LESSON 23

FINAL TOPICS ON FLEXIBILITY METHOD

- Support Settlements
- TEMP. CHANGES
- FAB. ERROR
- ELASTIC SUPPORT

A.) Support Settlements

CASE 1: SETTLEMENT CORRESPONDS TO A REDUNDANT?

→ VERY EASY:

\[ AB = -1 \text{ in} \]

\[ \text{AB}_{\text{primary}} + \text{AB}_{\text{Red}} = -1 \text{ in} \]

CASE 2: SETTLEMENT DOES NOT CORRESPOND TO A REDUNDANT?

→ Show Settlement Released Structure

\[ \text{AB}_{\text{primary}} + \text{ABS}_A = 0 \]

\[ \text{New term here} \]

B.) TEMP. CHANGES

TREAT Change in Temp. Deformations AS Deformations Due to LOAD.

\[ \text{Primary} \]

\[ \text{Released} \]

\[ \text{At} \]

\[ \text{Vier. Work Will Yield SCY Due To Load} \]

\[ \text{Temp Change} \]

\[ \text{FAC x LAT} \]

\[ \text{Simply Add To Eqn. of Compatibility} \]

\[ \text{SCY}_{\text{Primary}} + \text{SCY}_{\text{Redundant}} = 0 \]

\[ \text{At term is in here} \]
C.) Fabrication Error $+ \sum F \delta (\Delta L) \Rightarrow \delta_{\text{Primary}}$ (Add disp. effect to Primary)

$\delta_{\text{Primary}} + \delta_{\text{Redundant}} = 0$

D.) Elastic Support:

**Force on a spring:**

$F = k \Delta$

$\Delta = F / k$

**Force on a structure by a spring:**

$\Delta = -\frac{X}{k}$ where $X$ is Redundant Force

Include this in Compatibility Eqn.

Ex.: 

Treat as a redundant

$\Delta_{\text{Primary}} + \Delta_B \left( \frac{R_B}{k} \right) = -\frac{R_B}{k}$