PUBLICATIONS

INTRODUCTION

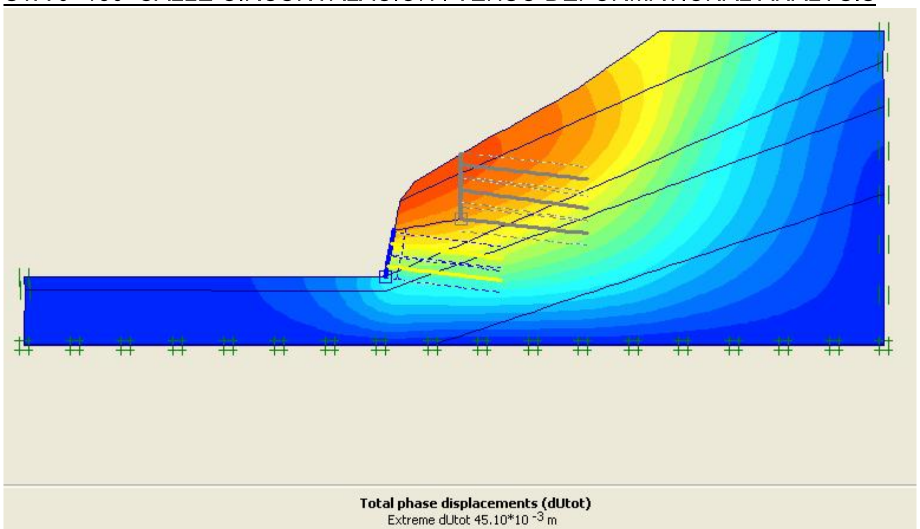
The risk analysis of two slopes recently built is the objective of this Report. They are part of a massive soil transformation necessary for the construction of a first class urban development located on the south side of the city of San Salvador. One the slopes is located ay STA 0+180 and the other one at STA 0+278.75; both of them, each one have a different configuration, have an average total height of 23m and 33^0 with respect to the horizontal. The analysis included not only the behavior of the tensions in the soil mass under normal circumstances but under seismic ones as well; it has been performed using a two dimensional finite elements program.

The strata, present in the site, consist of an upper OL layer followed by a soft SC-OL, a SP and a SC of medium density layers. The SC-OL and SC layers have an average water content of 40%.
To mitigate hazards and to improve safety against land slides, the designers chose a soil nailing stabilization method consisting of nails of 12m average length at spaces of 1,50m in check board pattern, and RC facing walls of 20cm in thickness. The soil cuts were performed well ahead of time and before any soil nailing had been performed, in such a way that the initial deformation had already taken place.

In order to obtain an idea of the deformations and tensions in the soil mass, prior the wall/nailing construction and during and after construction, three models of the slope were built for each of the slopes: Initial phase (the slope has already been built but no wall/nailing is present); intermediate phase (the first wall/nailing is already in place) and the final phase (all work has been concluded)

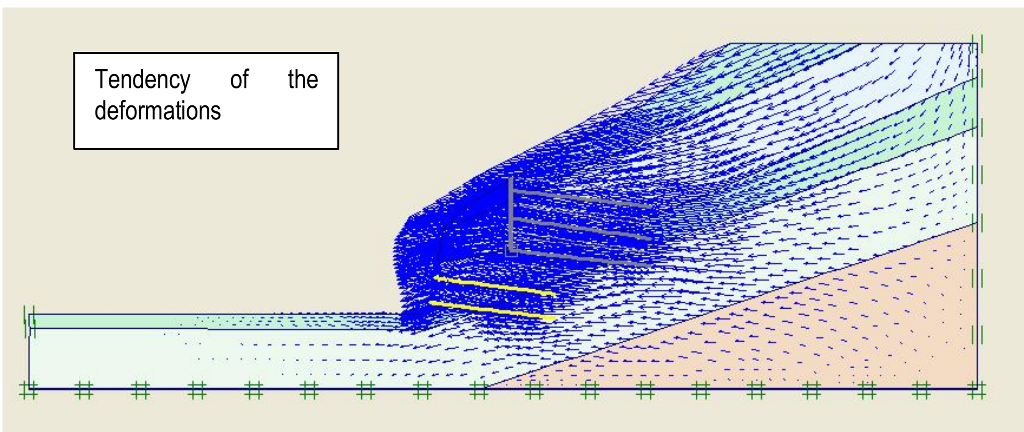
The following presentation is only part of a much extensive one and it is presented with sole purpose of giving our clients a thorough comprehension of our abilities in soil technologies

