

5.13 Torsion of Sedan

$$\begin{bmatrix} h_1 & w & 0 & 0 & 0 & 0 & 0 \\ l_S & 0 & -w & 0 & 0 & 0 & 0 \\ l_R & 0 & 0 & -w & 0 & 0 & 0 \\ l_B & 0 & 0 & 0 & -w & 0 & 0 \\ h_2 & 0 & 0 & 0 & 0 & w & 0 \\ l_F & 0 & 0 & 0 & 0 & 0 & -w \\ 0 & 0 & 0 & (h_0 - h_1) & [l_F(h_0 - h_2) + l_2(h_2 - h_1)]/l_B & -l_F & h_1 \end{bmatrix} \begin{bmatrix} Q_1 \\ Q_2 \\ Q_3 \\ Q_4 \\ Q_5 \\ Q_6 \\ Q_7 \end{bmatrix} = \begin{bmatrix} -T \\ 0 \\ 0 \\ 0 \\ -T \\ 0 \\ 0 \end{bmatrix} \begin{matrix} \text{dash} \\ \text{windshield} \\ \text{roof} \\ \text{backlight} \\ \text{rear seat panel} \\ \text{floor} \\ \text{side frame} \end{matrix}$$

$$\rightarrow \begin{bmatrix} 750 & 1500 & 0 & 0 & 0 & 0 & 0 \\ 707 & 0 & -1500 & 0 & 0 & 0 & 0 \\ 1250 & 0 & 0 & -1500 & 0 & 0 & 0 \\ 559 & 0 & 0 & 0 & -1500 & 0 & 0 \\ 750 & 0 & 0 & 0 & 0 & 1500 & 0 \\ 2000 & 0 & 0 & 0 & 0 & 0 & -1500 \\ 0 & 0 & 0 & 500 & 1789 & -2000 & 750 \end{bmatrix} \begin{bmatrix} Q_1 \\ Q_2 \\ Q_3 \\ Q_4 \\ Q_5 \\ Q_6 \\ Q_7 \end{bmatrix} = \begin{bmatrix} -T \\ 0 \\ 0 \\ 0 \\ -T \\ 0 \\ 0 \end{bmatrix}$$