



**HAYDN EVANS  
CONSULTING**

**THE DOME COMPANY**

**22.5M DIAMETER TIMBER FRAMED DOME**

The 20 metre structure has identical beam section as the 22.5 metre.

**DESIGN BASIS STATEMENT**

148/001

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The Dome Company: 22.5m Dome  
Design Basis Statement

**Load Assessments and Codes of Practice**

**1.0 Imposed Loads**

- 1.1 Access / maintenance and lights at top pentagon nodes and 2No. "latitudes" below (ie 15 No. total). = 638 N/node
- 1.2 Allowance for forces due to cladding pre-tension - to be confirmed by manufacturer. = 1300 N

**2.0 Wind Loads** - in accordance with:

- 2.1 BS 6399 Part 2: 1997 "Code of Practice for wind loads".
  - 2.1.1 Building Type Factor Kb = 2
  - Height of dome H = 6.5m
  - Therefore, Dynamic Augmentation Factor Cr = 0.03
  - 2.1.2 Standard method:  
Fig 4: Line A: Size factor Ca = 0.98
  - 2.1.3 Basic Wind Speed Vb = 23.5 m/sec
- 2.2 BRE publication: "The Designer's Guide to Wind Loading of Building Structures", Part 2 Static Structures: Section 20.6 and Figure 20.29.

**3.0 Snow Loads** - in accordance with:

- 3.1 BS 6399 Part 3: 1988 "Code of Practice for imposed roof loads".
  - 3.1.1 Basic snow load on ground = 0.4 kN/m<sup>2</sup>
  - 3.1.2 "No access" imposed loads calculated in accordance with Clause 4.3.1 (a) (b) or (c), and Clause 4.4.
  - 3.1.3 Clause 4.3.1 (d) is not applicable.

**4.0 Dead Loads**

- 4.1 Cladding self weight = 0.03 kN/m<sup>2</sup>
- 4.2 Spar self-weight to be calculated.

**5.0 Materials Codes of Practice**

- 5.1 Timber: BS 5628: Part 2: 1996
- 5.2 Structural Steelwork BS 5950: Part 1: 1990
- 5.3 Reinforced Concrete BS 8110: Part 1: 1997