Lab Practical (Answer Sheet) - Boundary-Element Analysis

Below, enter the answers you obtain when prompted to do so during the different exercises:

Part A – The Basics

This tutorial will demonstrate some of the basic features of boundary-element analysis using the Rocscience program EXAMINE^{2D}.

1. Sketch the Sigma 1 trajectories (using stress flow lines) relative to the underground openings (as prompted in step 9).

2. Comment on the potential for failure for this first model (as prompted in step 10).

Part B – Influence of Neighbouring Excavations

This tutorial will examine how neighbouring excavations influence one another in terms of induced stresses and failure.

1. For the given model conditions, comment on the σ_1 and σ_3 stress states within the pillar between the two excavations (as prompted in step 7)?

2. Report the values obtained for the strength factor for the pillar rock between the excavations (as prompted in step 8), when T_o = 0 MPa, ϕ = 30° and:

   cohesion = 10 MPa _____

   cohesion = 5 MPa _____

   cohesion = 2 MPa _____

3. What is the minimum pillar width between the two excavations where the strength factor is greater than one in the central region of the pillar (as prompted in step 9)? _____