STA 0+180 CALLE CIRCUNVALACION I TENSO DEFORMATIONAL ANALYSIS

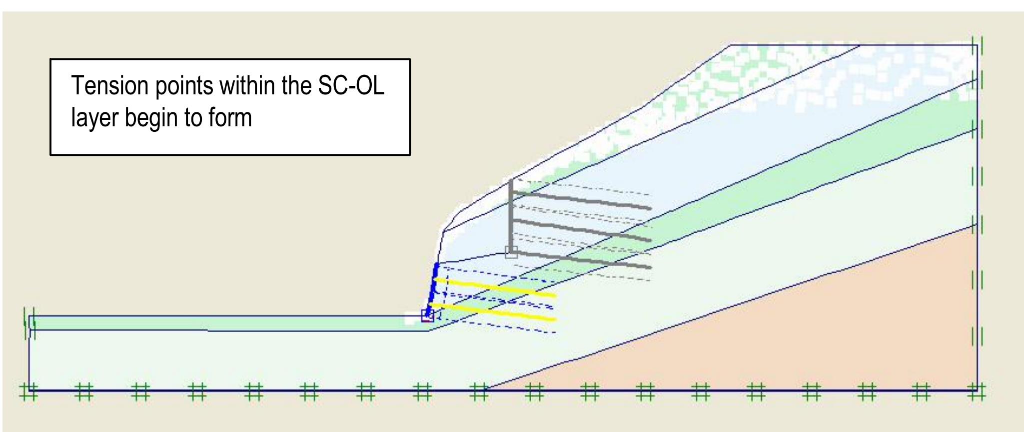


In the Initial Phase, the lower wall/nails are to be constructed. When the soil mass is shaken by a seismic force resulting from a ground motion of 0.40g, the displacements at the slope (intense red) are in the order of 4.5cm
The previous deformations are set to zero

