# Model Entities

This paragraph shows detailed or brief model overview.

## Materials

This paragraph contains materials information.

### Materials Summary

|  |  |  |
| --- | --- | --- |
| Title | Elements | Mass |
| 1..Structural Steel | 421 | 3493876.6 |

### 1..Structural Steel

Fatigue Data at zero mean stress comes from 1998 ASME BPV Code, Section 8, Div 2, Table 5-110.1

|  |  |
| --- | --- |
| Property | Value |
| Elements | 421 |
| Mass | 3493876.6 |
| Young Modulus | 2.00e+11 |
| Shear Modulus | 76923076923.08 |
| Poisson Ratio | 0.30 |
| Shear | 1.00 |
| Mass Density | 7850.00 |
| Tensile Strength | 360.00e+6 |
| Yield Stress | 240.00e+6 |

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## Properties

This paragraph contains properties information.

### Properties Summary

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| Title | Elements | Material | Mass |
| 4..Line Body 9(External Model) | 22 | 1..Structural Steel | 10759.3 |
| 5..Line Body 10(External Model) | 13 | 1..Structural Steel | 58718.0 |
| 6..Line Body 11(External Model) | 31 | 1..Structural Steel | 140923.2 |
| 7..Line Body 12(External Model) | 18 | 1..Structural Steel | 83332.6 |
| 8..Line Body 13(External Model) | 36 | 1..Structural Steel | 15399.1 |
| 9..Line Body 14(External Model) | 1 | 1..Structural Steel | 17149.1 |
| 10..Line Body 15(External Model) | 1 | 1..Structural Steel | 14624.5 |
| 11..Line Body 16(External Model) | 4 | 1..Structural Steel | 10501.2 |
| 12..Line Body 17(External Model) | 4 | 1..Structural Steel | 10501.2 |
| 13..Line Body 18(External Model) | 50 | 1..Structural Steel | 15394.6 |
| 14..Line Body 1(External Model) | 1 | 1..Structural Steel | 1884000.0 |
| 15..Line Body 2(External Model) | 44 | 1..Structural Steel | 96958.5 |
| 16..Line Body 3(External Model) | 44 | 1..Structural Steel | 96159.4 |
| 17..Line Body 4(External Model) | 32 | 1..Structural Steel | 16844.5 |
| 18..Line Body 5(External Model) | 78 | 1..Structural Steel | 946917.9 |
| 19..Line Body 6(External Model) | 22 | 1..Structural Steel | 40430.6 |
| 20..Line Body 7(External Model) | 10 | 1..Structural Steel | 20215.3 |
| 21..Line Body 8(External Model) | 10 | 1..Structural Steel | 15047.6 |

