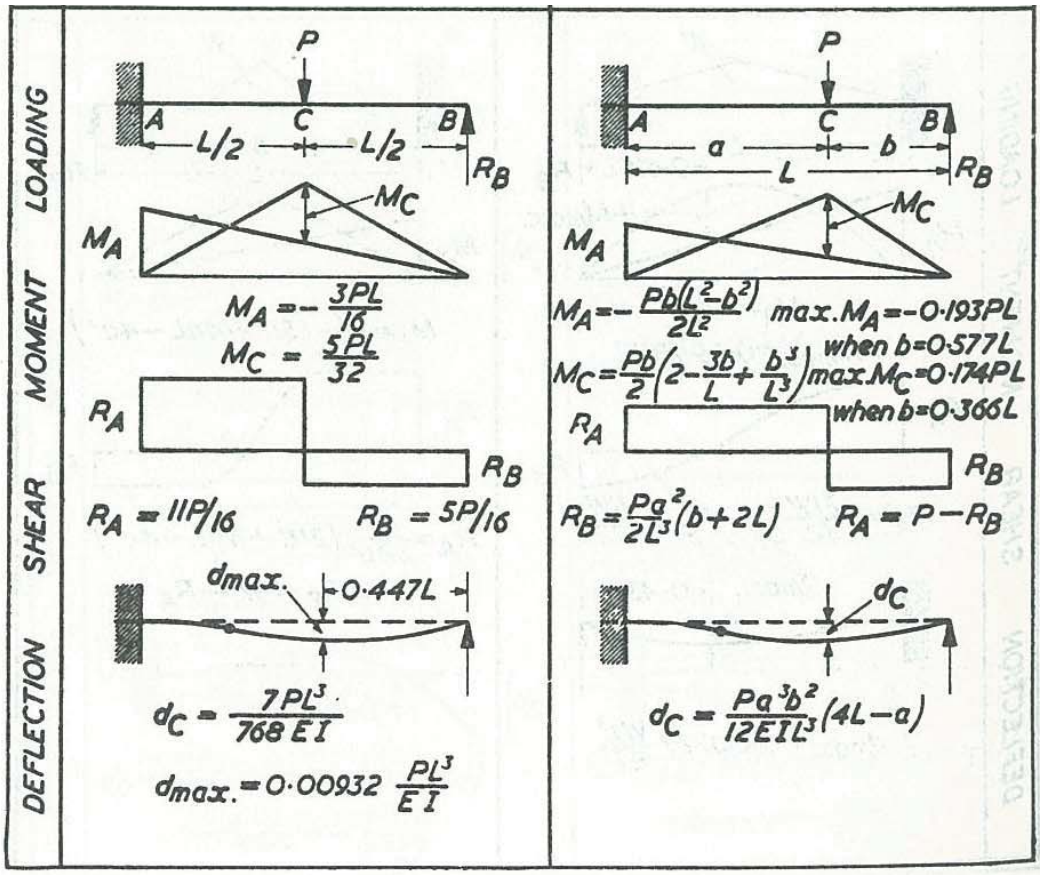
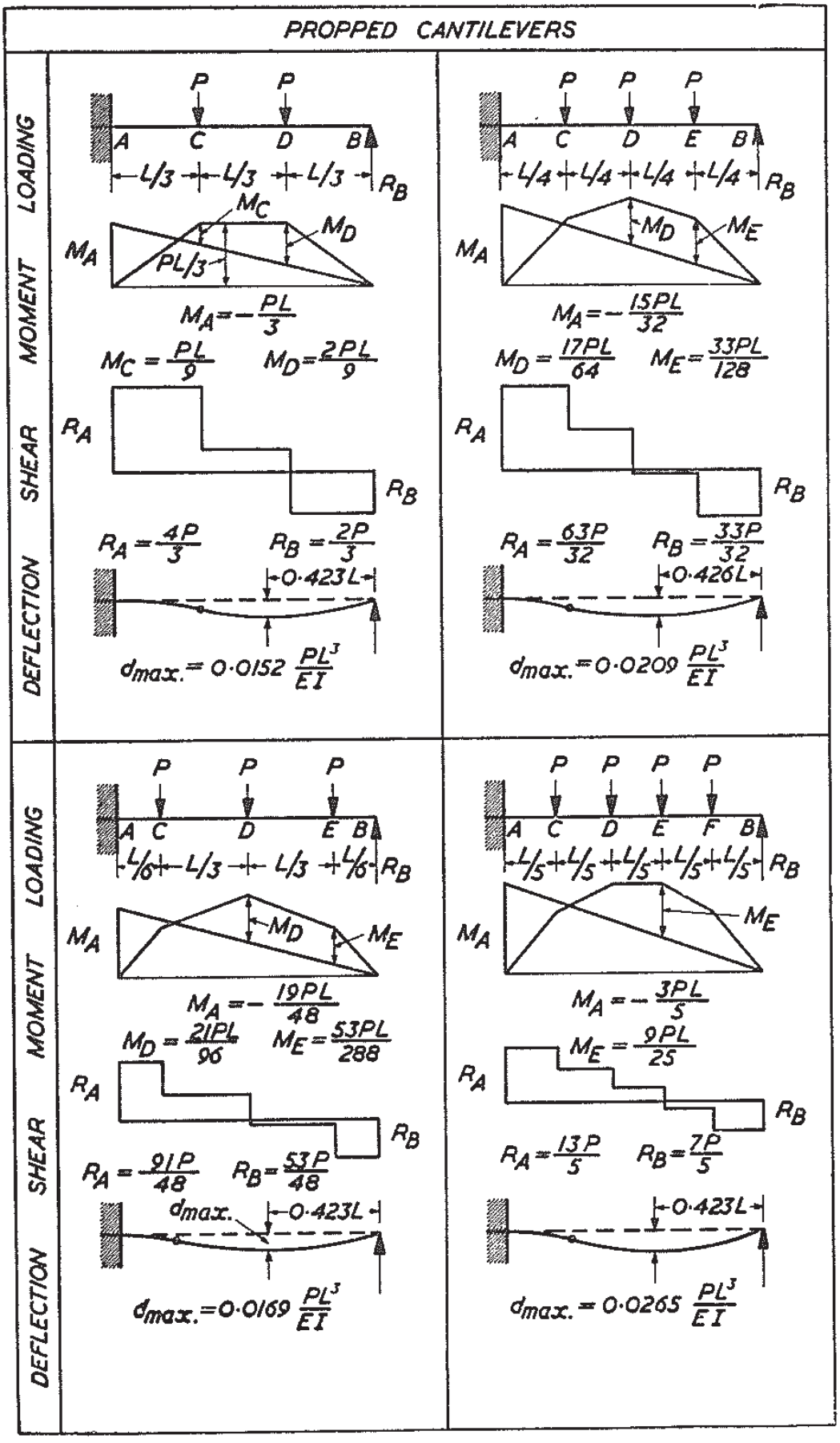
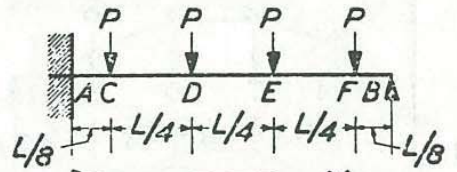

