CE 102: CIVIL ENGINEERING DRAWING

SOLID OBJECT

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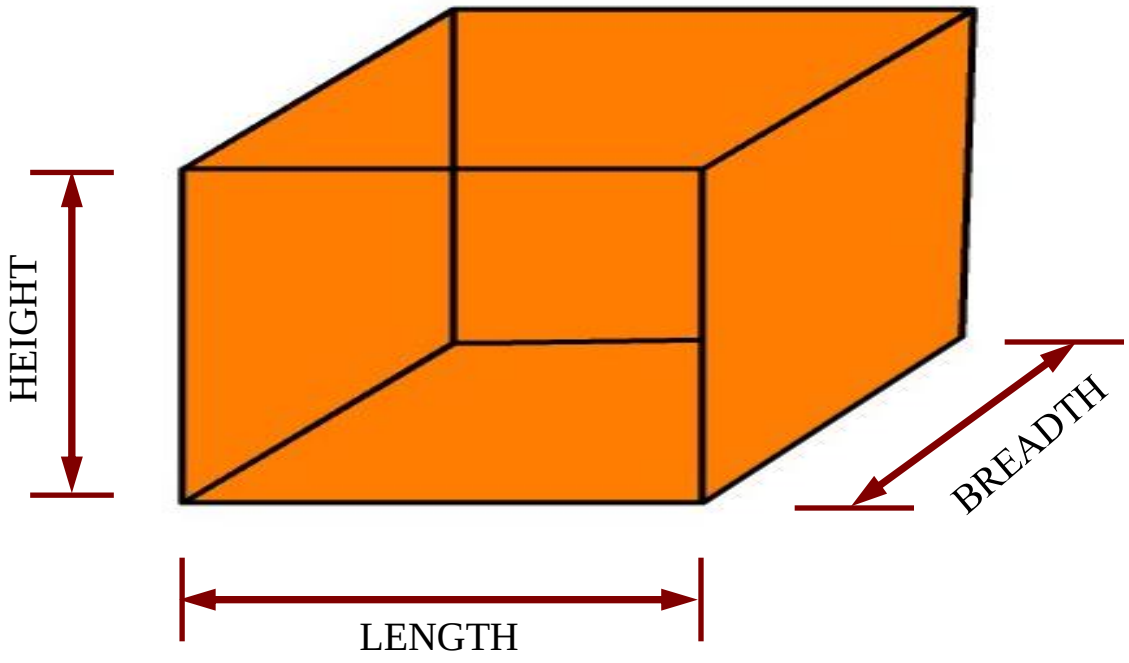
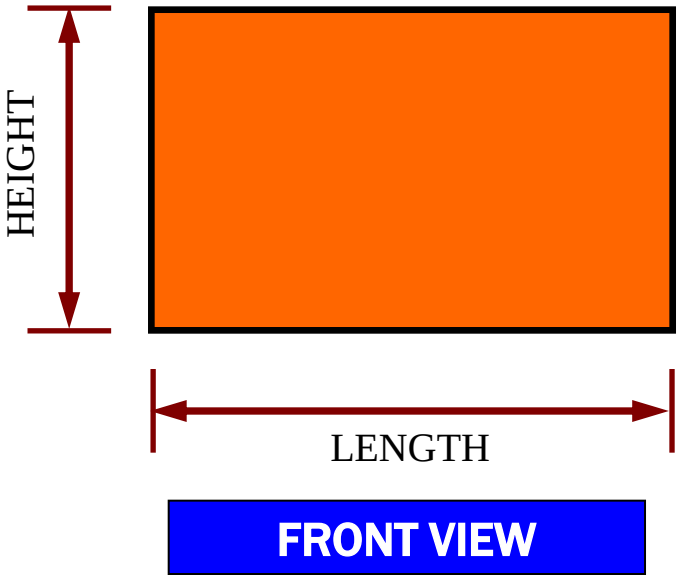
CHAPTER – 2

WHAT IS SOLID?

