Footnote	Reference
a	**ISRM 2007**. The Complete ISRM Suggested Methods for rock characterization, testing and monitoring:1974-2006. Edited by R. Ulusay and J.A. Hudson. ISRM Turkish National Group
b	**ISRM 1978**. Suggested Methods for the quantitative description of discontinuities in rock masses. International Journal of Rock Mechanics and Mining
c	**ASTM 2018**. "Standard D420-18: Standard Guide for Site Characterization for Engineering, Design, and Construction Purposes." ASTM International, West Conshohocken, PA.
d	**ASTM 2014**. "Standard D2113-14: Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigation." ASTM International, West Conshohocken, PA.
e	**ASTM 2017**. "Standard D6032M-17: Standard Test Method for Determining Rock Quality Designation (RQD) of Rock Core." ASTM International, West Conshohocken, PA.
f	**Deere, D.U., Hendron, A.J., Patton, F.D., and Cording, E.J. 1967**. Design of surface and near surface construction in rock.
g	**The Association of Engineering Geologists South Africa. (1976)**. A guide to core logging for rock engineering. In Proceedings of the Symposium on Exploration for Rock
h	**Marinos, P., and Hoek, E. 2001**. Estimating the geotechnical properties of heterogeneous rock masses such as flysch.
i	**Barton, N.R., Lien, R., and Lunde, J. 1974**. Engineering classification of rock masses for the design of tunnel support.
j	**Barton, N.R. 1987.** Predicting the behaviour of underground openings in rock. Manual Rocha Memorial Lecture. Lisbon.
k	**Bieniawski, Z.T. 1989**. Engineering rock mass classification. Wiley, New York. 251 p.
l	**Priest, S.D 1985**. Hemispherical projection methods for rock engineering. George Allen and Unwin, London.

1. General Overview of Core [a,b,c,d]

1a. Core Quality
1b. Major Features
1c. Lithologic Changes, Weathering Boundaries, Color Changes and Grain Size Changes

2. Identify and Mark Natural Discontinuities (on core) [a,b,c]

2a. Place a single strike mark across all discontinuities
2b. Mark depths of discontinuities
2c. Place x mark on either side of all mechanical breaks

3. Photograph the Core [a,c]

3a. Photograph wet and dry
3b. Include Project Name, Project Number, Date, Testhole #, Depth from and to, Run # & Box #
3c. Include a scale in the photo
3d. Color and/or Greyscale chart (optional)

4. Core Recovery Measurements [a,c]

4a. Total Core Recovery (TCR)
4b. Solid Core Recovery (SCR)
4c. Rock Quality Designation (RQD) [e,f]

RQD Length = ε Length of Core Sticks ≥ 10cm

5. Rock Mass Description [a,c]

5a. Rock Type (Geologic Unit and/or Formation Name)
5b. Colour
5c. Grain or Crystal Size [g]

Grain Size (mm)	Description	Examples
< 0.06	Very fine	Siltstone, mudstone, basalt, tuff
0.06 - 0.2	Fine	Greywacke
0.2 - 0.6	Medium	Quartzite
0.6 - 2.0	Coarse	Sandstone, granite, schist
> 2.0	Very Coarse	Conglomerate, breccia

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Notes for Completion of Rock Field Logs

5d. Intact Rock Strength (IRS) [f]

GRADE	DESCRIPTION	FIELD IDENTIFICATION	UNIAXIAL COMPRESSIVE STRENGTH (MPa)
R0	Extremely Weak	Indented by thumbnail	0.25-1.0 (>2.5 on Pocket Penetrometer)
R1	Very Weak	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	1.0 - 5.0 (Maximum reading exceeded for Pocket Penetrometer)
R2	Weak	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	5.0-25
R3	Medium Strong	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with a single firm blow of geological hammer	25-50
R4	Strong	Specimen requires more than one blow of geological hammer to fracture it	50-100
R5	Very Strong	Specimen requires many blows of geological hammer to fracture it	100-250
R6	Extremely Strong	Specimen can only be chipped with geological hammer	>250

5e. Weathering [a]

SYMBOL	TERM	DESCRIPTION	DISCOLORATION EXTENT	FRACTURE CONDITION	SURFACE CHARACTER
W1	Fresh	No visible sign of rock material weathering	None	Closed or Discolored	Unchanged
W2	Slightly Weathered	Discoloration indicated weathering of rock material on discontinuity surfaces. Less than 5% of rock mass altered.	<20% of fracture spacing on both sides of fracture	Discolored, may contain thin filling	Partial Discoloration
W3	Moderately Weathered	Less than 50% of the rock material is decomposed and/or distinegrated to a soil, or altered. Fresh or discolored rock is present either as a discontinuous framework or as corestones.	>20% of fracture spacing on both sides of fracture	Discolored, may contain thick filling	Partial to complete discoloration, not friable except poorly cemented rocks
W4	Highly Weathered	More than 50% of the rock material is decomposed and/or disintegrated to a soil or is altered. Fresh or discolored rock is present either as a discontinuous framework or as corestones.	Throughout	Filled with alteration minerals	Friable and possibly pitted
W5	Completely Weathered	100% of rock material is decomposed and/or disintegraated to a soil or 100% of minerals have been replaced with alteration minerals. The original mass structure is still largely intact.	Throughout	Filled with alteration minerals	Resembles soil, or all original mionerals have been replaced with alteration minerals
W6	Residual Soil	All rock material is converted to soil. The mass strcuture and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported	Throughout	N/A	Resembles soil

