Recent results in the study of distance-constrained graph labelings have led to the consideration of $\lambda_x$-labelings. For graph $G$ and non-negative real number $x$, $\lambda_x(G)$ is the minimum span of vertex labelings of $G$ satisfying the conditions that labels of adjacent vertices differ by at least $x$ and labels of vertices distance two apart differ by at least one. In this paper we introduce the notion of $\lambda_x$-invertible graphs: for $x > 0$, $G$ is said to be $\lambda_x$-invertible if and only if $\lambda_x(G) = \lambda_{1/x}(G^c)$. We investigate the properties of $\lambda_x$-invertible graphs and identify several classes of graphs with $\lambda$-invertibility. (Received September 17, 2007)