Mechanics of Materials
CIVL 3322 / MECH 3322
Shear Flow and Beam Construction
9.40 A wooden beam is fabricated from one $2 \times 10$ and two $2 \times 4$ pieces
of dimension lumber to form the I-beam cross section shown in Fig.
P9.40. The flanges of the beam are fastened to the web with nails that
can safely transmit a force of 120 lb in direct shear. If the beam is
simply supported and carries a 1,000-lb load at the center of a 12-ft
span, determine:
(a) the horizontal force transferred from each flange to the web in a 12-
in. long segment of the beam.
(b) the maximum spacing $s$ (along the length of the beam) required for
the nails.
(c) the maximum horizontal shear stress in the I-beam.

![Fig. P9.40]
Homework

- Problem P9.41
- Problem P9.43
- Problem P9.45