Oconee County
Long Range Transportation Study

Intersection Assessment and Potential Improvements
Background

The Georgia Department of Transportation (GDOT) is developing a multimodal Long Range Transportation Plan (LRTP) for Oconee County, Georgia. Much of Oconee County is comprised of land that is characterized as rural, with low population (close to 0.5 people per acre) and employment. Understanding this, the plan focuses on small scale and context sensitive solutions to serve the character of the community while ensuring mobility into the future.

The plan conducts a thorough operational and crash analysis for the top nine (9) intersections based on safety analysis and local stakeholder input. A variety of potential improvements are recommended for each intersection including advanced warning signs, operational improvements and access management strategies.
Contents and Definitions

Each intersection consists of two slides:

The first slide of each intersection assessment includes the following information:

- **Physical Condition** - summarized the intersection type and lane configuration.
- **Traffic Characteristics** – highlighted turning movement counts (TMC) for both AM and PM peak hours which were collected at all intersections on 4/24/2018.
- **Safety Analysis** – summarized the safety analysis results which were based on the crash data from the last five years (2013-2017). Safety analysis was used to assist in identifying safety issues and selecting countermeasures to improve them.
- **Peak Hour Level of Service Analysis** – summarized the operational analysis results for both AM and PM peak hours using Highway Capacity Software (HCS).
- **Stakeholder and Public Input** – recapped the input from stakeholders and summarized the public survey results.
- **Other Observations** – observations from professional engineers based on the existing traffic and crash analysis.

The second slide of each intersection assessment includes the proposed countermeasures to improve the safety and operations for the intersection. For each improvement, the following information is included:

- **Crash Type Addressed** – highlighted the crash type to which the proposed improvement is intended to address.
- **Benefits** – discussed the expected benefits associated with the proposed improvement.
- **Timeline for implementation** – referred to the relative approximate time it can take to implement the proposed intersection improvements. Three categories include:
  - Short ( < 1 year)
  - Short to Moderate (1 to 3 years)
  - Moderate (> 3 years)
- **Estimated Cost** – provided categories of planning-level estimated costs of the intersection improvements related to one another. All improvements are considered low cost, low to moderate or moderate cost. Costs could vary considerably due to right-of-way costs.
  - Low ( < $100,000)
  - Low to Moderate ($100,000 to $500,000)
  - Moderate (> $500,000)
# 1 - Epps Bridge Parkway at Parkway Boulevard

**Physical Condition**
- Signalized intersection
- Right and left turn lanes from Epps Bridge approaches
- Parkway Blvd turns into Tanglebrook Dr (residential)

**Safety Analysis**
- 15 collisions between 2013 and 2017
- Drivers’ unawareness of the intersection or speed could be the main cause for crashes

**Percentage of Crashes by Severity and Cause**

<table>
<thead>
<tr>
<th>Crash Severity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property Damage Only</td>
<td>27%</td>
</tr>
<tr>
<td>Injured</td>
<td>73%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manner of Collision</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rear End</td>
<td>86%</td>
</tr>
<tr>
<td>Sideswipe</td>
<td>7%</td>
</tr>
<tr>
<td>Same Direction</td>
<td>7%</td>
</tr>
<tr>
<td>Angle</td>
<td>5%</td>
</tr>
</tbody>
</table>

**Vehicle Maneuver**
- 36% Stopped
- 25% Straight
- 34% Turning Left
- 5% Turning Right

**Traffic Characteristics**
2018 Existing Peak Hour Turning Movement Counts

**Peak Hour Level of Service Analysis**
- AM Peak Hour: 9:00 am – 10:00 am
- PM Peak Hour: 5:00 pm – 6:00 pm

<table>
<thead>
<tr>
<th>AM Level of Service</th>
<th>Epps Bridge Pkwy</th>
<th>Parkway Blvd</th>
<th>Tanglebrook Dr</th>
</tr>
</thead>
<tbody>
<tr>
<td>WB Delay: 52.3 sec/veh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EB Delay: 50.6 sec/veh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM Level of Service</td>
<td>Epps Bridge Pkwy</td>
<td>Parkway Blvd</td>
<td>Tanglebrook Dr</td>
</tr>
<tr>
<td>WB Delay: 38.6 sec/veh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EB Delay: 43.3 sec/veh</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Stakeholder and Public Input**
- Public expressed concern over the traffic backup at this intersection

