David Norbury
Engineering Geologist

IDENTIFICATION AND DESCRIPTION OF ROCKS

In accordance with BS 5930:1999 Amendment 1 and BS EN ISO 14689

ROCK MATERIAL

DIMENSION	Strength	Structure and fabric	Colour	Texture	Grain size	ROCK NAME: SEDIMENTARY	ROCK NAME: IGNEOUS	ROCK NAME: METAMORPHIC	GENERAL: Minor Constituents	GENERAL: Formation Name
	>250 MPa Extremely Strong Rings on hammer blows. Only chipped with geological hammer	Use standard geological terms Very thickly	**LIGHTNESS** Light Dark	Use standard geological terms for example				Massive Foliated	Describe using relative terms rare occasional frequent	Name according to published geological maps and memoirs COAL MEASURES
2000 mm										
	100 - 250 MPa Very Strong Requires many hammer blows to break specimen	Thickly Medium Thinly	**CHROMA** Pinkish Reddish Yellowish Brownish Greenish Bluish Greyish	phaneritic ophitic porphyritic crystalline	Coarse grained	CONGLOMERATE BRECCIA LIMESTONE AGGLOMERATE DOLOMITE VOLCANIC BRECCIA	GRANITE DIORITE GABBRO	GNEISS MIGMATITE MARBLE	vugs shells pyrite crystals organics colours odours	WEATHERED WICKERSLEY ROCK RESIDUAL MUDSTONE SHERWOOD SANDSTONE LEWES CHALK DISTINCTLY WEATHERED MERCIA MUDSTONE
630 mm										
200 mm										
63 mm	50 - 100 MPa Strong Rock broken by more than one hammer blow	Very thinly Thickly laminated / Narrowly								
20 mm										
6.3 mm	25 - 50 MPa Medium Strong Cannot be peeled with knife, fractures with single blow of hammer	Thinly laminated / Very narrowly	**HUE** Pink Red Yellow Brown Green Blue White Grey Black	amorphous	Medium grained: Coarse	SANDSTONE HALITE GREYWACKE	MICROGRANITE	SCHIST		
2 mm										
0.63 mm					Medium	QUARTZITE	DOLERITE	PHYLLITE		
0.2 mm	5 - 25 MPa Weak Can be peeled with difficulty. Point of hammer makes shallow indents				Fine	TUFF ANHYDRITE	MICRODIORITE	QUARTZITE		
0.063 mm										
0.02 mm	1 - 5 MPa Very Weak Crumbles under firm hammer blows. Can be peeled by knife	Terms include bedded / laminated, foliated, banded and flow banded.			Fine grained	SILTSTONE CHALK GYPSUM Fine grained TUFF	RHYOLITE ANDESITE BASALT	SLATE HORNFELS		
0.006 mm										
0.002 mm					Very fine grained	MUDSTONE Very fine grained TUFF				
	0.6 - 1.0 MPa Extremely weak Gravel size lumps crush between finger and thumb. Indented by thumbnail				Crypto-crystalline	CHERT FLINT	OBSIDIAN VOLCANIC GLASS			

ROCK MASS

DISCONTINUITIES

Weathering	Orientation	Spacing	Persistence	Termination	Roughness	Wall strength	Aperture	Infilling	Seepage	No of sets
Approach 1 Mandatory description of all features associated with weathering Describe state and changes in Strength Fracture state Colour Presence or absence of weathering products	**Dip direction and dip** eg 245/70 Dip amount only in cores	Extremely widely > 6 m Very widely 2 to 6 m Widely 0.6 to 2 m Medium 200 to 600 mm Closely 60 to 200 mm Very closely 20 to 60 mm Extremely closely < 20 mm Take several readings Report average and maximum	Very high > 20 m High 10 to 20 m Medium 3 to 10 m Low 1 to 3 m Very Low < 1 m Discontinuous Continuous in cores	x outside exposure r within rock d against discontinuity Cannot normally be described in cores Record size of exposure	Large scale (m) Waviness Curvature Straightness **Medium scale** (cm) and small scale (mm) **Stepped** Rough Smooth Striated **Undulating** Rough Smooth Striated **Planar** Rough Smooth Striated Measure amplitude and wavelength of feature	Use standard strength terms (Col 2) Support by using Field strength tests Point load Schmidt hammer Other index tests Visual assessment	Cannot be described in cores Extremely Wide > 1 000 mm Very Wide 100 - 1000 mm Wide 10 - 100 mm Moderately wide 2.5 to 10 mm Open 0.5 to 2.5 mm Partly open 0.25 to 0.5 mm Tight 0.1 to 0.25 mm Very Tight < 0.1 mm Take several readings Report average and maximum	Clean Surface staining (colour) Soil infilling (describe as for soils, see over) Mineral coatings(eg calcite, chlorite, gypsum etc) Other - specify Record width, continuity and relevant characteristics of infill	Moisture on rock surface Dripping water Water flow measured per unit time on an individual discontinuity or set of discontinuities Large > 5 l/sec Medium 0.5 - 5.0 l/sec Small 0.05 - 5.0 l/sec	Cannot be described in detail in cores although division into sets with different dip amounts is often feasible and can be usefully carried out Record spacing and orientation of each set
Approaches 4 or 5 Classify only if useful and unambiguous										

FRACTURE STATE

Solid Core	Solid core is taken as core with at least one full diameter (but not necessarily a full circumference) measured along the core axis or other scan line between two natural fractures.
TCR	Percentage ratio of core recovered (both solid and non-intact) to the total length of core run.
SCR	Percentage ratio of solid core recovered to the total length of core run.
RQD	Total length of solid core pieces each greater than 100 mm between natural fractures expressed as a percentage of total length of core run.
If	Average length of solid core pieces between natural fractures over core lengths of reasonably uniform characteristics, not core runs.
FI	Number of fractures per metre over core lengths of reasonably uniform characteristics