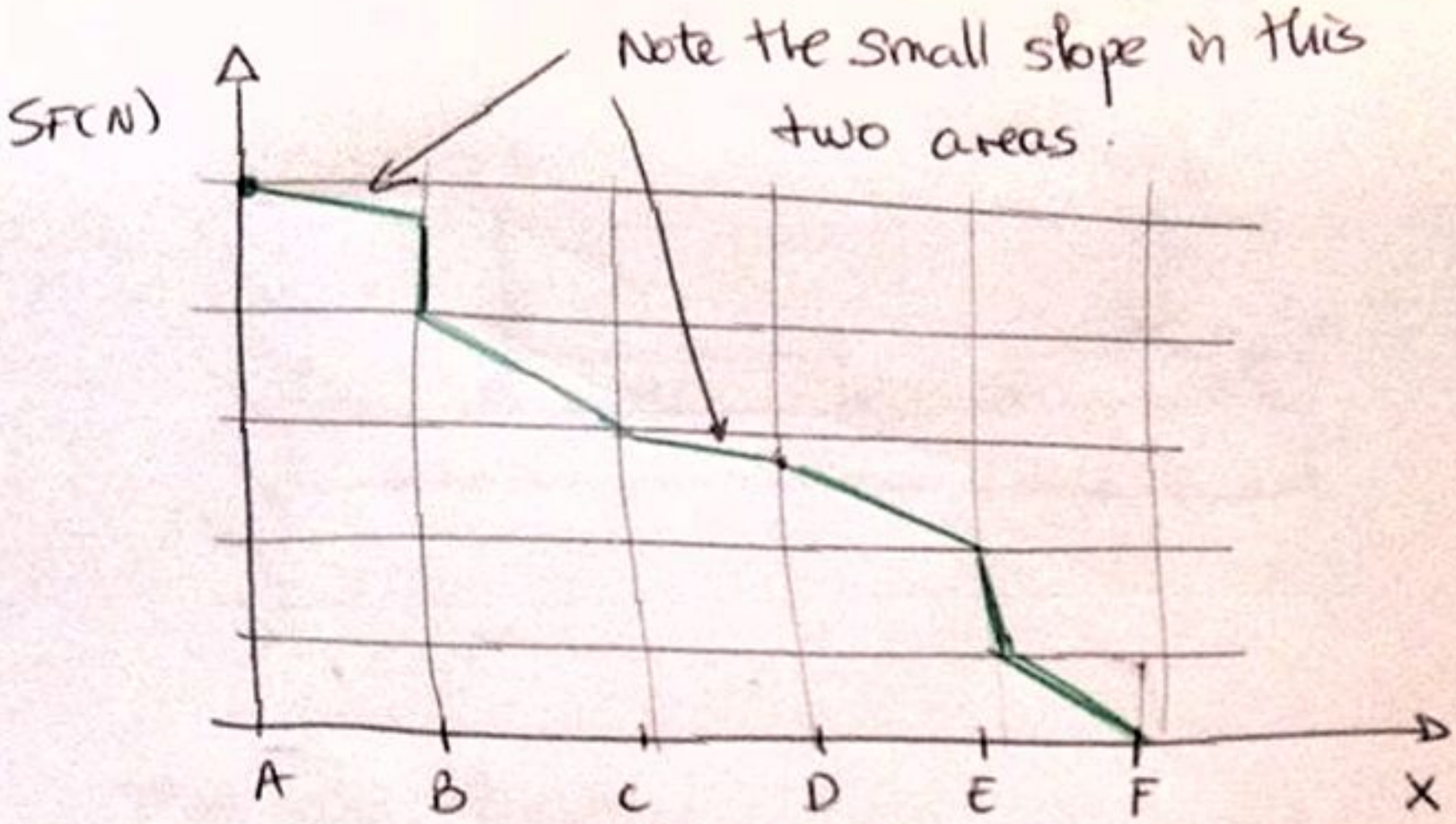


Bending moment (just given to the right of each point).