**Other Observations**
- Northbound rear end crashes are likely attributed to steep downgrades and vehicle following too close
- Southbound congestion could be caused by hill and progression of three closely spaced intersections
- Parkway Blvd traffic volume would likely increase due to future development between Epps Bridge Pkwy and Oconee Connector
# 1 - Epps Bridge Parkway at Parkway Boulevard

<table>
<thead>
<tr>
<th>Potential Improvements for Further Evaluation</th>
<th>Next Steps and Potential Improvements</th>
<th>Crash Type Addressed</th>
<th>Benefits</th>
<th>Timeline for Implementation</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>Consider extending yellow phase</td>
<td>Rear end collisions attributed to steep downgrades</td>
<td>Could provide extended time for drivers to stop or slow down when approaching the intersection</td>
<td>Short</td>
<td>Low</td>
</tr>
<tr>
<td>No. 2</td>
<td>Consider installing retroreflective tape on signal backplates</td>
<td>Rear end collisions attributed to steep downgrades on Epps Bridge Pkwy or drivers following too close</td>
<td>Could provide approaching motorists with additional information and help them make safer decisions as they approach the intersection</td>
<td>Short</td>
<td>Low</td>
</tr>
<tr>
<td>No. 3</td>
<td>Consider installing flashing yellow arrows (FYAs)</td>
<td>Rear end collisions attributed to steep downgrades on Epps Bridge Pkwy or drivers following too close</td>
<td>Could improve delay for through and left turn movement</td>
<td>Short - Moderate</td>
<td>Low - Moderate</td>
</tr>
</tbody>
</table>
Physical Condition
- Signalized intersection
- Yield signs for all right turn lanes

Traffic Characteristics
2018 Existing Peak Hour Turning Movement Counts

Safety Analysis
- 74 crashes in total during 2013 to 2017 with majority of them being rear end collisions
- Drivers’ failure to yield or stop could be the main causes for crashes

Crash Severity
- 32% Property Damage Only
- 68% Injured

Manner of Collision
- 34% Rear End
- 58% Sideswipe-Same Direction

Vehicle Maneuver
- 11% Turning Right
- 10% Turning Left
- 23% Straight
- 43% Stopped

Peak Hour Level of Service Analysis
- AM Corridor Peak Hour: 9:00 am – 10:00 am
- PM Corridor Peak Hour: 5:00 pm – 6:00 pm

AM Level of Service
- Epps Bridge Pkwy
- Dowdy Rd

PM Level of Service
- Epps Bridge Pkwy
- Dowdy Rd

Stakeholder and Public Input
- No specific comments are expressed regarding this intersection.

Other Observations
- May need to do further investigation due to the significant number of crashes at this intersection
- Misjudgment of speed, spacing, gaps due to hill likely contribute to crashes
## # 2 – Epps Bridge Parkway and Dowdy Road

### Potential Improvements for Further Evaluation

<table>
<thead>
<tr>
<th>Next Steps and Potential Improvements</th>
<th>Crash Type Addressed</th>
<th>Benefits</th>
<th>Timeline for Implementation</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. 1</strong></td>
<td>Consider adding pavement markings showing the left-turn movement to assist drivers turning left towards Dowdy Rd from Epps Bridge Pkwy.</td>
<td>Angle or sideswipe crashes attributed to limited sight distance or misjudging speed of oncoming motorists over the hill</td>
<td>Could help motorists make safer decisions as they approach the intersection</td>
<td><img src="Image1" alt="Short-Moderate" /> <img src="Image2" alt="Low" /></td>
</tr>
<tr>
<td><strong>No. 2</strong></td>
<td>Consider installing flashing yellow arrows (FYAs)</td>
<td>Rear end collisions attributed to steep downgrades on Epps Bridge Pkwy or drivers following too close</td>
<td>Could improve delay for through and left turn movement</td>
<td><img src="Image1" alt="Short-Moderate" /> <img src="Image2" alt="Low-Moderate" /></td>
</tr>
<tr>
<td><strong>No. 3</strong></td>
<td>Consider alternative intersection design, possibly Median U-turn (MUT) intersection or Restricted Crossing U-turn (RCUT) intersection</td>
<td>Angle crashes between eastbound and westbound</td>
<td>Could help reduce conflict points and reduce delays</td>
<td><img src="Image1" alt="Long" /> <img src="Image2" alt="High" /></td>
</tr>
</tbody>
</table>
Physical Condition
- Signalized intersection
- Right and left-hand turn lanes in each direction

