GDOT Safety Engineering Program

Samuel Harris, PE & Jack Anninos, EIT
GA Bike Summit
September 17th, 2020
Three Takeaways

1. What is the GDOT Safety Engineering Program?
2. Crashes are lower during Covid-19
3. Numetric
Highway Safety Improvement Program

• The Highway Safety Improvement Program (HSIP) is a core Federal-aid program with the purpose to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned roads and roads on tribal land. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads with a focus on performance.
Goals of the Program

- Eliminate fatalities and reduce the number of injury crashes on Georgia roadways by using a safety data driven approach.

Objectives of the Program

- Eliminate all roadway fatalities
- Reduce pedestrian, vehicle, and bicycle serious injuries
- Reduce roadway or lane departure crashes
- Reduce intersection crashes
- Reduce off-system crashes
- Reduce crashes on High Risk Rural Roads
- Align goals with stakeholders/partners and HSIP reports
Identification of Safety Concern

Crash Screening

Intersection Control Evaluation (ICE)

Design

Concept

Traffic Engineering Study

Letting

Construction

Evaluate and Improve
Identification of Safety Concern

- Data driven approach to identify and confirm a safety need.
- Some of the other ways safety concerns are identified
  - Citizens
  - Districts/Local Agencies
  - Politicians
  - Upper Management at GDOT
  - Road Safety Audit
  - GDOT Safety Engineering Program internal and external staff
Crash Screening
Crash Screening

SR 1 at Oak Grove Road, Carroll County Preliminary Safety Analysis

Project Origin: This location was brought to the attention of Senator Mike Dugan from a local county commissioner due to concerns about the safety of the intersection and proximity of a small educational academy to the west of the intersection. District 6 completed a Traffic Engineering Study in July 2018 to evaluate the safety of the intersection due to citizen inquiries and evaluate this location for potential safety project funding.

Sight Distance: The existing sight distance was measured as part of the TE Study completed by District 6. There are no significant horizontal curves at this location. There is a vertical curve that limits the sight distance to the north on SR 1.

<table>
<thead>
<tr>
<th>Left Turn from Oak Grove Road to SR 1</th>
<th>Right Turn from Oak Grove Road to SR 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direction</strong></td>
<td><strong>Required Sight Distance</strong></td>
</tr>
<tr>
<td>Left</td>
<td>610 ft</td>
</tr>
<tr>
<td>Right</td>
<td>530 ft</td>
</tr>
</tbody>
</table>

Volumes: Turning movement counts collected May 15, 2018 as part of the Traffic Engineering Study completed by District 6.

Crash History: Collision data collected from 2014 – 2018. See crash diagram for additional details.

<table>
<thead>
<tr>
<th>Crash Count</th>
<th>Crash Severity</th>
<th>People</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-2017</td>
<td></td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td></td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

- People: 3
- Property: 0

- Number of crashes resulting in injuries / fatalities, not number of persons.
Intersection Control Evaluation (ICE)
Stage 1 - Screening

**Signalized**

- Signal
- Median U-Turn
- RCUT
- Displaced Left Turn (CFI)
- Continuous Green-T
- Jughandle
- Diamond Interchange (signal)
- Quadrant Roadway
- Diverging Diamond
- Single Point Interchange
- Turn Lane Improvements
- Other
Stage 1 - Screening

Unsignalized

- Minor Stop
- All-Way Stop
- Mini Roundabout
- Single Lane Roundabout
- Multilane Roundabout
- RCUT
- RIRO w/Downstream U-Turn
- High-T (unsignalized)
- Offset-T Intersections
- Diamond Interchange (Stop)
- Diamond Interchange (RAB)
- Turn Lane Improvements
- Other
Stage 2 – Alternative Selection

Shortlist of Alternatives from Stage 1

- Total Project Cost
- Traffic Operations
- Safety Analysis
- Environmental Impacts
- Stakeholder Posture

Preferred Alternative
Traffic Engineering Study and Concept Report

Traffic Engineering Study
SR 98 AND SR 164
Banks County, Georgia

Requested by: Georgia Department of Transportation, District 1
Date Prepared: October 7, 2019
Prepared by: David L. Pickworth

Traffic Engineer:

Project Concept Report

Project Type: Safety
P.I. Number: 0014199

GDOT District: 3
Federal Route Number: N/A
Project Number: N/A
County: Butts
State Route Number: 16

This project proposes to convert the intersection of SR 16 at Higgins Road to a single lane roundabout.