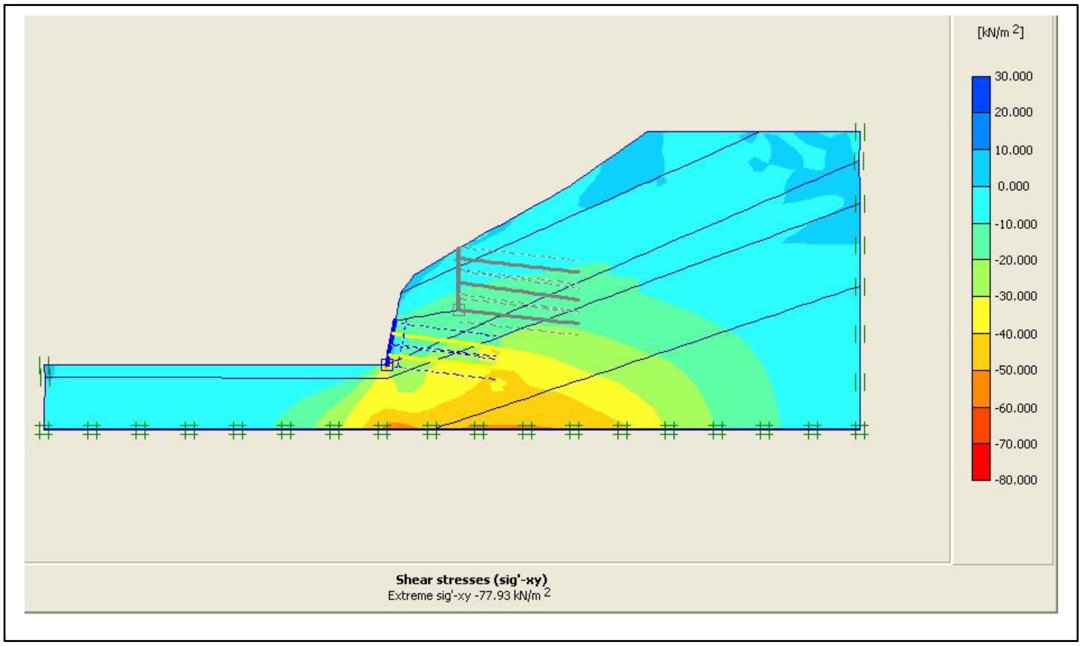
STA 0+180 DISPLACEMENTS. **FIGURE 1. INITIAL PHASE**



STA 0+180 DEFORMATION PATTERNS. **FIGURE 2. INITIAL PHASE**

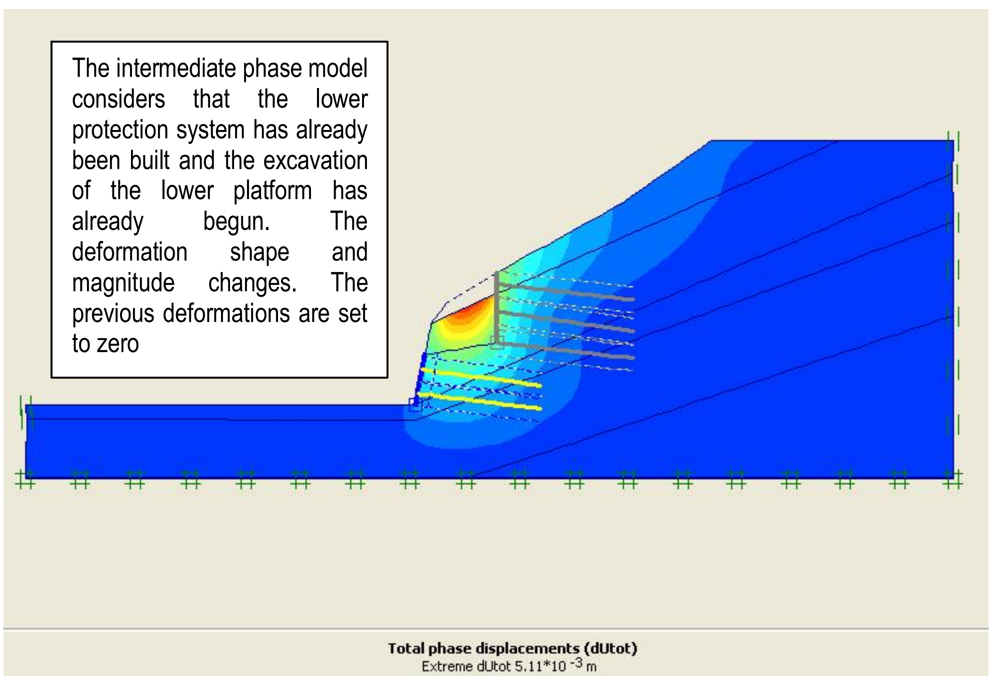


STA 0+180 FORMATION OF TENSION POINTS. **FIGURE 3. INITIAL PHASE**

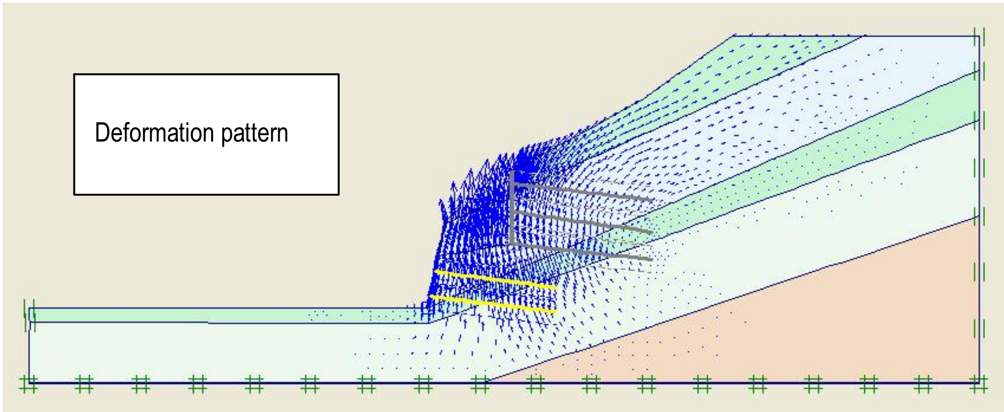


STA 0+180 SHEAR STRESSES. **FIGURE 4. INITIAL PHASE**

