



GEOTECHNICAL ENGINEERING STUDENT ORGANIZATION AT UIUC

EXPERIENCES IN LARGE SLOPE STABILITY PROBLEMS UNDER COMPLEX GEOLOGY

Camilo Marulanda, Ph.D.

Technical Manager, INGETEC

3 / 4 / 2016

12:00 pm – 1:00 pm

3310 Yeh Student Center



This presentation presents a brief summary of the origin of metamorphic rocks, specially schist and the presence of shear or gouge zones in metamorphic rocks, as defects that induce weakness characteristics to the rock mass and that depart substantially from the traditionally evaluation of joints and discontinuities, turning eventually into failure surfaces that govern the stability conditions of surface works. The effect these weak zones inflict into the metamorphic rock mass, especially to schist, causing significant slope stability problems, is illustrated through three case histories. The presence of such defects in the rock mass, detected and analyzed by means of exploratory holes drilled from the surface, can be hardly anticipated during the design stage as far as location, dip direction and geotechnical characteristics, given their erratic alignment within the rock mass, and their disguise during the drilling processes when the clay infill is washed away by the drill water, making their recognition and readiness for lab test sampling even more difficult. Special care of these geologic features, often present in metamorphic rocks, must be taken through: 1) direct exploration –such as galleries–, 2) the elaboration and interpretation of adequate geological models and corresponding sensitivity analyses of shear strength parameters of the established failure surfaces and 3) sound decision making and implementation of stabilization measures based on engineering judgment.