Beam Deflection Analysis Report

Report Generated: 2026-02-18 14:03:16

Concentrated Moment (M0): 10000 NÂ·m

Relative Moment Location: 0.5

Analysis Summary:

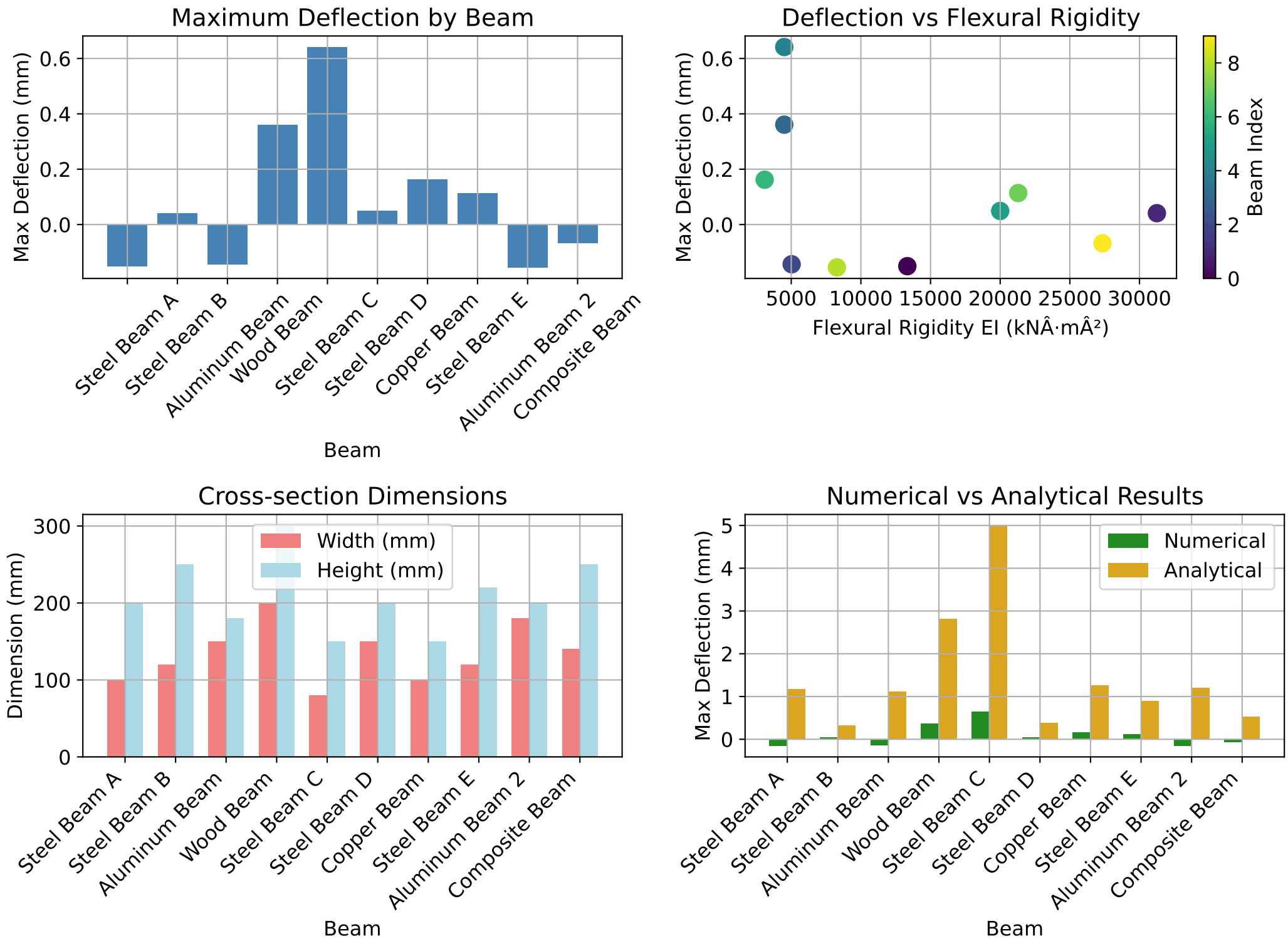
Beam Name	L (m)	I (m4)	EI (kNÂ·mÂ²)	Max Defl (mm)
Steel Beam A	5.00	0.000067	13333.3	-0.150
Steel Beam B	4.00	0.000156	31250.0	0.041
Aluminum Beam	3.00	0.000073	5030.1	-0.143
Wood Beam	4.50	0.000450	4500.0	0.361
Steel Beam C	6.00	0.000022	4500.0	0.641