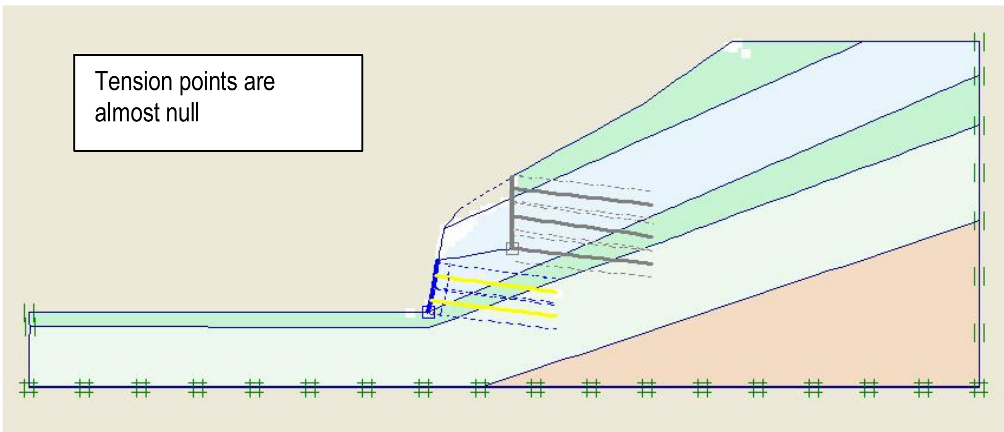
INTERMEDIATE PHASE



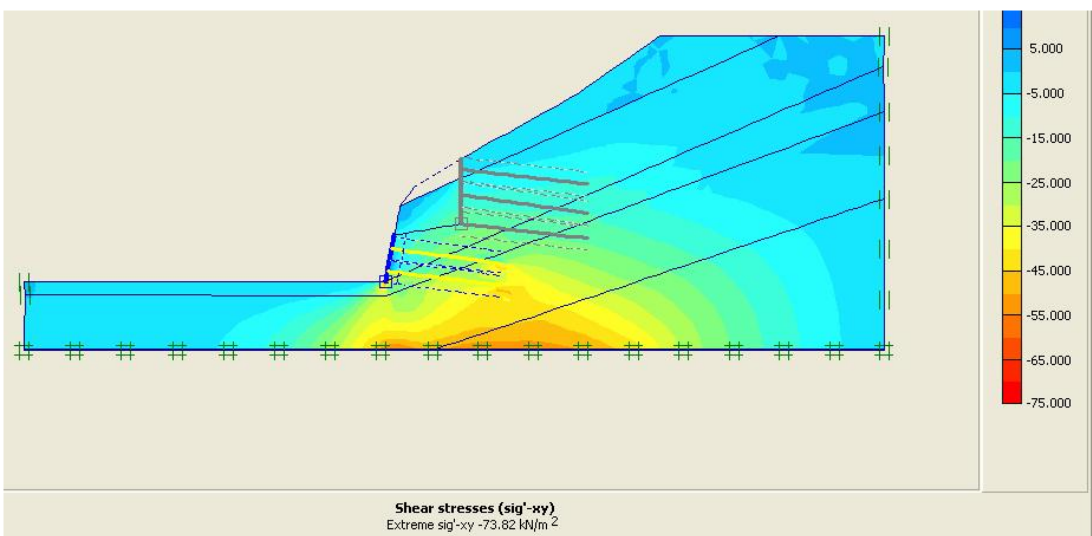
STA 0+180 DISPLACEMENTS. **FIGURE 5. INTERMEDIATE PHASE**



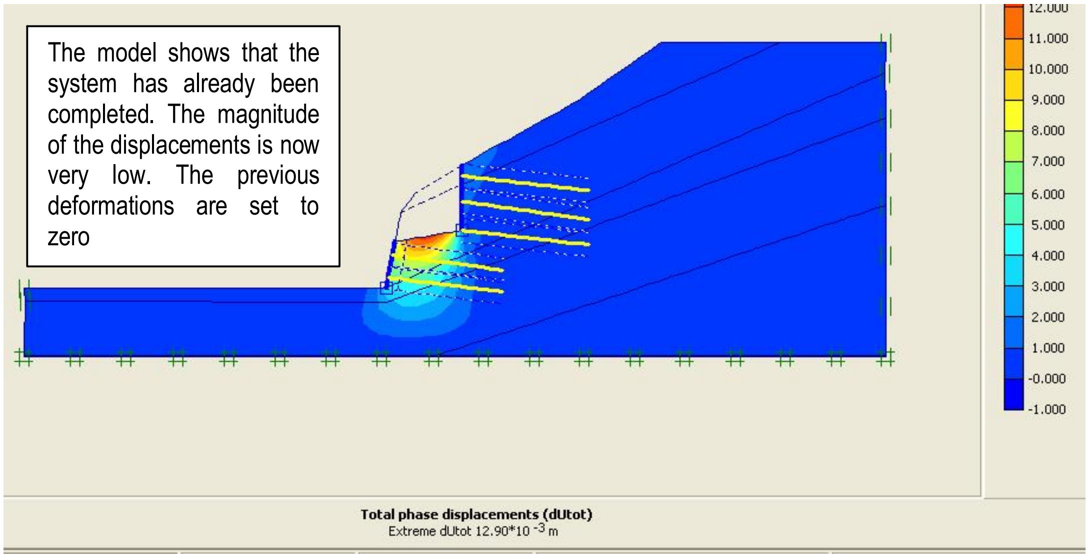
STA 0+180 DEFORMATION PATTERN. **FIGURE 6. INTERMEDIATE PHASE**



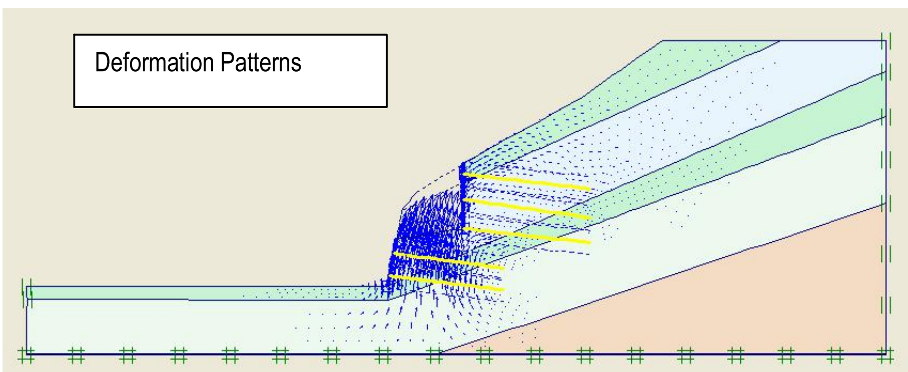
*EST 0+180 ESFUERZOS CORTANTES. **FIGURA 7. FASE 2***