Submitted for approval:

Jonathan Reed, PE
900 Howell Mill Road, Atlanta, GA 30318
09/20/2019
Date

State Program Delivery Administrator
Date

GDOT Project Manager
Date

Recommendation for approval:

State Environmental Administrator
Date

State Traffic Engineer
Date

Project Review Engineer
Date

State Utilities Engineer
Date

District Engineer
Date

☐ MPO Area: This project is consistent with the MPO adopted Regional Transportation Plan (RTP)/Long Range Transportation Plan (LRTP).
☐ Rural Area: This project is consistent with the goals outlined in the Statewide Transportation Plan (SWTP) and/or is included in the State Transportation Improvement Program (STIP).

State Transportation Planning Administrator
Date
Evaluate and Improve

- Roadside Design Improvement at Curves
- Reduced Left-Turn Conflict Intersections
- Systemic Application of Multiple Low Cost Countermeasures at Stop-Controlled Intersections
- Leading Pedestrian Interval
- Local Road Safety Plan
- USLIMITS2
- Enhanced Delineation and Friction for Horizontal Curves
- Longitudinal Rumble Strips and Stripes on Two-Lane Roads
- Median Barrier
- Safety Edge®
- Backplates with Retroreflective Borders
- Corridor Access Management
- Dedicated Left- and Right-Turn Lanes at Intersections
- Roundabouts
- Yellow Change Intervals
- Medians and Pedestrian Crossing Islands in Urban and Suburban Areas
- Pedestrian Hybrid Beacon
- Road Diet
- Walkways
- Road Safety Audit
Safety Focused Equipment
Safe Routes to School (SRTS)

Welcome to the Resource Center

The Safe Routes to School (SRTS) program empowers communities to make walking and bicycling to school a safe and routine activity once again. Georgia’s SRTS Resource Center assists schools and communities with education, encouragement, enforcement, evaluation, planning and other non-construction related SRTS activities.

Opportunities & Announcements

CELEBRATE CROSSING GUARDS! Crossing Guard Appreciation Week,
November 18-22, 2019
Tuesday, October 8, 2019
The Georgia Safe Routes to School Resource Center is sponsoring the sixth annual Georgia Crossing Guard Appreciation Week. The event is November 18-22, 2019. Click HERE to learn...

Almost 500 Partner Schools! What's Your Level?
Tuesday, August 27, 2019
The Georgia Safe Routes to School Resource Center has almost 500 School Partners! Who will be the 500th? Any elementary or middle school (or school with K-8 grades) is eligible to join the SRTS...

View more >>

http://www.saferoutesga.org
Road Safety Audit (RSA)

GDOT Road Safety Audits

The ultimate result of a successful RSA should be a blueprint for concise actionable items. The RSA should result in a road safety action/implementation plan with specific short, intermediate & long-term solutions. Each action plan should include safety countermeasures with estimated benefits measured in terms of lives saved and serious injuries prevented.