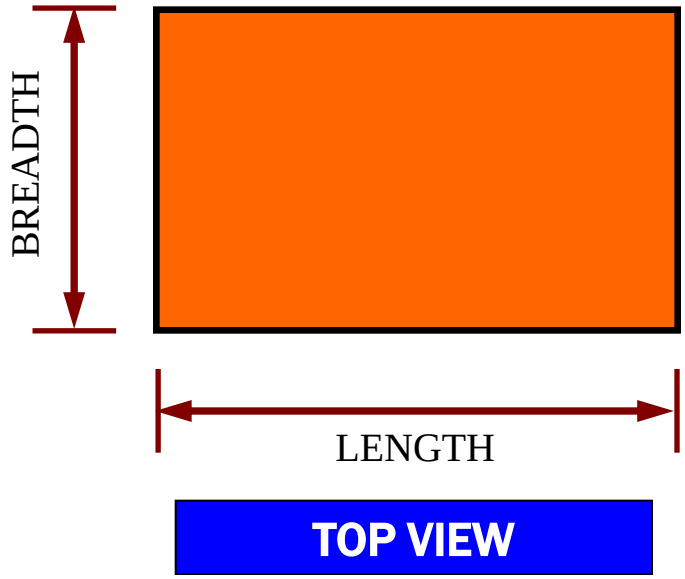
An object having three dimensions, i.e., length, breadth and height or thickness is called a **SOLID**.



WHAT IS FRONT VIEW & TOP VIEW?



