

*UNIVERZA V LJUBLJANI  
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Katedra za metalne konstrukcije*

# **JEKLENE STAVBE IN MOSTOVI**

## **KONSTRUKCIJE Z VRVMI**

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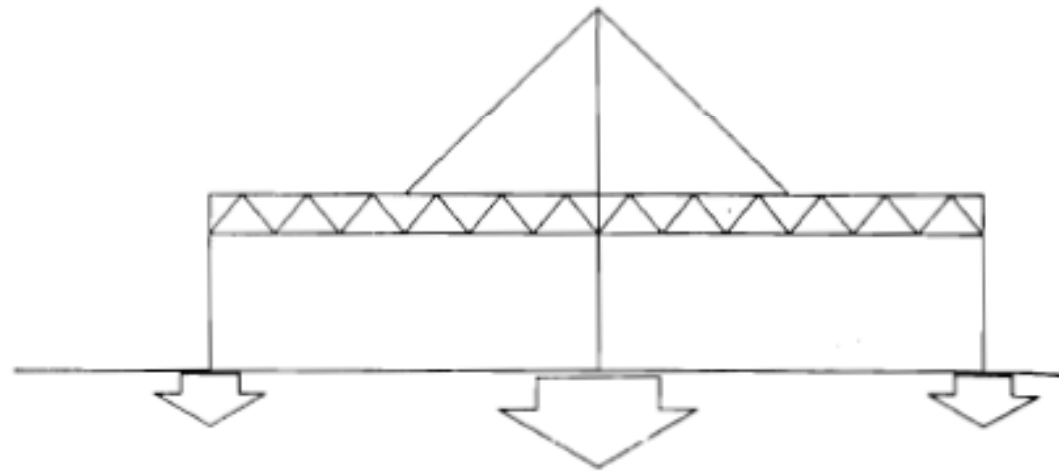


