

Rock Engineering

1030-1200, Tuesday, A610

Yoshiaki Fujii

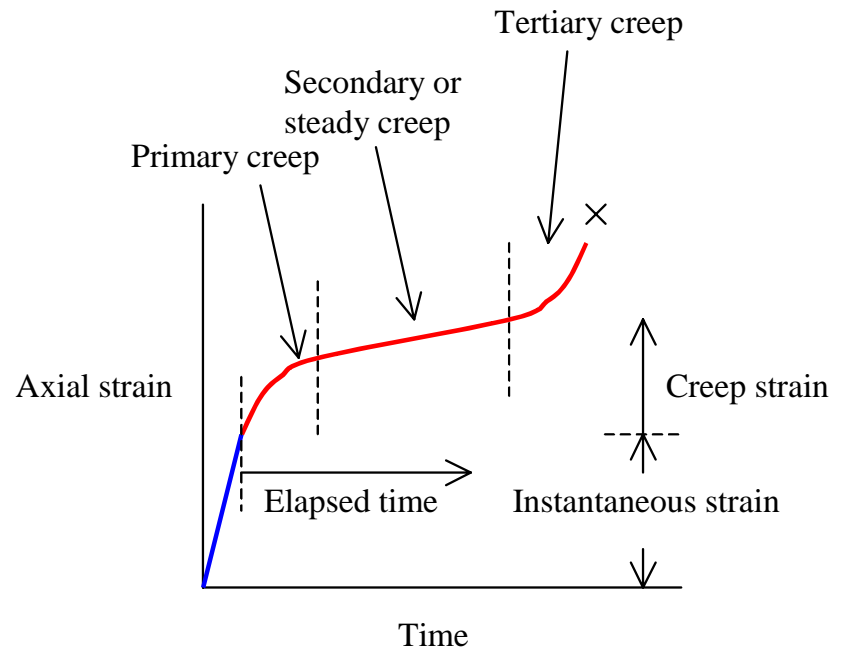
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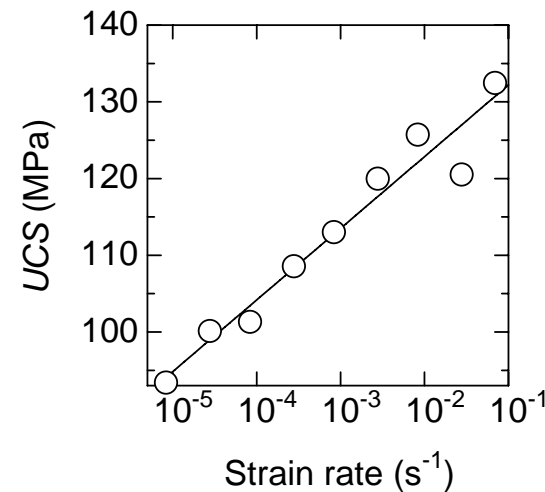
Creep failure and fatigue failure

- Creep failure
- Example of creep test
- Mechanism of creep
- Fatigue failure



Effects of various conditions on rock deformation and rock failure

- Loading rate
- Water
- pH of solution
- Chemical additives
- High and low temperatures
- Freeze-thaw cycle
- Anisotropy
- Scale effects and shape effects
- Diameter and chemical composition



Rock mass

- Classification of discontinuities
- Density and orientation of discontinuities
- Strength of discontinuities
- Deformation and strength of rock mass
- Rock mass classification
- Hydraulic conductivity of rock mass
- Failure of rock mass



Initial stress

- Initial stress value
- Initial stress measurement
- Stress relief method
- Hydraulic fracturing method
- Methods using oriented cores
- Method based on fault earthquake observation
- Other methods
- Example of initial stress measurement