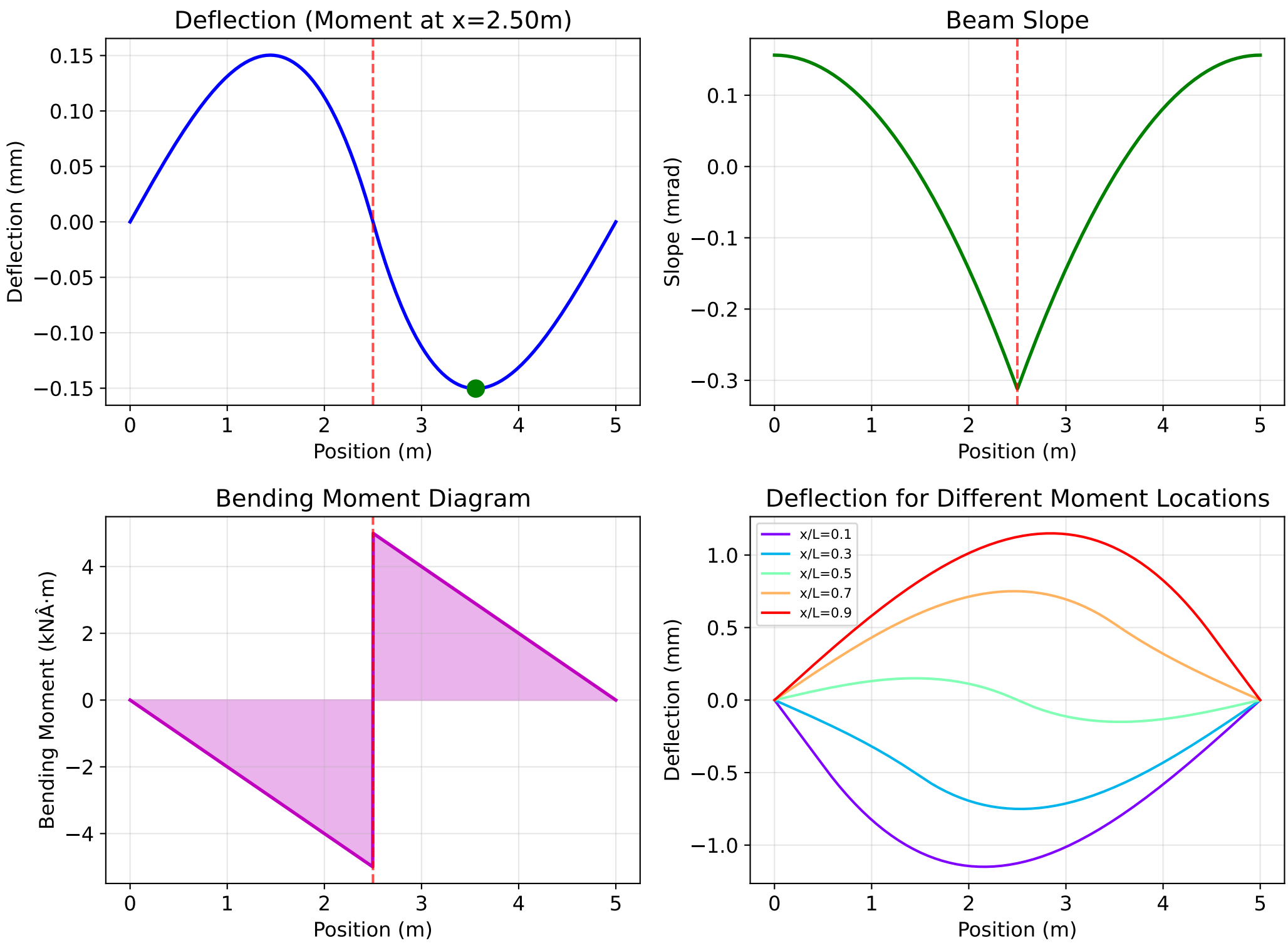
Statistics:

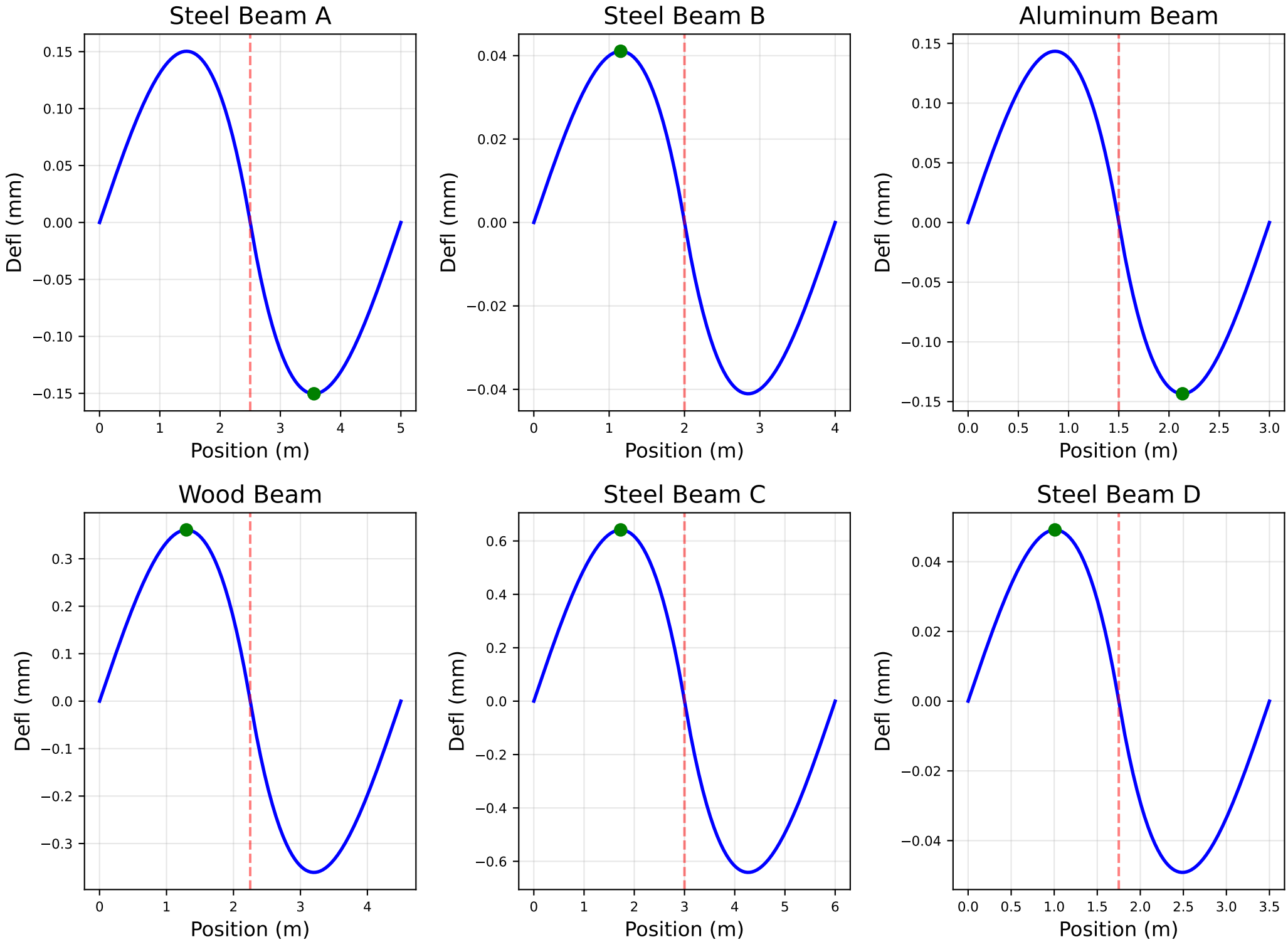
Average Deflection: 0.085 mm

Maximum Deflection: 0.641 mm

Minimum Deflection: -0.155 mm


Beam Analysis Results Comparison
Maximum Deflection by Beam
Max Deflection (mm)
0.0
0.2
0.4
0.6
Steel Beam A
Steel Beam B
Aluminum Beam
Wood Beam
Steel Beam C
Steel Beam D
Copper Beam
Steel Beam E
Aluminum Beam 2
Composite Beam
Beam
Deflection vs Flexural Rigidity
Max Deflection (mm)
5000
10000
15000
20000
25000
30000
Flexural Rigidity EI (kNÂ·mÂ²)
Beam Index
0
2
4
6
8
Cross-section Dimensions
Dimension (mm)
0
100
200
300
Width (mm)
Height (mm)
Beam
Numerical vs Analytical Results
Max Deflection (mm)
0
1
2
3
4
5
Numerical
Analytical
Beam


Detailed Analysis: Steel Beam A
Deflection (Moment at x=2.50m)
Deflection (mm)
Position (m)
Beam Slope
Slope (mrad)
Position (m)
Bending Moment Diagram
Bending Moment (kNÂ·m)
Position (m)
Deflection for Different Moment Locations
x/L=0.1
x/L=0.3
x/L=0.5
x/L=0.7
x/L=0.9
Deflection (mm)
Position (m)


Individual Beam Deflection Profiles
Steel Beam A
Steel Beam B
Aluminum Beam
Wood Beam
Steel Beam C
Steel Beam D
Defl (mm)
Position (m)

Statistical Analysis