Traffic Characteristics
2018 Existing Peak Hour Turning Movement Counts

<table>
<thead>
<tr>
<th></th>
<th>AM Peak Hour (begins at 9:00 AM)</th>
<th>PM Peak Hour (begins at 5:00 PM)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>314 313 310 110 135 363 114</td>
<td>80 117 215 195 211 186 317</td>
</tr>
</tbody>
</table>

Safety Analysis
- 216 crashes in total during 2013 to 2017 with majority of them being rear end collisions
- Road curvature and/or speeding could be the main causes for crashes

Percentage of Crashes by Severity and Cause
- Property Damage Only: 81%
- Injured: 19%

Manner of Collision
- 10% Rear End
- 32% Angle
- 57% Side Impact

Vehicle Maneuver

Peak Hour Level of Service Analysis
- AM Peak Hour: 9:00 am – 10:00 am
- PM Peak Hour: 5:00 pm – 6:00 pm

<table>
<thead>
<tr>
<th></th>
<th>AM Level of Service</th>
<th>Epps Bridge Pkwy WB Delay: 47 sec/veh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>PM Level of Service</th>
<th>Epps Bridge Pkwy WB Delay: 50.2 sec/veh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

Stakeholder and Public Input
- Public expressed concern over traffic congestion at this intersection
- Many people feel unsafe exiting the shopping center in the SE quad of the intersection (Kroger, Chick-fil-A)

Other Observations
- May need to do further investigation due to the significant number of crashes at this intersection
- Public comment mentioned Chick-fil-A, which appears accessed from Dowdy PI
- Misjudgment of speed, spacing, gaps due to hill likely contribute to crashes
<table>
<thead>
<tr>
<th>#</th>
<th>Next Steps and Potential Improvements</th>
<th>Crash Type Addressed</th>
<th>Benefits</th>
<th>Timeline for Implementation</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>Consider evaluating sight distance on eastbound approach and consider providing a signal ahead sign on both Epps Bridge Pkwy approaches.</td>
<td>Rear end collisions attributed to limited sight distance (curve) or speed</td>
<td>Could address problems like vehicle alignment, long exposure in the intersection, improve overall safety</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>No. 2</td>
<td>Consider installing a supplemental signal head for EB approach.</td>
<td>Rear end collisions attributed to limited sight distance (uphill) or speed</td>
<td>Could provide approaching motorists with additional information and help them make safer decisions</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>No. 3</td>
<td>Consider installing flashing yellow arrows (FYAs).</td>
<td>Rear end collisions attributed to steep downgrades on Epps Bridge Pkwy or drivers following too close</td>
<td>Could improve delay for through and left turn movement</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>No. 4</td>
<td>Consider access management for heavy volume driveways.</td>
<td>Rear end attributed to vehicles suddenly entering/exiting highway into driveways</td>
<td>Could address problems like vehicle alignment, long exposure in the intersection, and potential driver confusion</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>
# 4 – Mars Hill at Commerce Drive

**Physical Condition**
- Two-way stop-controlled intersection
- Right-hand turn lanes along Mars Hill Rd in both directions

**Safety Analysis**
- 22 crashes in total during 2013 to 2017 with majority of them being angle collisions
- Drivers’ unawareness of the intersection could be the main causes for angle crashes

**Percentage of Crashes by Severity and Cause**
- 55% Property Damage Only
- 45% Injured
- 24% Angle
- 76% Head On
- 40% Straight
- 50% Stopped
- 10% Turning Left

**Traffic Characteristics**
- 2018 Existing Peak Hour Turning Movement Counts

**Peak Hour Level of Service Analysis**
- AM Peak Hour: 7:15 am – 8:15 am
- PM Peak Hour: 4:45 pm – 5:45 pm

**Stakeholder and Public Input**
- Traffic congestion coming from Malcom Bridge Rd was noted
- Public expressed concern over lack of sidewalks at this intersection
- Limited visibility at this intersection is a concern
- Traffic in the mornings especially is a concern
- Roadway access issues were noted here
### Potential Improvements for Further Evaluation

