

Mr. Kevin Hamby
c/o Heard County
201 Park Avenue
Franklin, GA 30217

November 10, 2025

**Report of Full-Depth Reclamation (FDR) Mix Design
Hollingsworth Ferry Road Improvements
Heard County, Georgia
Geo-Hydro Project Number 252823.10**

Dear Mr. Hamby:

Geo-Hydro Engineers has completed the field exploration and laboratory full depth reclamation (FDR) mix design testing for the above referenced project. The section sampled was along **Hollingsworth Ferry Road** from **Glenloch Road** to **South Bridge Road**. The following paragraphs summarize our findings, procedures, and results from laboratory testing.

LABORATORY MIX DESIGN TESTING SUMMARY

We collected bulk samples representative of the upper 12 inches of the existing roadway materials. These samples were obtained from six core locations spaced along the Hollingsworth Ferry Road and transported to our laboratory for FDR mix design testing. The bulk samples consisted of asphaltic concrete, existing soil base or graded aggregate base (GAB) material, and soil. Existing pavement thicknesses ranged from 2 inches to 6 1/2 inches and averaged 3 inches thick. Sampling below the asphalt was consistent with the hand augers from our geotechnical report dated October 7, 2025 with only one location encountering soil near the intersection with South Bridge Road. The samples (including asphalt) were thoroughly blended into one composite samples on which we performed laboratory testing in general accordance with the following standards:

- ASTM D698 “*Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort*”
- ASTM D558 “*Standard Test Method for Moisture Density Relations of Soil Cement Mixtures*”, Method B
- ASTM D1633 “*Standard Test Method for Compressive Strength of Molded Soil-Cement Cylinders*”, Method A.

We chose amendment percentages of the dry weight of the parent material based on our experiences with similar projects and generally based on test requirements of GDOT Test Method GDT-65.

The results of our laboratory testing are summarized in the tables on the following pages.

FULL-DEPTH RECLAMATION MIX DESIGN RESULTS

The material (including asphalt) was amended with Type 1L Portland cement at rates of 25, 50, and 70 pounds per square yard for a mix depth of 12 inches which is approximately 2.1, 4.2, and 5.9 percent of dry weight of the parent material, respectively. The results from our testing are summarized in the following tables:

ASTM D 698 “Standard Test Method for Laboratory Compaction of Soil Using Standard Effort”

Sample Identification	Maximum Dry Density, (pcf)	Optimum Moisture Content, (%)
Bulk Sample with No Treatment	130.0	8.5

ASTM D 558 “Standard Test Method for Moisture Density Relations of Soil-Cement Mixtures”

Sample Identification	Maximum Dry Density, (pcf)	Optimum Moisture Content, (%)
Bulk Sample with 25 lbs/yd ² @ 12-inch mix depth (2.1%)	130.2	8.7
Bulk Sample with 50 lbs/yd ² @ 12-inch mix depth (4.2%)	130.6	8.2
Bulk Sample with 70 lbs/yd ² @ 12-inch mix depth (5.9%)	129.0	9.1

ASTM D 1633 “Standard Test Method for Compressive Strength of Molded Soil-Cement Cylinders”

Bulk Sample amended with 25 lbs/yd² (2.1%) Type 1L Portland Cement for a depth of 12 inches

Sample Identification	Dry Density, (pcf)	Moisture Content, (%)	Age, (days)	Compressive Strength, (psi)	Average Compressive Strength, (psi)
A	118.3	12.6	3	255	-
B	116.9	13.7	7	260	270
C	118.7	12.7	7	280	

Bulk Sample amended with 50 lbs/yd² (4.2%) Type 1L Portland Cement for a depth of 12 inches

Sample Identification	Dry Density, (pcf)	Moisture Content, (%)	Age, (days)	Compressive Strength, (psi)	Average Compressive Strength, (psi)
A	116.2	14.1	3	500	-
B	118.7	13.1	7	560	540
C	118.8	12.6	7	520	

Bulk Sample amended with 70 lbs/yd² (5.9%) Type 1L Portland Cement for a depth of 12 inches

Sample Identification	Dry Density, (pcf)	Moisture Content, (%)	Age, (days)	Compressive Strength, (psi)	Average Compressive Strength, (psi)
A	117.6	13.7	3	635	-
B	114.9	14.9	7	710	715
C	117.5	13.3	7	720	

RECOMMENDATIONS

The following recommendations are based on our laboratory testing results and on our experience with similar projects. Georgia DOT requires the cement amendment rate to be based on a minimum laboratory unconfined compressive strength of 450 psi and meet a minimum strength of 300 psi from field obtained cores after mixing is complete. Based on the average 7-day lab compressive strength results, we expect that utilizing Type 1L Portland cement at the following amendment rates will yield the minimum 300 psi requirement established by GDOT for cores obtained in the field with a 7-day cure time:

Description	Amendment Rate	Mix Depth
Hollingsworth Ferry Road	50 lbs/yd ²	12 inches

Mixing should be accomplished with a pulvamixer and the soil-cement should be compacted within two hours of the addition of the Portland cement.

During construction, if the blended material is significantly above optimum moisture content, remixing of these areas at a higher amendment rate may be necessary. If the base materials vary significantly from the materials used in the FDR mix design, the amendment percentages may need to be altered during construction in order to obtain desirable compressive strength and subgrade stabilization results.

Any isolated areas of soft subgrade soils identified during the mixing process should be treated using a higher cement application rate. In general, we recommend that soil cement construction be performed in general accordance with the construction requirements defined by *Georgia DOT Section 301.3 – Cement Stabilized Reclaimed Base Construction* specifications.

We recommend that a representative of Geo-Hydro perform field testing services during the soil-cement operations, including documenting the cement application rates and mixing operations, observing proofrolling operations, conducting in-place density testing, preparing compressive strength specimens, and performing compressive strength testing for performance verification.

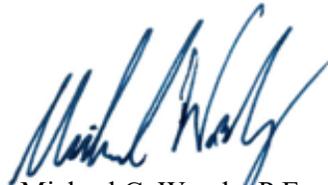
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If you have any questions concerning this report, please feel free to contact us.

Sincerely,

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