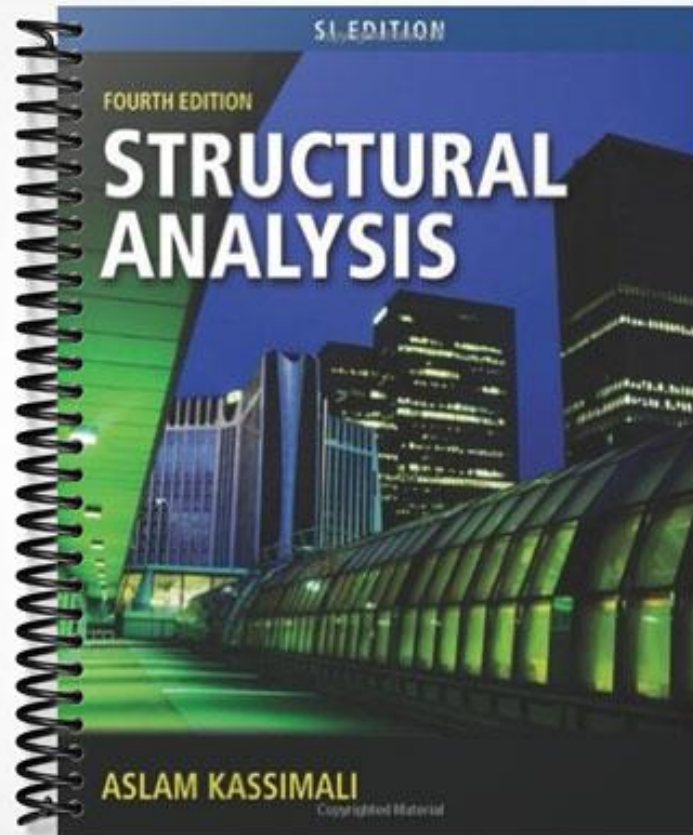
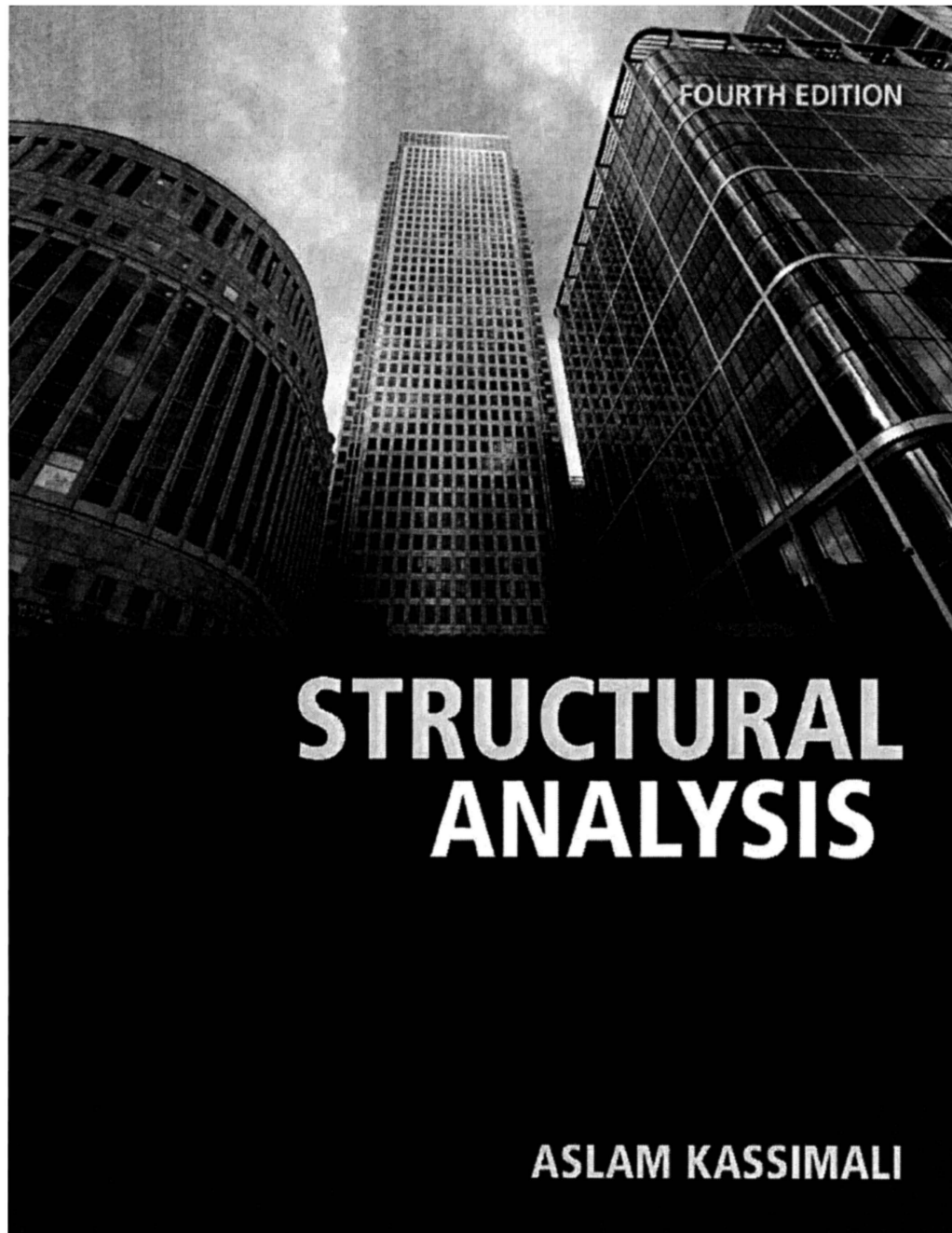