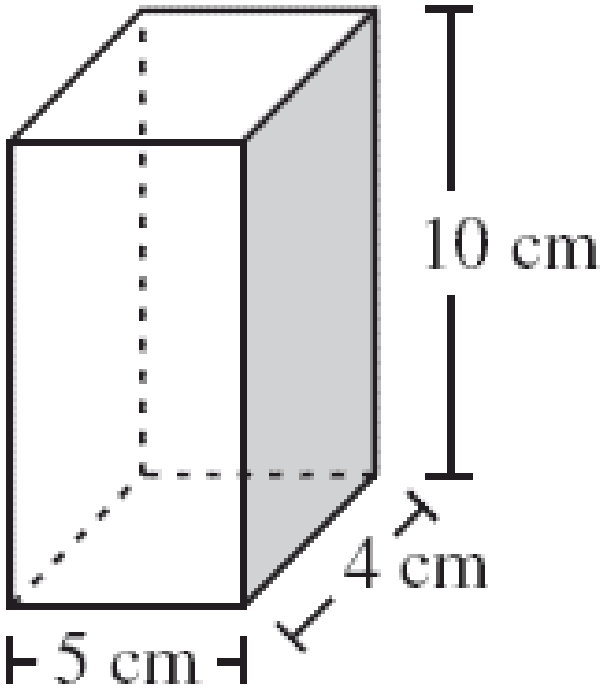
FRONT VIEW

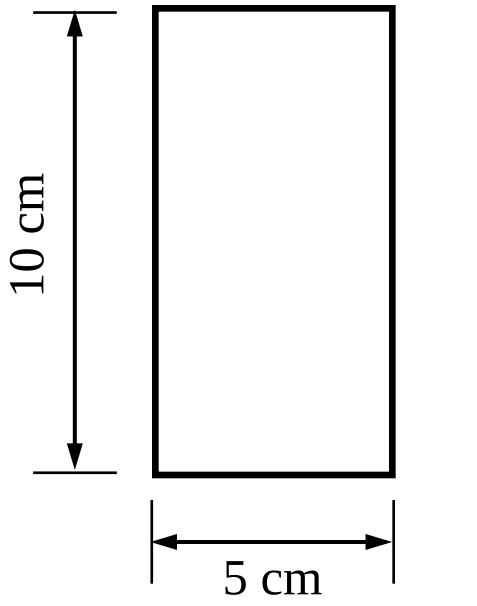


TOP VIEW

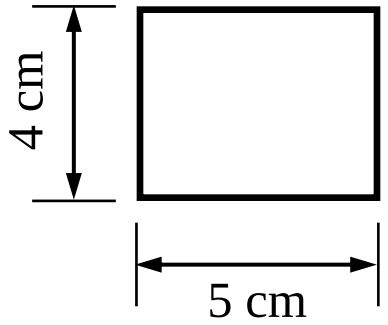
To represent a solid in the orthographic projection, at least two views are necessary; one view to represent length and height, called **FRONT VIEW** and the other view to represent length and breadth, called **TOP VIEW**.

Draw Front and Top view for the following object.





FRONT VIEW



TOP VIEW

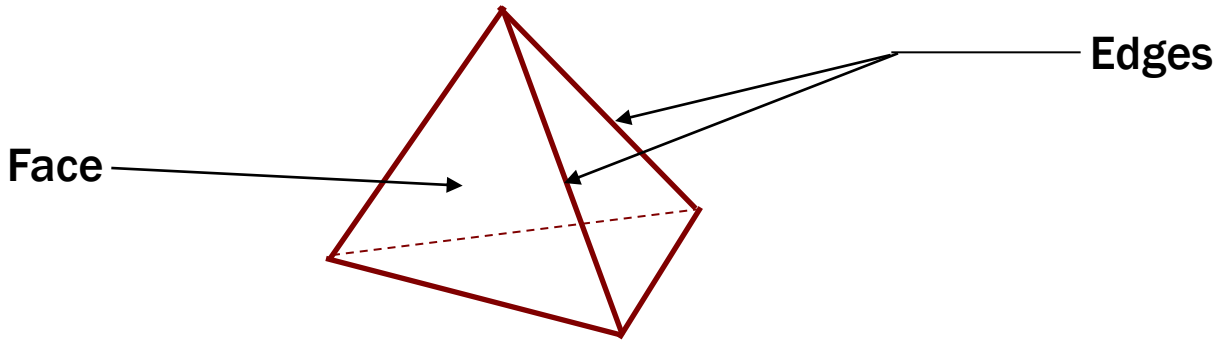
POLYHEDRON

The solid which is bounded by plane surfaces or faces is called **Polyhedron**. The polyhedra are further sub-divided into three groups:

- Regular Polyhedra
- Prisms
- Pyramids

REGULAR POLYHEDRA

A polyhedron is regular if each of its plane surfaces is a **Regular Polygon**. The regular plane surfaces which form the surfaces of the polyhedra are called **Faces**. The lines at which two faces intersect are called **Edges**.

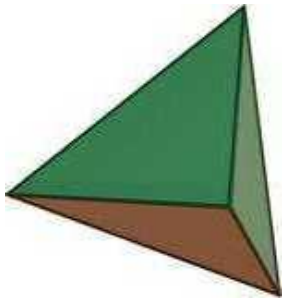


Tetrahedron

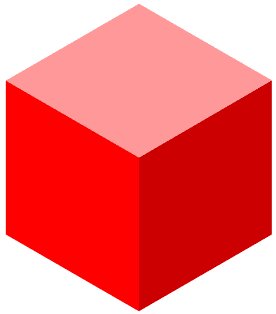
TYPES OF POLYHEDRA

The **Three** important regular polyhedra are:

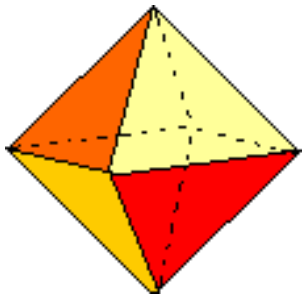
- Tetrahedron —— 4 equal regular squares
- Cube or Hexahedron — 6 equal regular squares
- Octahedron — 8 equal equilateral triangles



