Let $A$ be an abelian variety of dimension $g$ defined over a number field $F$. For a rational prime $\ell$, we will denote the extension of $F$ generated by the $\ell$-powered torsion points of $A$ by $F(A[\ell^\infty])$. According to a conjecture made by Rasmussen and Tamagawa in 2008, if $F(A[\ell^\infty])$ is both a pro-$\ell$ extension of $F(\mu_{\ell^\infty})$ and unramified away from $\ell$, then $\ell \leq C(F, g)$, where $C(F, g)$ is a constant that depends only on $F$ and $g$. We will show that if we restrict our attention to elliptic curves with complex multiplication, we can make $C(F, 1)$ explicit and, in fact, dependent only on the degree of the number field $F$. (Received September 17, 2013)