<table>
<thead>
<tr>
<th>Next Steps and Potential Improvements</th>
<th>Crash Type Addressed</th>
<th>Benefits</th>
<th>Timeline for Implementation</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1 Consider installing rumble strips on NB/SB approaches</td>
<td>Rear end collisions attributed to speed</td>
<td>Could reduce intersection speeds and help motorists make safer decisions as they approach the intersection</td>
<td>Short</td>
<td>Low</td>
</tr>
<tr>
<td>No. 2 Consider adding signal ahead flashers to intersection ahead signs</td>
<td>Angle and rear end collisions attributed to speed or drivers unawareness of the intersection</td>
<td>Could reduce intersection speeds and help motorists make safer decisions as they approach the intersection</td>
<td>Short - Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>No. 3 Consider lengthening the left turn lane from the eastbound approach</td>
<td>Angle crashes attributed to motorists being unaware of stop signs, unaware of conflicting traffic at the access point, or misjudging gaps in the mainline traffic</td>
<td>Could improve delay for through and right turn movements if they do not have to wait behind left-turning vehicles</td>
<td>Short - Moderate</td>
<td>Low - Moderate</td>
</tr>
<tr>
<td>No. 4 Consider roundabout as a long-term solution</td>
<td>Angle and rear end collisions attributed to the complexity of the intersection</td>
<td>Could reduce conflict points and reduce exposure time in the intersection</td>
<td>Long</td>
<td>High</td>
</tr>
</tbody>
</table>
# 5 – SR 316/8, US 29/78 at Oconee Connector

**Physical Condition**
- Signalized intersection
- Medians separating traffic in each direction

**Traffic Characteristics**
2018 Existing Peak Hour Turning Movement Counts

<table>
<thead>
<tr>
<th></th>
<th>AM Peak Hour (begins at 7:30 AM)</th>
<th>PM Peak Hour (begins at 4:45 PM)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SR 316/8</td>
<td>SR 316/8</td>
</tr>
<tr>
<td>EB</td>
<td>424 585 124</td>
<td>151 336 69</td>
</tr>
<tr>
<td>SB</td>
<td>83 47</td>
<td>854 1544 282</td>
</tr>
<tr>
<td>WB</td>
<td>262 522</td>
<td></td>
</tr>
</tbody>
</table>

**AM Peak Hour (begins at 7:30 AM)**
- EB Delay: 65.4 sec/veh
- SB Delay: 46.9 sec/veh
- WB Delay: 52.7 sec/veh

**PM Peak Hour (begins at 4:45 PM)**
- EB Delay: 67.2 sec/veh
- SB Delay: 92.7 sec/veh
- WB Delay: 92.9 sec/veh

**Stakeholder and Public Input**
- Many drivers experience severe congestion here
- More shoulder width was requested
- Drivers experience problems with tractor-trailers at this intersection
- Afternoon congestion particularly a problem
- Construction is a concern
- Public recommended adding additional turn lanes

**Safety Analysis**
- 275 crashes in total during 2013 to 2017 with majority of them being rear end collisions
- Speed and/or failure to yield could be the main causes for crashes

**Percentage of Crashes by Severity and Cause**
- 75% Injured
- 25% Property Damage Only

**Crash Severity**
- 81% Rear End
- 13% Angle
- 6% Other

**Stakeholder and Public Input**
- Many drivers experience severe congestion here
- More shoulder width was requested
- Drivers experience problems with tractor-trailers at this intersection
- Afternoon congestion particularly a problem
- Construction is a concern
- Public recommended adding additional turn lanes