著作権処理の都合で、
この場所に挿入されていた

『笠原慶一(1983) 地震の力学、鹿島出版会、p. 52, 図3.15』を省略させていただきます。

Rock slope

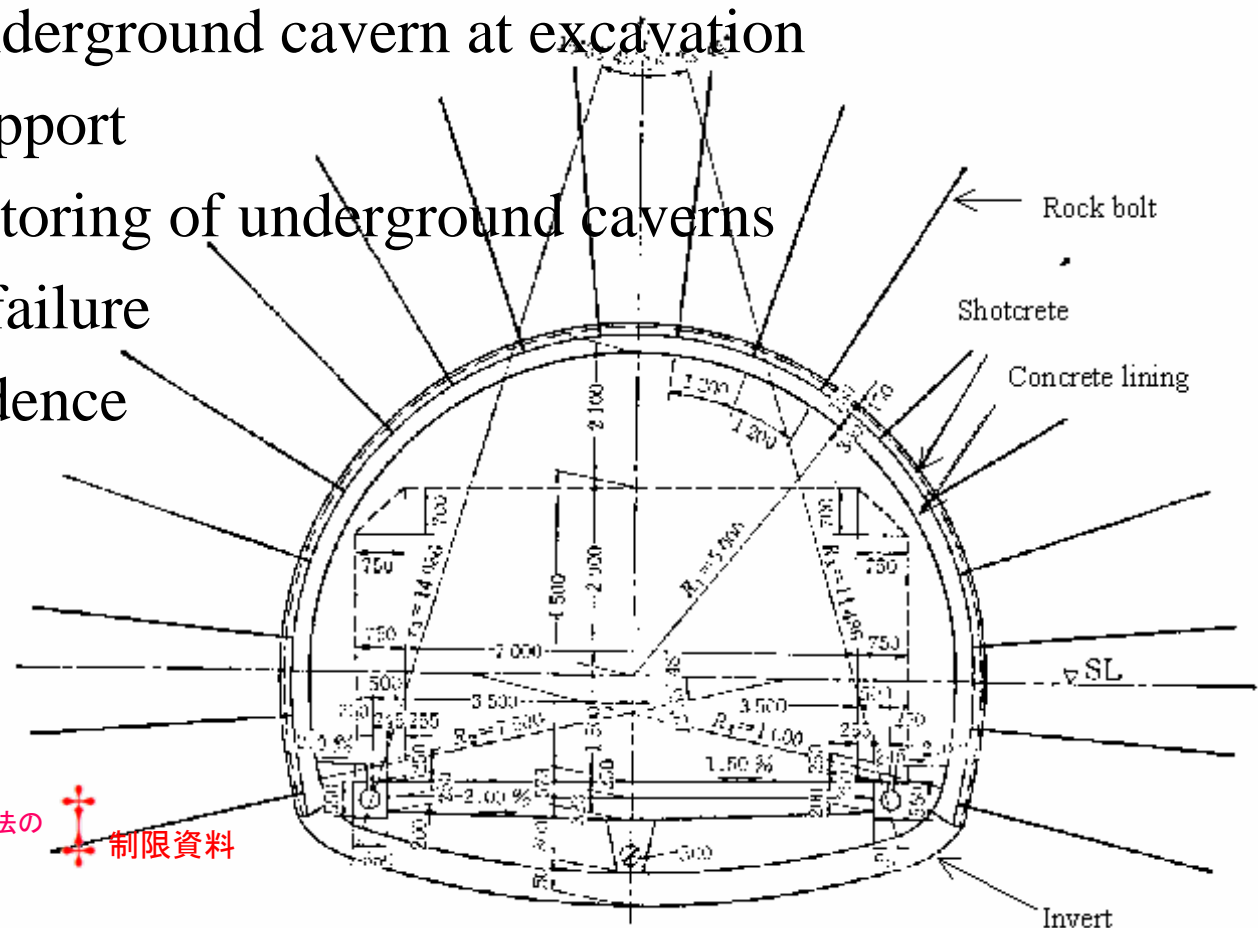
- Example of rock slope collapse
- Types of rock slope collapse
- Causes of rock slope collapse
- Criteria for rock slope collapses
- Monitoring of unstable rock slope
- Prediction of rock slope collapse

著作権処理の都合で、
この場所に挿入されていた

『北海道新聞 第二白糸トンネルの
岩盤崩壊記事の写真』を省略させて
頂きます。

Application to underground caverns

- Stability of underground cavern at excavation
- Concept of support
- Stability monitoring of underground caverns
- Prediction of failure
- Surface subsidence
- Rockbursts



社団法人地盤工学会(1986)、NATM工法の調査・設計から施工まで、p. 159図-3.24

制限資料

Grading, Textbooks and References

■ Grading

- Examination (80%) (Tuesday, July 19 at A610)
- Attendance and attitude (20%)

■ Textbooks and references

- Handout will be distributed.
- References will be indicated in the handout.

- Bring a calculator

Sign for stress and strain

■ Basically

- Compressive stress and contraction are taken as positive
- Tensile stress and extensile strain are taken as negative

■ There is a notice when

- Compressive stress and contraction are taken as negative
- Tensile stress and extensile strain are taken as positive