Concept 3 Glossary

THAYER SCHOOL OF ENGINEERING AT DARTMOUTH

anti-funicular form: the form taken by a structure under a given set of loads such that the entire structure is in compression

arch: a (usually) curved form that spans an open space

buckling load (P_{cr}): a compressive load that causes a column to displace laterally

compression: "pushing" force on a member that causes it to shorten or buckle

compression failure: a crushing or yielding failure that occurs when the applied stress exceeds the allowable stress of the material

compressive stress (σ): stress caused by a pushing force over a given area described by $\sigma = P/A$ where P is compressive load and A is the cross-sectional area

column: a vertical member that primarily resists compressive forces

crush: break apart by compression

dome: a structural element created by rotating an arch around its vertical axis

failure: what happens when too much load or stress has been applied to a structure or element

funicular form: the form taken by a cable or rope under any given load

load: a force that is applied to a structure such as weight, wind, snow, etc.

modulus of elasticity (E): is a material property that measures an object's resistance to being deformed elastically (non-permanently)

moment (M): the tendency of a force to cause an object to rotate or bend described by $M = F*d$ where F is the force applied and d is the perpendicular distance from a fixed point or axis

moment of inertia (I): a measure of the resistance to bending or buckling of a cross-section

reaction: a force exerted by a support on an object

span: the distance an object covers from end to end without support

stress: internal distribution of forces

tension: a "pulling" force on a member that causes it to elongate

yield: deform permanently

vault: an extended arch that spans an open space