



July 21<sup>st</sup>, 2015

Dave McDougal  
Northeast Natural Energy  
48 Donley Street Morgantown  
West Virginia 26501

*via email:*  
dmcdougal@nne-llc.com

Subject: Science MIP Slip Repair

Dear Dave;

GeoStabilization International (GSI®) offers this fixed price proposal to Northeast Natural Energy (NNE) to stabilize the progressive slip near the compressor pad, the well pad, and adjacent existing gas line ROW.



*Figure 1. Scarp below Compressor Pad*



*Figure 2. Landslide mass above WIP Science Pad*

This site contains an existing compressor pad, a partially constructed well pad, an above-ground temporary plastic gas pipeline and adjacent telephone poles. The well pad is partially complete and construction is currently on hold due to the landslide above that has encroached its western edge within the past few weeks.

Due to the complex nature of this slide, NNE allowed a series of exploratory test borings to be advanced at the site for determination of depth to rock. The results of the test boring exploration indicate highly varying bedrock depths and a significant amount of water.

GSI recommends a quick response to this slide to minimize the impact to the existing compressor pad, gas pipeline and adjacent powerlines/telephone poles. GSI proposes to install a stabilization system consisting of multiple rows of SuperNails® and steel reinforced shotcrete. This wall will support the compressor pad and allow for a re-grading (flattening) of the slope leading to the well pad. The proposed wall will vary in height but will have a maximum height of 20 feet, and run approximately 300 feet long (north to south direction) and will be between the 1140 and 1150 ft contour.

GSI will require NNE's contractors to clear, grub, excavate, haul, provide all necessary environmental and erosion controls, perform re-grading in the area of the slip and proposed wall, and hydroseed the site. GSI will require a 12 to 15 ft wide, all-weather bench from which to install SuperNails®. Due to the amount of water in the slide mass, support by the excavator will be required to cross portions of the slide, likely with the help of ground support including but not limited to providing and installing timber mats. The site excavation and grading will be directed by a representative of GSI to

ensure a proper working face of the stabilization system and a safe working environment for workers on the slide. GSI will then install SuperNails® faced with a steel reinforced shotcrete.

GSI intends to utilize a track mounted SuperNailer drill, double tub grout pump, an air compressor, skid steer and a water buffalo.

**Resources to be provided by NNE or others**

This proposal assumes that NNE, or your designated contractor, provides:

- Approval from the natural gas pipeline company in order to install a stabilization system in/across the ROW. This proposal does not include any additional support measures that may be required for the pipeline.
- Space to receive and unload materials shipped by GSI: 10’ long soil nails, 12’ wide rolls of mesh, pallets of Portland cement, boxes of other materials (drill bits, walers, rebar, nuts, etc).
- Fresh water to the site for grout preparation.
- Utility locates (including depth to all utilities within the work zone). This proposal is conditional upon confirmation that there are no buried utilities (gas, oil or other) beneath or around the location of the slip.
- Excavation support to assist in access, an all-weather, accessible bench, clearing and grubbing, shape the slope (significant grading), provide access support, remove any spoils generated by our work or work them back into the slope, and properly compact and re-grade the slope upon completion of our soil nails and drains. Approximately 20,000 cubic yards of material will need to be removed from the existing slope (slide material) moving to the pad.
- Three to four trench/interceptor drains (clean gravel wrapped with geofabric), approximately 180 ft long from the toe of the wall to the base of the well pad.
- Install slot drains to ensure positive drainage from the slope above the pad.
- Installation of trench drains at base of wall.
- Installation of a chain link fence at the top of the wall (fall protection).
- Hydro-mulch or hydro-seed the affected area upon completion of the work.

**Schedule**

Barring unforeseen delays, and continuous work, this project should take eight weeks to complete and can be scheduled upon approval.

**Cost**

LF/SF*	QTY	Unit	Item	Unit Price	Price
	1	LS	Mobilization*	\$36,100.00	<b>\$36,100.00</b>
7,000 SF	1	LS	SuperNail® and Shotcrete Stabilization System	\$856,000.00	<b>\$856,000.00</b>
	1	LS	Horizontal drains, as needed	<b>Included</b>	
	1	LS	P.E. Stamped Design	<b>Included</b>	
			<b>TOTAL - 300 linear feet of stabilization</b>		<b>\$892,100.00</b>



*\*Measurements are approximate only. Overages will not incur additional charges without prior client consent, nor will underages result in discounts without prior GSI consent.*

*\*\*This work shall progress as one continuous operation, and is based upon a single mobilization or demobilization from a nearby site. Additional mobilizations will be charged at the unit rate. Standby rates apply at a rate of \$15,000 per day.*

### **Warranty**

GSI stands behind its work, and offers a five-year limited warranty upon contractual project completion. If at any point within the warranty period the repaired slope becomes unstable, GSI will, in a timely manner, stabilize the slope with a design/construction solution.

This limited warranty does not cover work completed by others, shallow surface erosion issues that may develop over time, or any pipeline or utilities issues that may develop in the area during or after the construction of the slope stabilization system.

Exceptions to this limited warranty include catastrophic seismic, weather, or other events outside reasonable accounting in design (including earthquakes and weather events exceeding expectation for the region) or further construction by third parties that destabilize the repair (including utility trenches dug into or through any soil nails, deep excavations in the area, etc).

Extreme storm water volumes may cause erosion which could undermine the repaired areas which may void this warranty. After each such an event these areas should be checked for erosion.

### **Other Terms**

Payment is due upon completion of the work (and payable within 30 days of submittal of invoice).

If you have any questions please feel free to contact us.

Respectfully submitted,

*Peter MacKenzie*

Peter MacKenzie, Energy Services Division Director  
Cell: (713) 819-5153 Office: 855.579.0536 Fax: 970.245.7737  
E-mail: [pete@GSI.US](mailto:pete@GSI.US)  
[www.geostabilization.com](http://www.geostabilization.com)

*Corey D. Mislinski, P.E.*

Corey D. Mislinski, P.E., Energy Services Project Development Engineer  
Cell: (832) 943-9398  
E-mail: [corey@GSI.US](mailto:corey@GSI.US)



Please indicate your approval of this additional stabilization area and cost:

\_\_\_\_\_  
Name/Title

\_\_\_\_\_  
Date