

Reconstructed Township Roads #1

Road Surface 3 Times More Uniform for Longevity

PROBLEM

Currently a large majority of Township roads are being utilized for oil and gas access. Most of these Township roads were not originally designed to withstand the heavy loads and volume of traffic oil and gas operations entail. These Township roads are being reconstructed using quality aggregate to help sustain the increased traffic loads and volumes. The experience of the last few years has proven these reconstructed roads have needed costly continual maintenance and rework. Long term stabilization of the reconstructed road was needed to prevent the costly continual rework.

SOLUTION

Stabilization of the reconstructed Township roads in their as constructed state was achieved by installing EnviroKleen® to the quality aggregate and blending it to a depth of 6" using a reclaimer and then compacting to Maximum Dry Density. Costly maintenance and rework is eliminated as the road surface remains tight and smooth even under the traffic loads and volumes currently received during oil and gas operations.

TESTING METHOD

Falling Weight Deflectometer (FWD) testing was performed on the treated and untreated material per ASTM D4694-09. Falling Weight Deflectometer testing is a nondestructive test capable of applying loads in the range of 6,500 to 54,000lb and recording the resulting surface deflections.



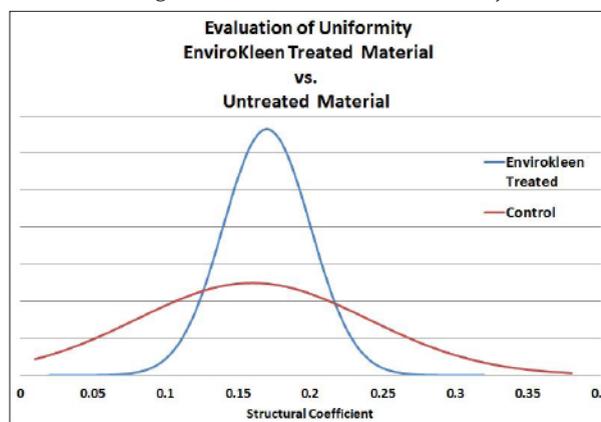
ENGINEERING DATA

	AS CONSTRUCTED UNTREATED	ENVIROKLEEN STABILIZED
Subgrade (PSI)	5330 (avg.)	5330 (avg.)
CBR	30 (avg.)	82 (avg.)
Structural Coefficient	0.11	0.17
Coefficient of Variation (COV)	33%	19%
Total SN	1.66	

EnviroKleen increased the average Structural Coefficient value by **over 154% of the control**.

SUMMARY

EnviroKleen® is a patented technology formulated with synthetic fluids enhanced with polymeric binders. Midwest offers a fully equipped Geotechnical laboratory as well as highly-trained field support specialists to ensure optimum performance of your Township roads.



The EnviroKleen stabilized road surface is **3X more** uniform than the unstabilized road surface. The Federal Highway Administration (FHWA) has indicated that "By reducing the variability of layer stiffness to +/- 25% of the mean, the life of the road surface will double over current practices." As can be seen in the above table, the coefficient of variability for the EnviroKleen treated road surface is 19%.

Reconstructed Township Roads #2

Road Surface 2 Times More Uniform for Longevity

PROBLEM

Currently a large majority of Township roads are being utilized for oil and gas access. Most of these Township roads were not originally designed to withstand the heavy loads and volume of traffic oil and gas operations entail. These Township roads are being reconstructed using quality aggregate to help sustain the increased traffic loads and volumes. The experience of the last few years has proven these reconstructed roads have needed costly continual maintenance and rework. Long term stabilization of the reconstructed road was needed to prevent the costly continual rework.

SOLUTION

Stabilization of the reconstructed Township roads in their as constructed state was achieved by installing EnviroKleen® to the quality aggregate and blending it to a depth of 3" using a reclaimer and then compacting to Maximum Dry Density. Costly maintenance and rework is eliminated as the road surface remains tight and smooth even under the traffic loads and volumes currently received during oil and gas operations.

TESTING METHOD

Falling Weight Deflectometer (FWD) testing was performed on the treated and untreated material per ASTM D4694-09. Falling Weight Deflectometer testing is a nondestructive test capable of applying loads in the range of 6,500 to 54,000lb and recording the resulting surface deflections.



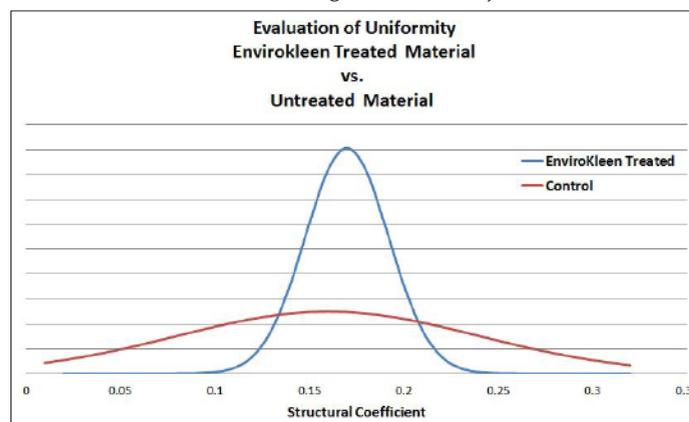
ENGINEERING DATA

	AS CONSTRUCTED UNTREATED	ENVIROKLEEN STABILIZED
Subgrade (PSI)	6989 (avg.)	5339 (avg.)
CBR	75 (avg.)	100 (avg.)
Structural Coefficient	0.14	0.24
Coefficient of Variation (COV)	45%	25%
Total SN	1.95	2.02

EnviroKleen increased the average CBR value by **33% of the control**.

SUMMARY

EnviroKleen® is a patented technology formulated with synthetic fluids enhanced with polymeric binders. Midwest offers a fully equipped Geotechnical laboratory as well as highly-trained field support specialists to ensure optimum performance of your Township roads.



The EnviroKleen stabilized road surface is **2X more** uniform than the unstabilized road surface. The Federal Highway Administration (FHWA) has indicated that "By reducing the variability of layer stiffness to +/- 25% of the mean, the life of the road surface will double over current practices." As can be seen in the above table, the coefficient of variability for the EnviroKleen treated road surface is 19%.