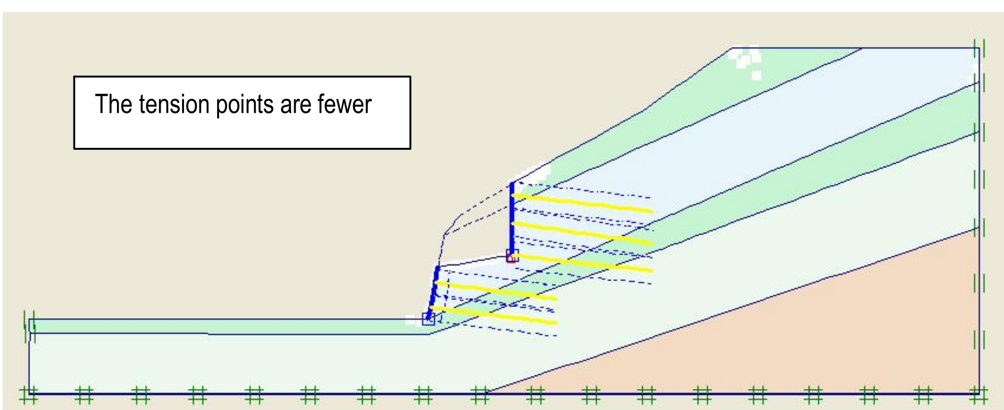
STA 0+180 SHEAR STRESSES. **FIGURE 8. INITIAL PHASE**



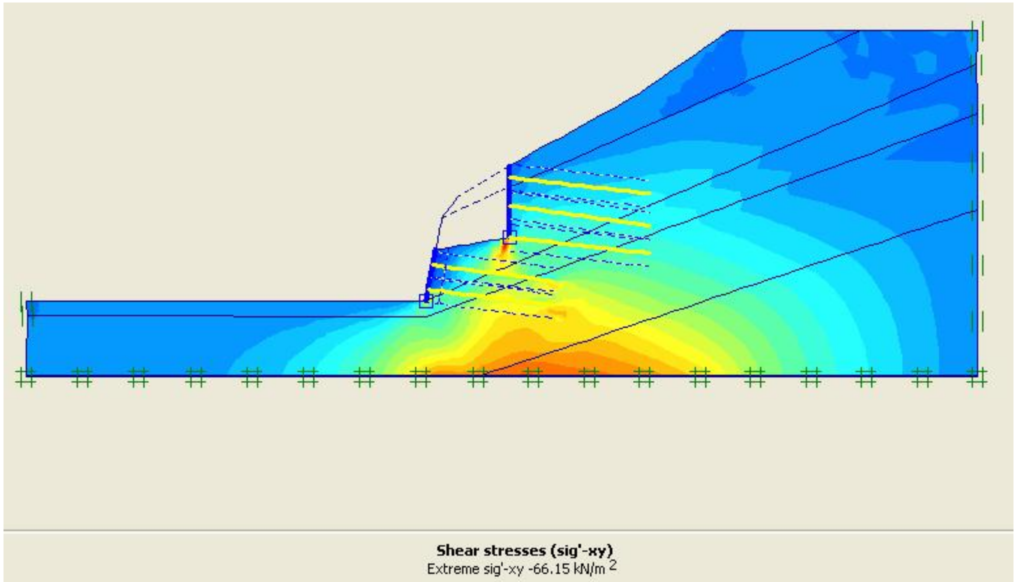
STA 0+180 DISPLACEMENTS **FIGURE 9. FINAL PHASE**



STA 0+180 DEFORMATION PATTERN. **FIGURE 10. FINAL PHASE**

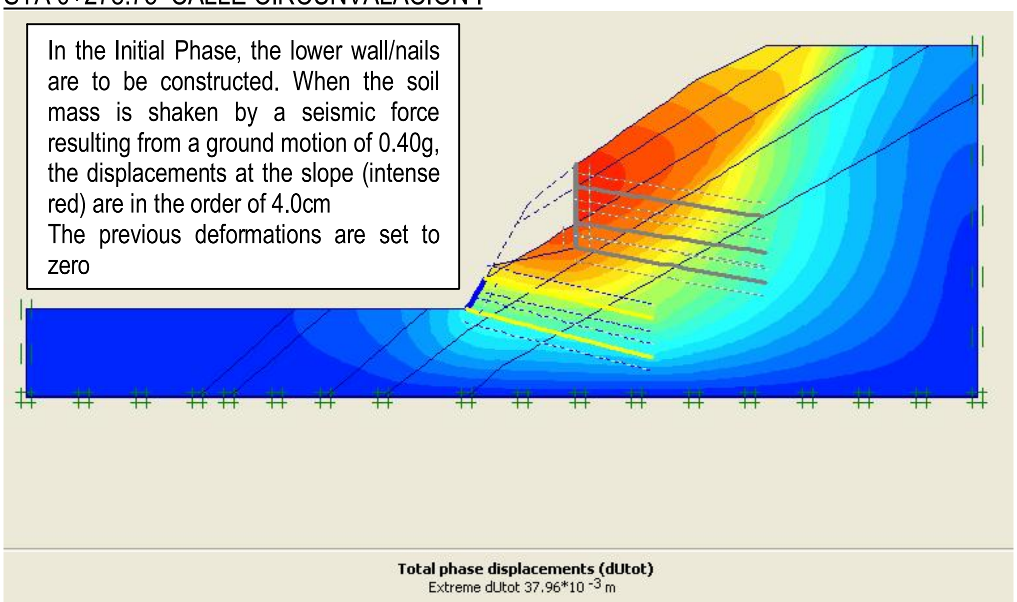


STA 0+180 TENSION POINTS. **FIGURE 11. FINAL PHASE**