LOADING
MOMENT
SHEAR
DEFLECTION
P
A
C
B
L/2
L/2
RB
MC
MA
MA = − 3PL/16
MC = 5PL/32
RA
RB
RA = 11P/16
RB = 5P/16
dmax.
0·447L
dC = 7PL³/768EI
dmax. = 0·00932 PL³/EI
P
A
C
B
a
b
L
RB
MC
MA
MA = − Pb(L²−b²)/2L²
max. MA = −0·193PL when b = 0·577L
MC = Pb/2 (2 − 3b/L + b³/L³)
max. MC = 0·174PL when b = 0·366L
RA
RB
RB = Pa²/2L³ (b + 2L)
RA = P − RB
dC
dC = Pa³b²/12EIL³ (4L − a)

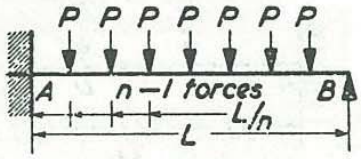
PROPPED CANTILEVERS



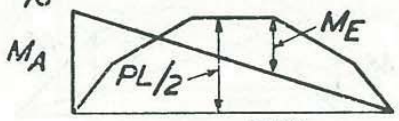
PROPPED CANTILEVERS

LOADING

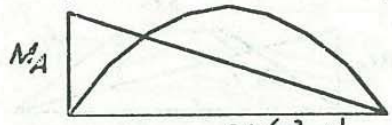




MOMENT

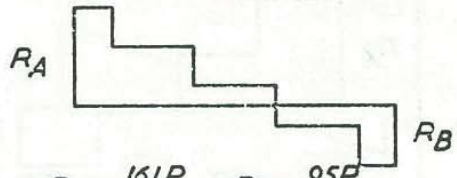


$$M_A = -\frac{33PL}{64} \qquad M_E = \frac{1\cdot57PL}{512}$$

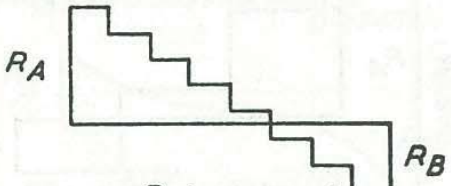


$$M_A = -\frac{PL(n^2-1)}{8n}$$

SHEAR



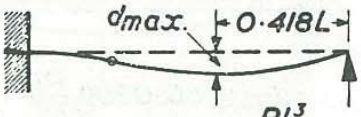
$$R_A = \frac{161P}{64} \qquad R_B = \frac{95P}{64}$$



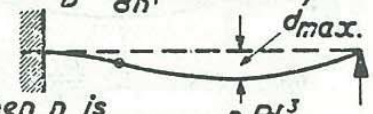
$$R_A = \frac{P}{8n}(5n^2-4n-1)$$

$$R_B = \frac{P}{8n}(3n^2-4n+1)$$

DEFLECTION



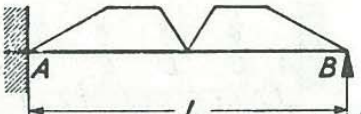
$$d_{max.} = 0\cdot0221\,\frac{PL^3}{EI}$$



when n is large, $d_{max.} \simeq \frac{n\,PL^3}{185\,EI}$

LOADING

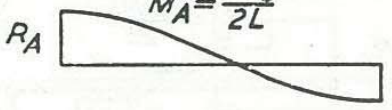
Any symmetrical load W



If A_S = Area of free B.M. Diagram

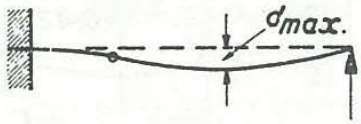
$$M_A = \frac{3A_S}{2L}$$

SHEAR



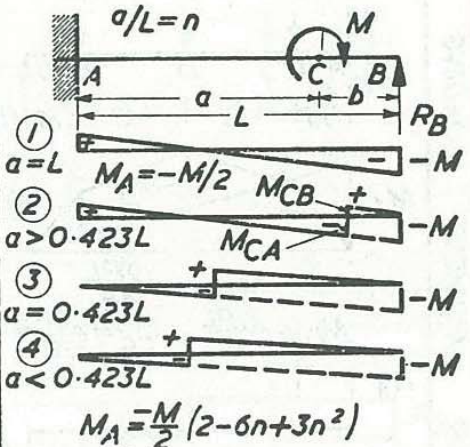
$$R_A = \frac{W}{2} + \frac{M_A}{L} \qquad R_B = \frac{W}{2} - \frac{M_A}{L}$$

DEFLECTION



$d_{max.}$ occurs at point corresponding to X on B.M. diagram, the area R being equal to the area Q

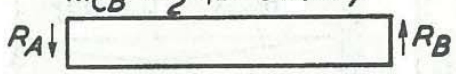
$$d_{max.} = \frac{\text{Area } S \times x}{EI}$$



$$M_A = \frac{-M}{2}(2-6n+3n^2)$$

$$M_{CA} = \frac{-M}{2}(2-6n+9n^2-3n^3)$$

$$M_{CB} = \frac{3Mn}{2}(2-3n+n^2)$$



$$-R_A = R_B = \frac{M+M_A}{L}$$

In Case 1, $R = 3M/2L$

Case 3, $R = M/L$