SOLUTIONS MANUAL



An Instructor's Solutions Manual to Accompany
Structural Analysis, 4th Edition
Aslam Kassimali



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An Instructor's Solutions Manual

For

Structural Analysis

Fourth Edition

Aslam Kassimali

Southern Illinois University Carbondale



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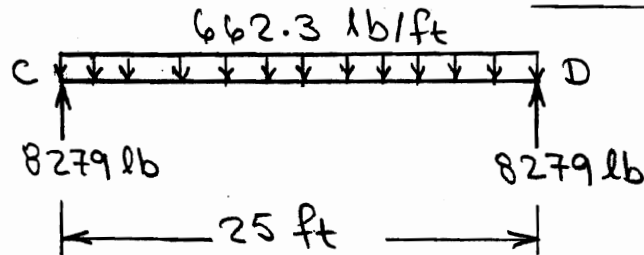
Chapter Two

Loads on Structures

CHAPTER 2

2.1 Beam CD

$$\begin{aligned}\text{Uniformly distributed load} &= 150(12)\left(\frac{4}{12}\right) + 490\left(\frac{18.3}{144}\right) \\ &= \underline{662.3 \text{ lb/ft}}\end{aligned}$$



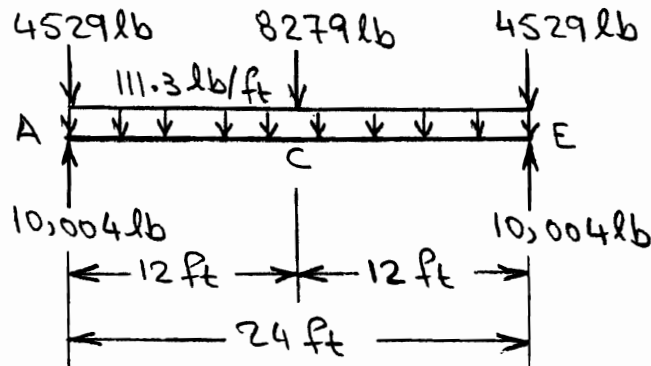
Girder AE

$$\text{Uniformly distributed load} = 490\left(\frac{32.7}{144}\right) = \underline{111.3 \text{ lb/ft}}$$

$$\text{Concentrated load at C} = \underline{8279 \text{ lb}}$$

Concentrated loads at A and E

$$= \left[150(6)\left(\frac{4}{12}\right) + 490\left(\frac{18.3}{144}\right)\right]\left(\frac{25}{2}\right) = \underline{4529 \text{ lb}}$$



2.2 See solution of Problem 2.1

Beam CD Uniformly distributed load

$$= 662.3 + 120 \left(\frac{6}{12} \right) (7) = 662.3 + 420 = \underline{1082.3 \text{ lb/ft}}$$

