Let $p$ be prime. Consider the additive group $M$ of all $p \times p$ matrices with entries in $\mathbb{Z}_{p^2}$. We want to find all subgroups of $M$ that are invariant under two particular endomorphisms. By examining factor groups of $M$ and relying on the fact that $\mathbb{Z}_p$ is a field, we were able to attack the problem using concepts from linear algebra and group theory. So far we have solved 20 of the 98 total cases of the problem for prime $p = 3$. This study has connections with classification problems for certain subgroups of wreath product finite groups of prime-power order. (Received September 07, 2007)