6. Structural Discontinuity [a,b,c]

6a. List depths and types of natural fractures
6b. Describe fracture conditions

TYPE	
JN	Joint
FLT	Fault
CON	Contact
VN	Vein
MECH	Mechanical
BD	Bedding
FO	Foliation
SH	Shear
BC	Broken Core
LC	Lost Core

SHAPE	
PL	Planar
C	Curved
UN	Undulating
ST	Stepped
IR	Irregular

ROUGHNESS	
K	Slickensided
PO	Polished
SM	Smooth
RO	Rough
VR	Very Rough

THICKNESS/APERTURE		
<0.1mm	Very Tight	Closed Features
0.1-0.25mm	Tight	
0.25-0.5mm	Partly Open	
0.5-2.5mm	Open	Gapped Features
2.5-10mm	Moderately Wide	
>10mm	Wide	
1-10cm	Very Wide	Open Features
10-100cm	Extremely Wide	
>1m	Cavernous	

JOINT INFILLING							
Phyllosilicates		Mineral Precipitate / Cement				Physical	
Bt	Biotite	Ca	Calcite	Gr	Graphite	M	Silt
Pg	Phlogopite	Ep	Epidote	Su	Sulphide	Sa	Sand
Ch	Chlorite	Fe	Iron	He	Hematite	Gv	Gravel
Cl	Clay	Mn	Manganese	Qz	Quartz	Br	Broken
Sr	Serioite	Gy	Gypsum	Tc	Talc	Go	Gouge

6c. Collect fracture conditions with respect to NGI-Q system [i]

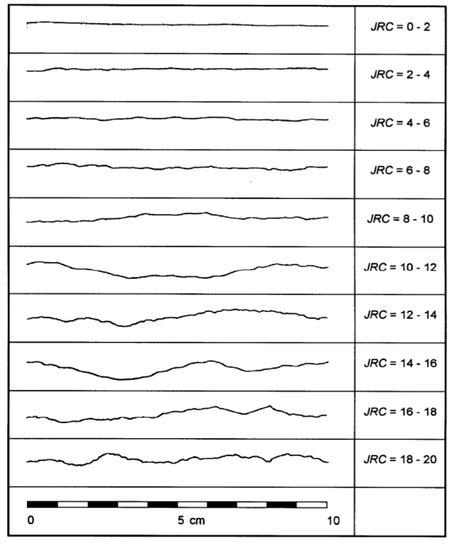
INFILLING COATING/CHARACTER	
-	Clean
ST	Staining Only
SA	Slightly Altered
CC	Continuous Coating <= 1mm
DC	Discontinuous Coating <= 2mm
IN	Continuous Infill >2mm

JOINT ROUGHNESS (Jr)	
4.0	Discontinuous
3.0	Wavy and Rough
2.0	Wavy and Smooth
1.5	Planar/Rough or Wavy/Slickensided
1.0	Planar/Smooth or Filled
0.5	Planar/Slickensided

JOINT NUMBER (Jn)	
0.5	Massive
1	Occasional random
2	One set
3	One plus random
4	Two sets
6	Two plus random
9	Three sets
12	Three plus random
15	Four or more sets
20	Crushed rock

JOINT ALTERATION (Ja)	
Unfilled or Coated	
0.8	Healed fractures
1	Staining Only
2	Slightly Altered Walls
3	Silty/Sandy (Decomposing)
4	Clay (Disintegrating)
Filled	
4	Sand/Crushed Rock <5mm
5	Sand/Crushed Rock >5mm
6	Cement/Non-softening <5mm
8	Soft Clays/Low Friction <5mm
12	Hydrating Clays/Chlorite <5mm
10	Cement/Non-softening >5mm
15	Soft Clays/Low Friction >5mm
20	Hydrating Clays/Chlorite >5mm

6d.Estimate joint roughness coefficient (JRC) [i]



NOTE: Chart is not to Scale

6e. Collect fracture conditions with respect to RMR 1989 system [k]

JOINT CONDITION RATING (JCR) 1989	
0	Soft gouge >5mm thick or separation >5mm continuous
10	Slickensided surfaces or gouge <5mm thick or separation 1-5mm continuous
20	Slightly rough surfaces, separation <1mm, highly weathered walls
25	Slightly rough surfaces, separation <1mm, slightly weathered walls
30	Very rough surfaces, not continuous, no separations, unweathered walls

6f. Discontinuity orientation dip (Alpha/Beta) [l]