Tendon

Tendons are line objects which may be embedded within other objects (frames, shells, solids, etc.) to simulate the effects of prestressing and post-tensioning. Tendons may be modeled either as independent structural objects or simply as equivalent loads which act upon the structure. When modeled as objects, nonlinear behavior may be assigned through axial hinges, and losses may be calculated, including those from elastic shortening and time-dependent effects (creep, shrinkage, and aging). Tendons extend between two joint locations, may follow a curvilinear or segmented path within 3D space, and do not need to be entirely contained within other objects. Tendons have axial, shear, bending, and torsional stiffness properties, though axial is of primary concern. A maximum tension (positive) and compression (negative) may be assigned to tendons. No-compression behavior is specified by setting the compression limit to zero. These limits only apply during nonlinear analysis. Target forces may also be applied to tendons. Additional information on tendons and their application is available in the CSI *Analysis Reference Manual* (The Tendon Object, page 279).

Related Content

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Test Problems

- Align solid and hollow sections
- Hyperstatic forces for bridge-object superstructures
- Modeling segmental-bridge joint openings
- Tendon force vs. frame response

References

- LAPBOX: Linear-Elastic Analysis of Box-Girder Bridges, NISEE Online Archive, University of California, Berkeley – the LAPBOX Manual explains calculation of tendon forces