Fig. 5.7 Suspension structure

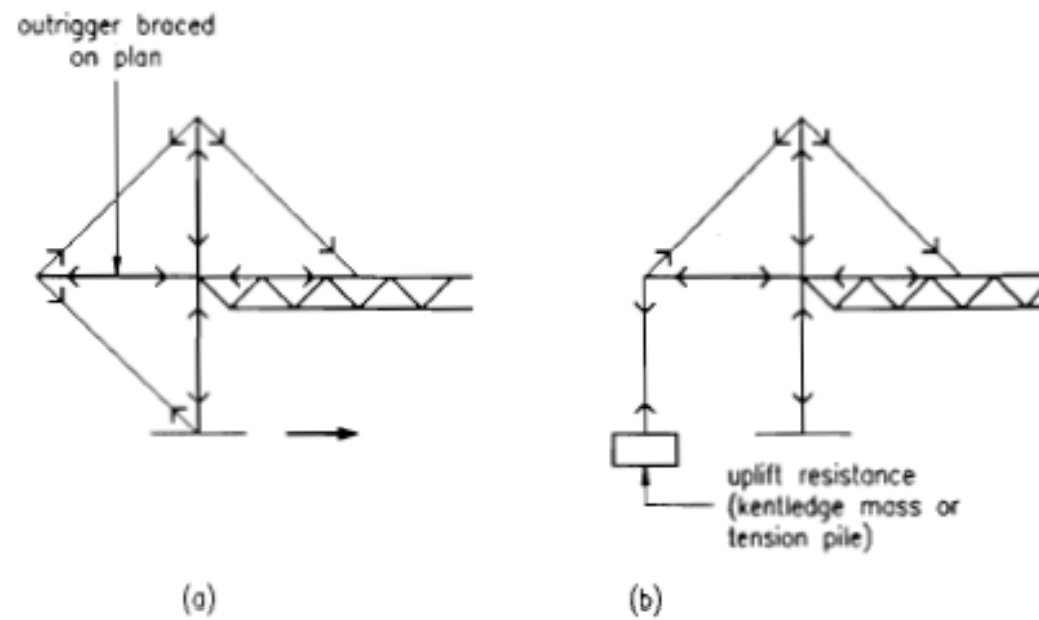
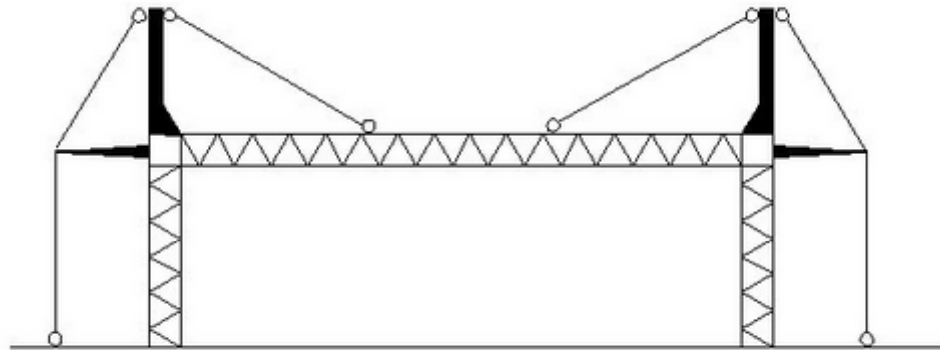
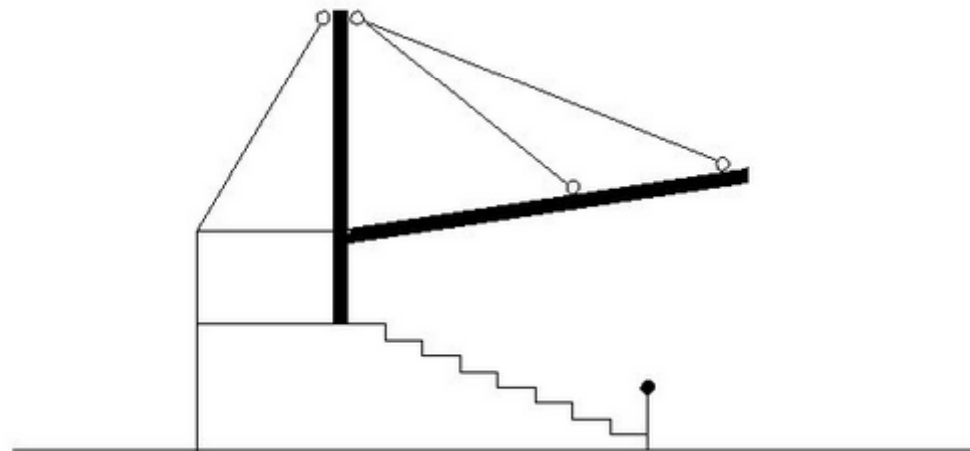


Fig. 5.6 Types of perimeter support



Cable-stayed roof of a building



Cable-stayed roof for a grandstand

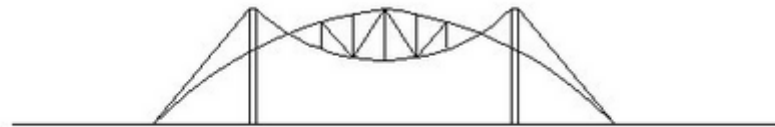
Figure 10 Examples of cable-stayed roofs