Tetrahedron



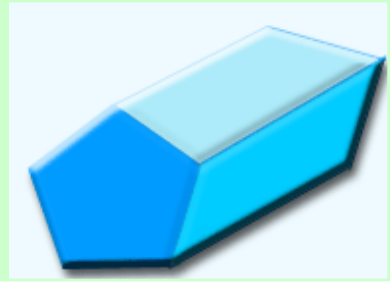
Cube or Hexahedron



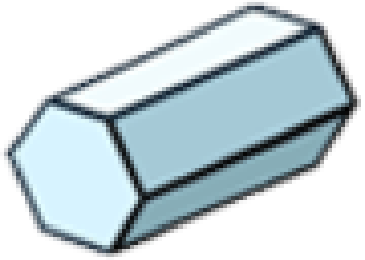
Octahedron

WHAT IS PRISM?

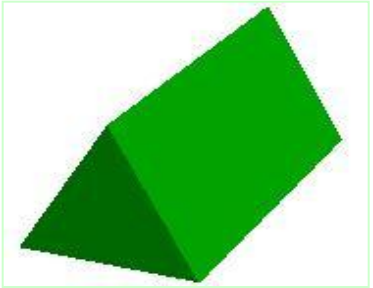
A solid figure whose bases or ends have the same size and shape and are parallel to one another, and each of whose sides is a parallelogram