Typical Steps in the GDOT Road Safety Audit (RSA) Process

<table>
<thead>
<tr>
<th>Step</th>
<th>Each BOLD word represents a key section in your RSA Report and Presentation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Project Identification</td>
</tr>
<tr>
<td></td>
<td>GDOT or a local government typically identifies the need for one or more</td>
</tr>
<tr>
<td></td>
<td>intersections, segments or projects to be assessed and makes the RSA</td>
</tr>
<tr>
<td></td>
<td>request. If there is an existing project at the location, then the</td>
</tr>
<tr>
<td></td>
<td>question should be asked if the RSA is still warranted. Site selection</td>
</tr>
<tr>
<td></td>
<td>should be manageable enough for review to take place over a day or two</td>
</tr>
<tr>
<td></td>
<td>and not too great in scale or scope. More specifically, urban location</td>
</tr>
<tr>
<td></td>
<td>candidates should include 5 or less major intersections. A major</td>
</tr>
<tr>
<td></td>
<td>intersection is one categorized by the need for an intersection control</td>
</tr>
<tr>
<td></td>
<td>evaluation (ICE) or warrant analysis. Urban location candidates should</td>
</tr>
<tr>
<td></td>
<td>not exceed one mile in length while rural location candidates can be up</td>
</tr>
<tr>
<td></td>
<td>to 5 miles long if the number of major intersections remains below 5.</td>
</tr>
<tr>
<td></td>
<td>For interstates, the RSA can be longer but should not exceed more than</td>
</tr>
<tr>
<td></td>
<td>7 miles or include more than one interchange.</td>
</tr>
</tbody>
</table>

The LOCATION is recommended by the GDOT District or a data driven selection is made based on analysis of crash data sorted by type and/or severity. Each District should agree on up to 2 potential RSA locations each fiscal year. Any locations proposed by the District should be locations where concerns have been recognized, but the District has been unable to arrive at a ready solution.

NOTE: Reference the priority corridors listed in the Pedestrian Safety Action Plan (once verified) as one source of data when considering RSA locations.

The State Office of Traffic Operations must conduct a minimum of 14 RSAs per year statewide as required by the Chief Engineer.

2    | RSA Team Development                                                     |
|      | After the location is selected, a multidisciplinary team is assembled   |
|      | generally consisting of engineers, planners, law enforcement, and other  |
|      | specific disciplines as needed (e.g., pedestrian, bike experts, schools, |
|      | etc.). The team is selected and organized by the RSA Team Leader. The    |
|      | RSA TEAM LEADER is the individual(s) designated by GDOT ultimately        |
|      | responsible for facilitating and completing the RSA. This includes        |
|      | sending out invitations to prospective team members. Every effort       |
|      | should be made to ensure law enforcement participates in the RSA         |
|      | process to include a non-engineering perspective on the team. The       |
|      | Governor’s Office of Highway Safety (GOHS) is an excellent resource for  |
|      | reaching out to law enforcement if there are any difficulties in doing  |
|      | so.

Teams include a minimum of 5, but typically no more than 10 persons from the following: Facilitator, District Traffic Engineer or designate, Office of Traffic Operations (OTMC), safety consultant from OTMC, district maintenance, FHWA Safety Engineer, Design Office, Office of Design Policy & Support, State Bicycle/Pedestrian Engineer, District Construction, local government, law enforcement or EMS. The RSA team leader contacts the potential team members to determine dates that they are available for the assessment. With this information, a pre-meeting date is scheduled, along with the field review, normally both conducted during the same day.
LOCAL ROAD SAFETY PLANS: Your Map to Safer Roadways

No matter what your resources, a Local Road Safety Plan will guide you to data-driven solutions and safer roads.

https://safety.fhwa.dot.gov/provencountermeasures/local_road/

Choose Proven Solutions
- Chevrons
- Roundabouts
- Targeted Enforcement
- Crosswalks

Chevron signs reduce nighttime crashes by 25%.

Use Safety Data
- Crashes
- Maintenance Logs
- Safety Audits
- Traffic Violations

In 2017, over 50% of fatalities occurred on rural roads, but just 19% of Americans live in rural areas.

Implement Solutions
- Education & Enforcement
- Capital Projects
- Maintenance Work

More than 75% of all roads are maintained by local agencies.

START HERE!

