COMMERCIAL ROCK CLIMBING WALL

Artificial Climbing Structure Technical & Engineering Specifications

DWG NO: RC-WALL-2026
Standards: EN 12572-1/2/3 & CWA Standard

1. SYSTEM SCOPE & STRUCTURAL ARCHITECTURE

This document sets forth material parameters, sub-frame engineering standards, surface coating textures, hold insert densities, top belay anchor mechanics, and safety compliance rules for artificial rock climbing structures (Lead, Top-Rope, and Bouldering).

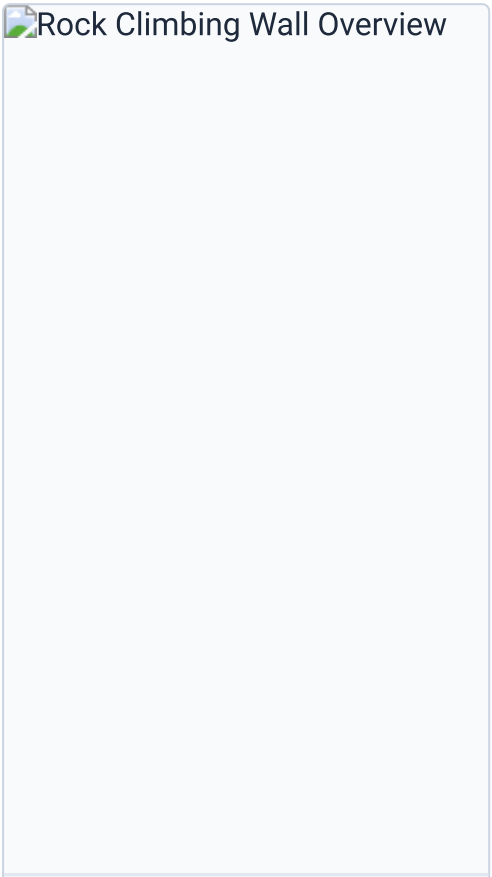


Figure 1: Commercial Indoor/Outdoor Rock Climbing Wall Installation.

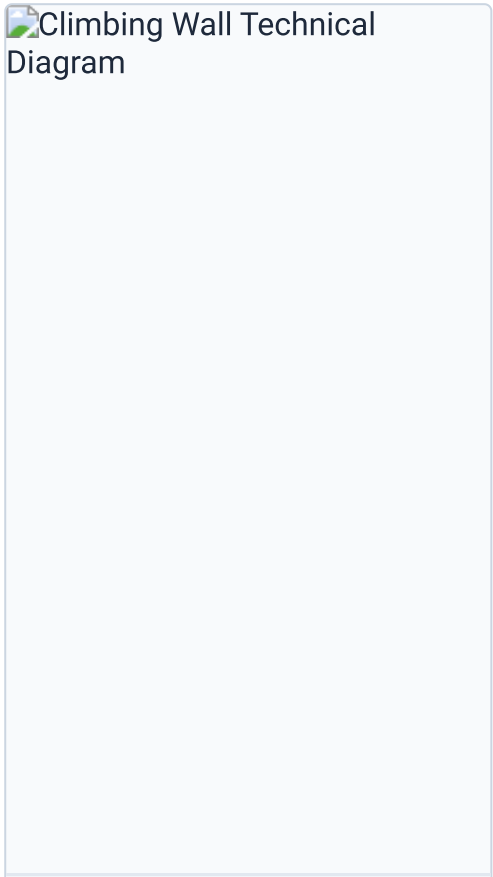


Figure 2: Technical Drawing (DWG RC-WALL-2026) – Steel Frame & T-Nut Grid Details.

2. TECHNICAL COMPONENT SPECIFICATIONS

System Module	Material & Technical Specifications	Structural Ratings & Capacities
Wall Panels	18mm high-density birch plywood or Glass Fiber Reinforced Polymer (GRP) modular panels.	Coated with anti-glare quartz sand silica friction layer; surface friction rating per EN 12572-1.
Steel Substructure	Powder-coated structural steel hollow sections (S235JR / S355JR grade).	Designed to withstand minimum 8.0 kN point load and 25.0 kN total dynamic fall load at anchors.
T-Nut Hold Grid	M10 zinc-plated / Grade 304 stainless steel screw-in T-nuts (36 grid inserts per m²).	Pull-out load resistance > 12.0 kN per T-nut; equipped with anti-twist screw holes.
Climbing Holds & Volumes	Polyurethane (PU) or Polyresin ergonomic hold sets with textured skin finish.	Compliant with EN 12572-3; non-brittle high-impact resistance with countersunk bolt holes.
Top Anchor Assembly	Dual-point Grade 316 stainless steel anchor plates with swivel steel carabiners and chain links.	Ultimate breaking strength > 30 kN; redundant double-locking belay mechanism.

3. SAFETY MANAGEMENT & IMPACT PROTECTION

STRUCTURAL COMPLIANCE & STANDARDS

- **EN 12572-1:** Artificial Climbing Structures - Wall structures with protection points.
- **EN 12572-2:** Bouldering Walls - Safety requirements & calculation methods.
- **EN 12572-3:** Safety requirements for climbing holds and insert points.

IMPACT SURFACING & MAINTENANCE

- **Bouldering Flooring:** 300mm–400mm dual-density polyurethane foam safety mats (EN 12572-2).
- **Lead/Top-Rope Mats:** 75mm foam landing pads at wall base to prevent grounding injuries.
- **Inspection Cycle:** Daily visual anchor check, monthly T-nut torque check (35 Nm), annual engineering audit.