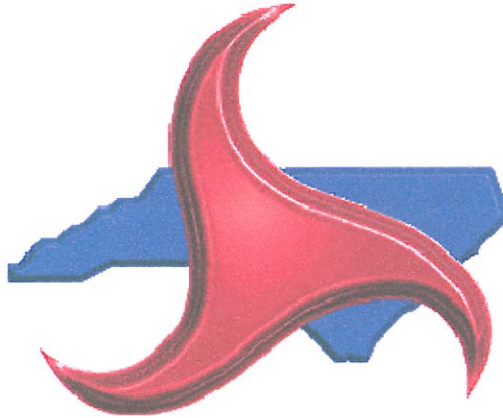


# Bridge Design Speed Investigation

Division 6 Express Design-Build

17BP.6.R.77

Bridge 223 over Gum Swamp on SR 1303 (Old Red Springs Road)  
Robeson County



Document Prepared By:

Regional Traffic Office – Sandhills Region  
Transportation Mobility and Safety Division  
North Carolina Department of Transportation

July 22, 2016



**Principal Investigator & Project Manager**

*David B. Phipps*  
David B. Phipps, PE  
Regional Traffic Engineer

# Bridge and Approach Investigation Checklist

Project 17BP.6.R.77  
Description Bridge 223 over Gum Swamp  
Route SR 1303 (Old Red Springs Road)  
Division 6  
County Robeson

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Existing Speed Limit 55 ☐ Posted ☒ Statutory

Reasonable & Comfortable  
Passenger Car Speed 55

Speed Data None

Ball Bank Speed Study Tangent Section.

Warning Signs at Bridge Type 3 Object Markers (OM-3L and OM-3R) - 2 each.

Roadside Development Farm land and wooded swamp land.

ADT History 2013 ADT = 1600, 2011 ADT = 1700, 2009 ADT =1500, 2007 =1600.

Pedestrian/Bicycle Traffic Minimal expected.

Bridge and Approach  
Digital Photos Attached.

Approach Lane Width 10 ft.

Approach Shoulder Width: 5 ft.  
Shoulder Type Soil/Grass.

Lane Width (existing bridge) 9 ft.

Shoulder width (existing bridge) 3 ft.

Strategic Corridor / Thoroughfare  
Designation and Recommended  
Cross Section SR 1303 is classified as a minor collector.  
Two lane cross section recommended.

Crash History and  
Safety Considerations One rear-end type collision in five year crash study.

Comments Existing structure is weight restricted 23/30 Tons.

