Evaluation of Permazyme 11x™ Soil Stabilization

Purpose and Need
As construction and material costs increase, NDDOT is investigating innovative ways of improving construction processes to benefit pavement performance. There is a need for cost effective methods of reducing material demands in areas were the supply of aggregates are limited and expensive. Soil stabilization can increase soil strength and stability reducing the required base material to construct a structurally adequate pavement system. Pacific Enzymes Inc. has developed Permazyme 11x™ and promotes its capabilities system to provide additional soil strength and stability. The system uses an enzymatic soil stabilizer along with conventional compaction to create a permanent dense weather resistant subgrade.

Objective
The objective of this experimental project is to evaluate the long term performance benefits of Permazyme 11x™ enzymatic soil stabilizer ability to increase subgrade strength and stability as a method to reduce aggregate material demands. The long term pavement performance of the test sections will be compared with a control section that will consist of a standard grade raise practices of the same thickness.

Scope
The NDDOT has identified a grade raise project scheduled for construction in the Minot District during the 2014-2015 seasons. The following project has been selected to evaluate the enzymatic soil stabilizer. SS-4-053(015)030, PCN 20764 Requirements for the stabilized subgrade will be incorporated into the bid and construction documents by plan details and the following plan note.

Evaluation
The field evaluation for these projects will consist of observing and documenting the construction process of the enzymatic soil stabilizer and an annual inspection of the pavement distresses with FWD testing. During the construction of the project the following data will be collected for both the experimental and control section:
- AASHTO T-87,88,89 Soil Classification and Properties
- AASHTO T-180, Moisture Density Curves
- AASHTO T-208-10, Unconfined Compressive Strength
The research project will last five years with a construction report, an annual evaluation report, and a final report.

Reporting
Data collected will be analyzed and reported annually. A final report will be published at the conclusion of the project.