

Guyed Lattice Masts

Guyed lattice masts provide an efficient structural solution for achieving significant instrument heights with relatively simple and economical construction requirements.

The mast consists of modular galvanised steel lattice sections, bolted together and stabilised by a system of guy wires and anchors. This arrangement provides restraint against lateral movement and prevents buckling under wind loading while limiting the scale of foundation and civil works required.

Structural Design Basis

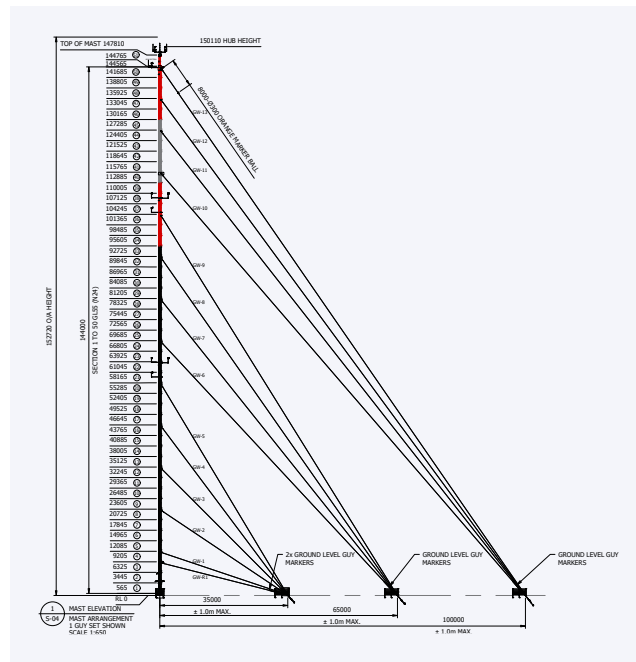
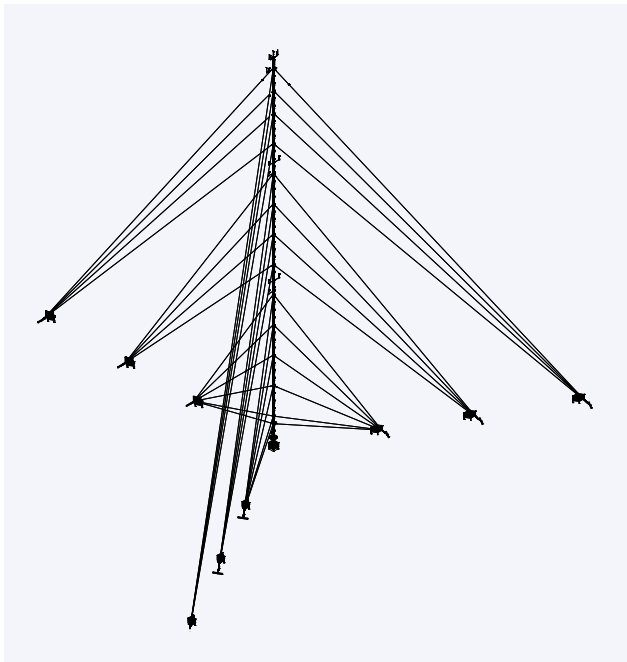
The critical design loading for guyed masts is wind, calculated in accordance with **AS 1170.2:2021 – Structural Design Actions, Part 2: Wind Actions**. Instrumentation and other relevant permanent, imposed, and environmental actions are also calculated in accordance with **AS 1170.0** and **AS 1170.1**.

The mast is modelled and analysed using a dynamic response procedure developed specifically for guyed lattice masts (“Dynamic Gust Response Factors for Guyed Towers,” Davenport & Sparling), as referenced by Australian Standards.

The mast steelwork, foundations, and rigging components are designed to meet the requirements of the following standards:

- AS 3995:1994 – Design of Steel Lattice Towers and Masts
- AS 4100:2020 – Steel Structures
- AS 3600:2018 – Concrete Structures
- AS 1891.4:2009 – Industrial Fall-Arrest Systems and Devices





Design History and Development

The structural details of the ART mast system have been developed and refined over more than 15 years of design application in the renewables and telecommunications industries.

All design work is undertaken in collaboration with Ardill Payne & Partners, our structural engineering consultancy partner with extensive industry experience in guyed masts and towers. The structural design team is fully qualified and chartered with Engineers Australia, carries professional indemnity insurance for all design work, and maintains professional civil and structural registration in all Australian states with a professional registration scheme.

Summary

The ART guyed lattice mast designs achieve structural stability and reliability by combining:

- Rigorous structural engineering design and detailing by highly experience structural engineers with over 15 years design experience in the industry
- Ensuring compliance with all applicable Australian Standards
- Procuring full structural certification for the structure including protective coatings and corrosion protection for the nominated service life

This approach ensures that the masts are structurally reliable, code-compliant, and appropriate for use under Australian environmental and regulatory conditions.

ART designs, manufactures, installs, and maintains turnkey infrastructure solutions for wind resource assessments, as well as for the broader renewables, resources and communications industries.