SUBJECT

Civil Engineering Construction & Graphics

CEC&G

Course Code CE-205

Recommended Books

- **Building Construction**
  By Huntington
- **Building Construction**
  By W.B. Mc.Kay
- **Building Construction**
  By N.L. Arora B.R. Gupta
- **Building Construction Class Notes & Presentations**

- Introduction
- Site Selection
- Orientation & setting out of Civil Engineering Projects

INTRODUCTION

- CEC&G deals with the construction techniques & materials adopted/used for different civil engineering projects to ensure
  - Systematic
  - Safe and
  - Economical

  Completion of projects
- Graphical tools like AutoCAD (Software)

  (computer-aided drafting) provides the facility to draw the detailed drawings of projects.

- Civil engineering projects can be broadly classified in to the followings categories.
  - Buildings(All types)
  - Roads, Railways, Airports & Bridges
  - Dams, Reservoirs & Canals.
  - Underground structures (Tunnels)
- Civil engineering projects works can be divided in to three parts
  1. Architectural works
  2. Structural design works
  3. Execution works

1. Architectural works
    1. Architectural works involves Planning, orientation and aesthetics of the Projects.
2. Structural design works
    1. Structural design work involves design of horizontal and vertical components of Projects.
    2. Horizontal components are … Floors, Beams, Slabs etc.
    3. Vertical components are …. Columns, walls, piles
3. Execution works
    1. It involves the Physical execution of work at site by using the drawings and specifications.

Site Selection

- It means selection of best site for the project which provide
  - Safety
  - Economy
- It is a project specific job.
- It depends on the
  1. Requirements of user/client
  2. Use of Project
  3. Finance available

General Rules for site selection

- It should provide minimum disturbance to the residents of the area.
- Site should be selected that it provides good drainage.
- Site should be easily accessible.
- Construction material should be easily available.
- Transportation of construction material is easy.
- The B/C ratio of the project should be greater than 1.

Orientation of Buildings & setting out of Civil engineering Projects

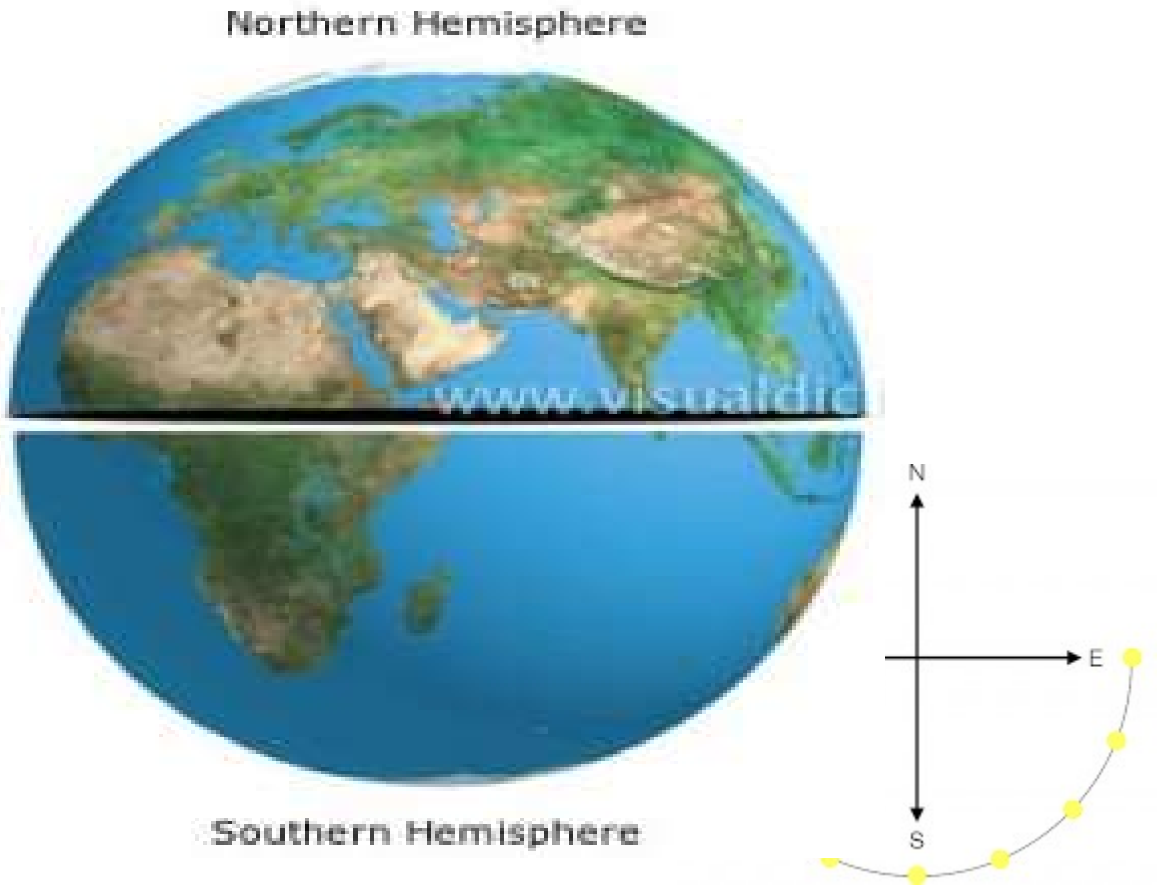
- What is Orientation of buildings?
  - It is defined as the art of placing a building in such a position that its front faces a particular direction.
- Object of Orientation of Buildings
  - To place the building so as to suit its surroundings.
  - To provide natural comfort to users.
  - To provide privacy to inmates.
  - To protect residents from dust and noise pollution.
  - To place the building in such direction that its minimum portion comes in contact with direct rain showers so as to avoid dampness in building.

