**[LOCAL TESTING PROGRAM REPORT TEMPLATE]**

DATE, 2014

Addressee

Company or Agency Name

Street Address

City, State ZIP

Subject: **Performance Validation Testing, Mechanically Stabilized Pavement**

 **Project Name**

 **City, State**

Dear **NAME**:

This report presents the findings of the Performance Validation Testing performed on [DATES] at the referenced site. The purpose of the study was to document the benefit, if any, of a Mechanically Stabilized Layer (MSL) using Tensar TriAx Geogrids in flexible pavement sections as compared to a conventional unbound aggregate layer.

**SITE DESCRIPTION**

**[INSERT SITE LOCATION, DESCRIPTION, AND RELATED INFORMATION]**

**PROJECT SCOPE**

**Subgrade Soil Information and Testing**

**[INSERT DISCUSSION OF TESTING CONDUCTED ON SUBGRADE. DEPENDING ON THE DATA AVAILABLE FOR THE PROJECT, THIS MAY INCLUDE LABORATORY TESTING OF SUBGRADE SOILS, FIELD TESTING OF SUBGRADE SOILS, OR BOTH. FIELD TESTING MAY CONSIST OF DYNAMIC CONE PENETROMETER (DCP) TESTING OR OTHER METHODS. THE OBJECTIVE OF THIS TESTING IS TO PROVIDE A RELIABLE CHARACTERIZATION OF THE SUBGRADE CONDITIONS SO THAT THE VALIDITY OF THE PAVEMENT DESIGN CAN BE VERIFIED.]**

A summary of data regarding subgrade soil conditions is presented below.

**In-Place Strength Evaluation**

Plate load testing was performed to determine pavement material stiffness values for the control and stabilized sections. This was done to insure that the reduced section exhibited stiffness values that were at least equal or greater than those of the control. Plate load tests were performed at the locations shown in Figure **X**.

The diameter of the plate was selected based on its depth of influence. In accordance with Boussinesq theory for a uniformly loaded circular area more than 90% of the vertical stress is supported by soil at a depth of 2 times the diameter of the loaded area (Das, 1984). To determine the improvement of a MSL, a plate diameter must be selected to evaluate stress behavior within a thin lift thickness. For this testing, a plate diameter of 5 inches was used.

The Plate Load Bearing Test was conducted on **[DATE]**. Test locations were marked and GPS coordinates were recorded for each location.

The exposed surface at each test location was leveled. A 5-inch diameter steel bearing plate was then placed on the leveled ground surface. A total of 2 dial gauges accurate to the nearest 0.001 inch were located near each extremity of the bearing plate to measure the ground deformation. A seating load of 200 pounds was then applied, released and reloaded, and the dial gauges were then set at their zero mark. Loads were then applied at a moderately rapid rate to the plate with a 10-ton hydraulic ram. After each increment of load was applied its action was allowed to continue until a rate of deflection of not more than 0.001 inches/minute was maintained for 3 consecutive minutes. Data from the field testing are presented below.

**[THE DISCUSSION ABOVE DESCRIBES ONE POTENTIAL CONFIGURATION AND METHODOLOGY FOR CONDUCTING THE TEST. IT CAN BE MODIFIED AS NEEDED BASED ON THE PROJECT NEEDS AND THE EQUIPMENT AVAILABLE.]**

**SUBGRADE CONDITIONS**

**[INSERT DESCRIPTION OF SUBGRADE SOIL CONDITIONS, INCLUDING RESILIENT MODULUS USED FOR DESIGN, AND ANY SUBGRADE DATA COLLECTED AS PART OF THE PROJECT SCOPE ABOVE]**

**PAVEMENT SECTIONS**

**[INSERT DESCRIPTION OF THE CONTROL AND MECHANICALLY STABILIZED PAVEMENT SECTIONS, DESIGN INPUTS INCLUDING SUBGRADE MODULUS, DESIGN TRAFFIC CAPACITY, AND AGGREGATE BASE LAYER COEFFICIENTS FOR THE STABILIZED AND UNSTABILIZED SECTIONS.]**

**PLATE LOAD BEARING TEST RESULTS**

The plate load bearing test was performed at the following pavement section locations and elevations:

1. **[LIST TEST LOCATIONS AND ELEVATIONS]**
2.
3.

