

$$\mathbb{A}^{[k]} = \begin{pmatrix}
 \begin{array}{ccccc|ccc}
 & \xrightarrow[k+1]{} & & & & & & \\
 \alpha_1 & \bullet & \dots & \bullet & \bullet & \bullet & \dots & \bullet \\
 0 & \ddots & \ddots & \vdots & \bullet & \vdots & & \vdots \\
 \vdots & \ddots & \ddots & \bullet & \bullet & \vdots & & \vdots \\
 0 & \dots & 0 & \alpha_k & \bullet & \vdots & \dots & \vdots \\
 0 & \dots & \dots & 0 & \alpha_{k+1} & \bullet & \dots & \bullet \\
 \hline
 0 & \dots & \dots & 0 & \bullet & \bullet & \dots & \bullet \\
 \vdots & & & \vdots & \bullet & \vdots & & \vdots \\
 0 & \dots & \dots & 0 & \bullet & \bullet & \dots & \bullet
 \end{array}
 \end{pmatrix}$$