APPLIED MECHANICS

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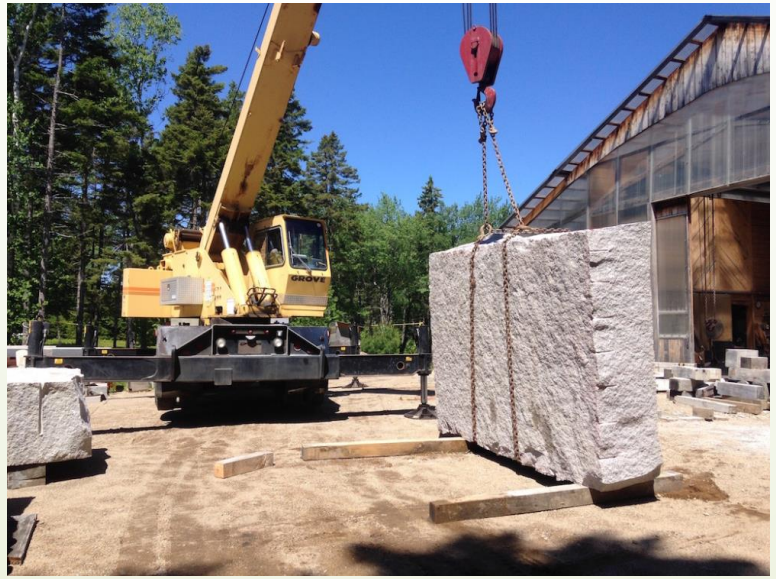
WHAT IS MECHANICS .

- "Mechanics is that branch of applied science in which we study the behavior of forces and their effects on different bodies" .

WHAT IS APPLIED MECHANICS .

- When we deal with study of practical application of different laws of mechanics for the solution of various engineering problems is known as Applied Mechanics.

- For example of the law of mechanics, the workers use iron rod to move heavy and big stones without knowing the principle (law) of lever.



CLASSIFICATION

- MECHANICS OF RIGID BODY. (SOLID MECHANICS)
- MECHANICS OF DEFORMABLE BODY.
- MECHANICS OF FLUIDS. (FLUID MECHANICS).

SOME IMPORTANT TERMS

- **Matter -** Matter is a thing which effects on our senses like to see, to touch and to bear. It possesses definite shape and size with volume and density.
- **Particle**: A body of infinitely small volume and which is considered to be concentrated at point just like a dot which has no dimension.
- **Body**: The limited portion of matter occupying space is known as a body. It consists of very large number of particles as metal, stone, wood etc.
- **Rigid Body**: A body, which does not change its shape and size under the action of external forces, is called rigid body.. Actually, no body in this universe is perfectly rigid, because some changes take place in the body under the action of external forces
- **Deformable Body**: A body, which does change its shape and size under the action of external forces, is called deformable body.

- **Resistant Body**: A body, which-does not suffer appreciable distortion in shape or change in physical form by the forces acting on it, is called resistant body. Some flexible bodies like springs, belts, ropes and chains etc. may be treated as resistant bodies.
- **Mass**: Mass is the quantity of matter contained in the body. Unit of mass in M.K.S. and S.I. system is kg.
- **Weight**: Weight is a force by which a body being attracted towards the center of earth.

It may vary from place to place and it will be zero at the center of earth.

Mathematically: Weight is Mass Acceleration due to gravity i.e.

W= m x g where, g = 9.81 m/second

The unit of weight in M.K.S. is **Kilogram (kg)**.

Wt S.I. unit is **Newton (N)**

- **Force**: From Newton's Ist Law the definition of a 'force' is:

"The external factor (or reason) in nature either "Push" or "Pull", which changes or tends to change the condition of rest or uniform motion of the body, is called a force.

" **Unit:** Unit of force in M.K.S. system is "kgf"

and in S.I, system is "newton" (N)

and in C.G.S. system is "dyne" (1 N=10^3 dyne)

1N=10^3 dynes