STRENGTH TESTED (HIGH DENSITY POLES)

Here at Roundwood New Zealand we have constructed our own Proof Testing Machine for the sole purpose of being able to Strength Test Construction Poles to verify they meet either High Density (HD) specifications or an Ultimate Top Load (UTL) Rating. This process follows the same principal used on MSG (Machine Stress Graded) Timber in the Building Industry, and enables us to supply a Verified Stress Graded Pole. Because there can be variations in strength and quality of Radiata Pine throughout New Zealand, even when sourced from High Density Forest regions, the only truly accurate way to measure a poles strength and stiffness is to apply pressure and see how it performs under loading. This process gives Structural Engineers and Contractors a proven product that will perform in its intended use.

Proof Tested Poles can be tested to verify they meet either High Density (HD) specifications of 450kg/m3 or 52MPa, or an Ultimate Top Load (UTL) Kilo Newton (kN) Rating required for Utility Line Poles. These process's use either a Three or Four-Point Test Method for High Density Testing, or a Three-Point Ground Line Proof Test for a Ultimate Top Load (UTL) kN Rating requirement. These Test Methods are conducted in accordance with New Zealand Standard (NZS) NZS3605:2001. Proof Tested Poles tested for High Density (HD) specifications are mainly used in Retaining Wall, Construction or Foundation Piling and Artificial Shelter Belts for Horticulture applications, where a specified strength and stiffness rating is required by a Customer. The Three-Point Ground Line Test is mainly used when an Ultimate Top Load (UTL) kN Rating is required for Utility Line (Power Transmission) Poles or Telecommunication Poles as specified by the Line Company.

During the Testing Process the Pole is placed horizontally in the Pole Testing Rig. One or two hydraulic rams are then moved into position and used to apply a vertical loading to the Pole. Each Ram has a Y shape design so that it does not damage the Pole when applying the force. The load is applied to the Pole at a rate sufficient to reach the required loading to an accuracy of 2%. The proof loading applied by the ram(s) is held for a period of not less than 10 seconds. This is a fully automated system that calculates the force required taking into account the pole condition i.e. peeling, steaming and treating, in accordance with New Zealand Standard NZS 3603:1993. A computer generated "Proof of Testing" Certificate is supplied with the Pole showing the relevant data such as Ultimate Top Load (UTL), Bending Strength (MPa), Modules of Elasticity (GPa), Proof Force (kN) and Deflection (mm). The Pole condition and grading in accordance with NZS 3605:2001 is also recorded

on the Certificate. Each Tested Pole has an aluminum disk inserted (routed) into the Pole either 3.6m up from the ground line for UTL or halfway up the Pole for HD that has the Unique Test ID, Treatment Plant Number, Treatment Hazard Class i.e. H5, Treatment Date, year of manufacture, species used i.e. Pinus Radiata and kN Rating (load bearing requirement) stamped into the disk.

SED Machine Peeled Poles and Un-Peeled Poles (UGLIES) can all be put through this Strength Testing Process but need to be a minimum of 4.2m in length and can be up to 18.0m. Anything less than 4.2m in length is too short to test on the rig and with the correct grading method being applied should meet the standards for HD Poles.

Use Roundwood New Zealand Machine Strength Tested Poles for:

- Structural Building High Density (HD) specifications
- Retaining Wall High Density (HD) Engineer specified
- Artificial Shelter Belt Structures - Horticulture
- Foundation Piling High Density (HD) Engineer specified
- Telecommunication Poles Ultimate Top Load (UTL) requirement
- Power Transmission Poles Ultimate Top Load (UTL) requirement
- UGLIES (Un-Peeled) Poles for Foundation Piling (HD) requirement

Roundwood New Zealand Quick Reference:

- Radiata Pine Machine Peeled
- Un-Peeled Natural UGLIES
- Naturally tapered 6-8mm per metre length
- Diameter range: 150mm up to 550mm SED
- Length range from 4.2m up to 18.0m lengths
- H5 CCA and H6 Marine Hazard Class
- Machine Strength Tested to Ultimate Top Load (UTL) kN requirement
- Machine Strength Tested to High Density (HD) 450kg/m3 or 52MPa

Above is a photo of our Strength Testing Pole Rig.