# COMMERCIAL TRAMPOLINE PARK SYSTEMS

Structural Engineering & Safety Performance Specifications

**DWG NO:** TPK-ENG-2026
**Standards:** ASTM F2970-20 & EN 15567

## 1. SYSTEM SCOPE & ARCHITECTURE

This document outlines the material standards, frame construction, safety matting, airbag landing zones, and operational compliance requirements for commercial indoor Trampoline Park facilities.

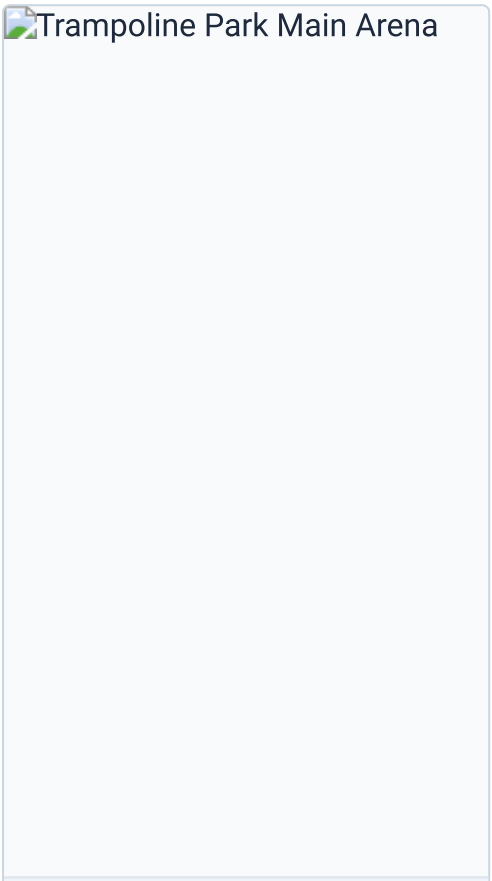


Figure 1: Main Court Jump Arena with Angled Wall Trampolines & Safety Padding.

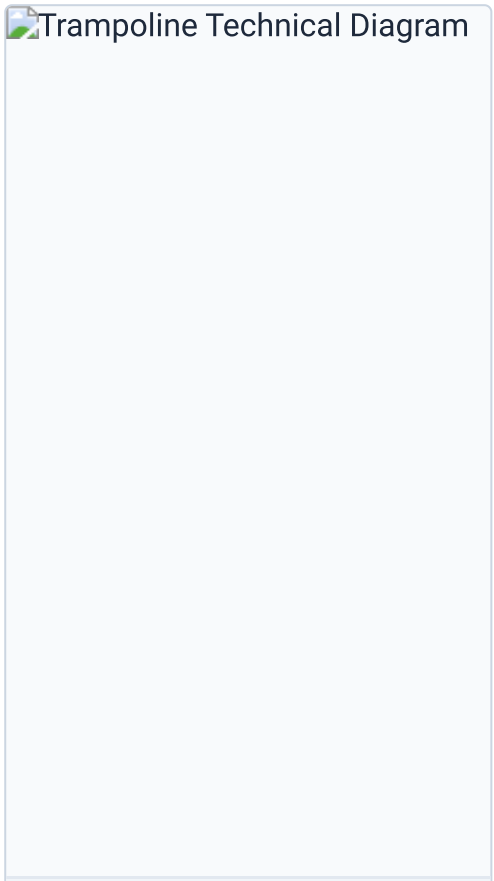


Figure 2: Technical Drawing (DWG TPK-ENG-2026) – Steel Grid Frame & Spring Attachment Detail.

## 2. TECHNICAL COMPONENT SPECIFICATIONS

| System Element | Material & Dimension Specifications | Structural & Safety Ratings |
|---|---|---|
| **Steel Frame Substructure** | 80mm × 80mm × 4mm galvanized structural steel tubing (Q235/Q345 grade). | Modular interlock system rated for continuous dynamic loads up to 150 kg per jumper. |
| **Trampoline Jumping Beds** | Heavy-duty Permatron polypropylene woven fabric (UV resistant, anti-slip finish). | Tensile strength > 2200 N; double-stitched reinforced webbing edges with steel V-rings. |
| **Spring Assembly** | 3.2mm wire diameter galvanized piano wire high-tension springs (length: 215mm–260mm). | Tapered spring design for progressive deceleration and reduced joint strain impact. |
| **Safety Padding & Covers** | 70mm thick Cross-Linked Polyethylene (EPE/XPE) foam core encased in 0.55mm PVC vinyl. | Flame retardant (Class B1 / NFPA 701); completely covers steel frame members and springs. |
| **Airbag / Foam Pit Landing** | Dual-chamber high-velocity air inflation system with top anti-friction sheet. | Min. depth: 1.5m; flame-retardant foam blocks (density: 30 kg/m³) or safety stunt airbag. |

## 3. SAFETY COMPLIANCE & OPERATIONAL STANDARDS

### SAFETY STANDARDS & NETTING

- **Design Compliance:** ASTM F2970-20 Standard Practice for Trampoline Courts.
- **Enclosure Netting:** High-density polyethylene (HDPE) mesh (height: 2.5m minimum).
- **Clearance Height:** Minimum 5.5m unobstructed vertical space from bed level.

### INSPECTION & MAINTENANCE PROTOCOLS

- **Daily Inspection:** Spring tension check, pad alignment, and frame lock check.
- **Weekly Audit:** Bed stitching integrity inspection and foam pit fluffing/cleaning.
- **Annual Certification:** Complete structural fastener torque testing & weld inspection.