Reasonable Bridge Speed 55 mph

Investigated by: David B. Phipps, PE

Reviewed by: David B. Phipps, PE

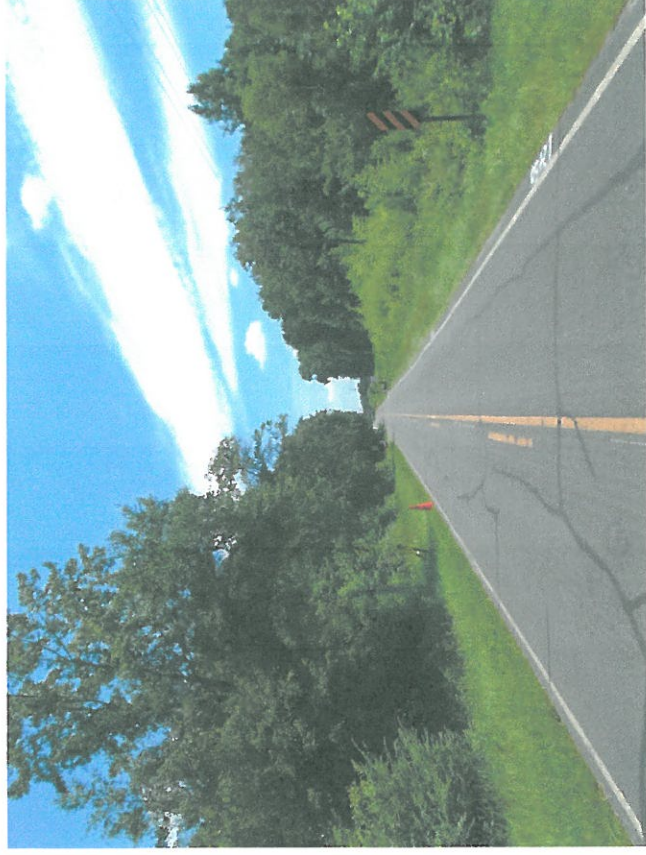
County: Robeson

Description: Bridge 223

Looking North

Route: SR 1303

Looking South

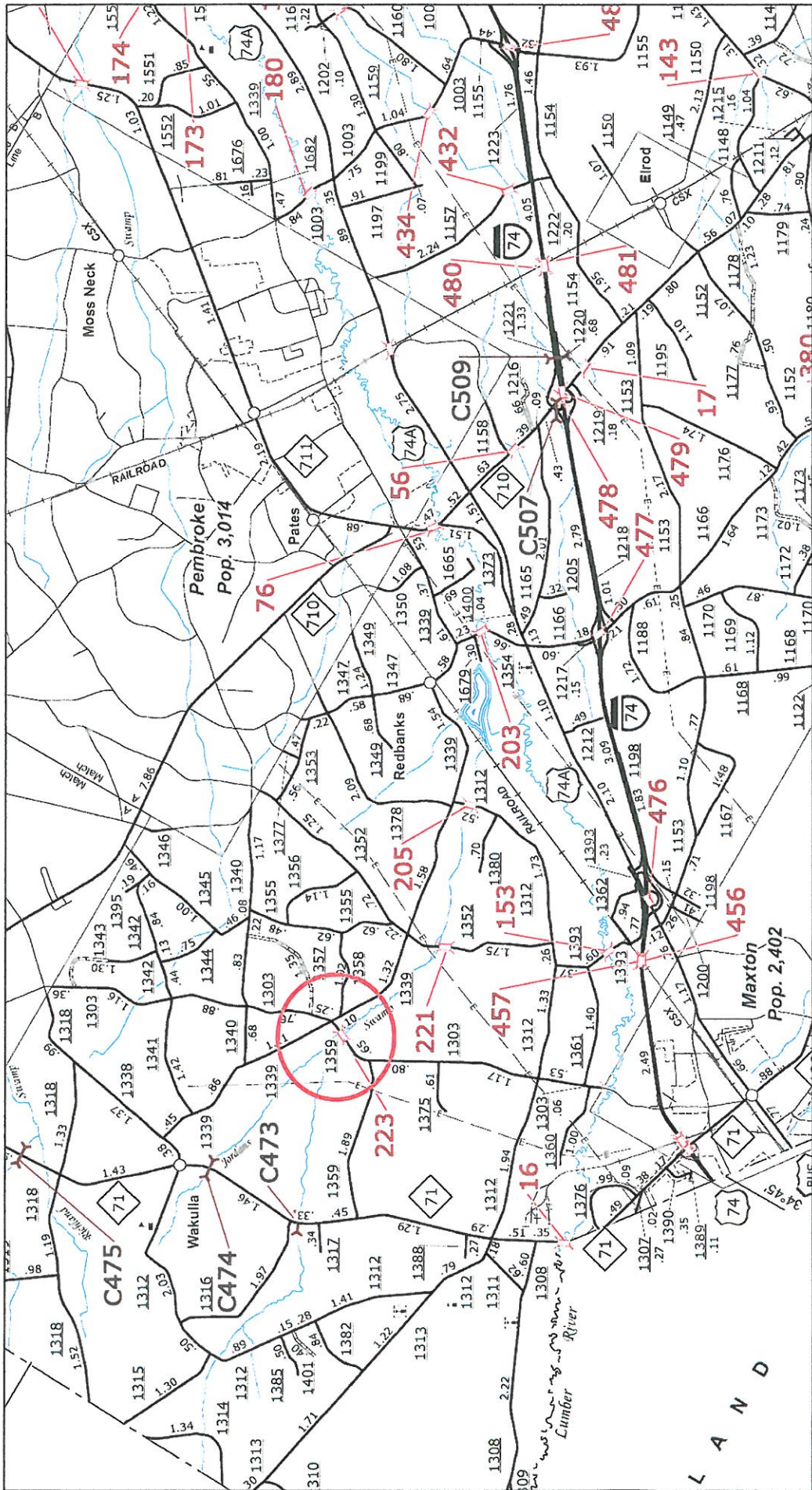


Looking South



Looking South





Bridge 223 OVER Gum Swamp on SR 1303 (Old Red Springs Road)

Robeson County

North Carolina Department of Transportation  
Traffic Engineering Accident Analysis System  
Strip Analysis Report

**Study Criteria Summary**

County: ROBESON City: All and Rural  
Date: 06/01/2011 to 05/31/2016 Study: ROBESONBRIDGE223  
Location: On SR 1303 (OLD RED SPRING RD) FROM 500 NORTH OF BRIDGE TO 500 FEET SOUTH OF BRIDGE 223

