

$$\theta_1 = \theta_3 = \theta_5 = \theta_7 = 0 ; \theta_2, \theta_4, \theta_6, \theta_8, \theta_9, \theta_{10} = \text{unknown}$$

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• Fixed End moment

$$FEM_{q_i} = -\frac{wL^2}{12} = -\frac{100(5)^2}{12} = -208.333 \text{ kN-m}$$

$$FEM_{q_j} = +208.333 \text{ kN-m}$$

$$EI = 20058 \times 10^2 = 400 \text{ kN/m}^2$$

8 wpc - deflectioni Equations

$$M_{AB} = M_{AB}^F + \frac{4EI\theta_A}{L} + \frac{2EI\theta_B}{L}$$

$$M_{BA} = M_{BA}^F + \frac{2EI\theta_A}{L} + \frac{4EI\theta_B}{L}$$

$$M_{1ij} = M_{AB}^F + \frac{4EI\theta_A}{L} + \frac{2EI\theta_B}{L} = \frac{2EI\theta_B}{L}$$

$$M_{1ji} = M_{BA}^F + \frac{4EI\theta_B}{L} + \frac{2EI\theta_A}{L} = \frac{4EI\theta_B}{L}$$

$$M_{2ij} = M_{BA}^F + \frac{4EI\theta_B}{L} + \frac{2EI\theta_A}{L} = \frac{2EI\theta_A}{L}$$

$$M_{2ji} = M_{AB}^F + \frac{2EI\theta_B}{L} + \frac{4EI\theta_A}{L} = \frac{4EI\theta_A}{L}$$

$$M_{3ij} = \frac{2EI\theta_6}{L}$$

$$M_{3ji} = \frac{4EI\theta_6}{L}$$

$$M_{4ij} = \frac{2EI\theta_8}{L}$$

$$M_{4ji} = \frac{4EI\theta_8}{L}$$

$$M_{5ij} = \frac{4EI\theta_2}{L} + \frac{2EI\theta_4}{L}$$

$$M_{5ji} = \frac{2EI\theta_2}{L} + \frac{4EI\theta_4}{L}$$

$$M_{6ij} = \frac{4EI\theta_4}{L} + \frac{2EI\theta_6}{L}$$

$$M_{6ji} = \frac{2EI\theta_4}{L} + \frac{4EI\theta_6}{L}$$

$$M_{7ij} = \frac{4EI\theta_6}{L} + \frac{2EI\theta_8}{L}$$

$$M_{7ji} = \frac{2EI\theta_6}{L} + \frac{4EI\theta_8}{L}$$

$$M_{8ij} = \frac{4EI\theta_2}{L_2} + \frac{2EI\theta_4}{L_2}$$

$$M_{8ji} = \frac{2EI\theta_2}{L_2} + \frac{4EI\theta_4}{L_2}$$

$$M_{9ij} = -208.33 + \frac{4EI\theta_9}{L} + \frac{2EI\theta_{10}}{L}$$

$$M_{9ji} = +208.33 + \frac{2EI\theta_9}{L} + \frac{4EI\theta_{10}}{L}$$

$$L_2 = 5\sqrt{2}$$

$$M_{10ij} = \frac{4EI\theta_{10}}{L_2} + \frac{2EI\theta_8}{L_2}$$

$$M_{10ji} = \frac{2EI\theta_{10}}{L_2} + \frac{4EI\theta_8}{L_2}$$

$$M_{11ij} = \frac{4EI\theta_4}{L} + \frac{2EI\theta_6}{L}$$

$$M_{11ji} = \frac{2EI\theta_4}{L} + \frac{4EI\theta_6}{L}$$

$$M_{12ij} = \frac{4EI\theta_6}{L} + \frac{2EI\theta_{10}}{L}$$

$$M_{12ji} = \frac{2EI\theta_6}{L} + \frac{4EI\theta_{10}}{L}$$

$$\sum @ J_2 = M_{1ji} + M_{5ij} + M_{8ij} = 0 ; \sum @ J_4 = M_{2ji} + M_{6ij} + M_{11ij} + M_{5ji} = 0$$

$$\sum @ J_6 = M_{3ji} + M_{7ij} + M_{12ij} + M_{6ji} = 0 ; \sum @ J_8 = M_{4ji} + M_{10ji} + M_{7ji} = 0$$

$$\sum @ J_9 = M_{11ji} + M_{9ij} + M_{8ji} = 0 ; \sum @ J_{10} = M_{12ji} + M_{10ij} + M_{9ji} = 0$$

$$J_2 = \frac{4EI\theta_2}{L} + \frac{4EI\theta_2}{L} + \frac{2EI\theta_4}{L} + \frac{4EI\theta_2}{L_2} + \frac{2EI\theta_9}{L_2}$$

$$J_4 = \frac{4EI\theta_4}{L} + \frac{4EI\theta_4}{L} + \frac{2EI\theta_6}{L} + \frac{4EI\theta_4}{L} + \frac{2EI\theta_9}{L} + \frac{2EI\theta_2}{L} + \frac{4EI\theta_4}{L}$$

$$J_6 = \frac{4EI\theta_6}{L} + \frac{4EI\theta_6}{L} + \frac{2EI\theta_8}{L} + \frac{4EI\theta_6}{L} + \frac{2EI\theta_{10}}{L} + \frac{2EI\theta_4}{L} + \frac{4EI\theta_6}{L}$$

$$J_8 = \frac{4EI\theta_8}{L} + \frac{2EI\theta_{10}}{L_2} + \frac{4EI\theta_8}{L_2} + \frac{2EI\theta_6}{L} + \frac{4EI\theta_8}{L}$$

$$J_9 = \frac{2EI\theta_4}{L} + \frac{4EI\theta_9}{L} + (-208.33) + \frac{4EI\theta_9}{L} + \frac{2EI\theta_{10}}{L} + \frac{2EI\theta_2}{L_2} + \frac{4EI\theta_9}{L_2}$$

$$J_{10} = \frac{2EI\theta_6}{L} + \frac{4EI\theta_{10}}{L_2} + \frac{4EI\theta_{10}}{L_2} + \frac{2EI\theta_8}{L_2} + 208.33 + \frac{2EI\theta_9}{L} + \frac{EI\theta_{10}}{L}$$