$BM(A) = -M$

$BM(B) = -M + R_A \times Pb + UDL5 \times \left(\frac{Pb}{2}\right) \times Pb$

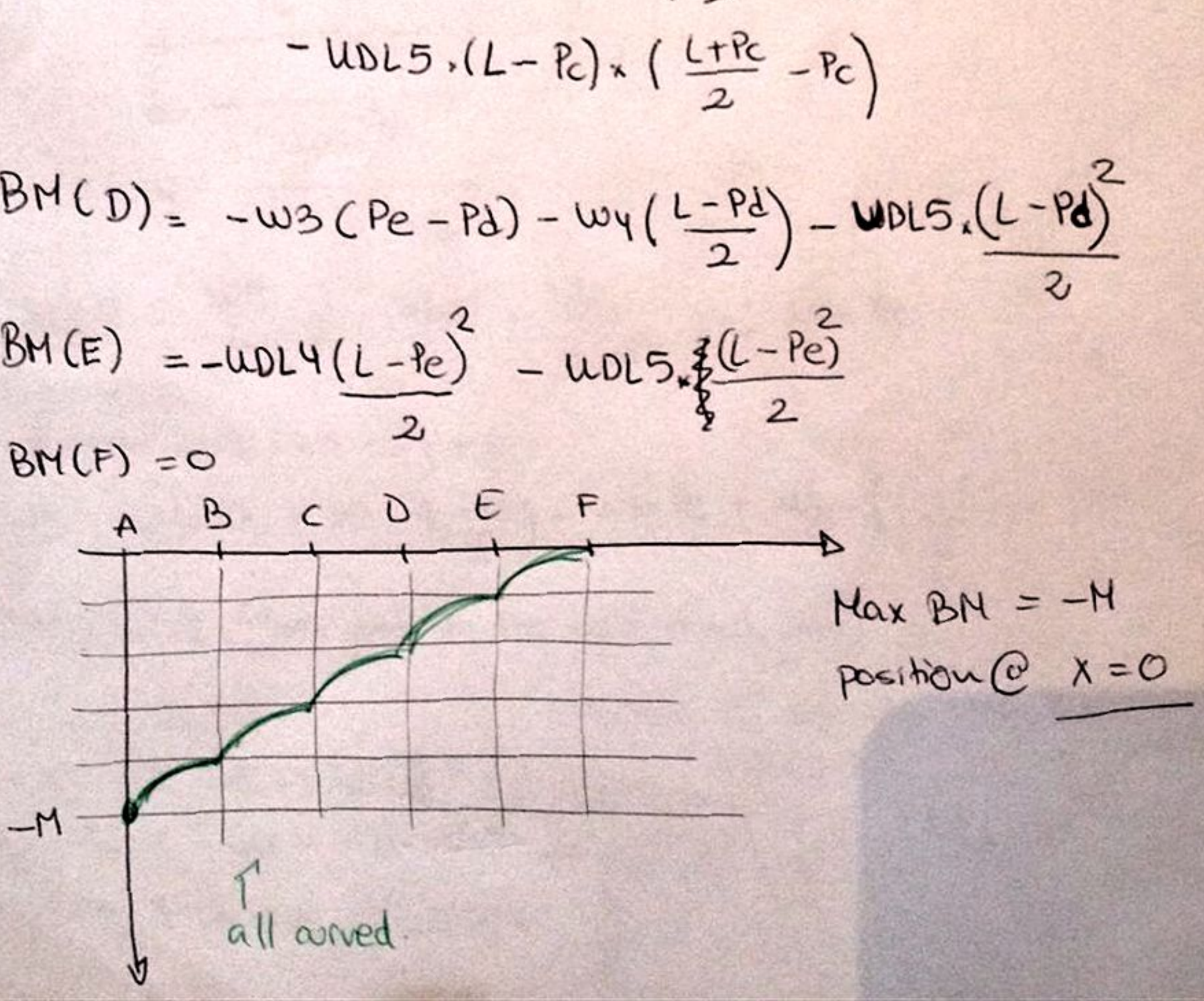
$BM(C) = -W3 \times (Pe - Pc) - W4 \times \left(\frac{L + Pd}{2} - Pc\right)$

