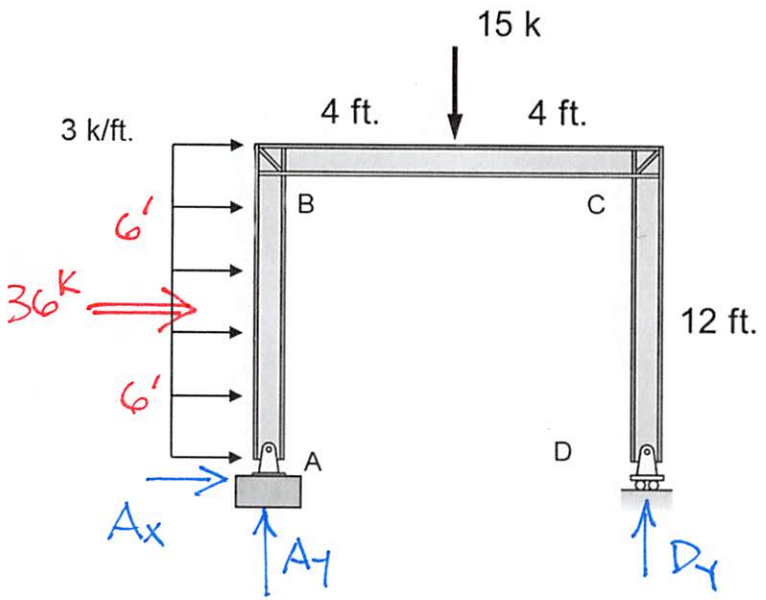
Example 4d-1: Draw the shear and moment diagrams for the following frame:



$$\circlearrowleft^{+}\Sigma M_A = 0 = -36^k(6\,ft) - 15^k(4\,ft) + D_y(8\,ft)$$

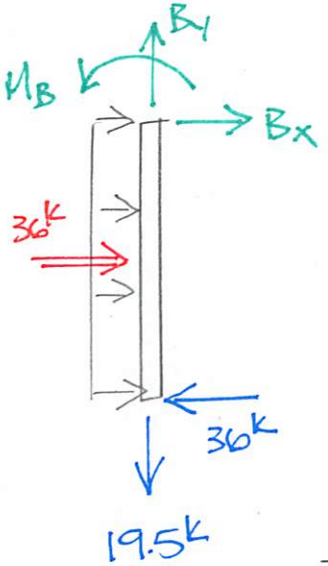
$$D_y = 34.5^k$$

$$+\uparrow \Sigma F_y = 0 = A_y + D_y - 15k$$

$$A_y = -19.5^k$$

$$\xrightarrow{+} \Sigma F_x = 0 = A_x + 36^k \qquad A_x = -36^k$$

SECTION AB



$$\circlearrowleft^{+}\Sigma M_B = 0$$

$$= M_B + 36^k(6') - 36^k(12')$$

$$M_B = 216k\,ft$$

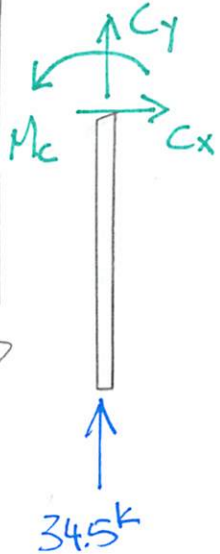
$$+\uparrow \Sigma F_y = 0 = B_y - 19.5^k$$

