159   | 0                            | 0.00                        |
| 1200-1259   | 0                            | 0.00                        |
| 1300-1359   | 0                            | 0.00                        |
| 1400-1459   | 0                            | 0.00                        |
| 1500-1559   | 0                            | 0.00                        |
| 1600-1659   | 0                            | 0.00                        |
| 1700-1759   | 0                            | 0.00                        |
| 1800-1859   | 0                            | 0.00                        |
| 1900-1959   | 0                            | 0.00                        |
| 2000-2059   | 0                            | 0.00                        |
| 2100-2159   | 0                            | 0.00                        |
| 2200-2259   | 0                            | 0.00                        |
| 2300-2359   | 0                            | 0.00                        |

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**Light and Road Conditions Summary**

| Condition | Dry | Wet | Other | Total |
|-----------|-----|-----|-------|-------|
| Day       | 0   | 0   | 0     | 0     |
| Dark      | 1   | 0   | 0     | 1     |
| Other     | 0   | 0   | 0     | 0     |
| Total     | 1   | 0   | 0     | 1     |

**Object Struck Summary**

| Object Type | Times Struck | Percent of Total |
|-------------|--------------|------------------|
| ANIMAL      | 1            | 100.00           |

**Vehicle Type Summary**

| Vehicle Type  | Number Involved | Percent of Total |
|---------------|-----------------|------------------|
| PASSENGER CAR | 1               | 100.00           |

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**Yearly Totals Summary**

**Accident Totals**

| <b>Year</b> | <b>Total<br/>Accidents</b> | <b>Fatal<br/>Accidents</b> | <b>Injury<br/>Accidents</b> | <b>Property Damage<br/>Only Accidents</b> |
|-------------|----------------------------|----------------------------|-----------------------------|-------------------------------------------|
| 2006        | 0                          | 0                          | 0                           | 0                                         |
| 2007        | 0                          | 0                          | 0                           | 0                                         |
| 2008        | 0                          | 0                          | 0                           | 0                                         |
| 2009        | 0                          | 0                          | 0                           | 0                                         |
| 2010        | 0                          | 0                          | 0                           | 0                                         |
| 2011        | 0                          | 0                          | 0                           | 0                                         |
| 2012        | 0                          | 0                          | 0                           | 0                                         |
| 2013        | 0                          | 0                          | 0                           | 0                                         |
| 2014        | 1                          | 0                          | 0                           | 1                                         |
| 2015        | 0                          | 0                          | 0                           | 0                                         |
| 2016        | 0                          | 0                          | 0                           | 0                                         |
| Total       | 1                          | 0                          | 0                           | 1                                         |

**Injury Totals**

| <b>Year</b> | <b>Fatal Injuries</b> | <b>Class A, B,<br/>or C Injuries</b> |
|-------------|-----------------------|--------------------------------------|
| 2006        | 0                     | 0                                    |
| 2007        | 0                     | 0                                    |
| 2008        | 0                     | 0                                    |
| 2009        | 0                     | 0                                    |
| 2010        | 0                     | 0                                    |
| 2011        | 0                     | 0                                    |
| 2012        | 0                     | 0                                    |
| 2013        | 0                     | 0                                    |
| 2014        | 0                     | 0                                    |
| 2015        | 0                     | 0                                    |
| 2016        | 0                     | 0                                    |
| Total       | 0                     | 0                                    |

**Miscellaneous Totals**

| <b>Year</b> | <b>Property Damage</b> | <b>EPDO Index</b> |
|-------------|------------------------|-------------------|
| 2006        | \$ 0                   | 0.00              |
| 2007        | \$ 0                   | 0.00              |

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| <b>Year</b>  | <b>Property Damage</b> | <b>EPDO Index</b> |
|--------------|------------------------|-------------------|
| 2008         | \$ 0                   | 0.00              |
| 2009         | \$ 0                   | 0.00              |
| 2010         | \$ 0                   | 0.00              |
| 2011         | \$ 0                   | 0.00              |
| 2012         | \$ 0                   | 0.00              |
| 2013         | \$ 0                   | 0.00              |
| 2014         | \$ 1500                | 1.00              |
| 2015         | \$ 0                   | 0.00              |
| 2016         | \$ 0                   | 0.00              |
| <b>Total</b> | <b>\$ 1500</b>         | <b>1.00</b>       |

