

Engineering Geology (3)

- Composition of ground
- -different depending on rock type
- -rock composition depends on minerals

- Main "Three" type of rock
- -igneous rock
- -sedimentary rock
- -metamorphic rock

- Rock types: part of geologic cycles
- -weathering, transport, deposition, lithification, metamorphism, melting, movement
- Identification of rock is required!

- Identification of rock
- -identification of mineral is required
- -by color, luster, hardness, crystal shape etc.
- -mineral composition leads to rock type

- Rock vs Mineral
- Rock: mixtures of minerals
- Minerals: compounds of elements
- Rock properties is variable but mineral property is fixed

- Igneous rock
- -from magma
- -Two types of igneous rock
- (1) intrusive rock: e.g. granite
- (2) extrusive rock: e.g. basalt

- *comparison: grains size, color etc

- Sedimentary rock
- -from erosion
(weathering+transportation)
- -from deposition
- -from lithification
- -from river, sea, mountain side etc
- -differ in grains size, color etc

- Sedimentary rock (classification)
- Clastic vs Non-clastic
- Clastic rock: conglomerate, sandstone, shale, mudstone etc
- Non-clastic rock: limestone, coal etc

- Metamorphic rock
- -metamorphism due to high temperature and high pressure
- -hornfels, marble, schist, slate, gneiss etc

- Implication into engineering
- (1) isotropy vs anisotropy: sedimentary layers, schistosity
- (2) specific weathering phenomena of each rock type
- (3) specific geological structures (e.g.) sheeting joint in granite, bedding joints in sedimentary rocks etc

- Implication into engineering
- (4) deeper weathering in metamorphic rock than others
- (5) deeper weathering in more fractured area