Let $K$ be an $n$-bridge knot, $n \geq 3$, with bridge distance greater than $2n$. It follows that the tunnel number of $K$ is $n - 1$, and there are at most $\binom{2n}{n}$ distinct tunnel systems for $K$, which we explicitly construct. Further, we show that, if the bridge distance of $K$ is at least $4n$, certain pairs of Heegaard splittings corresponding to these tunnel systems have stable genus at least $2n - 1$, while all others have stable genus at most $n + 1$. Although, at the time of submission, it remains open whether the upper bound on the number of distinct tunnel systems can be realized, some partial results in this direction can be shown as well. (Received February 20, 2015)