**Type of Accident Totals**

| <b>Year</b>  | <b>Left Turn</b> | <b>Right Turn</b> | <b>Rear End</b> | <b>Run Off Road &amp;<br/>Fixed Object</b> | <b>Angle</b> | <b>Side Swipe</b> | <b>Other</b> |
|--------------|------------------|-------------------|-----------------|--------------------------------------------|--------------|-------------------|--------------|
| 2006         | 0                | 0                 | 0               | 0                                          | 0            | 0                 | 0            |
| 2007         | 0                | 0                 | 0               | 0                                          | 0            | 0                 | 0            |
| 2008         | 0                | 0                 | 0               | 0                                          | 0            | 0                 | 0            |
| 2009         | 0                | 0                 | 0               | 0                                          | 0            | 0                 | 0            |
| 2010         | 0                | 0                 | 0               | 0                                          | 0            | 0                 | 0            |
| 2011         | 0                | 0                 | 0               | 0                                          | 0            | 0                 | 0            |
| 2012         | 0                | 0                 | 0               | 0                                          | 0            | 0                 | 0            |
| 2013         | 0                | 0                 | 0               | 0                                          | 0            | 0                 | 0            |
| 2014         | 0                | 0                 | 0               | 0                                          | 0            | 0                 | 1            |
| 2015         | 0                | 0                 | 0               | 0                                          | 0            | 0                 | 0            |
| 2016         | 0                | 0                 | 0               | 0                                          | 0            | 0                 | 0            |
| <b>Total</b> | <b>0</b>         | <b>0</b>          | <b>0</b>        | <b>0</b>                                   | <b>0</b>     | <b>0</b>          | <b>1</b>     |

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Strip Diagram

| Features | Milepost | Crash IDs |
|----------|----------|-----------|
|          | 0.60     |           |
|          | 0.61     |           |
|          | 0.62     |           |
|          | 0.63     |           |
|          | 0.64     |           |
|          | 0.65     |           |
|          | 0.66     |           |
|          | 0.67     |           |
|          | 0.68     |           |
|          | 0.69     |           |
|          | 0.70     | 104000051 |
|          | 0.71     |           |
|          | 0.72     |           |
|          | 0.73     |           |
|          | 0.74     |           |
|          | 0.75     |           |
|          | 0.76     |           |
|          | 0.77     |           |
|          | 0.78     |           |
|          | 0.79     |           |
|          | 0.80     |           |
|          | 0.81     |           |
|          | 0.82     |           |
|          | 0.83     |           |

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**Study Criteria**

| Study Name    | Log No. | PH No. | TIP No. | K/A Cf. | B/C Cf. | ADT | ADT Route |
|---------------|---------|--------|---------|---------|---------|-----|-----------|
| ASHEBRIDGE160 |         |        |         | 76.8    | 8.4     | 870 | 40001155  |

| Request Date | Courier Service | Phone No. | Ext. | Fax No. |
|--------------|-----------------|-----------|------|---------|
|--------------|-----------------|-----------|------|---------|

| County |      |      | Municipality  |      |            |            |            |       |
|--------|------|------|---------------|------|------------|------------|------------|-------|
| Name   | Code | Div. | Name          | Code | Y-Line Ft. | Begin Date | End Date   | Years |
| ASHE   | 5    | 11   | All and Rural |      | 0          | 11/1/2006  | 10/31/2016 | 10.00 |

| Location Text                                                                              | Requestor |
|--------------------------------------------------------------------------------------------|-----------|
| SR 1155 (Frank Dillard Rd) from 500 feet east of Bridge 160 to 700 feet west of the bridge |           |

| Excluded Accidents |
|--------------------|
| 102215193          |
| 102538521          |

| Fiche Roads      |          |
|------------------|----------|
| Name             | Code     |
| SR 1155          | 40001155 |
| FRANK DILLARD RD | 50035524 |

| Strip Road |          |          |        |       |            |
|------------|----------|----------|--------|-------|------------|
| Name       | Code     | Begin MP | End MP | Miles | Kilometers |
| SR 1155    | 40001155 | 0.602    | 0.835  | 0.233 | 0.375      |