TECHNICAL MEMORANDUM

Structural Analysis of Flexural Members

Project Identifiers

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Subject: Simply Supported Beam - 12m Span Analysis
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1 Project Scope

This memorandum presents the calculated internal force distribution for a primary structural element. The analysis focuses on deriving the Shear Force Diagram (SFD) and Bending Moment Diagram (BMD) under static load conditions.

1.1 Configuration Modeling

The beam is modeled with ideal pinned-roller boundary conditions. The geometry and loading path are visualized in the figure below:

Simply Supported Beam

Figure 1: Analytical Free Body Diagram.

2 Numerical Computation Matrix

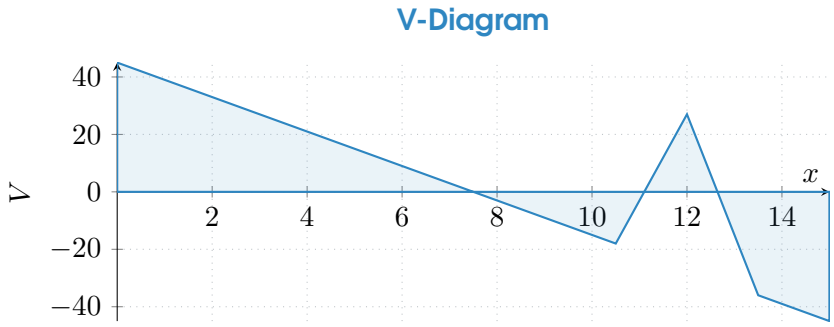
Sampled data points extracted from the finite element simulation:

Point (m)	Shear (kN)	M
0.00	45.0	0
3.00	27.0	1
6.00	9.0	1
9.00	-9.0	1
12.00	27.0	1
15.00	-45.0	0

3 Internal Force Envelopes

The graphical plots below describe the mechanical response of the beam.

3.1 Shear Force Variance



3.2 Bending Moment Variance