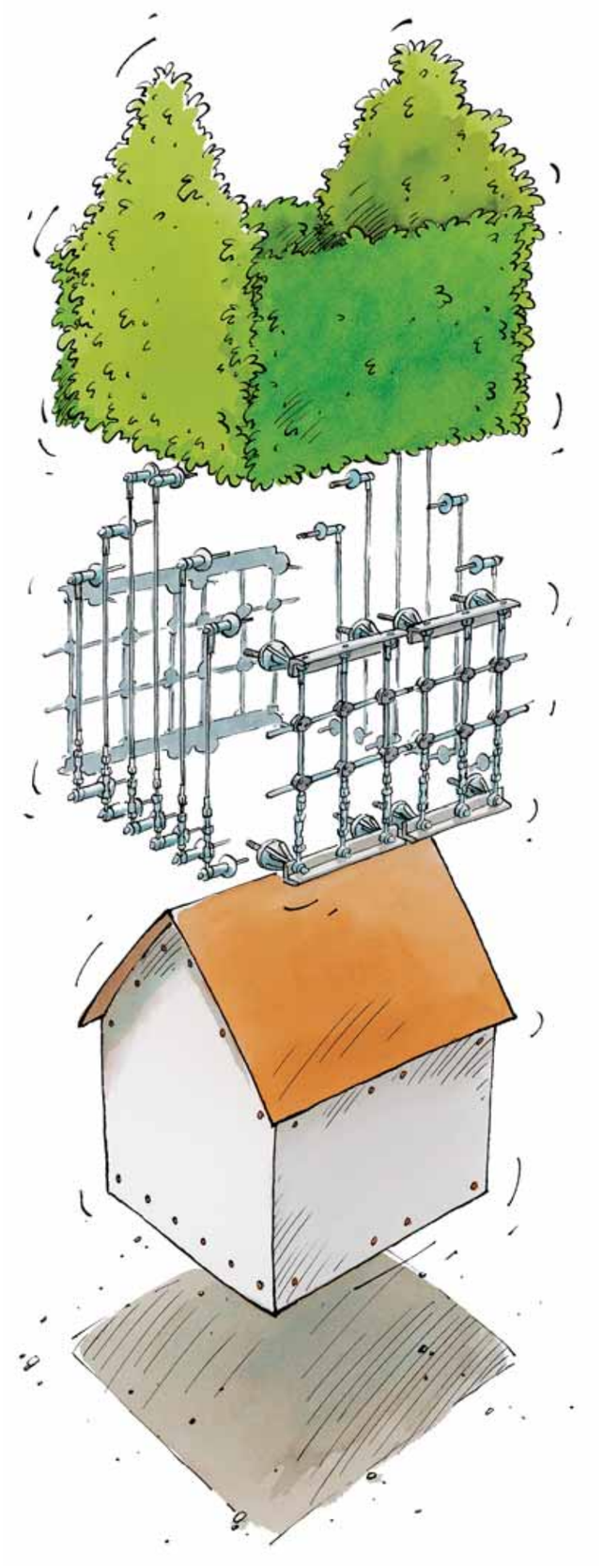


DIMENSIONING TRAINING SYSTEMS

The overall load of a greened surface is composed of:

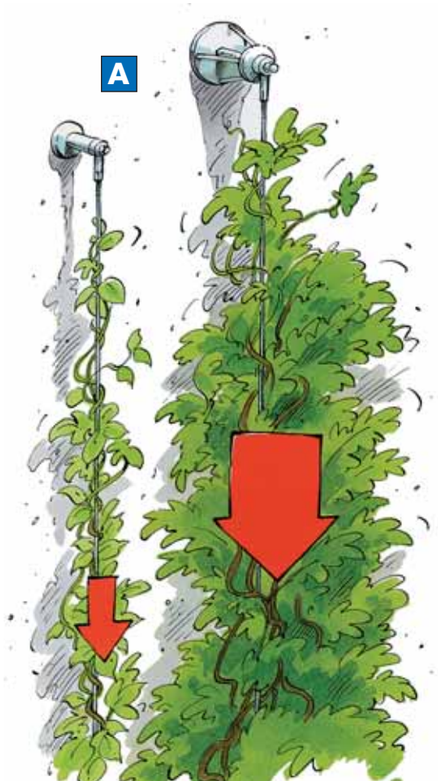
- Weight of the plant
- Wind load on plant surface
- Weight of dew and rain
- Weight of snow
- Weight of training structure

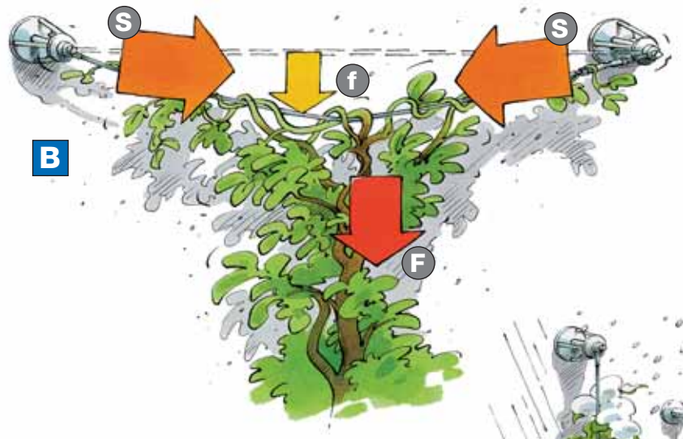
Load distribution
If the entire vertical load is absorbed solely by the training system at the top and bottom, the upper suspension must hold the entire vertical load and half the wind load. The bottom suspension must hold only half the wind load.