$- UDL5 \times (L - Pc) \times \left(\frac{L + Pc}{2} - Pc\right)$

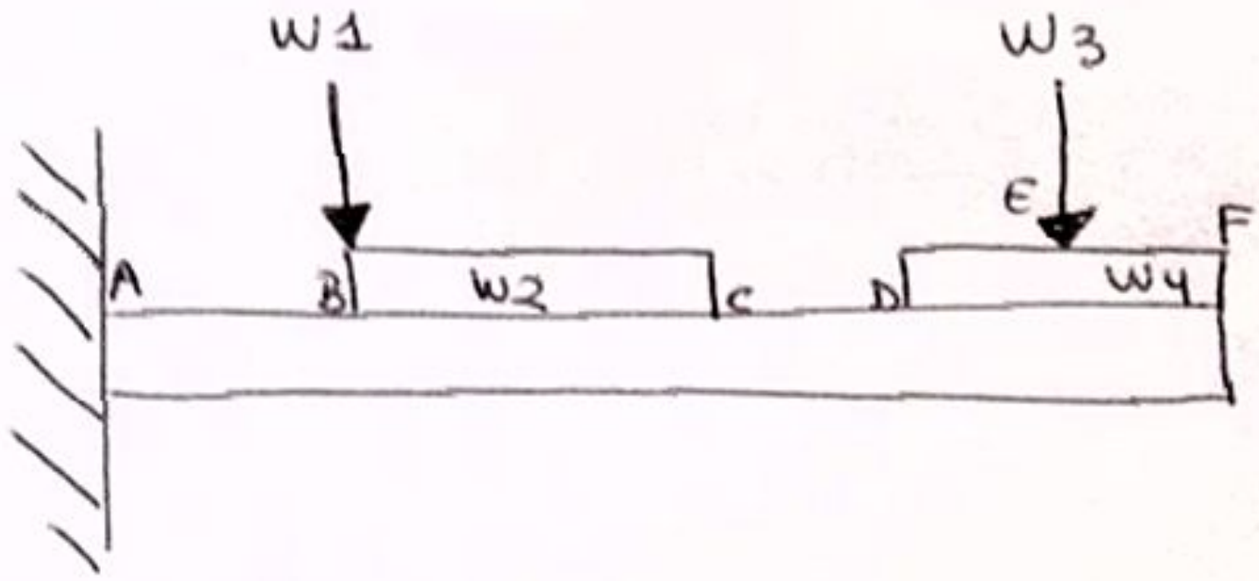
$BM(D) = -W3(Pe - Pd) - W4\left(\frac{L - Pd}{2}\right) - UDL5 \times \frac{(L - Pd)^2}{2}$

