



**RAM JACK**

# 2016 CASE STUDY

Type: Residential | Issue: NV201601

**Ram Jack  
Reinforces  
Basement in  
Structural  
Jeopardy**

**RAM JACK LOCATION:**

**VersaGrade, Inc**  
[www.versagrade.com](http://www.versagrade.com) | 775-284-1964  
Sparks, NV

# CASE STUDY 2016

## VERSAGRADE, INC

SPARKS, NV  
775-284-1964  
[www.fixfoundation.com](http://www.fixfoundation.com)



Minimal disruption to property

## BASEMENT WALL RECOVERY

### INSTALLATION OVERVIEW

**Total # of Piles:** 5

**Products Used:** Custom-Engineered Threaded Adapters

**Product Type:** Tieback

**Typical Applications:** Ram Jack's 1 1/2" RCS anchors and extensions are used for tieback applications (bowing basement walls, retaining walls, and guy anchors).



From 1920-1960, basements were standard in most homes in Reno, Nevada. Not only did they provide ample storage for dry goods, food, and coal, but they also added a layer of protection for structures built on the highly expansive soils.

### Situation

Constructed in 1954, this single-story, residential home has a basement which spans the entire footprint of the living area above. The home was built on the sandy, clay-rich soil of the Alluvian Fan Deposits of the Peavine Mountain. This soil is particularly susceptible to expansion and contraction based on moisture content. When VersaGrade was called in, the swelling of the clay soil against the basement walls had exerted enough pressure to break the walls and cause structural damage to the framing. Without reinforcing steel to add strength, cracks in the basement walls had grown to as wide as 1 in. The rear wall had an obvious bow from top to bottom and was pushing into the interior walls while pulling away from the upper level floor joists. This was complicated by an external deck and hot tub enclosure that was only adding pressure to the wall.



### Proposed Solution

Before VersaGrade could perform the repair, immediate action was needed to ensure the integrity of the structure and the safety of the work crew. Temporary shoring supports were installed until a more permanent solution could be executed. After consulting with K2 Engineering, VersaGrade came up with a plan that supported the basement walls without damaging an external deck and hot tub enclosure adjacent to the structure.



Installation of helical anchors

### Outcome

Without reinforcing steel present, it was determined that a whaler system was needed to distribute the lateral forces on the rear wall. Prior to installation of the whaler system, VersaGrade installed 1.5 in. Round Corner Stock (RCS) steel helical anchors through the wall using a handheld torque drive motor. Fortress Stabilization Carbon Fiber support straps were used at the midpoints between helical anchors to provide vertical support. Each strap was epoxied to the concrete wall with embedded Kevlar straps that attached to the structure (to prevent overturning to the wall). Finally, a 10 in. wide continuous steel channel was bolted to the wall as the whaler, tying the entire support system together.

Even though the constraints of working in such a tight area were a challenge, the project was a complete success. The wall was completely stabilized without damage to the external deck or hot tub enclosure.



10 in. wide steel whaler



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