$$B_y = 19.5^k$$

$$\xrightarrow{+} \Sigma F_x = 0 = B_x - 36^k + 36^k$$

$$B_x = 0$$

SECTION CD



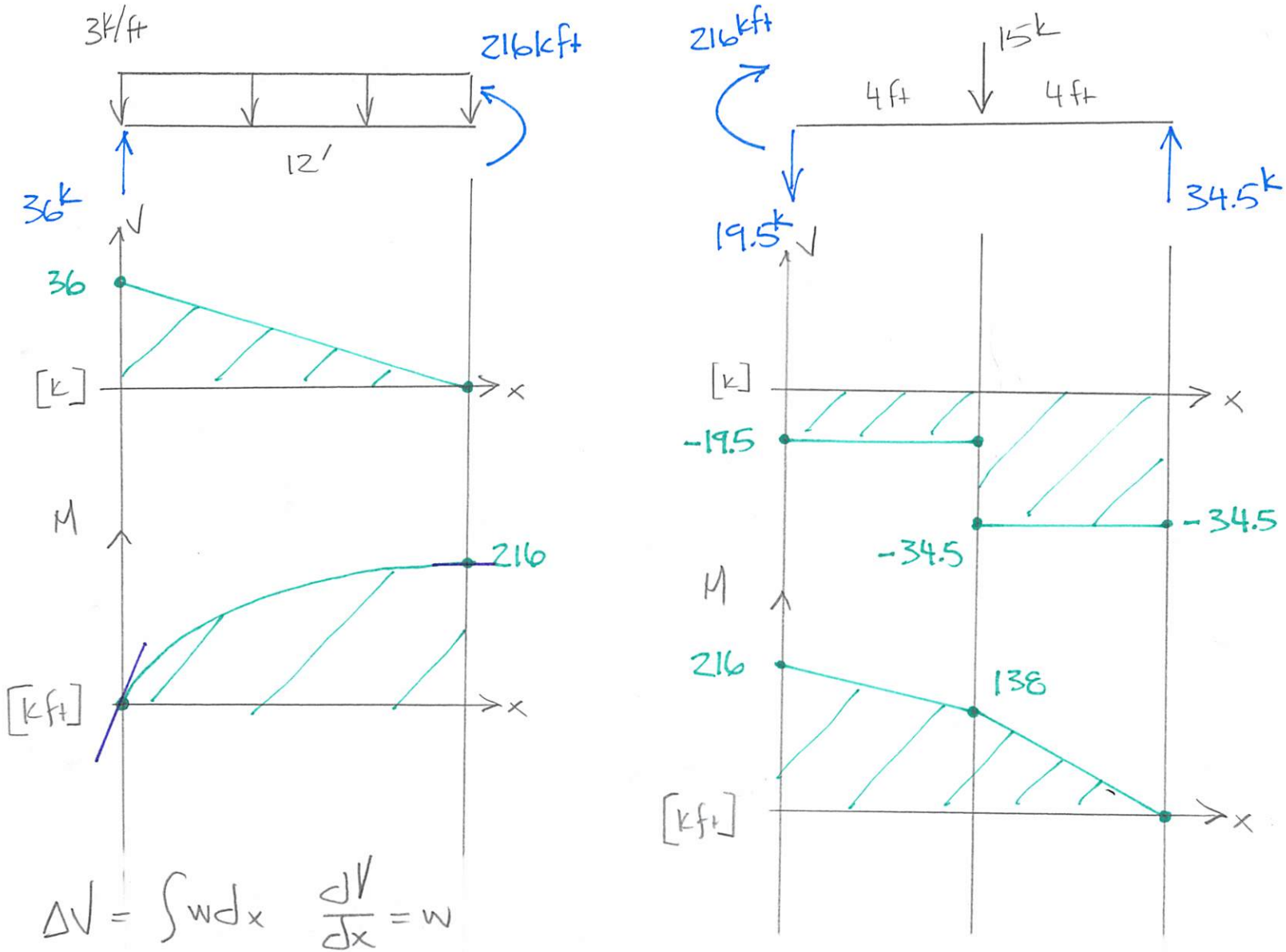
$$\circlearrowleft^{+}\Sigma M_c = 0 = M_c$$

$$+\uparrow \Sigma F_y = 0 = C_y + 34.5^k$$

$$C_y = -34.5^k$$

$$\xrightarrow{+} \Sigma F_x = 0 = C_x$$

Example 4d-1: Draw the shear and moment diagrams for the following frame:



$$\Delta V = \int w\,dx \qquad \frac{dV}{dx} = w$$

$$\Delta M = \int V\,dx \qquad \frac{dM}{dx} = V$$