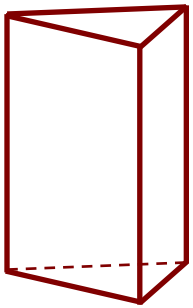
Pentagonal Prism



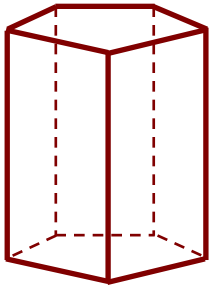
Hexagonal Prism



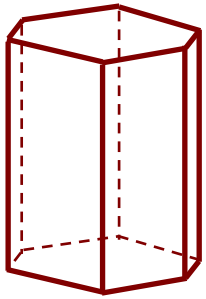
Triangular Prism



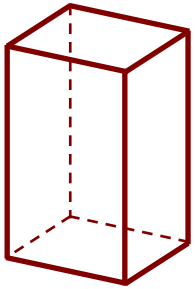
Triangular Prism



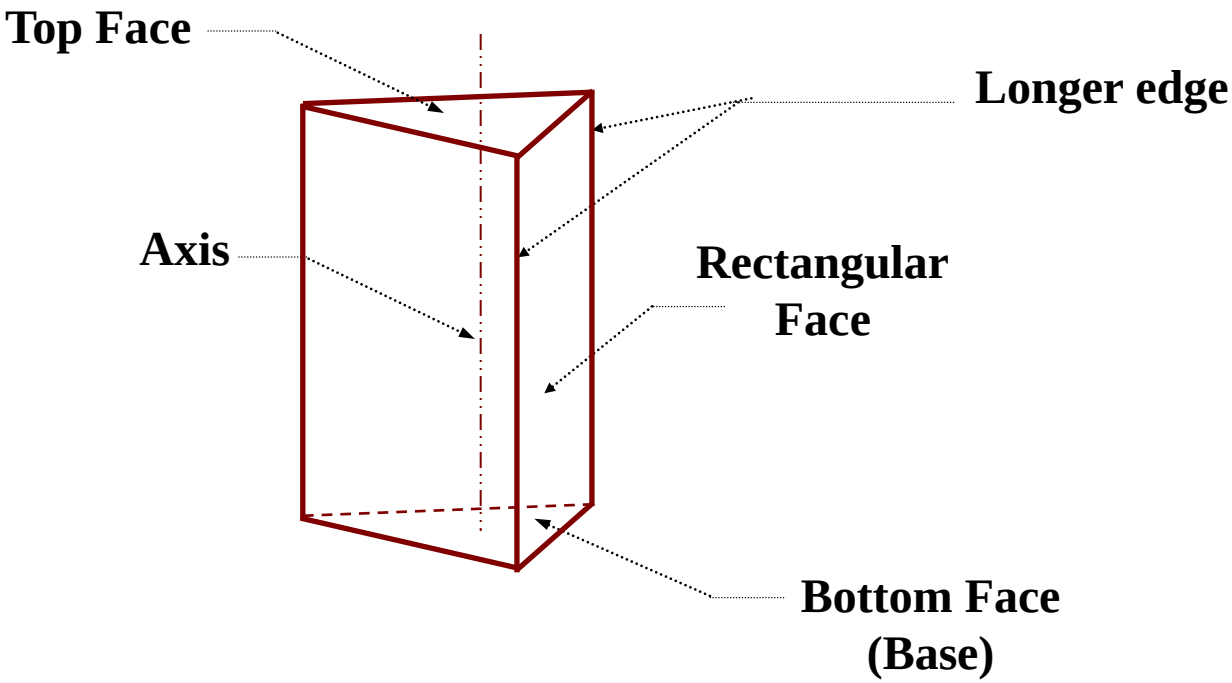
Pentagonal Prism



Hexagonal Prism



Rectangular Prism

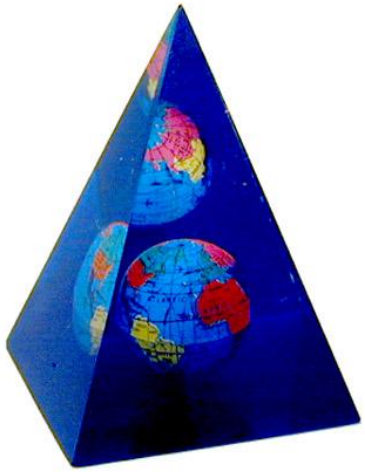

Top Face
Longer edge
Axis
Rectangular
Face
Bottom Face
(Base)

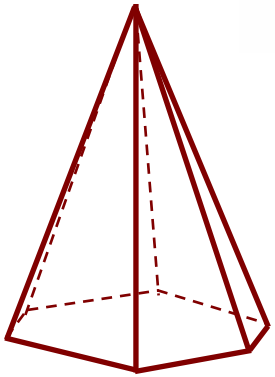
PYRAMID

A massive monument of ancient Egypt having a rectangular base and four triangular faces culminating in a single apex, built over or around a crypt or tomb

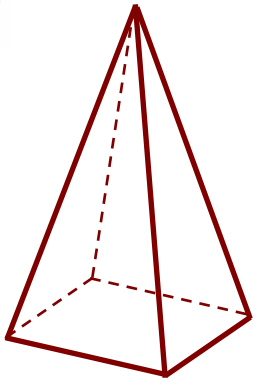
WHAT IS PYRAMID?

A solid figure with a polygonal base and triangular faces that meet at a common point

