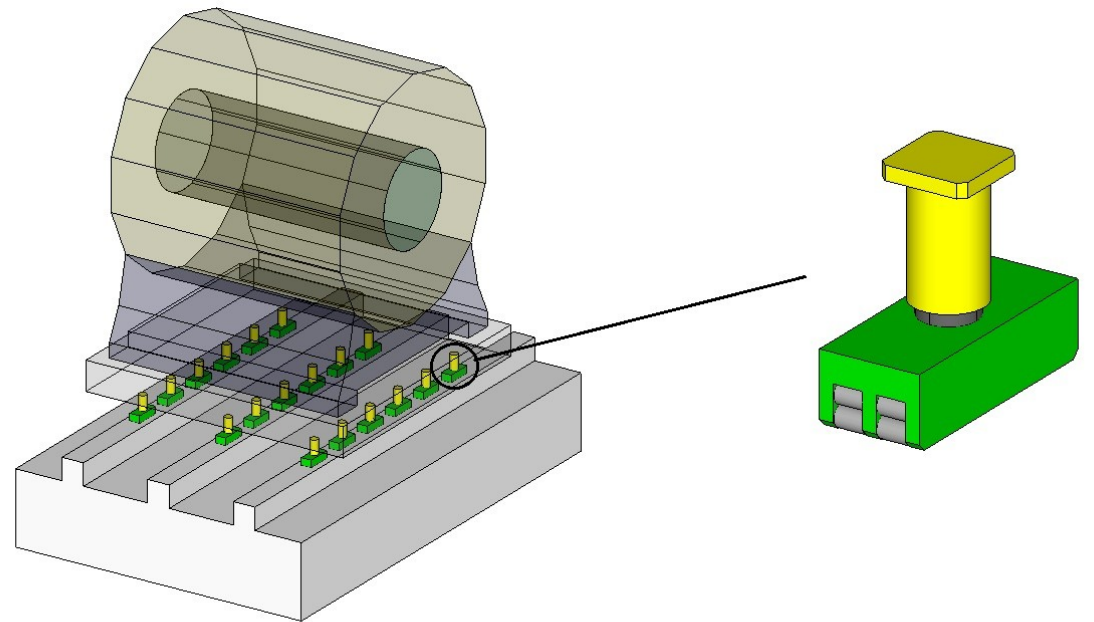
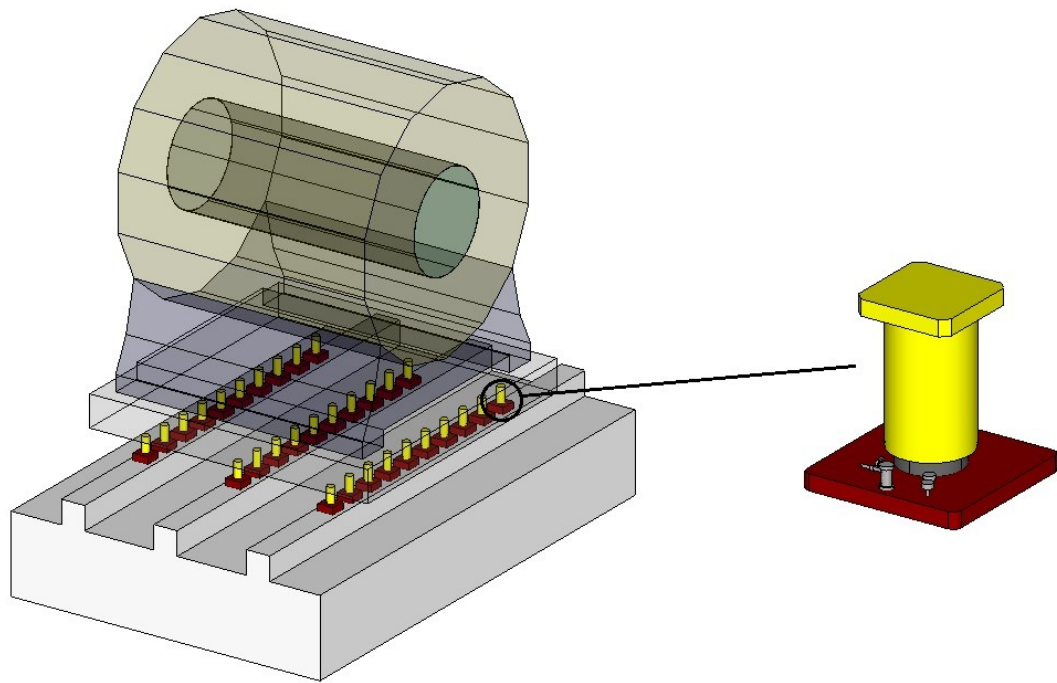