### 4..Line Body 9(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 22 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.03 |
| I1 | 3.810e-03 |
| I2 | 3.810e-03 |
| I12 | 0 |
| Torsion Constant | 0.01 |
| Y Shear Area | 0 |
| Z Shear Area | 0 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 0 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 5..Line Body 10(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 13 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.30 |
| I1 | 1.25 |
| I2 | 0.58 |
| I12 | 0 |
| Torsion Constant | 1.07 |
| Y Shear Area | 3.00 |
| Z Shear Area | 1.50 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 9.430e-05 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 6..Line Body 11(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 31 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.30 |
| I1 | 1.25 |
| I2 | 0.58 |
| I12 | 0 |
| Torsion Constant | 1.07 |
| Y Shear Area | 3.00 |
| Z Shear Area | 1.50 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 9.430e-05 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 7..Line Body 12(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 18 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.30 |
| I1 | 1.25 |
| I2 | 0.58 |
| I12 | 0 |
| Torsion Constant | 1.07 |
| Y Shear Area | 3.00 |
| Z Shear Area | 1.50 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 9.430e-05 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 8..Line Body 13(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 36 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.03 |
| I1 | 2.676e-03 |
| I2 | 2.676e-03 |
| I12 | 0 |
| Torsion Constant | 0.01 |
| Y Shear Area | 0 |
| Z Shear Area | 0 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 0 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 9..Line Body 14(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 1 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.04 |
| I1 | 1.352e-04 |
| I2 | 1.352e-04 |
| I12 | 0 |
| Torsion Constant | 2.704e-04 |
| Y Shear Area | 0 |
| Z Shear Area | 0 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 0 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 10..Line Body 15(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 1 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.04 |
| I1 | 1.352e-04 |
| I2 | 1.352e-04 |
| I12 | 0 |
| Torsion Constant | 2.704e-04 |
| Y Shear Area | 0 |
| Z Shear Area | 0 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 0 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 11..Line Body 16(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 4 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.17 |
| I1 | 0.25 |
| I2 | 0.25 |
| I12 | 0 |
| Torsion Constant | 0.37 |
| Y Shear Area | 1.50 |
| Z Shear Area | 1.50 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 7.454e-06 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 12..Line Body 17(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 4 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.17 |
| I1 | 0.25 |
| I2 | 0.25 |
| I12 | 0 |
| Torsion Constant | 0.37 |
| Y Shear Area | 1.50 |
| Z Shear Area | 1.50 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 7.454e-06 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 13..Line Body 18(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 50 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.02 |
| I1 | 1.561e-03 |
| I2 | 1.561e-03 |
| I12 | 0 |
| Torsion Constant | 3.121e-03 |
| Y Shear Area | 0 |
| Z Shear Area | 0 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 0 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 14..Line Body 1(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 1 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 60.00 |
| I1 | 500.00 |
| I2 | 180.00 |
| I12 | 0 |
| Torsion Constant | 458.43 |
| Y Shear Area | 0 |
| Z Shear Area | 0 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 337.70 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 15..Line Body 2(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 44 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.14 |
| I1 | 0.11 |
| I2 | 0.11 |
| I12 | 0 |
| Torsion Constant | 0.15 |
| Y Shear Area | 1.25 |
| Z Shear Area | 1.00 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 3.616e-03 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 16..Line Body 3(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 44 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.14 |
| I1 | 0.11 |
| I2 | 0.11 |
| I12 | 0 |
| Torsion Constant | 0.15 |
| Y Shear Area | 1.25 |
| Z Shear Area | 1.00 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 3.616e-03 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 17..Line Body 4(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 32 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.04 |
| I1 | 1.329e-03 |
| I2 | 3.774e-03 |
| I12 | 0 |
| Torsion Constant | 2.909e-03 |
| Y Shear Area | 0.25 |
| Z Shear Area | 0.40 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 3.012e-05 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 18..Line Body 5(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 78 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.79 |
| I1 | 0.05 |
| I2 | 0.05 |
| I12 | 0 |
| Torsion Constant | 0.10 |
| Y Shear Area | 0 |
| Z Shear Area | 0 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 0 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 19..Line Body 6(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 22 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.14 |
| I1 | 0.09 |
| I2 | 0.22 |
| I12 | 0 |
| Torsion Constant | 0.18 |
| Y Shear Area | 1.00 |
| Z Shear Area | 1.50 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 0.03 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 20..Line Body 7(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 10 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.14 |
| I1 | 0.09 |
| I2 | 0.22 |
| I12 | 0 |
| Torsion Constant | 0.18 |
| Y Shear Area | 1.00 |
| Z Shear Area | 1.50 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 0.03 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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### 21..Line Body 8(External Model)

|  |  |  |
| --- | --- | --- |
| Property | Value | Property Shape |
| Type / Elements | Beam / 10 |  |
| Material | 1..Structural Steel |
| Mass | 0.0 |
| Gravity Center | [0.00; 0.00; 0.00] |
| Area | 0.10 |
| I1 | 0.08 |
| I2 | 0.12 |
| I12 | 0 |
| Torsion Constant | 0.14 |
| Y Shear Area | 1.00 |
| Z Shear Area | 1.50 |
| Nonstructural Mass | 0 |
| Perimeter | 0 |
| Warping Constant | 2.657e-06 |
| Y Neutral Axis Offset A | 0 |
| Z Neutral Axis Offset A | 0 |

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