Parallel cable system

Radial cable system

(a) Single layer cable systems



Planar cable truss



Cable space truss

Radial cable truss

(b) Double layer prestressed cable systems

Figure 11 Single and double-layer cable systems

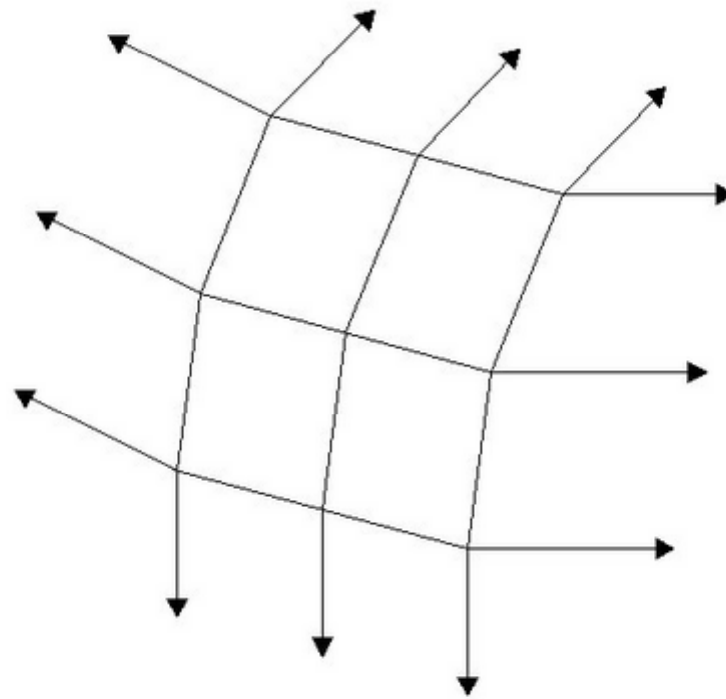
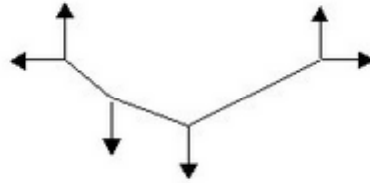
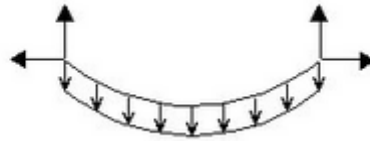


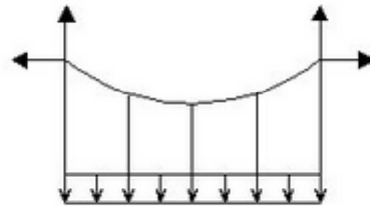
Figure 12 Prestressed tensile membrane system-  
an anticlastic cable net



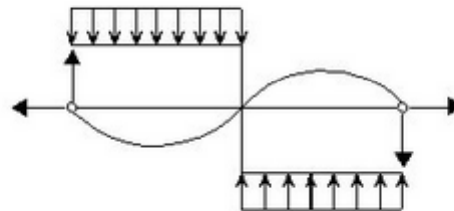
Concentrated loads (Polygonal form)



Self weight (Catenary form)

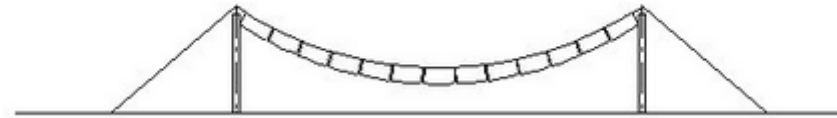


Uniformly distributed vertical load  
(Square parabolic form)

