CRANE BEAM STRUCTURAL ANALYSIS REPORT

PROJECT INFORMATION

Project name: Crane Beam Calculation Project

Design engineer: 1

Calculation date: 9/18/2025

Software: Smart Crane Beam Calculator

INPUT PARAMETERS

Geometric Parameters:

Beam width (b)	600 mm
Beam height (h)	900 mm
Top flange thickness (t1)	30 mm
Bottom flange thickness (t2)	30 mm
Web thickness (t3)	15 mm
Web stiffener spacing (b1)	400 mm

Load and Material Properties:

Beam span (L)	800 cm
Lifting load (P_nang)	15000 kg
Equipment load (P_thietbi)	5000 kg
Distributed load (q)	20 kg/cm
Allowable stress (Ïƒ_allow)	1650 kg/cmÂ²
Yield strength (Ïƒ_yield)	2450 kg/cmÂ²
Elastic modulus (E)	2.10e+6 kg/cmÂ²
Poisson ratio (Î½)	0.3

CALCULATION RESULTS

Geometric Properties:

Cross-sectional area (F)	612.00 cmÂ²
Moment of inertia Jx	8.30e+5 cmâ
Moment of inertia Jy	2.17e+5 cmâ
Section modulus Wx	18436.80 cmÂ³
Section modulus Wy	7218.30 cmÂ³

Centroid Yc	45.00 cm

Internal Forces and Stresses:

Total bending moment (M_x)	6.93e+6 kg.cm
Calculated stress (Ïƒ)	414.67 kg/cmÂ²
Calculated deflection (f)	0.184 cm

SAFETY CHECKS

Stress check (KÏƒ)	3.98	PASS
Deflection check (nf)	4.36	PASS
Local buckling check (K_b)	4.17	PASS

OVERALL ASSESSMENT

âœ“ BEAM MEETS SAFETY REQUIREMENTS

All checks PASSED. The beam can be safely used with the given parameters.

ANALYSIS DIAGRAMS

Bending Moment Diagram: Element not found (ID: moment-diagram)

Shear Force Diagram: Element not found (ID: shear-diagram)

Stress Distribution Diagram: Element not found (ID: stress-diagram)

Deflected Shape Diagram: Element not found (ID: deflection-diagram)

Chart Summary: 0 captured successfully, 4 failed