**Report Details**

| Acc No | Crash ID  | Milepost    | Date                | Accident Type             | Total Damage  | Injuries           |   |   |   | Condition |              |   | Road |    | Trfc Ctl |    |
|--------|-----------|-------------|---------------------|---------------------------|---------------|--------------------|---|---|---|-----------|--------------|---|------|----|----------|----|
|        |           |             |                     |                           |               | F                  | A | B | C | R         | L            | W | Ch   | Ci | Dv       | Op |
| 1      | 103306988 | 6.064       | 11/18/2011<br>07:32 | REAR END, SLOW OR<br>STOP | \$ 6000       | 0                  | 0 | 3 | 2 | 1         | 1            | 1 | 1    | 0  | 0        |    |
| Unit   | 1 : 2     | Alchl/Drgs: | 0                   | Speed:                    | 55 MPH Dir: N | Veh Mnvr/Ped Actn: |   |   |   | 4         | Obj Strk:    |   |      |    |          |    |
| Unit   | 2 : 1     | Alchl/Drgs: | 0                   | Speed:                    | 35 MPH Dir: N | Veh Mnvr/Ped Actn: |   |   |   | 4         | Obj Strk: 58 |   |      |    |          |    |

**Legend for Report Details:**

- Acc No - Accident Number
- Injuries: F - Fatal, A - Class A, B - Class B, C - Class C
- Condition: R - Road Surface, L - Ambient Light, W - Weather
- Rd Ch - Road Character
- Rd Ci - Roadway Contributing Circumstances
- Trfc Ctl - Traffic Control: Dv - Device, Op - Operating
- Alchl/Drgs - Alcohol Drugs Suspected
- Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action
- Obj Strk - Object Struck

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Traffic Engineering Accident Analysis System  
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Summary Statistics

High Level Crash Summary

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

Crash Severity Summary

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

Vehicle Exposure Statistics

Annual ADT = 1600

Total Length = 0.2 (Miles)                      0.322 (Kilometers)

Total Vehicle Exposure = 0.58 (MVMT)                      0.94 (MVKMT)

| Crash Rate           | Crashes Per 100 Million<br>Vehicle Miles | Crashes Per 100 Million<br>Vehicle Kilometers |
|----------------------|------------------------------------------|-----------------------------------------------|
| Total Crash Rate     | 171.05                                   | 106.28                                        |
| Fatal Crash Rate     | 0.00                                     | 0.00                                          |
| Non Fatal Crash Rate | 171.05                                   | 106.28                                        |
| Night Crash Rate     | 0.00                                     | 0.00                                          |
| Wet Crash Rate       | 0.00                                     | 0.00                                          |
| EPDO Rate            | 1436.78                                  | 892.77                                        |

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Miscellaneous Statistics

|                                      |         |
|--------------------------------------|---------|
| Severity Index =                     | 8.40    |
| EPDO Crash Index =                   | 8.40    |
| Estimated Property Damage Total = \$ | 6000.00 |

Accident Type Summary

| Accident Type          | Number of<br>Crashes | Percent<br>of Total |
|------------------------|----------------------|---------------------|
| REAR END, SLOW OR STOP | 1                    | 100.00              |

Injury Summary

| Injury Type              | Number of<br>Injuries | Percent<br>of Total |
|--------------------------|-----------------------|---------------------|
| Fatal Injuries           | 0                     | 0.00                |
| Class A Injuries         | 0                     | 0.00                |
| Class B Injuries         | 3                     | 60.00               |
| Class C Injuries         | 2                     | 40.00               |
| Total Non-Fatal Injuries | 5                     | 100.00              |
| Total Injuries           | 5                     | 100.00              |

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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          | 0                            | 0.00                        |
| 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          | 1                            | 100.00                      |
| 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        | 0                            | 0.00                        |
| Thu        | 0                            | 0.00                        |
| Fri        | 1                            | 100.00                      |
| Sat        | 0                            | 0.00                        |
| Sun        | 0                            | 0.00                        |

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Hourly Summary

| Hour      | Number of<br>Crashes | Percent<br>of Total |
|-----------|----------------------|---------------------|
| 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 | 0                    | 0.00                |
| 0600-0659 | 0                    | 0.00                |
| 0700-0759 | 1                    | 100.00              |
| 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       | 1   | 0   | 0     | 1     |
| Dark      | 0   | 0   | 0     | 0     |
| Other     | 0   | 0   | 0     | 0     |
| Total     | 1   | 0   | 0     | 1     |

Object Struck Summary

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

Vehicle Type Summary

| Vehicle Type  | Number Involved | Percent of Total |
|---------------|-----------------|------------------|
| PASSENGER CAR | 1               | 50.00            |
| PICKUP        | 1               | 50.00            |

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Yearly Totals Summary

Accident Totals

| Year  | Total<br>Accidents | Fatal<br>Accidents | Injury<br>Accidents | Property Damage<br>Only Accidents |
|-------|--------------------|--------------------|---------------------|-----------------------------------|
| 2011  | 1                  | 0                  | 1                   | 0                                 |
| 2012  | 0                  | 0                  | 0                   | 0                                 |
| 2013  | 0                  | 0                  | 0                   | 0                                 |
| 2014  | 0                  | 0                  | 0                   | 0                                 |
| 2015  | 0                  | 0                  | 0                   | 0                                 |
| 2016  | 0                  | 0                  | 0                   | 0                                 |
| Total | 1                  | 0                  | 1                   | 0                                 |

