

Table 3.13 Example of a completed quality rating assessment worksheet (after Lienhart, 1998)

	a	b				c	d	e
	Criterion	Quality rating				Rating value	Weighting	Weighted rating
		Excellent	Good	Marginal	Poor			
		(=4)	(=3)	(=2)	(=1)	Average	%	{{(c) × (d)}/ mean of (d)}
Field-based indicators	Lithological classification		√			3	58	2.12
	Regional <i>in situ</i> stress			√		2	73	1.78
	Weathering grade		√			3	73	2.67
	Discontinuity analysis		√			3	95	3.48
	Groundwater condition			√		2	73	1.78
	Production method				√	1	95	1.16
	Rock block quality			√		2	80	1.95
	Set-aside		√			3	73	2.67
	Petrographic evaluation			√		2	95	2.32
1	Block integrity test				√	1.5	90	1.65
	Block integrity visual			√				
2	Mass density		√			3	80	2.93
	Water absorption		√					
	Microporosity/total porosity		√					
	Methylene blue absorption		√					
3	Compressive strength			√		1.67	88	1.79
	Schmidt impact index			√				
	Sonic velocity				√			
4	Point load strength			√		2.67	88	2.87
	Fracture toughness		√					
	Los Angeles		√					
5	Micro-Deval			√		2	88	2.15
6	Freeze-thaw loss		√			3.67	80	3.58
	MgSO ₄ soundness	√						
	Wet-dry loss	√						
						Sum	1229	34.9
						n	15	15
						Mean	81.9	2.33

Notes

- This sheet includes 15 factors (nine field, six laboratory), hence overall rating or armoustone quality designation (*AQD*) is mean of column (e) based on all 15 factors. If no data are available for one or more factors, *AQD* should be based on the number of included factors. A complete and balanced set of data is ideal.
- In addition to engineering geology indicators, each boxed grouping of tests 1 to 6, generates one average rating value in column (c) from one or more suggested tests. They refer to 1: resistance to major breakage; 2: mineral fabric physical quality; 3: resistance to minor breakage (compressive); 4: resistance to minor breakage (tensile, dynamic); 5: resistance to wear (shear and attrition); 6: resistance to in-service weathering.
- Test results and field assessments can be used to generate continuously varying ratings from 0.5 to 4.5 rather than integer values. Similarly, *AQD* results can vary from 0.5 to 4.5.