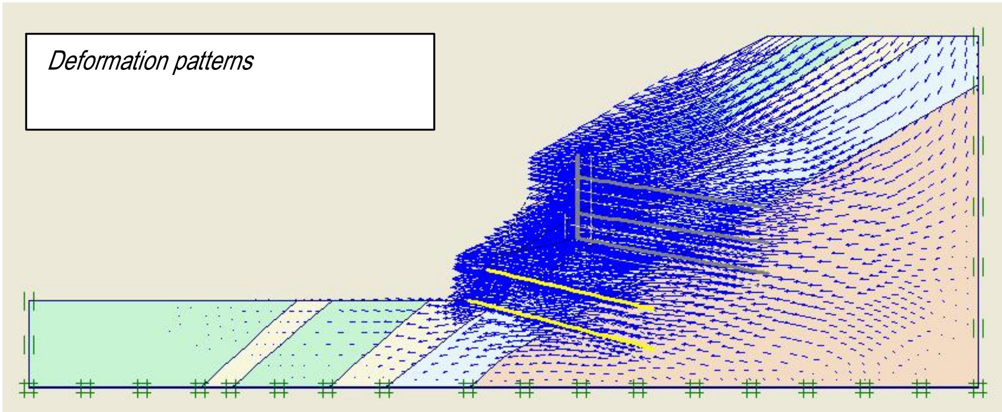


STA 0+180 SHEAR STRESSES. **FIGURE 12. FINAL PHASE**

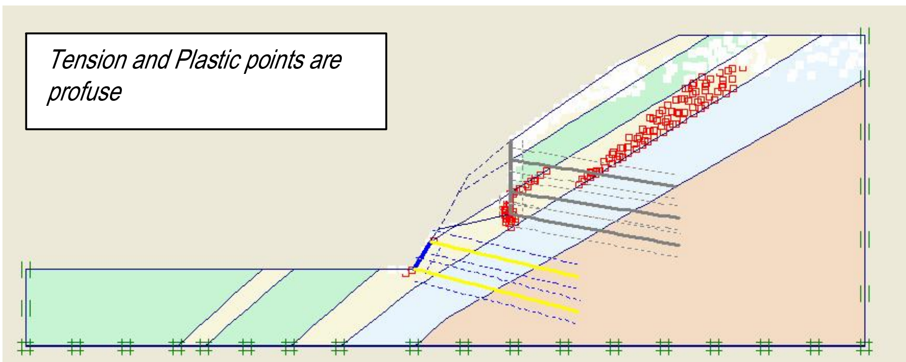
STA 0+278.75 CALLE CIRCUNVALACION I



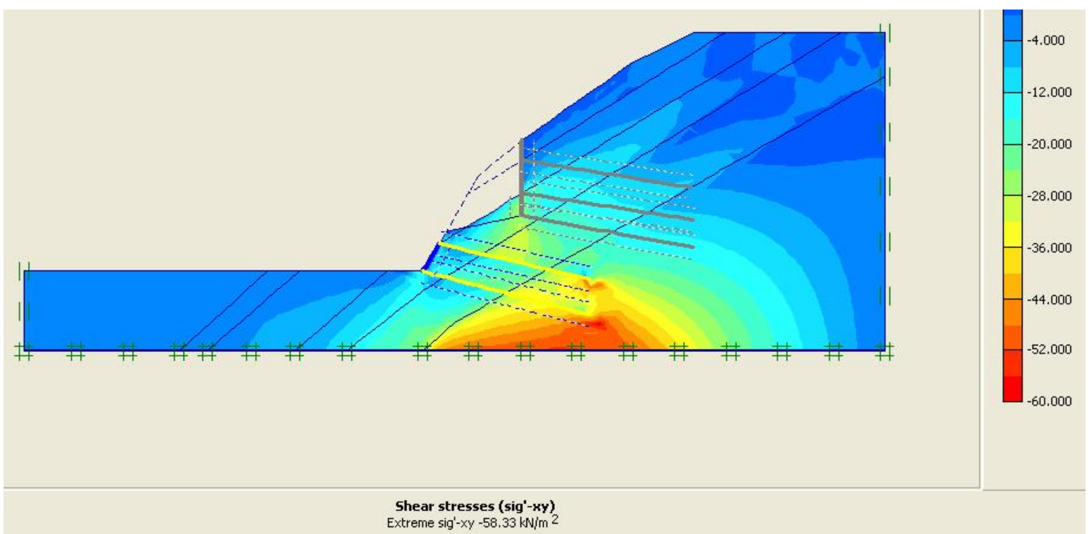
STA 0+278.75 DISPLACEMENTS **FIGURE 1. INITIAL PHASE**