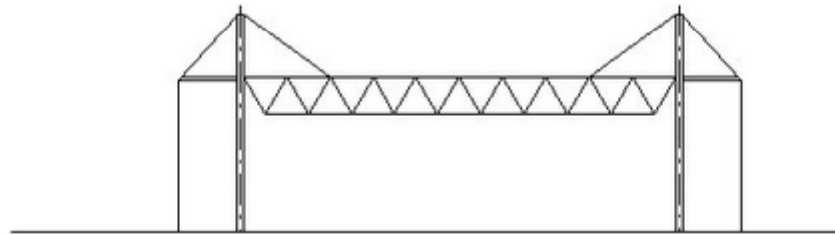


Assymmetric loading with uplift

Figure 13 Single cable : Load/ shape relations



(a) Permanent load

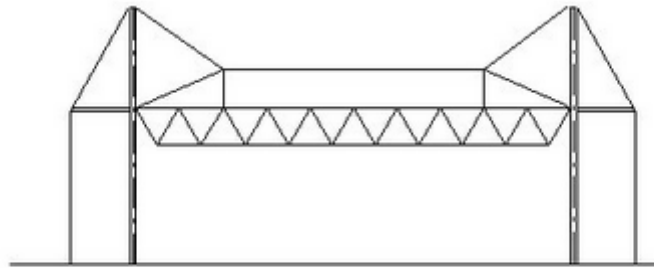


(b) Rigid roof structure

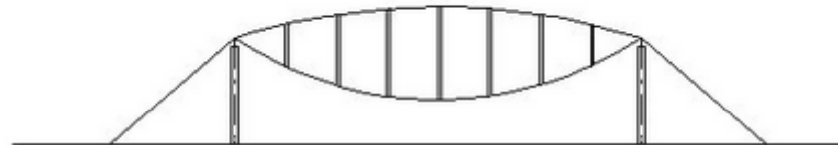


(c) Construction as rigid arch or shell

Figure 14 Cable stability : plane systems



(d) Additional staying



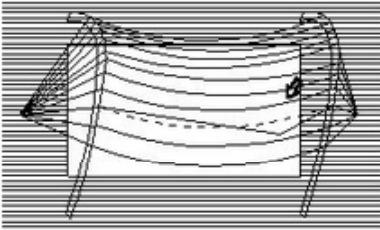
(e) Prestressing by cable with opposite curvature



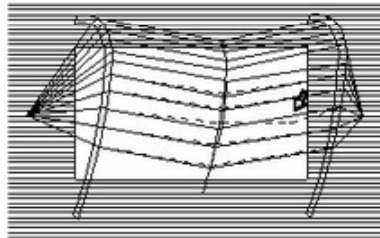
(f) Staying with transverse cables to ground  
or to another part of the structure

Figure 14(cont'd) Cable stability : plane systems

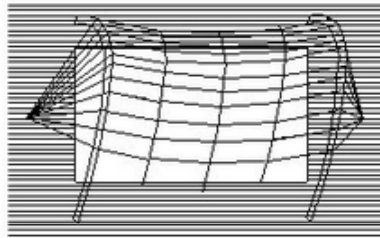




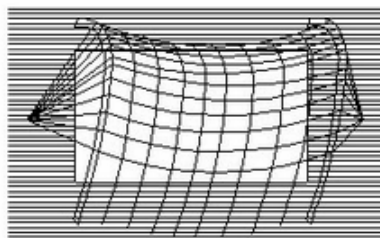
Single load causes major deflection that remains localized to the cable under load



Transverse stabilization cable stresses suspension cable and resists deflection

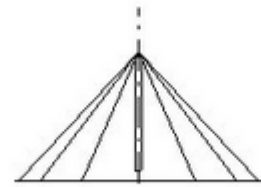


Increase of stabilization cables strengthens resistance against point loads

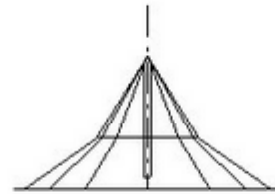


All the cable are participating in the mechanism of resisting single load deflection

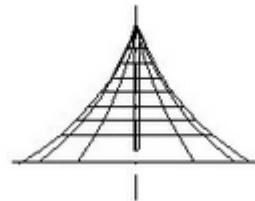
Figure 15 Cable stability : anticlastic cable nets



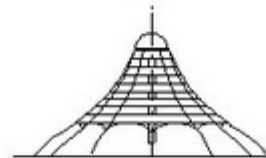
(a)



(b)



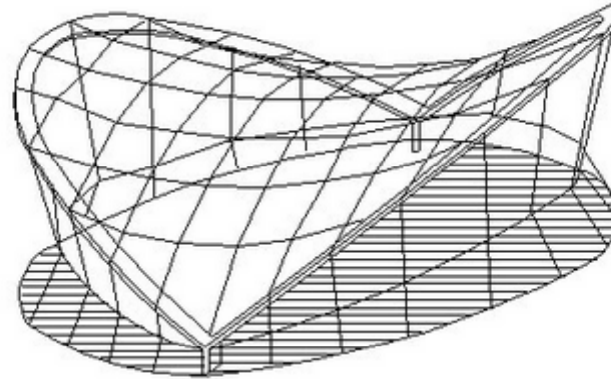
(c)



