



Project No: 24105 - Thornton	Sheet No: 1
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TITLE **Beech Drive, Thornton, Leicestershire**

Vibration Assessment

Rig **JCB JX**
 Hammer Weight **2.50** Tonnes
 Drop Height **0.30** m
 Hammer Efficiency **95.0** %
 Separation of pile toe and structure **20.00** m

* Although different calculation methods use different wording and notation, these values are the same as the piling system energy

Piling system energy = **712.5** kgm (**6989.6** j)

From BS5228-2:2009

$$V_{res} = k_p \left[\frac{\sqrt{W}}{r^{1.3}} \right]$$

where; V_{res} = resultant PPV (mm/s)
 W = hammer energy (kj)
 r = slope distance from pile toe (m)
 k_p = driving resistance factor

driving conditions characterised by **very stiff cohesive soil** hence k_p is taken as **5**

Therefore projected vibration = **8.5** mm/s

From Ciria 142 (1992) (after Attewell et al (1990/1) and Oliver and Selby (1991))

$$v = b \left(\frac{\sqrt{E}}{r} \right)^x$$

where; v = peak particle velocity at r
 E = pile energy input *
 r = radial distance between source and receiver
 b = 1.33
 x = 0.73

Therefore, projected vibration = **3.8** mm/s

Summary

BS5228-2:2009 = **8.5** mm/s
 Ciria 142 (1992) = **3.8** mm/s