The orthogonal Procrustes problem aims to find an orthogonal matrix $\mathbf{T}$ which transforms one given matrix $\mathbf{A}$ into another one $\mathbf{B}$ by minimizing the residual difference under Frobenius norm of matrix, i.e., $\min\|\mathbf{B}-\mathbf{T}\mathbf{A}\|\_{F}^{2}$. In many real applications, some certain factors may have been partially known previously. The prior information could be formulated as partially known columns in $\mathbf{T}$ and would influence the solution of the whole orthogonal transformation matrix, and hence makes the original orthogonal Procrustes problem more difficult. In this paper, we give the necessary and sufficient conditions for the solution of orthogonal Procrustes problem with partially known columns, which includes the original orthogonal Procrustes problem as a special case. We also discuss the number of solutions under different situations.