A. $\quad Q = [\,20^2\,]$

$$R_t = \begin{bmatrix} \alpha_1\,\delta_{rot_1}^2 + \alpha_2\cdot\delta_{tran}^2 & 0 & 0 \\[2mm] 0 & \alpha_3\,\delta_{tran}^2 + \alpha_4\,(\delta_{rot_1}^2 + \delta_{rot_2}^2) & 0 \\[2mm] 0 & 0 & \alpha_1\,\delta_{rot_2}^2 + \alpha_2\,\delta_{tran}^2 \end{bmatrix}$$

$$R_t\Big|_{\substack{\text{initial}\\ \text{command}}} = \begin{bmatrix} 0,0001 & 0 & 0 \\ 0 & 2,5 & 0 \\ 0 & 0 & 0,001 \end{bmatrix}$$

$$G_t = \begin{bmatrix} 1 & 0 & -\delta_{tran}\sin(\theta + \delta_{rot_1}) \\[2mm] 0 & 1 & \delta_{tran}\cos(\theta + \delta_{rot_1}) \\[2mm] 0 & 0 & 1 \end{bmatrix}\Bigg|_{\substack{\text{initial}\\ \text{mean}}} = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 10 \\ 0 & 0 & 1 \end{bmatrix}$$

$$V_t = \begin{bmatrix} -\delta_{tran}\sin(\theta + \delta_{rot_1}) & \cos(\theta + \delta_{rot_1}) & 0 \\[2mm] \delta_{tran}\cos(\theta + \delta_{rot_1}) & \sin(\theta + \delta_{rot_1}) & 0 \\[2mm] 1 & 0 & 1 \end{bmatrix}\Bigg|_{\substack{\text{initial}\\ \text{mean}}} = \begin{bmatrix} 0 & 1 & 0 \\ 10 & 0 & 0 \\ 1 & 0 & 1 \end{bmatrix}$$

$$H_t = \begin{bmatrix} \dfrac{M_y - y}{q} & -\dfrac{M_x - x}{q} & -1 \end{bmatrix}, \quad q = (M_x - y)^2 + (M_y - y)^2$$

$$H_t\Big|_{\substack{\text{initial}\\ \text{mean}}} = \begin{bmatrix} -0,0016 & 0,00544 & -1 \end{bmatrix}$$