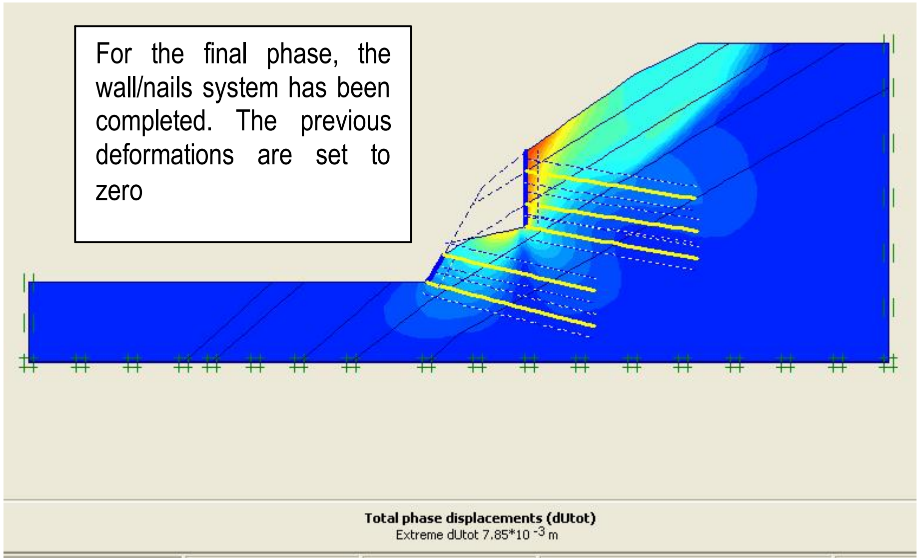
<u>STA 0+278.75 DEFORMATION PATTERNS</u>. **FIGURE 2. INITIAL PHASE**



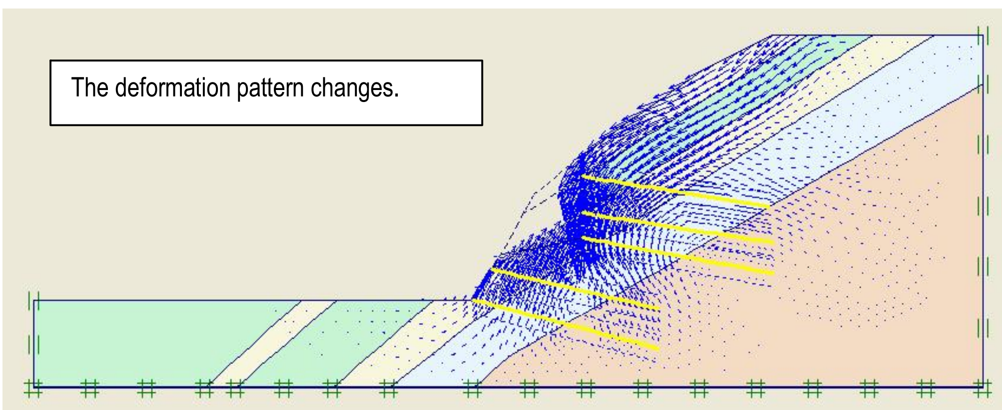
<u>STA 0+278.75 PLASTIC AND TENSION POINTS</u>. **FIGURE 3. INITIAL PHASE**



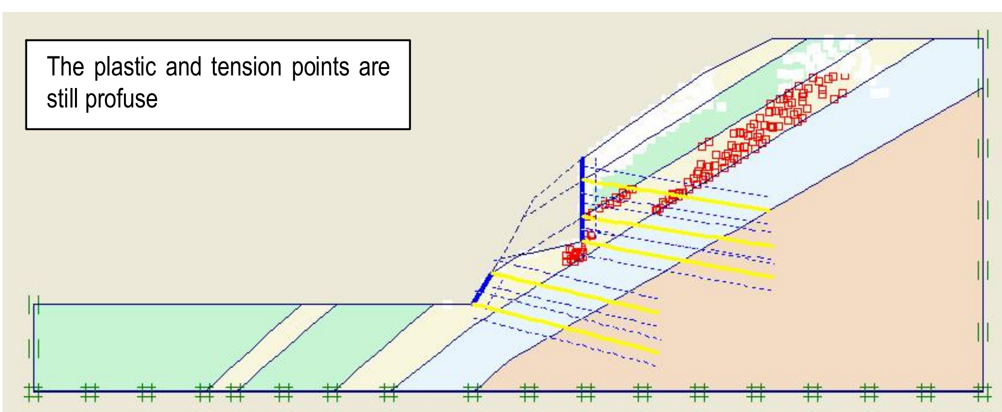
<u>STA 0+278.75 SHEAR STRESSES</u>. **FIGURE 4. INITIAL PHASE**