**Peak Hour Level of Service Analysis**
- AM Peak Hour: 7:30 am – 8:30 am
- PM Peak Hour: 4:45 pm – 5:45 pm

**SR 316**
- AM Level of Service
- EB Delay: 65.4 sec/veh
- SB Delay: 46.9 sec/veh
- WB Delay: 52.7 sec/veh

**Oconee Conn**
- PM Level of Service
- EB Delay: 67.2 sec/veh
- SB Delay: 92.7 sec/veh
- WB Delay: 92.9 sec/veh

**Other** includes: Head-On, Side Impact, Intersection, Unpredictable Driver Error, Pedestrian, Bicycle, Animal, Roller, Falling Object, Making a Turn, Changing Lanes, Neglecting a Curve, Entering Lane, Parking, Hooking, Other.
<table>
<thead>
<tr>
<th>Next Steps and Potential Improvements</th>
<th>Crash Type Addressed</th>
<th>Benefits</th>
<th>Timeline for Implementation</th>
<th>Estimated Cost</th>
</tr>
</thead>
</table>
| **No. 1** | Grade Separation  
This intersection is included in GDOT’s Construction Work Program (PI#0013769). It is proposed to convert this intersection into a grade separated interchange to correct the current deficiencies. | Rear end collisions attributed to speed or drivers unawareness where one vehicle is turning left/stoped | Could improve delay for through and left turn movements if they do not have to wait behind left-turning vehicles | Moderate | High |
### Physical Condition
- Signalized intersection

### Traffic Characteristics
2018 Existing Peak Hour Turning Movement Counts

<table>
<thead>
<tr>
<th></th>
<th>AM Peak Hour (begins at 7:00 AM)</th>
<th>PM Peak Hour (begins at 4:30 PM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main St</td>
<td>107 398 168</td>
<td>47 554 101</td>
</tr>
<tr>
<td>S Barnett Shoals Rd</td>
<td>145 93</td>
<td>112 82 41</td>
</tr>
<tr>
<td>Greensboro Hwy</td>
<td>428 17</td>
<td>4 12 17</td>
</tr>
</tbody>
</table>

### Safety Analysis
- 50 crashes in total during 2013 to 2017 with majority of them being rear end collisions
- Complex configuration and/or failure to yield could be the main causes for crashes

#### Percentage of Crashes by Severity and Cause
- 88% Injured
- 12% Property Damage Only
- 6% Not A Collision with Motor Vehicle
- 25% Rear End
- 6% Angle

#### Manner of Collision
- 45% Straight
- 27% Turning Right
- 13% Stopped
- 15% Other

### Stakeholder and Public Input
- Public requested bike lanes here, as bike traffic gets heavy around 5pm
- Issues being unable to pass slow moving vehicles on Barnett Shoals Rd
- Traffic backup is an issue here
- Public noticed a lack of roadway shoulders in this area

### Peak Hour Level of Service Analysis
- AM Peak Hour: 7:00 am – 8:00 am
- PM Peak Hour: 4:30 pm – 5:30 pm

#### AM Level of Service
- C

#### PM Level of Service
- B

### Existing Condition Analysis
<table>
<thead>
<tr>
<th>No.</th>
<th>Next Steps and Potential Improvements</th>
<th>Crash Type Addressed</th>
<th>Benefits</th>
<th>Timeline for Implementation</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>Consider access management for heavy volume driveways</td>
<td>Rear end crashes attributed to vehicles suddenly entering/exiting highway into driveways</td>
<td>Could address problems like vehicle alignment, long exposure in the intersection, and potential driver confusion</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>No. 2</td>
<td>Consider converting four-legged intersection into two T-intersections</td>
<td>Angle and rear end collisions attributed to the complexity of the intersection</td>
<td>Could reduce conflict points and reduce exposure time in the intersection</td>
<td>Long</td>
<td>High</td>
</tr>
<tr>
<td>No. 3</td>
<td>Consider roundabout as a long term solution</td>
<td>Angle and rear end collisions attributed to the complexity of the intersection</td>
<td>Could reduce conflict points and reduce exposure time in the intersection</td>
<td>Long</td>
<td>High</td>
</tr>
</tbody>
</table>
# 7 – Macon Highway at Price Mill Road

**Physical Condition**
- Two-way stop-controlled intersection
- Right turn lane from Old Bishop Rd

**Traffic Characteristics**
2018 Existing Peak Hour Turning Movement Counts

<table>
<thead>
<tr>
<th></th>
<th>AM Peak Hour (begins at 7:00 AM)</th>
<th>PM Peak Hour (begins at 4:45 PM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price Mill Rd</td>
<td>133</td>
<td>20</td>
</tr>
<tr>
<td>Old Bishop Rd</td>
<td>634</td>
<td>457</td>
</tr>
<tr>
<td>Macon Hwy</td>
<td>24</td>
<td>18</td>
</tr>
</tbody>
</table>

