NTNU

Norwegian University of
Science and Technology

303448 – NFR PROFESJON

ROCARC — ROCk anchoring for stabilization of infrastructures with focus on the ARChing effect and rock-grout bond

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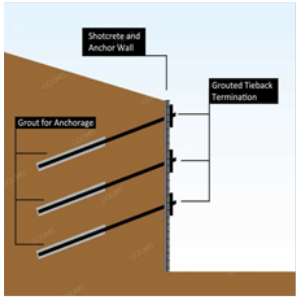
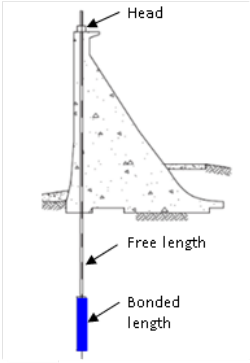
1. A short introduction of ROCARC

- Aims of the program PROFESJON
  - to strengthen the research-based foundation for professional education and professional practice, and
  - to strengthen research competence in the academic environments in the relevant education

ROCARC (2020 – 2024)



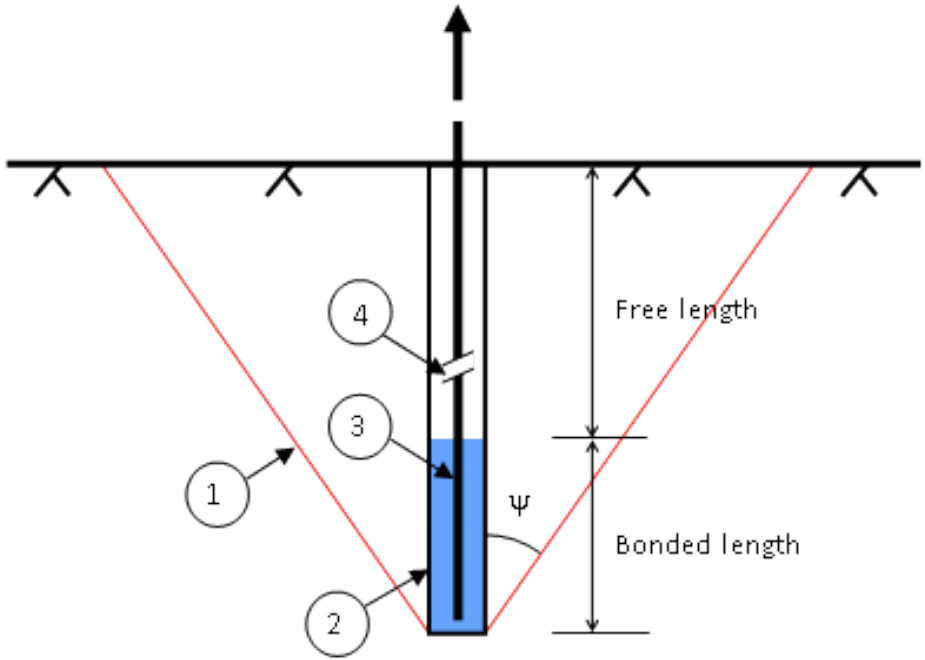


- Aim: to develop an updated method for dimensioning of rock anchors
- Investigation tasks:
  - load transfer from the anchor to the rock mass,
  - the failure pattern in the rock mass, and
  - the bond strength at the grout–rock interface
  - a guideline for rock anchoring design
- Methods: Lab tests, field tests, numerical modelling

Failure modes and design criteria

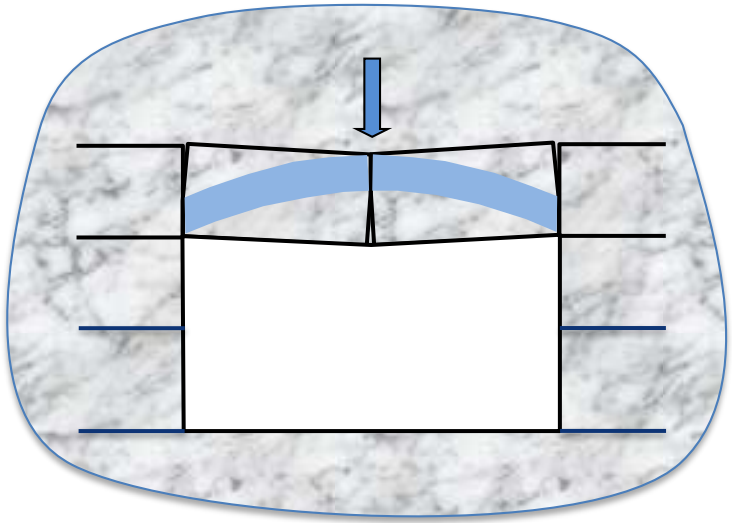
1. **Conical failure in rock**
2. **Failure in the rock-grout bond**
3. Failure in the grout-strand bond
4. Failure in the strand

