Georgia FDR Case Study
Batesville Road and Taylor Road
Milton, Georgia
Chris Arnold
Tyler Jordan, E.I.T.
W. Shea Vincent, P.E.
Overview

Batesville Road

- Major Collector
- Heaviest travel during morning and afternoon work commutes.
- Approx. AADT count is 6,000 during the weekday (2016 Traffic Study)

Taylor Road

- Local Road
- Heaviest travel during morning and afternoon work commutes.
- Approx. AADT count is 350 during the weekday (2016 Traffic Study)
Pavement Components (Prior to FDR)

Batesville Road (2012)
- Asphalt: 3 to 6 inches
- Soil-Cement Base: 3 to 5 inches
- No GAB present

Taylor Road (2016)
- Asphalt: 4 to 5 inches
- Soil-Cement Base: 4 to 5 inches
- No GAB present
Falling Weight Deflectometer (FWD)
Ground Penetrating Radar

- Information can be collected at posted speed limits.
- Data can be exported to Google Earth™ or GIS software.
Timelines

❖ Batesville Road
  • October/November 2012 - FDR and Pavement Reconstruction Performed
  • December 2016 - Preliminary FWD and GPR data collected by S&ME
  • April 2018 – 1 year follow-up FWD data collected by S&ME

❖ Taylor Road
  • December 2016 - Preliminary FWD and GPR Data collected by S&ME
  • October 2017 - FDR and Pavement Reconstruction Performed
  • March 2018 – Post Reconstruction GPR data collected by S&ME
  • April 2018 - Post Reconstruction FWD data collected by S&ME
Batesville Road FDR Recommendations

- FDR Design performed in general accordance with GDOT 301 Special Provisions.
- 8-inches of FDR, 2 inches of 19mm SP, 1 ½ inches of 9mm Type II.
- FDR Compacted to 98%
- Cement Spread Rate of 70 lbs./ SY
- FDR Mixed in October/November 2012.
- FDR Implemented starting at intersection with Taylor Road heading east toward Birmingham Highway.
GPR Data (*Batesville Road; Eastbound*)

- **Asphalt Thickness (inches)**
- **Base Thickness (inches)**

Taylor Road Intersection

Bridge

Bottom of Asphalt

Bottom of Base Course
Batesville Road (Northbound)

Asphalt Thickness (inches)

Distance (feet)

Bottom of Asphalt

Bottom of Base Course

Change in Pavement Structure

FDR Section

No FDR

Asphalt Thickness (inches)

Distance (feet)

Bottom of Asphalt

Bottom of Base Course
FWD Results: Deflection Data (December 2016)

- FDR had not yet been applied to Taylor Road.
- FWD Testing performed on Batesville Road east of intersection with Taylor Road (areas with FDR already implemented in 2012)
FWD Deflection Results:
Batesville Road (2016 vs. 2018)
FWD Subgrade Modulus Results:
Batesville Road 2016 vs. 2018
Taylor Road FDR Recommendations

- FDR Design done in general accordance with GDOT 301 Special Provisions.
- FDR Mixed in October 2017.
- 13-inches of FDR, 3 ½ inches Asphalt.
- FDR Compacted to 98%+
- Field Cement Spread Rate of about 63 lbs./ SY
- Compressive Strength of field-molded FDR specimens ranged from 350 to 740 psi at 7 days – average of about 520 psi.
- FDR Implemented for approximately 4,500 linear feet (~0.8 miles) extending from intersection with Batesville Road.
Taylor Road (Northbound)

Before (December 2016)

After (April 2018)
Taylor Road

Before (December 2016)

After (April 2018)
Taylor Road (FWD Test Location 1)

Before (December 2016)

After (April 2018)
GPR Data *(Taylor Road; Southbound)* – December 2016

- **Asphalt Thickness** (inches)
- **Base Thickness** (inches)

- **Bottom of Asphalt**
- **Bottom of Base Course**
GPR Data *(Taylor Road; Southbound)*

**Taylor Road (Southbound) – Before FDR**

**Taylor Road (Southbound) – After FDR**

**FDR Area**
Average Deflection Data: Taylor Road (2016 vs. 2018)

2018 - Taylor Road - FDR vs Non-FDR

FDR Average Deflections
Non-FDR Average Deflections

Geophone
FWD Deflection Results: Taylor Road (2016 vs. 2018)

City of Milton, Taylor Rd.

* Red Dashed line represents approximate end of 2017 FDR Section
2018 FWD Test Location No. 20
(Taylor Road - End of FDR Repair Section)
FWD Subgrade Modulus Results: Non-FDR Sections of Taylor Road (2016 vs. 2018)

* Red Dashed line represents approximate end of 2017 FDR Section
2018 FWD Test Location No. 24 & 26 (Taylor Road)

Date & Time: Tue Apr 24 10:59:37 EDT 2018
Position: +034.146924°, -086.343997°
Altitude: 1086ft
Datum: WGS-84
Azimuth/Bearing: 019° N19E, 033°mils (True)
Elevation Angle: -13.7°
Horizon Angle: 0.5°
Zoom: 1x
Test 24 Location - Taylor Road

Date & Time: Tue Apr 26 10:06:25 EDT 2018
Position: +034.167019°, -086.343595°
Altitude: 1086ft
Datum: WGS-84
Azimuth/Bearing: 012° N72E, 100°mils (True)
Elevation Angle: -20.8°
Horizon Angle: 0.5°
Zoom: 1x
Test 26 Location - Taylor Road
Recommended Overlay– Based on FWD Results

City of Milton, Taylor Rd.

* Red Dashed line represents approximate end of 2017 FDR Section

Good candidate for FDR
Questions?