**Safety Analysis**
- 5 crashes during 2013 to 2017 with majority of them being angle collisions
- Drivers' unawareness of the intersection and/or speeding could be the main causes of the crash

**Percentage of Crashes by Severity and Cause**
- Property Damage Only: 60%
- Angle: 20%
- Sideswipe: 20%
- Turning Left: 20%
- Straight: 20%
- Turning Right: 20%
- Stopped: 20%

**Peak Hour Level of Service Analysis**
- AM Peak Hour: 7:15 am – 8:15 am
- PM Peak Hour: 4:45 pm – 5:45 pm

- **Macon Hwy**
  - EB Delay: 174.2 sec/veh
  - WB Delay: 130.7 sec/veh

- **Price Mill Rd**
  - EB Delay: 28.1 sec/vehicle

**Stakeholder and Public Input**
- Traffic congestion/backup is a problem here
- Drivers notice a lack of turn lanes on Price Mill Rd
- Roadway access issues are a concern here
- Public expressed concern about passing bikes along Price Mill Rd
## Potential Countermeasures

<table>
<thead>
<tr>
<th>Next Steps and Potential Improvements</th>
<th>Crash Type Addressed</th>
<th>Benefits</th>
<th>Timeline for Implementation</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>Consider adding signal ahead flashers to intersection ahead signs</td>
<td>Angle and rear end collisions attributed to speed or drivers unawareness of the intersection</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Could reduce intersection speeds and help motorists make safer decisions as they approach the intersection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 2</td>
<td>Consider providing a short thru/right turn lane on Price Mill Rd</td>
<td>Rear end collisions attributed to speed or drivers unawareness of traffic backup</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Could improve delay for through and left turn movements if they do not have to wait behind left-turning vehicles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 3</td>
<td>Consider installing a roundabout as a long term solution</td>
<td>Angle and rear end collisions attributed to the complexity of the intersection</td>
<td>Long</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Could significantly reduce the number of injuries from angle collisions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Physical Condition
- Two-way stop-controlled intersection
- One lane per direction for all approaches
- No exclusive turn lanes

### Traffic Characteristics
2018 Existing Peak Hour Turning Movement Counts

<table>
<thead>
<tr>
<th>Hog Mtn Rd</th>
<th>Sikes Rd</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM Peak Hour (begins at 7:15 AM)</td>
<td>PM Peak Hour (begins at 4:45 PM)</td>
</tr>
<tr>
<td>Hog Mtn Rd</td>
<td>3</td>
</tr>
<tr>
<td>Hebron Church Rd</td>
<td>0</td>
</tr>
</tbody>
</table>

### Safety Analysis
- 3 Crashes in total during 2013 to 2017
- Drivers’ unawareness of the intersection and/or skewed configuration could be the main causes for crashes

#### Percentage of Crashes by Severity and Cause
- Injured: 33%
- Not A Collision with Motor Vehicle: 34%
- Head On: 33%

#### Manner of Collision
- Straight: 17%
- Turning Left: 17%
- Turning Right: 16%
- Stopped: 50%

#### Vehicle Maneuver

### Peak Hour Level of Service Analysis
- AM Peak Hour: 7:15 am – 8:15 am
- PM Peak Hour: 4:45 pm – 5:45 pm

### Stakeholder and Public Input
- Public expressed concern over lack of sidewalks along Hebron Church Rd
- Lack of roadway shoulders along Sikes Rd is a concern
- Speed along Hog Mountain Rd is an issue
- Drivers have issues driving alongside tractor-trailers at this intersection

*Highway Capacity Software (HCS) was used as the analysis tool.
### Potential Improvements for Further Evaluation