Help Get People Home Safely
Upcoming Bicycle Related Efforts
Rumble Strip Policy
- Reevaluating policies for bicycle safety
- Edge line rumble strip policies for bicycles
- Shoulder widening projects

Georgia State Bicycle Map
- Analyzing bicycle routes from safety perspective
- More comprehensive and accessible map
- USBR Signage initiatives

Ongoing 2020 Bicycle Fatality Study
- Analyzing fatal bicycle crashes for trends in data
- Program recommendations based on crash details
- Time of Day, Manner of Collision, Road Type, Speed Analysis
Covid-19 Impacts on Traffic Safety
Effect of COVID-19 on Traffic Safety

“Shelter-In-Place” Order

- On April 2\textsuperscript{nd} 2020, Governor Kemp issued a statewide “Shelter-in-Place” executive order to help slow the spread of COVID-19.
- The order applied to all Georgia residents and visitors and remained in effect until April 23 at 11:59 p.m. (22 days).
- On April 24\textsuperscript{th}, the following businesses were allowed to open: gyms, fitness centers, bowling alleys, body art studios, barbers, cosmetologists, hair designers, nail care artists, estheticians, their respective schools, and massage therapists.
- On April 27\textsuperscript{th}, and subject to specific social distancing and sanitation mandates, theaters, private social clubs and restaurant dine-in services were also allowed to reopen.
Effect of COVID-19 on Traffic Safety

Reduction in Number of Collisions and Injuries/Fatalities

<table>
<thead>
<tr>
<th>Accident Type</th>
<th>(March 2\textsuperscript{nd} - 23\textsuperscript{rd}, 2019)</th>
<th>Transitional (March 2\textsuperscript{nd} - 23\textsuperscript{rd}, 2020)</th>
<th>(April 2\textsuperscript{nd} - 23\textsuperscript{rd}, 2019)</th>
<th>During Shelter (April 2\textsuperscript{nd} - 23\textsuperscript{rd}, 2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K – Fatal Crashes</td>
<td>91</td>
<td>106</td>
<td>82</td>
<td>69</td>
</tr>
<tr>
<td>A – Serious Injury Crashes</td>
<td>354</td>
<td>365</td>
<td>392</td>
<td>266</td>
</tr>
<tr>
<td>B – Suspected Minor or Visible Injury</td>
<td>1,509</td>
<td>1,399</td>
<td>1,658</td>
<td>912</td>
</tr>
<tr>
<td>C – Possible Injury or Complaint</td>
<td>4,670</td>
<td>3,647</td>
<td>4,775</td>
<td>1,744</td>
</tr>
<tr>
<td>O – No Apparent Injury</td>
<td>22,355</td>
<td>18,648</td>
<td>22,487</td>
<td>9,140</td>
</tr>
<tr>
<td>All</td>
<td>28,979</td>
<td>24,165</td>
<td>29,395</td>
<td>12,129</td>
</tr>
<tr>
<td>% Reduction</td>
<td>17%</td>
<td></td>
<td></td>
<td>59%</td>
</tr>
</tbody>
</table>

- Cost reduction of $66,000,000 per day
Effect of COVID-19 on Traffic Safety

Crash Density in Georgia

April 2019

April 2020
Effect of COVID-19 on Traffic Safety

Density of Injury / Fatal Crashes in Georgia

Legend

Fatal / Injury Crash Density
High: 17,000
Low: 0
State Routes

April 2019

April 2020
## Bicycle Crashes

<table>
<thead>
<tr>
<th>Bicycle Crash Severity</th>
<th>Before Order (March 2\textsuperscript{nd} - 23\textsuperscript{rd}, 2019)</th>
<th>Before Order (March 2\textsuperscript{nd} - 23\textsuperscript{rd}, 2020)</th>
<th>After Order (April 2\textsuperscript{nd} - 23\textsuperscript{rd}, 2019)</th>
<th>After Order (April 2\textsuperscript{nd} - 23\textsuperscript{rd}, 2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K – Fatal Crashes</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>A – Serious Injury Crashes</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>B – Suspected Minor or Visible Injury</td>
<td>14</td>
<td>14</td>
<td>21</td>
<td>16</td>
</tr>
<tr>
<td>C – Possible Injury or Complaint</td>
<td>16</td>
<td>10</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>O – No Apparent Injury</td>
<td>14</td>
<td>20</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>All</td>
<td>48</td>
<td>51</td>
<td>52</td>
<td>43</td>
</tr>
<tr>
<td>% Reduction</td>
<td>-6%</td>
<td></td>
<td></td>
<td>17%</td>
</tr>
</tbody>
</table>
## Pedestrian Crashes

