BRE digest methodology to measure cracking in Buildings

When assessing the affected building, the surveyor will use the columns Assessment A, B and C to indicate what category best describes the measurements and ease of repair, choosing option Yes from the drop down list. This will highlight the box in yellow, for ease of identification.

	BRE Digest 251 Table 1 Visible damage to walls + ease of repair Crack width is one factor, not to be used alone			BRE Digest 251 Table 2 Visible damage caused by groundfloor slab settlement Categorisation may be qualified by possibility of progressive movement; eg. due to voids or areasof loosely compacted fill (or degradable material)			BRE digest 475 Table 2 Inidicative values for tilting of low rise housing		
Cat.	Assessment -A	Typical damage (ease of repair)	Crack(s) mm	Assessment-B	Typical damage (ease of repair)	Aprox. (a) crack width (b) gap*	Assessment-C	Classification + Tilt	Comment + ease of repair
0		No action required	< 0.1 mm		Hairline cracks between floor and skirting (boards). No action required	a- NA b- up to 1 mm		NA Tilt nil	No action required
1		Damage usually on internal walls, rarely externally Easily treated by decoration.	Up to 1 mm		Settlement of slabs, at corner or along the walls, or uniformity gap(s) . No wall/floor cracks, negligible cracks in floor screed. Slab reasonably level. Gap(s) masked by reseting skirting	a- NA b- Up to 6 mm		Design limit value, 1/400	Maximum acceptable differential settlement across the building related to tilt design limit. If building likely to tilt more, ground treatment or deep foundations may be needed.
2		Not necessarily externally. Some external repointing may be required.Doors/windows may require easing and adjusting. Cracks easily filled. Recurrent cracks masked by linings.	Up to 5 mm		Gaps below skirting, limited local settlement, slight slope of slab. Fine cracks in internal walls need some re -decoration. Slight ditorsion in door frames, ncessitating readjustment of doors. No cracks in floor slab although there may be very slight cracks in floor screed and finish slab reasonably level. Reset skirting, local re-screeding Re-decoration Adjusting of doors	a- up to 1 mm b- Up to 13 mm		Noticeability, 1/250	Tilt of a building becomes noticeable dependendt on the type and purpose of the building, and the powers of observation and perception of the occupiers. Typically tilt of low rise housing is noticed when it is in the region of 1/250 to 1/200
3		Doors/windows sticking. Broken pipes. Water tightness impaired. Work by mason. Repointing external brickwork and possibly some brickwork replaced.	5 to 15 mm		Significant gaps below skirting, especially at corners/ends, slight cracking of slab. Sloping slab clearly visible; (approx.1/150). Disrupted drains + pipes may occur. More damaged internal walls with some crack filling or replastering of partitions necessary. . Some voids below slab + loosely campacted fill. Need for crack filling and replastering of partitions Doors may need refitting	a- up to 5 mm b- Up to 19 mm		Monitoring, 1/250	When tilting is noticed it is advisable to make some measurements to confirm that the building has tilted. If the measured tilt is greater than 1/250, monitoring should be carried out to determine whether the tilt is increasing.
4		Extensive specially over doors and windows. Windows and door frames distorted, floor sloping noticeably. * Walls leaning/bulging.* Service pipes disrupted Replacing sections of walls,	15 - 25 mm		Large gaps below skirting; possibly some cracks in slab, sharp fall to slab edge;(slope aprox. 1/500 or more). Voids exceeding 50mm below slab and/or poor or lose fill likely to settle further. Local breaking out, part refilling and relaying of floor slab or grouting of fill may be necessary; damage to internal partitions may require replacement of some bricks or blocks or relining of stud partitions.	a- 5 to 15 mm but may also depend on number of cracks b- up to 25 mm		Remedial action, 1/100	Where tilts of this magnitude are measured or the measured rate of increase of tilt indicates that this degree of tilt will be exceeded, some remedial action should be taken. This is likely to include re-levelling de building, perhaps by re grouting or underpinning and jacking.
5		Structural damage . Walls lean badly. Danger of instability. Requiring major repair, partial or complete rebuilding	>25 mm		Significant overall flor settlement + wall(s) movement, possibke damage to exterior walls, or large differential settlements across slabs. Voids >75mm and/or poor/very loose, fill instability risk Replace /grout most/all of slab, replace internal walls.	a- ussually >15 mm but depends on number of cracks b- >25 mm		Ultimate limit, 1/50	If tilt reached this level, the building may be regarded as in a dangerous condition, and remedial action either to re-level or to demolish the building will be required urgently.

* Local deviation of slope, from the horizontal or vertical, of more than 1/100 will normally be clearly visible.
Overall deviation in excess of 1/150 are undesirable.

* Gap, refers to space- ussually between the skirting and finished floor. Caused by settlement after making appropriateallowance for discrepancy in building, shrinkage, normal bedding and the like.