The safety factor
The defined vertical load to be absorbed by the upper suspension must be multiplied by a safety factor.

A: PLANT WEIGHT

Depending on the variety, the unit weight per square metre of plant area can vary from 1 to 50 kg/m².
The plant weight is influenced by the location, the soil quality, the growth rate and owner care.





B: HORIZONTAL AND VERTICAL WIRE ROPES

When computing rope forces, a distinction must be made between horizontally and vertically tensioned wire ropes.

Intermediate supports for rods and wire ropes
The sag **(f)** of horizontal or inclined rods and wire ropes can be diminished with intermediate supports.

C: WIND LOAD

When planning and installing training systems, the wind load is an important aspect. It is composed of wind pressure and wind suction as well as side winds on the greened surface. Although it can be assumed that part of the wind will breeze through the vegetation, we recommend looking at the greened mass as a solid surface.

The following suggested values apply **to wind suction** calculations:

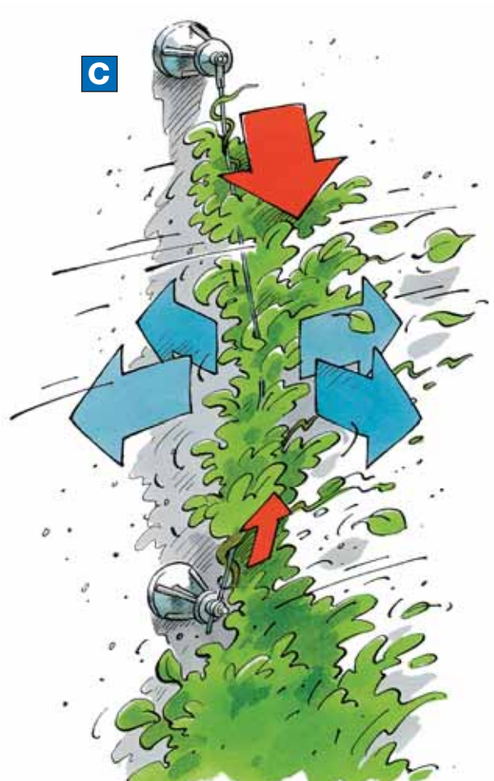
- Height above ground up to 8 metres: approx. 0.5 kN/m²
- Between 8 and 20 metres above ground: approx. 0.8 kN/m²
- Higher than 20 metres above ground: 1.1 kN/m²

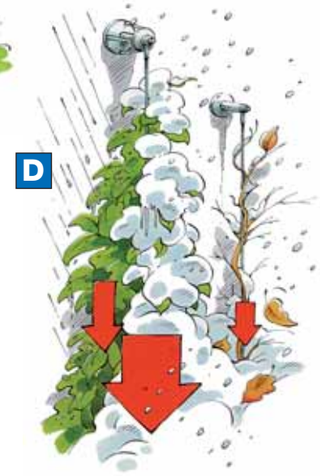
A suction effect on the vegetated surface occurs when the wind blows parallel to the greened surface. The resulting tensile forces must be transmitted to the building structure via the dowels.

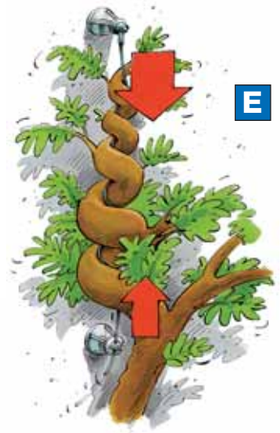
Incident side winds impose a bending moment on the spacers. In special cases, it may be necessary to reinforce the spacers and/or guy them down with wire ropes.

Where trainers are **subsequently attached** to a building structure, it should be determined if and at which locations the computed forces are transmitted and where they can be diverted into the foundation.

In new buildings, it is the planner's responsibility to investigate whether and how training systems should be included and mounted.







D: DEW, RAIN, AND SNOW LOADS

In addition to the weight of the plant, the training structure must also be capable of absorbing dew, rain, and snow loads. This load is factored in by multiplying the plant weight by the following coefficients:

For deciduous plants: **plant weight times 2;** for evergreens: **plant weight times 3.**

E: STRONG TWINING CLIMBERS

At least one end of the wire rope which holds climbers that twine significantly (Wisteria, for example) must be protected with a **Jakob**® INOX LINE **overload clamp** (No. **30920-**0400-10, page 65). This is the only way to prevent major façade damage by tensile overloads on spacers (Fig. 2, page 29).