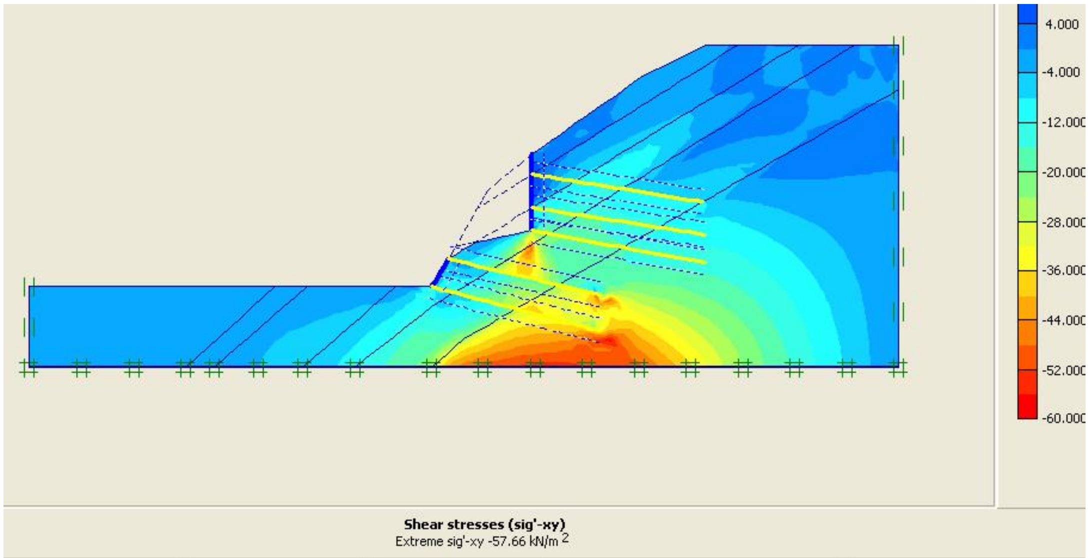
STA 0+278.75 DISPLACEMENTS. **FIGURA 5. FINAL PHASE**



STA 0+278.75 DSIPLACEMENT PATTERNS. **FIGURE 6. FINAL PHASE**

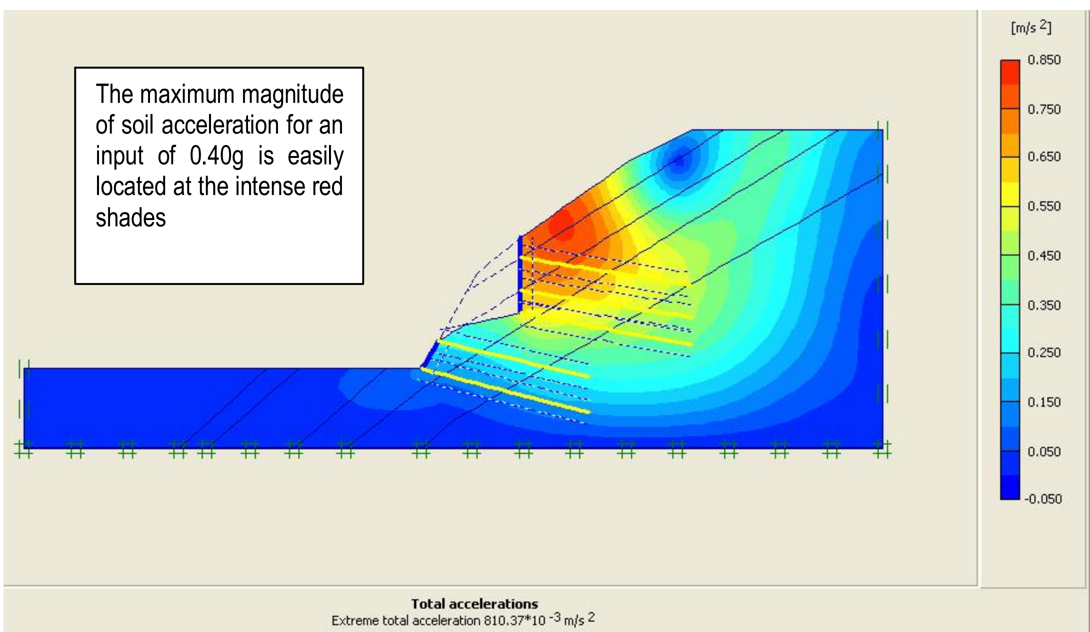


STA 0+278.75 PLASTICO AND TENSION POINTS. **FIGURE 7. FINAL PHASE**



STA 0+278.75 SHEAR STRESSES. **FIGURE 8. FINAL PHASE**

DYNAMIC SOIL



STA 0+278.75. SOIL MASS ACCELERATIONS