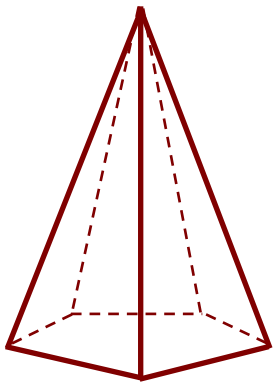




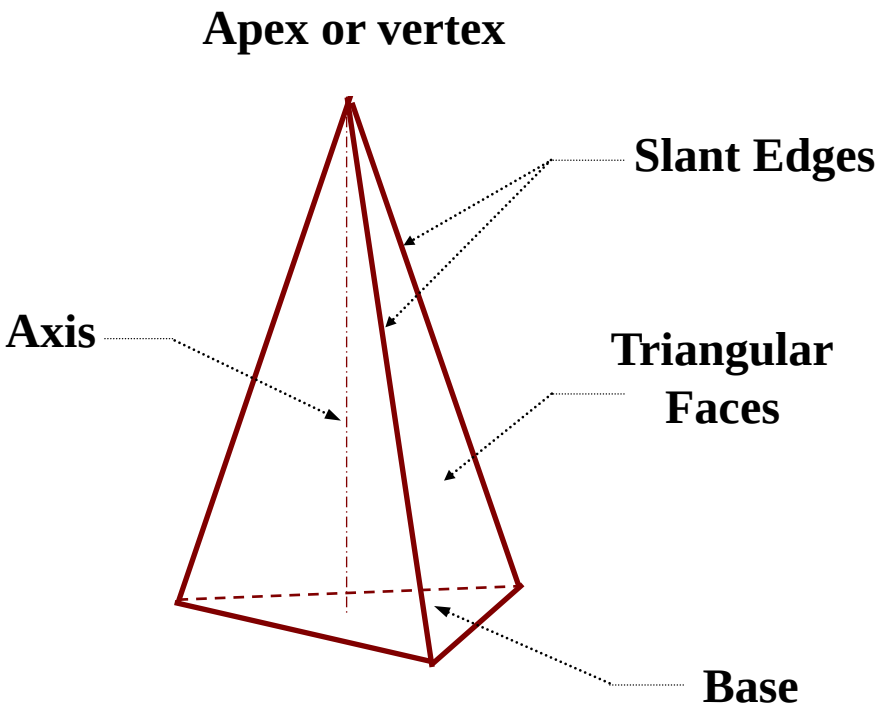
Hexagonal Pyramid



Square Pyramid



Pentagonal Pyramid


Apex or vertex
Slant Edges
Axis
Triangular Faces
Base

FRUSTUM & TRUNCATED

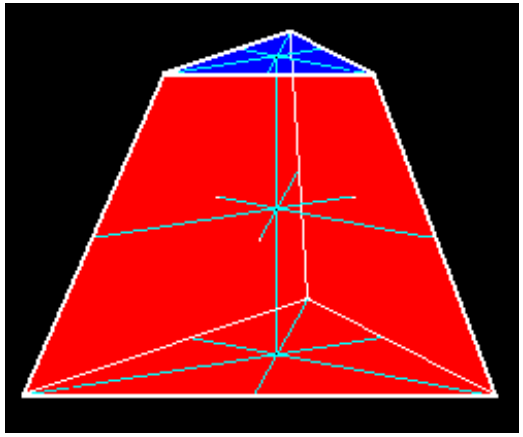


Fig: Frustum

When a pyramid or a cone is cut by a cutting plane parallel to its base, the remaining portion thus obtained after removing the top portion is called the **Frustum**.

When a solid (prism/cylinder/pyramid/cone) is cut by a cutting plane inclined to its base (not parallel), the remaining portion thus obtained after removing the top portion is called the **Truncated Solid**.

