60. From mechanical energy conservation (or simply using Eq. 2-16 with $\vec{a} = g$ downward) we obtain

$$v = \sqrt{2gh} = \sqrt{2(9.8)(6.0)} = 10.8 \text{ m/s}$$

for the speed just as the $m = 3000$-kg block makes contact with the pile. At the moment of "joining", they are a system of mass $M = 3500$ kg and speed V. With downward positive, momentum conservation leads to

$$mv = MV \implies V = \frac{(3000)(10.8)}{3500} = 9.3 \text{ m/s} .$$

Now this block-pile "object" must be rapidly decelerated over the small distance $d = 0.030$ m. Using Eq. 2-16 and choosing $+y$ downward, we have

$$0 = V^2 + 2ad \implies a = -\frac{9.3^2}{2(0.030)} = -1440$$

in SI units (m/s^2). Thus, the net force during the decelerating process has magnitude $M\,|a| = 5.0 \times 10^6$ N.