Girder AE Uniformly distributed load = 111.3 lb/ft

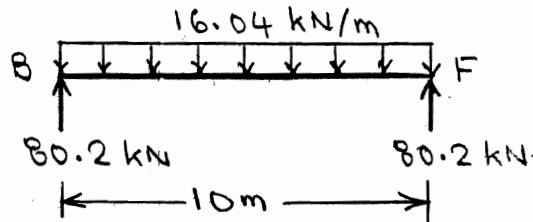
$$\text{Concentrated load at C} = 8279 + 420 \left(\frac{25}{2} \right) = \underline{13,529 \text{ lb}}$$

$$\text{Concentrated loads at A and E} = \underline{4529 \text{ lb}}$$

2.3 Beam BF

Uniformly distributed load

$$= 23.6 (5) \left(\frac{130}{1000} \right) + 77 \left(\frac{9100}{106} \right) = \underline{16.04 \text{ kN/m}}$$



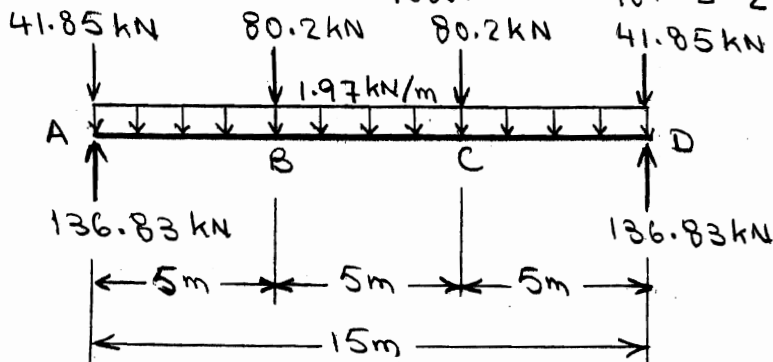
Girder AD

$$\text{Uniformly distributed load} = 77 \left(\frac{25600}{106} \right) = \underline{1.97 \text{ kN/m}}$$

$$\text{Concentrated loads at B and C} = \underline{80.2 \text{ kN}}$$

Concentrated loads at A and D

$$= \left[23.6 (2.5) \left(\frac{130}{1000} \right) + 77 \left(\frac{9100}{106} \right) \right] \frac{10}{2} = \underline{41.85 \text{ kN}}$$



2.4

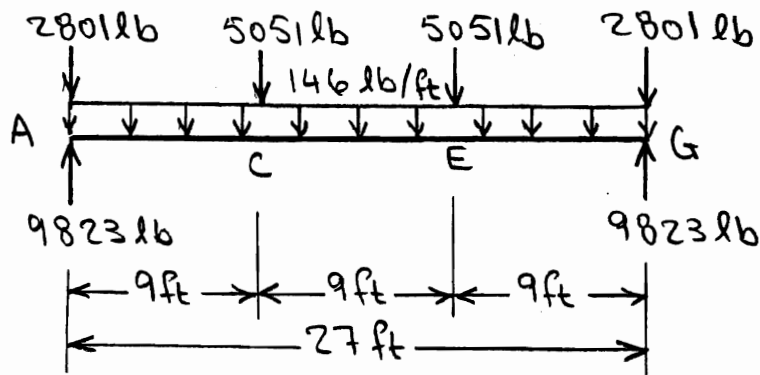
$$\text{Uniformly distributed load} = 490 \left(\frac{42.9}{144} \right) = \underline{146 \text{ lb/ft}}$$

Concentrated loads at A and G

$$= \left[150(4.5) \left(\frac{4}{12} \right) + 490 \left(\frac{16.2}{144} \right) \right] \left(\frac{20}{2} \right) = \underline{2801 \text{ lb}}$$

Concentrated loads at C and E

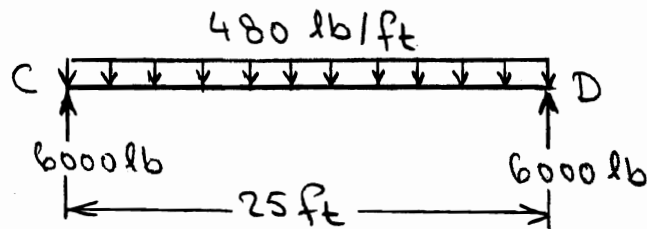
$$= \left[150(9) \left(\frac{4}{12} \right) + 490 \left(\frac{16.2}{144} \right) \right] \left(\frac{20}{2} \right) = \underline{5051 \text{ lb}}$$



2.5 Live load = 40 psf

Beam CD

Uniformly distributed load = $40(12) = \underline{480 \text{ lb/ft}}$



Girder AE

Concentrated load at C = 6000 lb

Concentrated loads at A and E = $[40(6)](\frac{25}{2})$