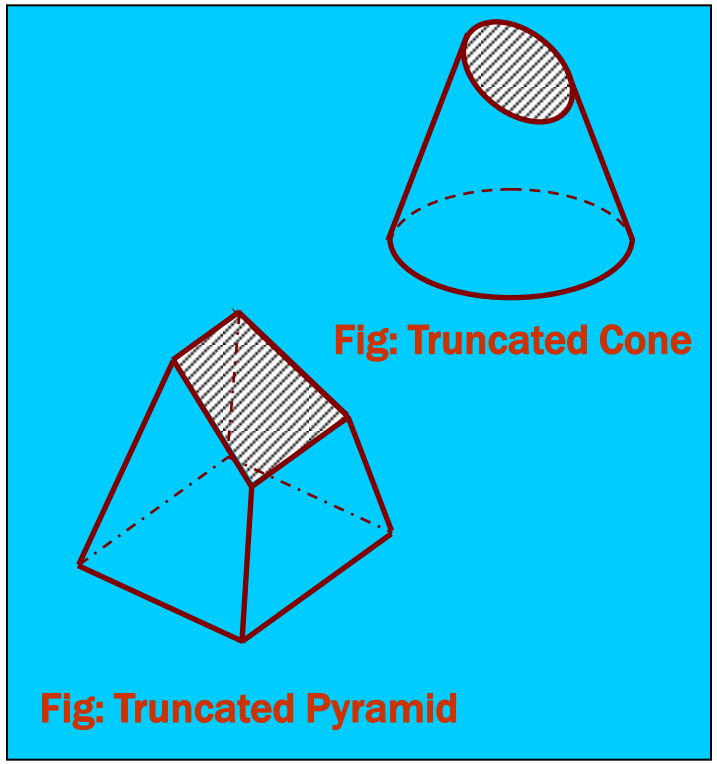
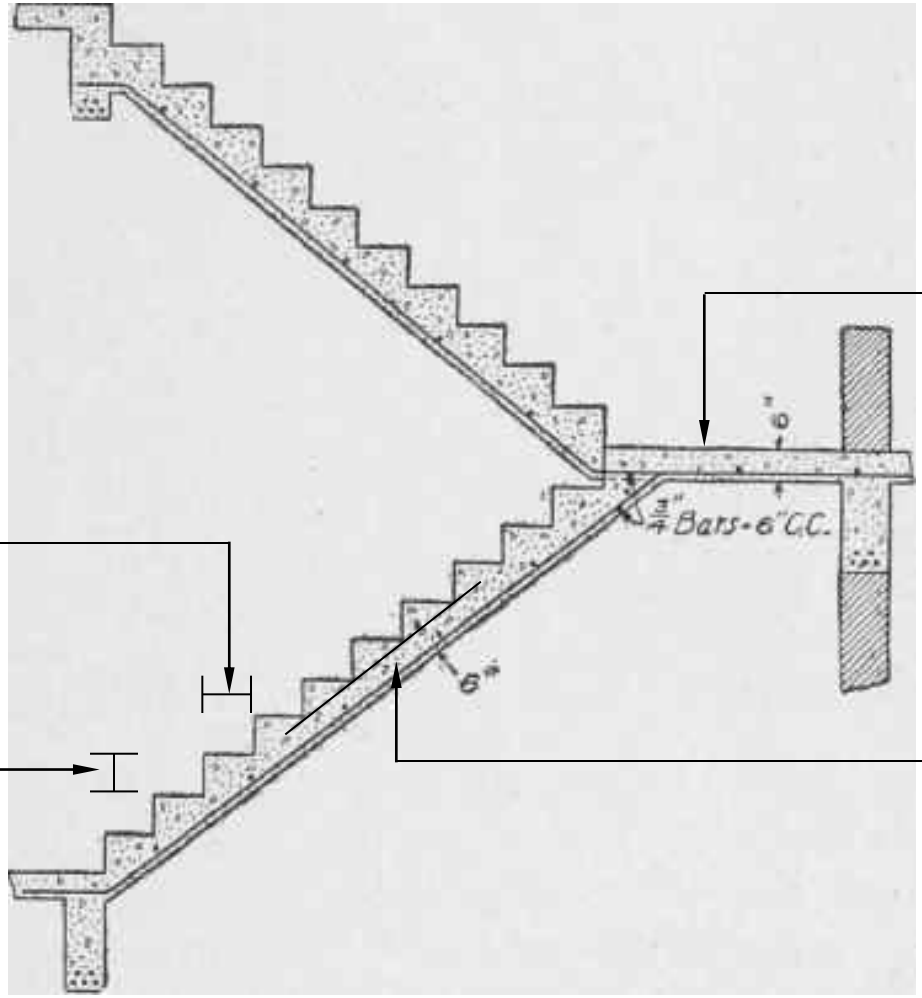


Fig: Truncated Cone

Fig: Truncated Pyramid

TYPICAL SECTION OF A STAIR



Landing

Tread

Riser

Waist Slab

Thank You