GE 341

Lab Assignment – Logging Rock Core and Determination of Rock Quality Index (RQD)

Reference Items:

1) **Deere, Don U., 1962, Technical Description of Rock Cores for Engineering Purposes: *Rock Mechanics and Engineering Geology*, v.1:1, pp. 16-22.**
2) **Deere, D.U., and Deere, D.W., 1988, The Rock Quality Designation (RQD) Index in Practice: in Kirkaldie, L., ed., Rock Classification Systems for Engineering Purposes, ASTM *Special Technical Publication (STP) 984*, pp. 91-101.**
3) **Sample of a cored rock boring log**
4) **Box of NX rock core (Navajo Sandstone of Jurassic age, collected in Zion National Park)**
5) **GSA Rock Color Chart**
6) **Steel tape measure**

Your assignment is to log the rock core contained in the waxed cardboard core box in 265 McNutt. Please take one copy of articles 1) and 2) to keep for your Engineer's Notebook. Read these article to gain an understanding of what the RQD determination is and what it describes. Be prepared to answer a quiz on RQD in class on Thursday Oct 20th, at the beginning of class. The other items should remain in 265 McNutt.

Standard core boxes are designed to retain exactly 10 feet of core, split in five 2 foot sections. See the sample core log for an idea of how descriptions should appear. You can log the core at any scale you choose, but certainly not less than about 1 inch per foot.

The most important items to note are apparent voids (missing material) and fractures. It is expected that the core sections will separate along inclined bedding planes or joints. Joints are usually pretty regular with respect to their orientations; if you see repeating patterns in the inclinations or smooth through-going fractures with respect to bedding, it's likely a joint. Always note the character of the joint, such as "Clean", "smooth", "healed", or "infilled", then note what kind of material comprises the filling (e.g. clay).

The abbreviation "MB" is used for "mechanical breaks." This is subjective interpretation based on the logger's experience. Mechanical breaks are typically caused by drilling, and not thought to be natural. The core sections must be broken into two foot segments to fit in the core box, so these breaks should not be shown on the log (unless they coincide with the even two foot spacings).

You should also include a graphic log of the cores, noting anything descriptive, such as color, texture, weathering, fracture orientations, etc. You should also note the percent core recovered (% REC) as well as the RQD value you determine for the 10 foot section.

The completed assignment is due Thursday Oct 20th after lecture.