METODA SILA

1) STATIČKA NEODREĐENOST $n = z_o + z_u + z_s + z_k - 2k$

2) USLOVNE JEDNAČINE METODE SILA:

$$\delta_1 = \delta_{11} X_1 + \delta_{12} X_2 + \dots + \delta_{1n} X_n + \delta_{1o} + \delta_{1t} + \delta_{1c} = 0$$
$$\delta_2 = \delta_{21} X_1 + \delta_{22} X_2 + \dots + \delta_{2n} X_n + \delta_{2o} + \delta_{2t} + \delta_{2c} = 0$$
$$\vdots$$
$$\delta_n = \delta_{n1} X_1 + \delta_{n2} X_2 + \dots + \delta_{nn} X_n + \delta_{no} + \delta_{nt} + \delta_{nc} = 0$$

$$\begin{bmatrix} \delta_{11} & \delta_{12} & \dots & \delta_{1n} \\ \delta_{21} & \delta_{22} & \dots & \delta_{2n} \\ \vdots & & & \\ \delta_{n1} & \delta_{n2} & \dots & \delta_{nn} \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \\ \vdots \\ X_n \end{bmatrix} + \begin{bmatrix} \delta_{1o} \\ \delta_{2o} \\ \vdots \\ \delta_{no} \end{bmatrix} + \begin{bmatrix} \delta_{1t} \\ \delta_{2t} \\ \vdots \\ \delta_{nt} \end{bmatrix} + \begin{bmatrix} \delta_{1c} \\ \delta_{2c} \\ \vdots \\ \delta_{nc} \end{bmatrix} = \Theta$$

$$D\bar{X} + \delta_o + \delta_t + \delta_c = \Theta$$

$$\bar{X} = -D^{-1} \cdot (\delta_o + \delta_t + \delta_c)$$

$$\delta_{ij} = \int \left(\frac{M_i M_j}{EI} + \frac{N_i N_j}{EF} + k \cdot \frac{T_i T_j}{GF} \right) ds$$ → POMERANJE U PRAVCU i USLED JEDINIČNE SILE $X_i = 1$

$$\delta_{io} = \int \left(\frac{M_i M_o}{EI} + \frac{N_i N_o}{EF} + k \frac{T_i T_o}{GF} \right) ds$$ → POMERANJE U PRAVCU i USLED SPOLJAŠNJEG OPTER.

$$\delta_{it} = \int \left(M_i \alpha_t \frac{\Delta t}{h} + N_i \alpha_t \cdot t^\circ \right) ds$$ → POMERANJE U PRAVCU i USLED TEMPERATURNIH UTICAJA

$$\delta_{ic} = -\sum C_{j,i} \cdot c_j$$ → POMERANJE U PRAVCU i USLED POMERANJA OSLONACA i OBRTANJA UKLJEŠTENJA

$$\delta = \frac{1}{EI_c} \cdot \delta^* \rightarrow \delta^* = EI_c \delta$$

$X_1, X_2 \dots X_n$ - STATIČKI NEODREĐENE (NEZAVISNE) VELIČINE

$P \neq 0 \quad X_1 = 0 \quad X_2 = 0 \dots X_n = 0$ .. .. $P = 0 \quad X_1 = 0 \quad X_2 = 1 \dots X_n = 0$

$P = 0 \quad X_1 = 1 \quad X_2 = 0 \dots X_n = 0$ $P = 0 \quad X_1 = 0 \quad X_2 = 0 \quad X_n = 1$