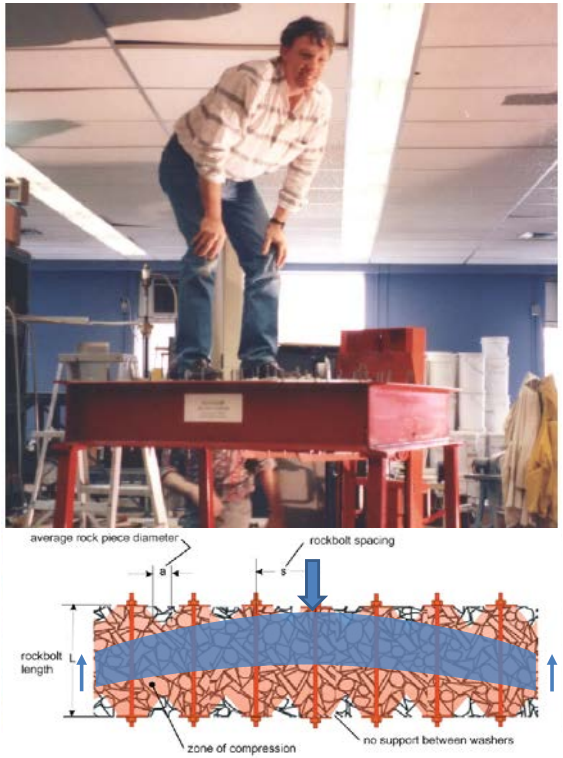
ROCARC focuses on 1 & 2.



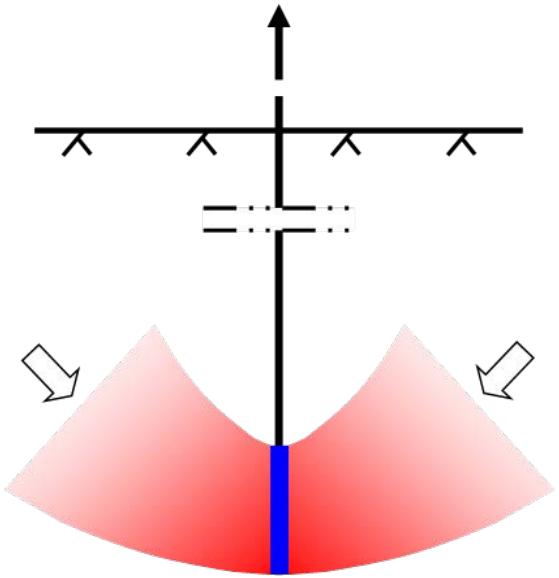
Hypotheses and theories

Concept of load-bearing arch

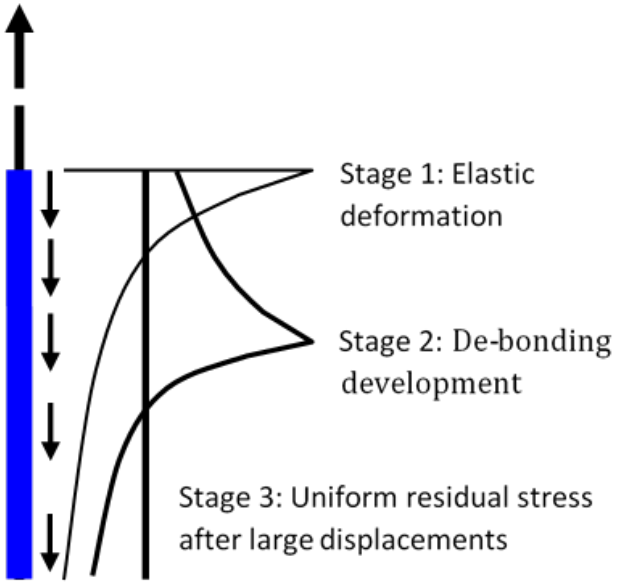




Load-bearing arch



Progressive failure at rock-grout



2. Organisation

- Budget: 13 255 kNOK (10 000 from RCN)
- Project host: IGP / NTNU
- Partners:
  NTNU (IGP & IBM), University in Tromsø (UiT),
  SINTEF, NGI, SVV,
  Norsk Bergmekanikkgruppe (NBG),
  Multiconsult, Norconsult, NORSAR
- One PhD and one Post-doc

Board leader:
Egil Tjåland

ROCARC Board

Reference group

WP1 **Management** Leader: Charlie Li	**WP2** **Laboratory tests** Leader: Are Høien	**WP3** **Field tests** Leader: Leif Lia	**WP4** **Num. modelling** Leader: Roger Olsson	**WP5** **Dissemination** Leader: Nghia Trinh
2020-2024	2020-2022	2022-2023	2020-2024	2020-2024

3. Project progress

- Kick-off meeting 13/8, 2020
- ROCARC website: https://www.ntnu.edu/igp/rocarc
- Board established
- Reference group established
- PhD student: Bjarte Grindheim
- Dissemination: Webinar 18/11, 2020
- Num. mod. for lab tests (N. Trinh) started
- Lab test preparation: A test rig under construction