The loading and deformations at each test location were measured and plotted at each testing location, as presented in Figure **X.**

**[EXAMPLE FIGURE BELOW]**

**Figure X**

**Plate Load Bearing Test Data**



The results in Figure **X** can be used to calculate the effective modulus of the aggregate base layer for all sections. The gradient of the load-deformation curves for each section represents the aggregate layer stiffness. These have been calculated and the results are shown in Table **X**.

**Table X**

**Measured Stiffness of the Aggregate Base**

**Using Plate Load Test Data**

|  |
| --- |
| **Analysis to Calculate Measured Aggregate Layer Stiffnesses (Using Figure X)** |
|  | **Equation** | **Unstabilized** | **TX** | **TX** |
| **A** | **Change in Deformation (mm)** |  |  |  |  |
| **B** | **Layer Thickness (mm)** |  |  |  |  |
| **C** | **Strain (%)** | (A ÷ B) |  |  |  |
| **D** | **Change in Load (kN)** |  |  |  |  |
| **E** | **Convert Load to Stress (MPa)** | D/Plate Area |  |  |  |
| **F** | **Layer Stiffness Modulus (MPa)** | E/C |  |  |  |
|  | **Improvement Factor (Ratio, Line F)** | TX/Unstab. |  |  |  |

The improvement factor for the stabilized section(s) compared to the unstabilized section is the ratio of the effective moduli, calculated as shown in Table **X**. This indicates the magnitude of the stiffness improvement for the stabilized sections.

**SUMMARY AND CONCLUSIONS**

**[THE SUMMARY AND CONCLUSIONS WILL NEED TO BE TAILORED TO THE SPECIFIC RESULTS OBTAINED AND THE PAVEMENT DESIGNS FOR THE SECTIONS TESTED. FOR EXAMPLE, IF THE STABILIZED SECTION IS THINNER THAN THE CONVENTIONAL SECTION, IT IS IMPORTANT TO NOTE THAT IN ALL COMPARISONS SO THAT THE BENEFIT OF THE MSL IS NOT UNDERSTATED.]**

The Plate Load Bearing Testing demonstrated improved stiffness of the mechanically stabilized section over the conventional section, as predicted by the pavement designs. The improvement measured by this testing was **[INSERT IMPROVEMENT DATA HERE – PRESENTED AS A RANGE, AN AVERAGE, OR A TABLE OF VALUES. BE SURE TO ACCOUNT FOR VARIATIONS IN SECTION GEOMETRY]**. This compares to the ratio of the stabilized and unstabilized layer coefficients of the section designs of **[INSERT DISCUSSION OF LAYER COEFFICIENT INFO FROM ABOVE HERE]**. Based on these results, the design for the stabilized pavement section is validated.

It is important to view the results of this testing in proper context relative to AASHTO flexible pavement design – the testing program and results presented here should be used primarily as a validation method for the empirical data that has been collected from Tensar’s comprehensive Accelerated Pavement Testing program, which accurately simulates actual traffic loading over the life of a flexible pavement structure. Plate Load Bearing Test data, such as that presented here, should be used to validate the relative structural capacity of alternative section designs and to ensure that projects, as constructed, realize the expected benefits from mechanical stabilization with geogrid. This testing also demonstrates that the MSL provides the expected stiffness enhancement using the materials available in the region of this project and under typical local conditions.

These results demonstrate that the modified layer coefficient(s) used for the MSL(s) in the stabilized pavement designs are reliable and can be safely used for the tested pavement sections.

Respectfully Submitted,

Consulting Engineer

Firm Name

**APPENDICES**

**[INSERT FIELD DATA, LAB DATA, CALCULATIONS, AND/OR RELATED INFORMATION]**

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