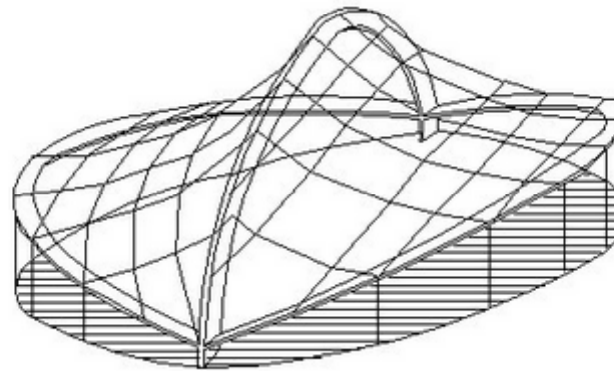
(d)

Figure 17 Cable stability : conical membrane





2 boundary arches with common base points



2 boundary arches with one central arch

Figure 18 Anticlastic cable nets with boundary arches

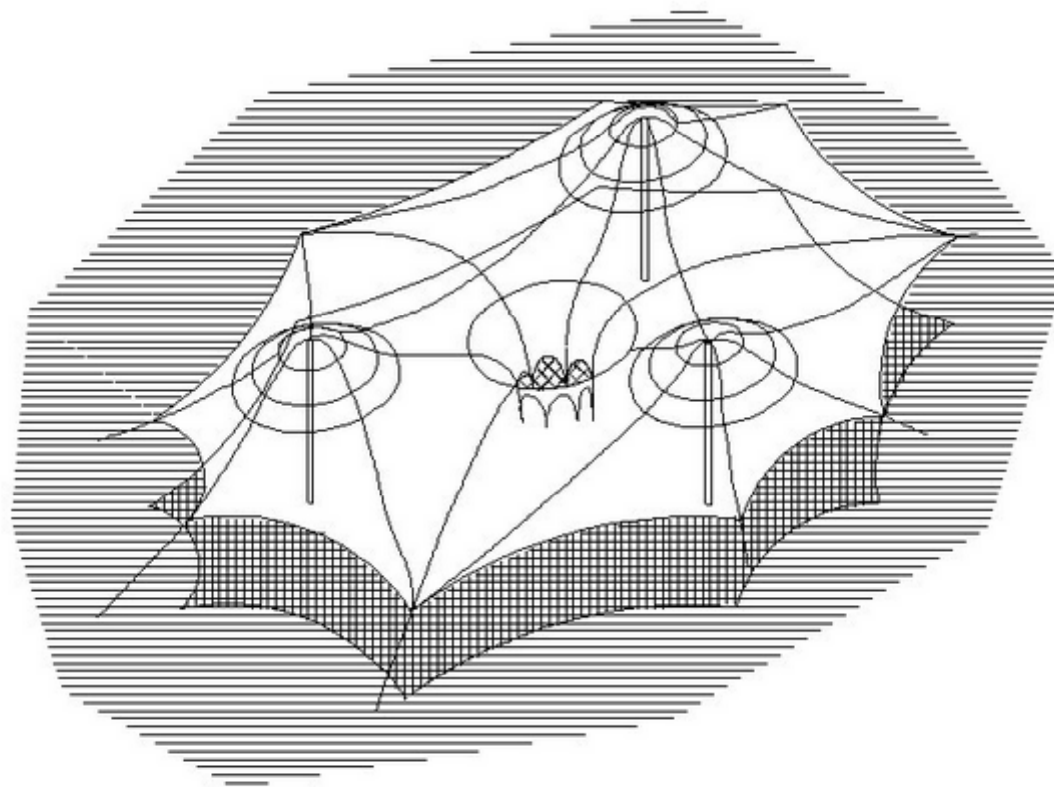


Figure 19 Complex tent system with multiple interior supports and internal anchorage