

53:134 Structural Design II (Steel Structures)
Spring 2006 (Lecture Summary)
Week 5 (2/13 - 2/17/06)

2-13-06

- ◆ Review the slope-deflection equations and notations - clockwise positive. Local x-axis along AB; A is the starting point and B is the ending point. Free-body diagram of the member (internal forces).
- ◆ Discuss HW#7: P5.2.2 - Analysis of a continuous beam using slope deflection method. Equilibrium condition for each degree of freedom.
- ◆ Slope-deflection method applied to frames without side sway - symmetric loading; side sway prevented. Examples 5.2.4, 5.2.5, 5.2.6 on pages 308-315.
- ◆ **Read:** Section 5.2.
- ◆ **HW#8: P5.2.5 (due 2/15/06)**
- ◆ **Midterm Exam:** Monday 20th; Force method, slope-deflection method - closed book; one hand-written formula sheet is allowed.
- ◆ **Office Hours:** Changed to MW 10:30 to 11:30am.

2-15-06

- ◆ **Discuss HW#8: 5.2.5** - Analysis of frames using slope deflection method.
- ◆ **Slope-deflection method:** for frames subjected to side sway. Additional equation - equilibrium for horizontal reactions. Examples: 5.2.7 -5.2.9 on pages 317 - 328.

- ◆ **Example with one vertical member:** consider equilibrium of the entire structure; equilibrium of the vertical member.
- ◆ **Example with two vertical members:** consider equilibrium of the entire structure; equilibrium of the vertical members.
- ◆ **Read:** Section 5.2.
- ◆ **HW#9:** P5.2.6

2-17-06

- ◆ Review the slope-deflection equations and notations.
- ◆ Discuss HW#9: 5.2.6 - frame with side sway, derive equations.
- ◆ Review of force method - determination of redundants; compatibility equation(s).
- ◆ **Read:** Section 5.2.
- ◆ **HW#10:** 5.2.10 (no need to submit).
- ◆ **Midterm Exam:** on Monday, February 20; One hand-written formula sheet is allowed.