<table>
<thead>
<tr>
<th>Next Steps and Potential Improvements</th>
<th>Crash Type Addressed</th>
<th>Benefits</th>
<th>Timeline for Implementation</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1 Consider providing intersection ahead signs and flashers for all approaches</td>
<td>Eastbound rear end collisions attributed to speed or drivers being unaware of the intersection</td>
<td>Could provide approaching motorists with additional information and help them make safer decisions as they approach the intersection</td>
<td>Short</td>
<td>Low</td>
</tr>
<tr>
<td>No. 2 Consider adding small right turn lanes on northbound Hebron Church Rd</td>
<td>Rear end collisions attributed to speed or drivers unawareness of traffic backup</td>
<td>Could improve delay for through and right turn movements if they do not have to wait behind other vehicles</td>
<td>Moderate</td>
<td>Moderate-High</td>
</tr>
<tr>
<td>No. 3 Consider installing a roundabout as a long term solution</td>
<td>Angle and rear end collisions attributed to the complexity of the intersection</td>
<td>Could significantly reduce the number of injuries from angle collisions</td>
<td>Long</td>
<td>High</td>
</tr>
</tbody>
</table>
# 9 – Hog Mountain Road at Snows Mill Rd/Rocky Branch Rd

**Physical Condition**
- Two-way stop-controlled intersection
- Right turn yield lanes in each direction

**Traffic Characteristics**
2018 Existing Peak Hour Turning Movement Counts

**Safety Analysis**
- 25 Crashes in total during 2013 to 2017 with majority of them being angle collisions
- Drivers’ unawareness of the intersection and/or skewed configuration could be the main causes for crashes

**Peak Hour Level of Service Analysis**
- AM Peak Hour: 7:15 am – 8:15 am
- PM Peak Hour: 4:45 pm – 5:45 pm

**Stakeholder and Public Input**
- Public requested a traffic light be added to this intersection
- Drivers feel unsafe at this intersection
- Police direct traffic here at peak hours
<table>
<thead>
<tr>
<th>Potential Improvements for Further Evaluation</th>
<th>Next Steps and Potential Improvements</th>
<th>Crash Type Addressed</th>
<th>Benefits</th>
<th>Timeline for Implementation</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
<td><img src="image6.png" alt="Image" /></td>
</tr>
<tr>
<td>No. 1</td>
<td>Consider lengthening west bound right turn lane on Hog Mountain Rd</td>
<td>Angle and rear end collisions attributed to drivers speed and unawareness of the traffic backup going into the high school</td>
<td>Could improve delay for through and left turn movements if they do not have to wait behind right-turning vehicles</td>
<td><img src="image7.png" alt="Image" /></td>
<td><img src="image8.png" alt="Image" /></td>
</tr>
<tr>
<td>No. 2</td>
<td>Consider adding a flashing beacon at this intersection</td>
<td>Angle and rear end collisions attributed to drivers speed and difficulty navigating the intersection</td>
<td>Could help motorists make safer decisions as they approach the intersection</td>
<td><img src="image9.png" alt="Image" /></td>
<td><img src="image10.png" alt="Image" /></td>
</tr>
<tr>
<td>No. 3</td>
<td>Consider installing a roundabout as a long term solution</td>
<td>Angle and rear end collisions attributed to the complexity of the intersection</td>
<td>Could significantly reduce the number of injuries from angle collisions</td>
<td><img src="image11.png" alt="Image" /></td>
<td><img src="image12.png" alt="Image" /></td>
</tr>
</tbody>
</table>
Appendix: Crash Reduction Factors for Countermeasures at Intersections

A crash reduction factor (CRF) is a multiplicative factor used to compute the percentage reduction in crashes after implementing a given countermeasure at a specific site. The following table provides crash reduction factors for each improvements proposed for the identified intersections. The crash reduction factors were obtained from the Crash Modification Factors Clearinghouse. It is important to note that a CRF represents the long-term expected reduction in crashes and this estimate is based on the crash experience at a limited number of study sites; the actual reduction may vary.

