

**ROGER BULLIVANT**

ROGER BULLIVANT LTD

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Project No:
WP.19.2031

Sheet No:

Prepared by:
THSDate:
2.12.19

Checked by:

Date:

TITLE MIPA Paints Havant

Approved for Construction
by:

Date:

Vibration Assessment

Rig 5000
 Hammer Weight 5.50 Tonnes
 Drop Height 0.30 m
 Hammer Efficiency 75.0 %
 Separation of pile toe and structure 12.00 m

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

Piling system energy = 1.2375 Tm (12139.9 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 (j)
 r = slope distance from pile toe (m)
 k_p = driving resistance factor

driving conditions characterised by stiff cohesive soil hence k_p is taken as 1.5

Therefore projected vibration = 6.54 mm/s

From ENV 1993-5 (1998)

$$v = C \times \frac{\sqrt{W}}{r}$$

where; v = peak particle velocity at r
 W = source energy per cycle *
 r = radial distance between source and receiver
 C = ground dependant factor

Worst case** material considered as stiff cohesive soil hence C is taken as 0.75

** greatest competency

Therefore, projected vibration = 6.9 mm/s

Summary

BS5228-2:2009 = 6.5 mm/s

ENV 1993-5 (1998) = 6.9 mm/s



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Rig 5000

System Energy 12140 kj

Calculated Vibration Vs. Distance from Source