$BM(E) = -UDL4\frac{(L - Pe)^2}{2} - UDL5 \times \frac{(L - Pe)^2}{2}$

$BM(F) = 0$

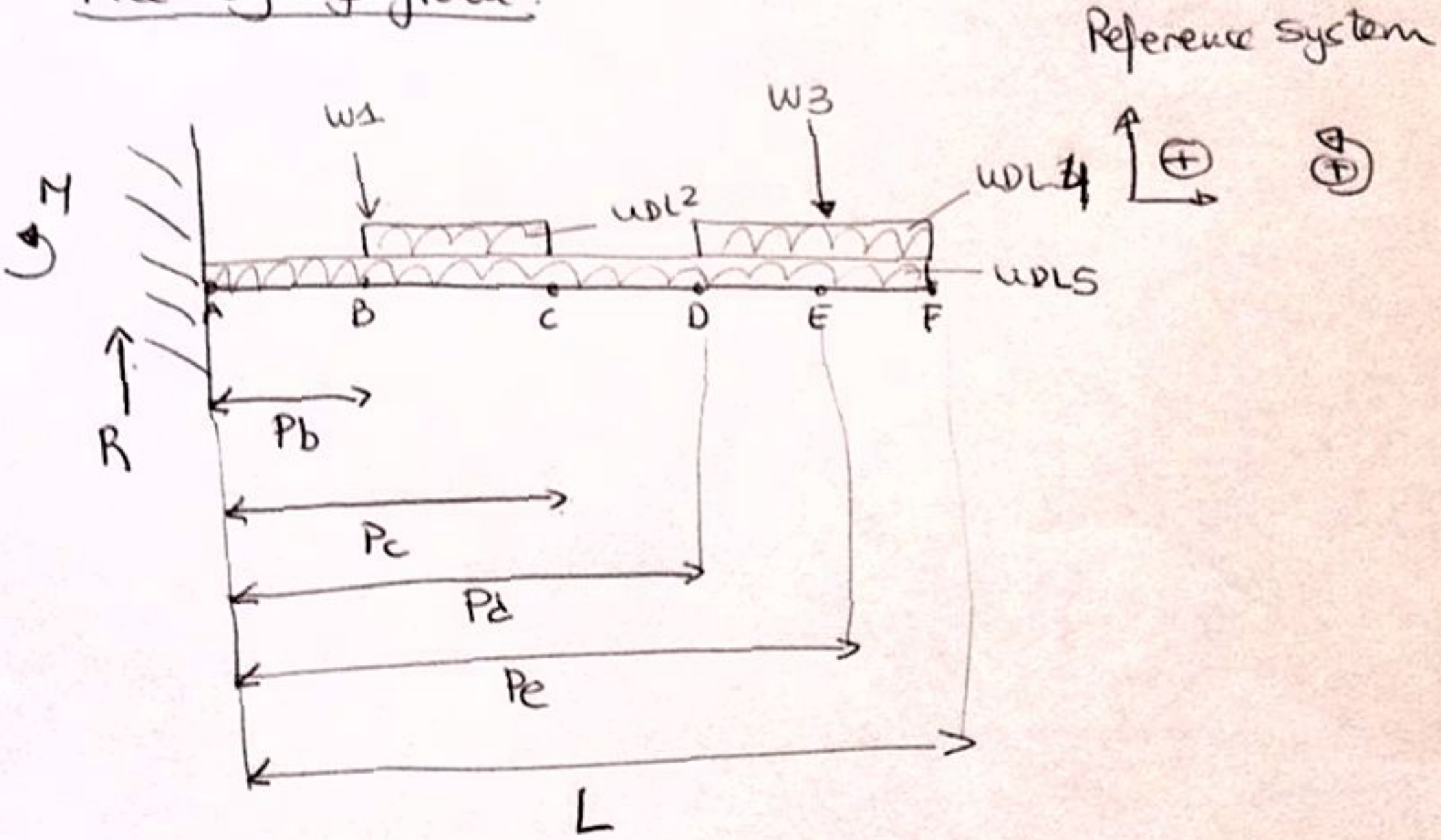


Propose for Level 5 - cantilever



Additionally the beam has a total weight of W5 uniformily distributed.

Free body diagram.



$$UDL5 = \frac{W5}{L} \; ; \quad UDL2 = \frac{W2}{Pc - Pb} \; ; \quad UDL4 = \frac{W3}{L - Pe}$$

Reactions

$$R = W1 + W2 + W3 + W4 + W5$$

$$M = W1 \times Pb + W2\left(\frac{Pc + Pb}{2}\right) + W3 \cdot Pe + W4 \times \left(\frac{L + Pe}{2}\right) + W5 \times \frac{L}{2}$$

Shear force. (given just to the right of each point)

$$SF(A) = R$$

$$SF(B) = R - W1 - UDL5\,(Pb)$$

$$SF(C) = R - W1 - W2 - UDL5 \cdot Pc$$

$$SF(D) = R - W1 - W2 - UDL5 \times Pd$$

$$SF(E) = R - W1 - W2 - W3 - UDL4 \times (Pe - Pd) - UDL5 \times Pe$$

$$SF(F) = 0$$