*Task 1 - The design of the underground concrete platforms required to transport each of the two Linear Collider Detectors on and off the beam-line position.*

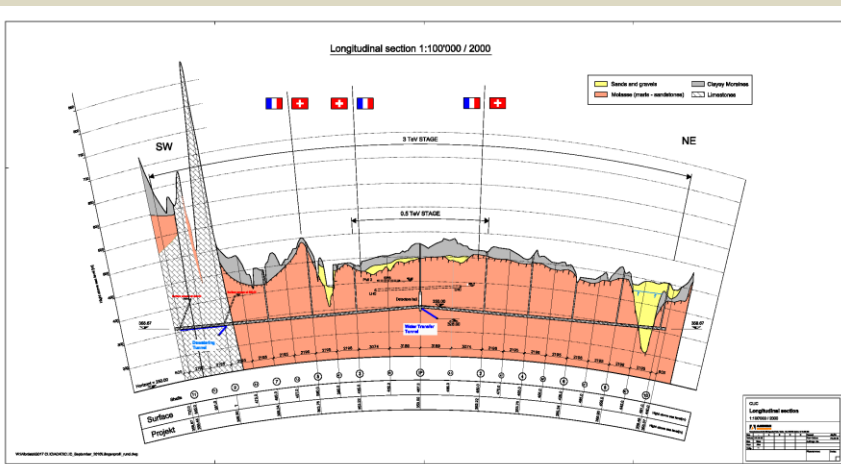
- Two platforms would be required, one for each detector.
- Load of each detector, excluding platforms, of approximately 14,000tons
- Intermediate supports determined by the preferred movement system.
- Platform movement on/off the beamline to be moved over a period of the order of five hours,
- Up to 20 movements per year during machine operation.
- Accelerations of the detector during movement to be limited to 0.5g
- Location of the platforms to within +/-1mm and +/-0.1 milli-rads of their target location relative to final focus quadrupole base slab.