Injury Totals

| Year  | Fatal Injuries | Class A, B,<br>or C Injuries |
|-------|----------------|------------------------------|
| 2011  | 0              | 5                            |
| 2012  | 0              | 0                            |
| 2013  | 0              | 0                            |
| 2014  | 0              | 0                            |
| 2015  | 0              | 0                            |
| 2016  | 0              | 0                            |
| Total | 0              | 5                            |

Miscellaneous Totals

| Year  | Property Damage | EPDO Index |
|-------|-----------------|------------|
| 2011  | \$ 6000         | 8.40       |
| 2012  | \$ 0            | 0.00       |
| 2013  | \$ 0            | 0.00       |
| 2014  | \$ 0            | 0.00       |
| 2015  | \$ 0            | 0.00       |
| 2016  | \$ 0            | 0.00       |
| Total | \$ 6000         | 8.40       |

Type of Accident Totals

| Year | Left Turn | Right Turn | Rear End | Run Off Road &<br>Fixed Object | Angle | Side Swipe | Other |
|------|-----------|------------|----------|--------------------------------|-------|------------|-------|
| 2011 | 0         | 0          | 1        | 0                              | 0     | 0          | 0     |
| 2012 | 0         | 0          | 0        | 0                              | 0     | 0          | 0     |
| 2013 | 0         | 0          | 0        | 0                              | 0     | 0          | 0     |

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| Year  | Left Turn | Right Turn | Rear End | Run Off Road & |  | Angle | Side Swipe | Other |
|-------|-----------|------------|----------|----------------|--|-------|------------|-------|
|       |           |            |          | Fixed Object   |  |       |            |       |
| 2014  | 0         | 0          | 0        | 0              |  | 0     | 0          | 0     |
| 2015  | 0         | 0          | 0        | 0              |  | 0     | 0          | 0     |
| 2016  | 0         | 0          | 0        | 0              |  | 0     | 0          | 0     |
| Total | 0         | 0          | 1        | 0              |  | 0     | 0          | 0     |

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Strip Diagram

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| Features         | Milepost | Crash IDs |
|------------------|----------|-----------|
| Structure:770223 | 5.96     |           |
|                  | 5.97     |           |
|                  | 5.98     |           |
|                  | 5.99     |           |
|                  | 6.00     |           |
|                  | 6.01     |           |
|                  | 6.02     |           |
|                  | 6.03     |           |
|                  | 6.04     |           |
|                  | 6.05     |           |
|                  | 6.06     | 103306988 |
|                  | 6.07     |           |
|                  | 6.08     |           |
|                  | 6.09     |           |
|                  | 6.10     |           |
|                  | 6.11     |           |
|                  | 6.12     |           |
|                  | 6.13     |           |
|                  | 6.14     |           |
|                  | 6.15     |           |
|                  | 6.16     |           |

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Traffic Engineering Accident Analysis System  
Strip Analysis Report

Study Criteria

| Study Name       | Log No. | PH No. | TIP No. | K/A Cf. | B/C Cf. | ADT  | ADT Route |
|------------------|---------|--------|---------|---------|---------|------|-----------|
| ROBESONBRIDGE223 |         |        |         | 76.8    | 8.4     | 1600 | 40001303  |

| Request Date | Courier Service | Phone No.    | Ext. | Fax No. |
|--------------|-----------------|--------------|------|---------|
|              |                 | 919-707-6604 |      |         |

| County  |      |      | Municipality  |      |            |            |            |       |
|---------|------|------|---------------|------|------------|------------|------------|-------|
| Name    | Code | Div. | Name          | Code | Y-Line Ft. | Begin Date | End Date   | Years |
| ROBESON | 78   | 6    | All and Rural |      | 0          | 06/01/2011 | 05/31/2016 | 5.00  |

| Location Text                                                                           | Requestor                                           |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------|
| On SR 1303 (OLD RED SPRING RD) FROM 500 NORTH OF BRIDGE TO 500 FEET SOUTH OF BRIDGE 223 | Virginia Mabry<br>Manager of Priority Projects Unit |

| Fiche Roads     |          |
|-----------------|----------|
| Name            | Code     |
| SR 1303         | 40001303 |
| OLD MAXTON      | 50022365 |
| OLD RED SPRINGS | 50022579 |
| MCCASKILL       | 50019368 |

| Strip Road |          |          |        |       |            |
|------------|----------|----------|--------|-------|------------|
| Name       | Code     | Begin MP | End MP | Miles | Kilometers |
| SR 1303    | 40001303 | 5.956    | 6.156  | 0.200 | 0.322      |