TYPES OF GROUTING METHOD
OUTLINE

- INTRODUCTION
- GROUTING
- TYPES OF GROUTING METHOD
- GROUTING EQUIPMENT
- CONCLUSION
INTRODUCTION

Grounds that the purpose of improving the poor soils with heavy loading conditions, them are affected by natural disasters such as earthquakes or landslides, tunnels around or buildings main floor of the features that help to bring more appropriate and sufficient conditions.
Before Grouting
After Grouting
GROUTING

- Contact Grouting
- Repair Grouting
- Chemical Grouting
- Cavity Grouting
- Consolidation Grouting
Contact Grouting

Repair Grouting
Chemical Grouting

Cavity grouting

Chemical or Cement Grout is injected to Prevent Soils from Collapsing

Collapsed area

Shotcrete

Concrete
Consolidation Grouting
Ground Improvement Technique, The Affecting Selection Of The Parameters

- Ground/rock profiles and characteristic,
- Groundwater of status and amount,
- Favored level of improvement,
- Improve the necessary space and depth,
- Production factors,
- Environmental factors,
- Cost,
- Maintenance, durability, and operational requirements,
- Others..
TYPES OF GROUTING METHOD

- Permeation Grouting
- Compaction Grouting
- Hydro Fracture Grouting
- Jet Grouting
- Rock Grouting
- Compensation Grouting
- Deep Mixing Methods (DMM)
PERMEATION GROUTING

This method describes the process of filling joints or fractures in rock or pore spaces in soil with a grout without disturbing the formation.
Grout mix is specifically designed so as **not to permeate the soil voids or mix with the soil.** Instead, it displaces the soil into which it is injected.
COMPACCTION GROUTING
HYDRO FRACTURE GROUTING

Hydro fracture grouting is the deliberate fracturing of the ground (soil or rock) using grout under pressure. Typically it is used to compact and stiffen the ground or to access otherwise inaccessible voids.
HYDRO FRACTURE GROUTING
JET GROUTING

The high-pressure water or grout is used to physically disrupt the ground, in the process modifying it and thereby improving it.
JET GROUTING
ROCK GROUTING

Rock grouting is the filling or partly filling by grout injection of fissures, fractures or joints in a rock mass with grouts without creating new or opening existing fractures.
ROCK GROUTING

GROUTING OF TECTONICALLY STRESSED ROCK

STRESSED ROCK LIABLE TO HEAVE WHEN RIGIDIFIED BY GROUT

CONTROL THE ENERGY APPLIED THROUGH THE GROUT BY LIMITING THE VOLUME INJECTED
- PRESSURE
COMPENSATION GROUTING

Compensation grouting is the responsive use of compaction, permeation or hydro fracture grouting as an intervention between an existing structure and an engineering operation.
COMPENSATION GROUTING
DEEP MIXING METHODS (DMM)

Today accepted world-wide as a soil improvement method which is performed to improve the strength, deformation properties and permeability of the soil.
DEEP MIXING METHODS (DMM)

1. Positioning of auger tool
2. Drilling and mixing soil with cement grout
3. Bottom mixing
4. Withdrawing while continuing soil mixing
5. Complete mixed product columns

1. Breakwater foundation (and quay walls)
2. Retaining wall foundation
3. Revetment foundation
4. Road foundation
5. Bridge pier foundation and retaining wall
6. Underground brace
GROUTING EQUIPMENT

DRILLING EQUIPMENT

SHOTCRETE

GROUTING BOLTS

MIXING

TBM

MAD 427
by ÜLKÜ SARI
CONCLUSION

Modern injection materials that ensure good permeation, short setting times and continuous work progress have proven to give very dry tunnels at reasonable cost levels.
NOW, ARE YOU SURE THAT YOU READ THE BLUE PRINTS RIGHT FOR THE CORING JOB ON THIS DAM PROJECT?

I THINK SO.

SIDE OF THE PLANET, SOMEWHERE IN CHINA!

MEAN WHILE SOMEWHERE ON THE OTHER

ANY QUESTION??