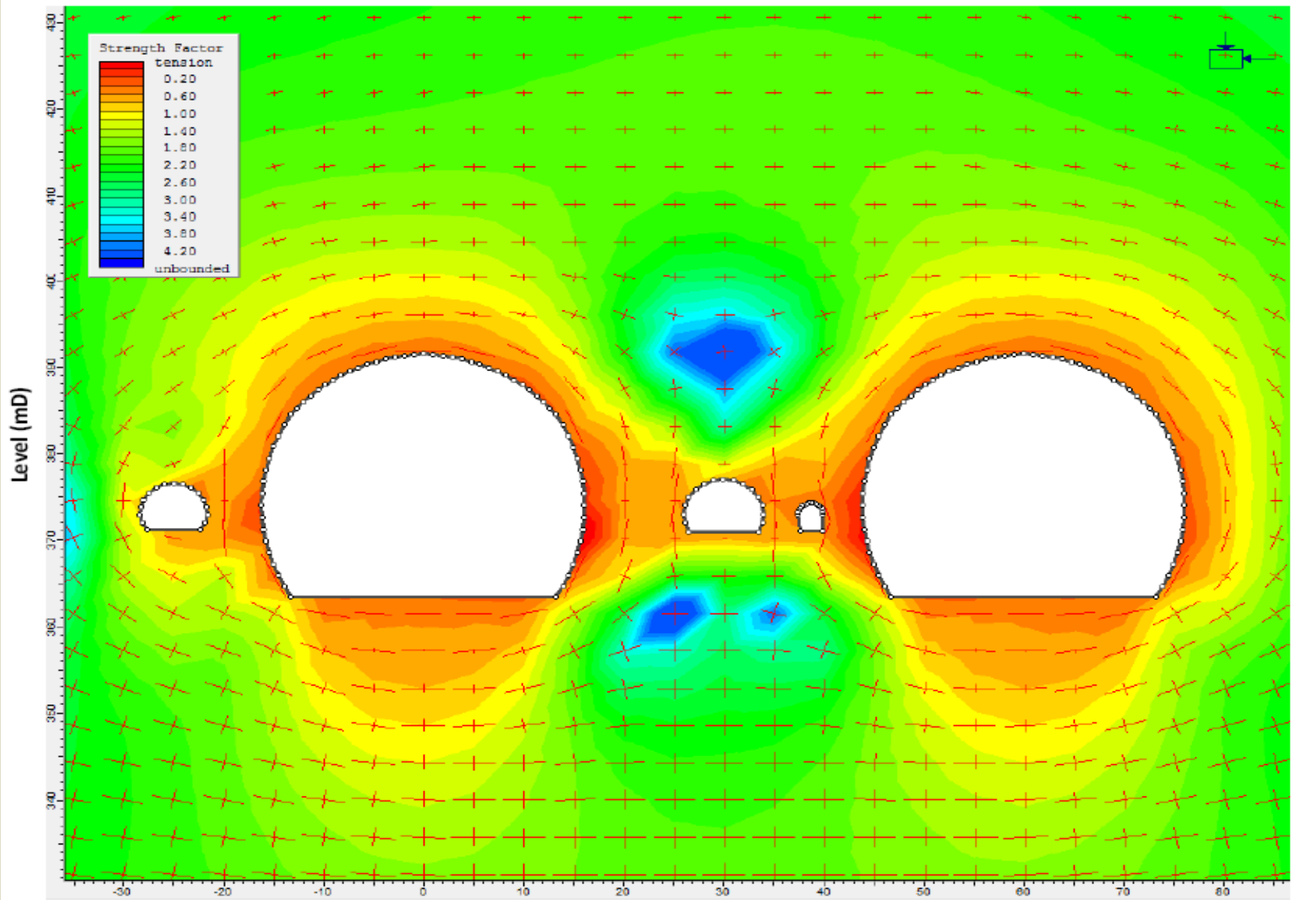


Air pads v Rollers for concrete platform movement will be further analysed

*Task 2 - A detailed study of the potential behaviour of the rock mass surrounding the experimental area during the estimated 20-year life span of the machine.*

- Experience from other cavern rock related mass conditions should be taken into account e.g LHC.
- 2D and 3D effects to be assessed.
- The study should assume that the experimental area is to be built in CERN geology, in the Molasse Rock
- The long-term behaviour of the excavation





2d and 3d models will be developed for CLIC to do a “Time-dependant” state analysis.

Possible 2<sup>nd</sup> phase use of these models for ILC layouts/geology.

### *Task 3 - Passive isolation slab design*

- Required maximum relative rms displacement of the beams is 0.1nm.
- Below 4Hz, vibration can be mitigated by active systems through steering the beam.
- Provide passive isolation at the end of each accelerator tunnel, where the beams emerge from the tunnel before entering the detector.
- Slab could be approximately 50 – 100 tons of concrete, resting on several springs and dampers – this will be assessed through our evaluation, as outlined below.

### *Task 4 - Review of the Experimental Area design*

- Layout of the shafts/cavern based on available geotechnical information and current space proofing.
- Review of suitability of various strata depths for cavern location

## **Budget for this Linear Collider IR study needs to be sourced :**

- Possible cost sharing CERN & Fermilab

## **Some key decisions for ILC to resolve first, in order to allow a more 'useful' study :**

- Are both detectors using the “concrete” platform strategy
- Are the level of the platforms the same
- For the overall layout :
  - Gantry crane capacity in the experimental hall
  - Should shafts be directly over the cavern or offset
  - Self shielding detectors