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>K – Fatal Crashes</td>
<td>14</td>
<td>19</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>A – Serious Injury Crashes</td>
<td>11</td>
<td>22</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>B – Suspected Minor or Visible Injury</td>
<td>39</td>
<td>26</td>
<td>40</td>
<td>25</td>
</tr>
<tr>
<td>C – Possible Injury or Complaint</td>
<td>34</td>
<td>30</td>
<td>34</td>
<td>14</td>
</tr>
<tr>
<td>O – No Apparent Injury</td>
<td>46</td>
<td>36</td>
<td>63</td>
<td>16</td>
</tr>
<tr>
<td>All</td>
<td>144</td>
<td>133</td>
<td>157</td>
<td>75</td>
</tr>
<tr>
<td>% Reduction</td>
<td>8%</td>
<td></td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td>Rank</td>
<td>Route / MP</td>
<td>Crashes</td>
<td>Fatalities</td>
<td>Crash Rate</td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>---------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>1</td>
<td>1196403208 / -0.6 - 0.4</td>
<td>3</td>
<td>0</td>
<td>10527.8</td>
</tr>
<tr>
<td>2</td>
<td>0456402018 / -0.5 - 0.5</td>
<td>1</td>
<td>0</td>
<td>10523.7</td>
</tr>
<tr>
<td>3</td>
<td>2176402173 / -0.6 - 0.4</td>
<td>6</td>
<td>0</td>
<td>6531.9</td>
</tr>
<tr>
<td>4</td>
<td>2176402170 / -0.5 - 0.5</td>
<td>2</td>
<td>0</td>
<td>5027.0</td>
</tr>
<tr>
<td>5</td>
<td>0456402021 / -0.6 - 0.4</td>
<td>2</td>
<td>0</td>
<td>4955.4</td>
</tr>
<tr>
<td>6</td>
<td>3016402219 / -0.6 - 0.4</td>
<td>1</td>
<td>0</td>
<td>4562.0</td>
</tr>
<tr>
<td>7</td>
<td>0896407121 / -0.6 - 0.4</td>
<td>6</td>
<td>0</td>
<td>4347.9</td>
</tr>
<tr>
<td>8</td>
<td>0516404114 / -0.6 - 0.4</td>
<td>4</td>
<td>0</td>
<td>3662.0</td>
</tr>
<tr>
<td>9</td>
<td>3016402220 / -0.6 - 0.4</td>
<td>2</td>
<td>0</td>
<td>3509.3</td>
</tr>
<tr>
<td>10</td>
<td>0516404150 / -0.5 - 0.5</td>
<td>1</td>
<td>0</td>
<td>3358.1</td>
</tr>
<tr>
<td>11</td>
<td>3136401341 / -0.6 - 0.4</td>
<td>2</td>
<td>0</td>
<td>3122.9</td>
</tr>
<tr>
<td>12</td>
<td>0216404064 / -0.6 - 0.4</td>
<td>9</td>
<td>0</td>
<td>2988.6</td>
</tr>
<tr>
<td>13</td>
<td>2456401540 / -0.4 - 0.6</td>
<td>2</td>
<td>0</td>
<td>2859.5</td>
</tr>
<tr>
<td>14</td>
<td>2656403069 / -0.6 - 0.4</td>
<td>4</td>
<td>0</td>
<td>2718.5</td>
</tr>
</tbody>
</table>
Three Takeaways

1. What is the GDOT Safety Engineering Program?
2. Crashes are lower during Covid-19
3. Numetric
Questions?

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