TECHNICAL NOTE: BENDING & SHEAR RESPONSE
Structural Engineering Laboratory - 2026

1   Analytical Framework

This report evaluates the internal mechanical response of a structural beam under discrete loading. The simulation aims to isolate the shear and flexural envelopes for design verification.

1.1   System Geometry

Parameters: L=12.0m, Support: Pinned-Roller.

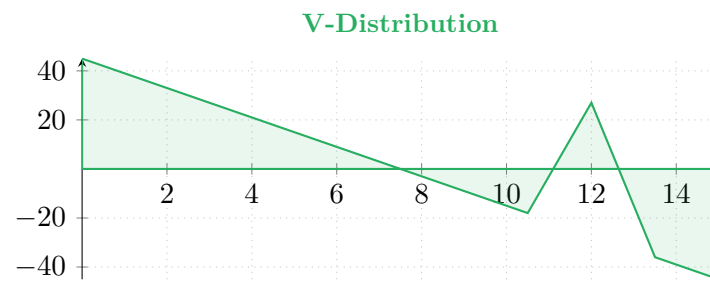**Simply Supported Beam**

Figure 1: Schematic Load Diagram

2   Computation Matrix

The dataset below represents the calculated stress points along the span.

x (m)	V (kN)	M (kNm)
0.00	45.0	0.0
3.00	27.0	108.0
6.00	9.0	162.0
9.00	-9.0	162.0
12.00	27.0	108.0
15.00	-45.0	0.0

3 Stress Envelopes

3.1 Shear Force (V) Diagram

V-Distribution

3.2 Bending Moment (M) Diagram

M-Distribution