Item 3

ESTIMATE OF WEIGHTS FOR PORTAL FRAME STEEL BUILDING

(EXCLUDING WEIGHTS OF HAVS)

Overall length of building = 61.0 metres (10 bays @ 6.1 metres)

Portal frame span = 22.5 metres column centres

Roof Slope 10°

Column height = 5.5 metres

Column Section 533 x 210 x 82 UB

Rafter Section 406 x 178 x 54 UB

Weight of each column = $82 \times \frac{9.806}{1000} \times 5.5$ = 4.42 Kn **(0.44 tons)**

Weight of each rafter = $54 \times \frac{9.806}{1000} \times 22.5 \times 1.015$ = 12.09 Kn **(1.21 tons)**

Total no of columns = 2 x 11 = 22 no

Total no of rafters = 11 no

Weight of each 1/2 rafter including eaves haunch = 6.5 Kn **(0.65 tons)**

Length of each half rafter section = $\frac{22.5 \times 1.015}{2}$ = **11.42 metres (37.5')**

Weight of each Portal Frame including columns & rafters

(4.42 x 2) + 12.09 = 20.93 Kn **(2.1 tons)**

Total weight of 11 Portal Frames, including columns & rafters

= 11 x 20.93 = 230.2 Kn **(23.1 tons)**

The above materials weights are for estimation purposes only and are based on a similar Portal Frame structure designed by the undersigned

M.R.FORSTER F.I.E.D., I.Eng.

[redacted]

Sign at the A16

Condition of the Lane

29/02/24
Accident 40 tonne
H.G.V. came
off road.

29. 22024

Recovery Vehicle
reversing down Lane.