COE-C2001 - Foundations of Solid Mechanics

Assignment for Week-6

(1) Deadline: 12:00, Monday, December 13, 2021

(2) Free format submission

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1. The rigid bar AD is attached to two springs of constant k and is in equilibrium in the position shown in **Fig.1**. Knowing that the equal and opposite loads *P* and *P`* remain horizontal, determine the magnitude P_{cr} of the critical load for the system. (40 points)

2. A frame as shown in **Fig.2** is loaded with uniformly distributed design load q_d and a point design load F_d (a safety factor is already considered). Square-section woods are used for the frame structure (E=13 GPa, σ_{all} =12 MPa). (a) Draw the diagrams for shear, bending moment and axial force, respectively. (b) Considering the axle force only, determine the size of the column section if the column is to safely support the loads. (60 points)

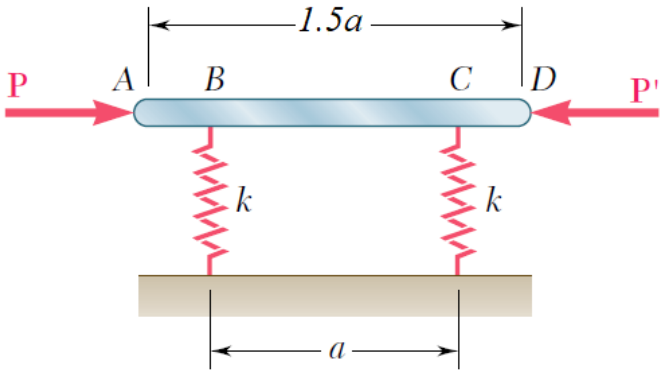

Fig.1

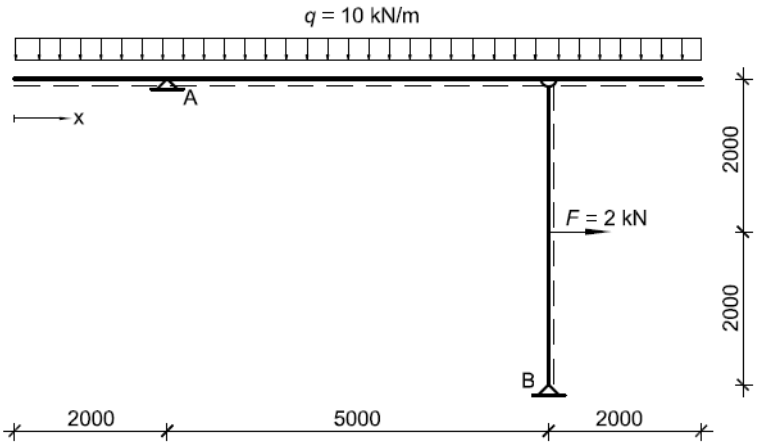

Fig.2