<table>
<thead>
<tr>
<th>Improvements</th>
<th>Crash Reduction Factor</th>
<th>Source or Notes</th>
<th>Intersection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consider installing a roundabout</td>
<td>35%</td>
<td>Qin et al., “Evaluation of Roundabout Safety.” (Jan 2013) <a href="http://www.cmfclearinghouse.org/detail.cfm?facid=4931">http://www.cmfclearinghouse.org/detail.cfm?facid=4931</a></td>
<td>#4 Mars Hill at Commerce Dr; #6 Main Street at Barnett Shoals Rd/Greensboro Highway; #7 Macon Hwy at Price Mill Rd; #8 Hog Mountain Rd at Sikes Rd/Hebron Church Rd; #9 Hog Mountain Rd at Snows Mill Rd/Rocky Branch Rd</td>
</tr>
<tr>
<td>Consider installing flashing yellow arrows (FYAs)</td>
<td>7.8%</td>
<td>Srinivasan, et al., “Evaluation of Safety Strategies at Signalized Intersections.” (2011) <a href="http://www.cmfclearinghouse.org/detail.cfm?facid=4176">http://www.cmfclearinghouse.org/detail.cfm?facid=4176</a></td>
<td>#1 Epps Bridge Pkwy at Parkway Blvd; #2 Epps Bridge Pkwy and Dowdy Rd; #3 Epps Bridge Pkwy at Oconee Connector</td>
</tr>
<tr>
<td>Consider alternative intersection design, possibly Median U-turn (MUT) or Restricted Crossing U-turn (RCUT) intersection</td>
<td>34.8%</td>
<td>Edara et al., “Evaluation of J-Turn Intersection Design Performance in Missouri.” (Dec 2013) <a href="http://www.cmfclearinghouse.org/detail.cfm?facid=5555">http://www.cmfclearinghouse.org/detail.cfm?facid=5555</a></td>
<td>#2 Epps Bridge Pkwy and Dowdy Rd</td>
</tr>
<tr>
<td>Consider adding length to existing left turn lanes</td>
<td>43%</td>
<td><a href="https://www.fhwa.dot.gov/publications/research/safety/02089/02089.pdf">https://www.fhwa.dot.gov/publications/research/safety/02089/02089.pdf</a>, pg 139</td>
<td>#4 Mars Hill at Commerce Dr; #5 SR 316/8, US 29/78 at Oconee Connector</td>
</tr>
<tr>
<td>Consider adding length to existing right turn lanes</td>
<td>15%</td>
<td><a href="https://safety.fhwa.dot.gov/intersection/other_topics/fhwasa08008/ub7_longer_rturn_lines.pdf">https://safety.fhwa.dot.gov/intersection/other_topics/fhwasa08008/ub7_longer_rturn_lines.pdf</a></td>
<td>#9 Hog Mountain Rd at Snows Mill Rd/Rocky Branch Rd</td>
</tr>
<tr>
<td>Consider adding a right turn lane</td>
<td>14%</td>
<td>Harwood et al., “Safety Effectiveness of Intersection Left- and Right-Turn Lanes” (2002) <a href="http://www.cmfclearinghouse.org/detail.cfm?facid=285#commentanchor">http://www.cmfclearinghouse.org/detail.cfm?facid=285#commentanchor</a></td>
<td>#7 Macon Hwy at Price Mill Rd; #8 Hog Mountain Rd at Sikes Rd/Hebron Church Rd</td>
</tr>
<tr>
<td>Consider adding a left turn lane</td>
<td>25.2%</td>
<td>Srinivasan et al., “Safety Evaluation of Signal Installation With and Without Left Turn Lanes on Two Lane Roads in Rural and Suburban Areas.” (Oct 2014) <a href="http://www.cmfclearinghouse.org/detail.cfm?facid=7996">http://www.cmfclearinghouse.org/detail.cfm?facid=7996</a></td>
<td>#5 SR 316/8, US 29/78 at Oconee Connector</td>
</tr>
</tbody>
</table>
### Appendix: Crash Reduction Factors for Countermeasures at Intersections - continued

<table>
<thead>
<tr>
<th>Improvements</th>
<th>Crash Reduction Factor</th>
<th>Source or Notes</th>
<th>Intersection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consider adding pavement markings showing the left-turn movement</td>
<td>None Identified</td>
<td>None Identified</td>
<td>#2 Epps Bridge Pkwy and Dowdy Rd</td>
</tr>
<tr>
<td>Consider access management for heavy volume driveways</td>
<td>25-31% (injury/fatal crash)</td>
<td><a href="https://safety.fhwa.dot.gov/provencountermeasures/corridor_access_mgmt/">https://safety.fhwa.dot.gov/provencountermeasures/corridor_access_mgmt/</a></td>
<td>#3 Epps Bridge Pkwy at Oconee Connector; #6 Main Street at Barnett Shoals Rd/Greensboro Highway</td>
</tr>
</tbody>
</table>