**Q5**    Edge M.G
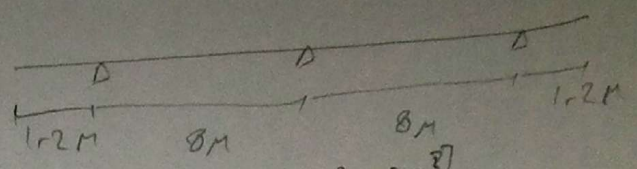
**# D.L**

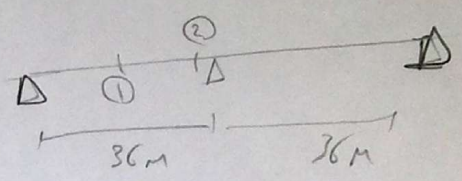$$W_{D.L} = W_{con} + W_{w.s} + W_{steel} + W_{piping} + W_{H.V}$$

$$= 2.5 \times 0.25 \times 5.2 + 2.2 \times 0.08 \times 5.2 + \left[\frac{200 + 4 \times 36 + 6.03 \times 36^2}{1000}\right] \times 4$$

$$+ \left[\frac{100 + 3 \times 36}{100}\right] \times 1.2 + 0.25 + 0.15$$

$$= 6.35 \ t/m'$$

∫ for 2 spans only

$$M_1 = 0.9 \times \frac{6.35 \times 36^2}{8} = 925.83 \ t.m$$

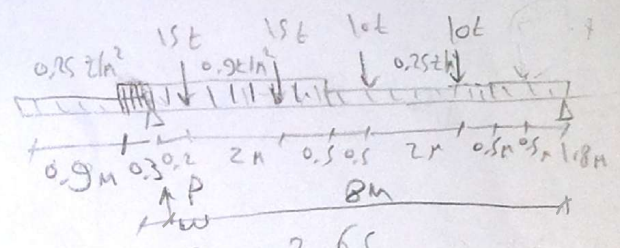$$M_2 = \frac{0.75}{0.9} \times 925.83 = 771.53 \ t.m$$

$$Q_2 = \frac{6.35 \times 36}{2} = 114.3 \ t$$

**# L.L + I**

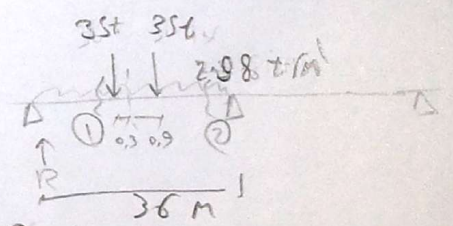$$P = \left[ 15 \times \frac{7.8}{8} + 15 \times \frac{5.8}{8} + 10 \times \frac{4.8}{8} \right.$$
$$\left. + 10 \times \frac{2.8}{8} \right] = 35 \ t \quad 36.1 \ ?$$

$$W = 0.25 \times 0.3 \times \frac{8.75}{8} + 0.9 \times 3.5 \times \frac{6.8}{8} + 0.25 \times 5.3 \times \frac{2.65}{8}$$
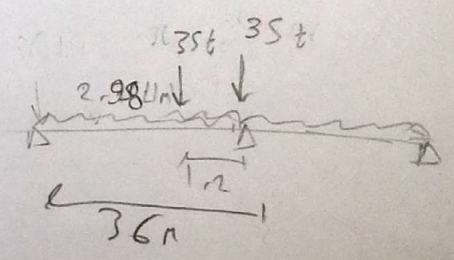$$= 2.98 \ t/m'$$

$$R_{simple} = 35 \times \frac{18.7}{36} + \frac{35 \times 17.1}{36}$$
$$+ 2.98 \times 18 = 88.06 \ t$$

$$M_1 = 0.9 \left[ 88.06 \times 17.7 - \frac{2.98 \times 17.7^2}{2} \right] = 982.7 \ t.m$$

$$M_2 = \frac{0.75}{0.9} \times M_1 = 818.9 \ t.m$$

$$Q_2 = 35 + 35 \times \frac{34.8}{36} + 2.98 \times \frac{36}{2}$$
$$= 122.53 \ t$$

$$\therefore M_{1 max} = 925.83 + 982.7 = 1908.53 \ t.m$$
$$M_{2 max} = 771.53 + 818.9 = 1590.43 \ t.m$$
$$Q_{max} = 114.3 + 122.53 = 236.83 \ t$$

# ⊞ wind Load

- assume bridge height $(0 \sim 20) m$

∵ $q_w = 100 \ t / K9 / m^2$

$$-W_{wind} = \frac{100}{1000} \times (4 + 1.2) = 0.52 \ t/m^1$$

$$Q_w = 0.52 + \frac{36}{2} = 9.36 \ t$$

$$M_w = \frac{0.52 \times 36^2}{8} = 84.24 \ t \cdot m$$

check $\frac{Q_w}{Q_{mat}} = \frac{9.36}{236.8} = 0.04 \quad < 0.2$

neglect wind effect