

Modified  $\underline{C}$  matrix

For isotropic material,

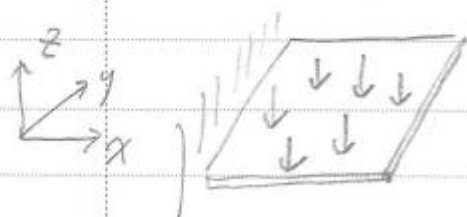
$$\underline{C} = \begin{bmatrix} C_{11} & C_{12} & C_{13} & 0 & 0 & 0 \\ C_{21} & C_{22} & C_{23} & 0 & 0 & 0 \\ C_{31} & C_{32} & C_{33} & 0 & 0 & 0 \\ 0 & 0 & 0 & C_{44} & 0 & 0 \\ 0 & 0 & 0 & 0 & C_{55} & 0 \\ 0 & 0 & 0 & 0 & 0 & C_{66} \end{bmatrix}$$

$$\sigma_{xx} = C_{11} \epsilon_{xx} + C_{12} \epsilon_{yy} + C_{13} \epsilon_{zz} \quad (1)$$

$$\sigma_{yy} = C_{21} \epsilon_{xx} + C_{22} \epsilon_{yy} + C_{23} \epsilon_{zz} \quad (2)$$

$$\sigma_{zz} = C_{31} \epsilon_{xx} + C_{32} \epsilon_{yy} + C_{33} \epsilon_{zz} \quad (3)$$

if thin plate bending



$$\sigma_{zz} \rightarrow 0, \quad \epsilon_{zz} \rightarrow 0$$

$$(3) \text{ or } C_{31} \epsilon_{xx} + C_{32} \epsilon_{yy} \rightarrow 0$$

additional constraint make plate rigid.

$$C_{31} = C_{32} = C_{13} = C_{23} = 0$$

$$\text{Modified } \underline{C} \text{ matrix} = \begin{bmatrix} C_{11} & C_{12} & 0 \\ C_{21} & C_{22} & 0 \\ 0 & 0 & C_{33} \end{bmatrix}$$