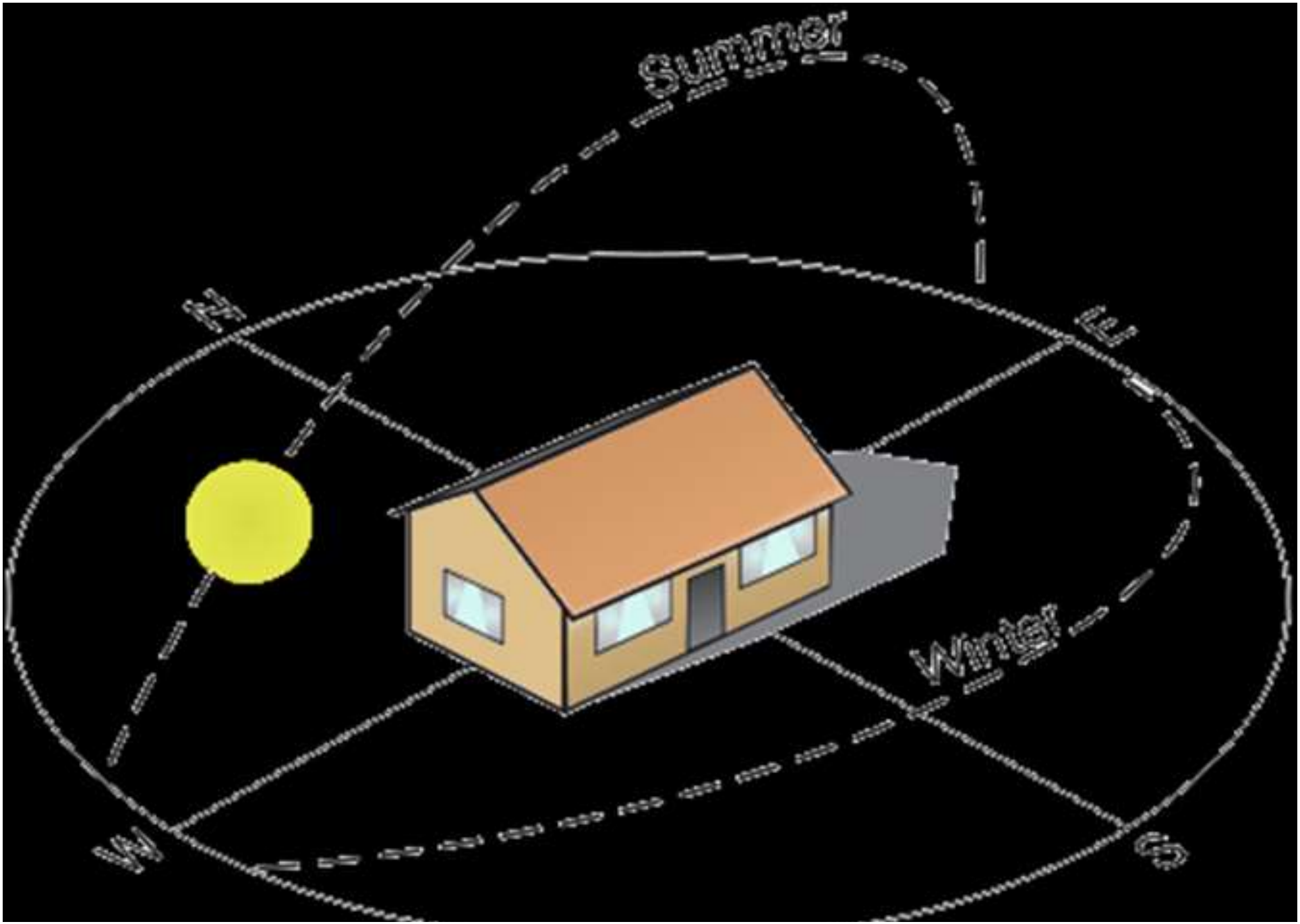
Factors effecting Orientation of Buildings

- Following factors are important for deciding the Orientation of Buildings.
  1. Surroundings of the Site
     - The building should be so oriented that it suits surrounding of the site.
  2. Approach to road or street
     - Approach to nearby road means a good orientation.
  3. Sun Movement.
     - Sun path and sun rays are important in deciding the placement of different rooms in a building.

Sun Movement.

- Sun is the important source of energy, natural light and Temperature.
- If sunrays are properly falling on the building then it will provide a good living conditions in the buildings.


Northern Hemisphere
Southern Hemisphere
N
E
S


Summer
W
E
Winter
S

Arrangement of Different rooms in a Residential Building w.r.t Sun Movement

• Drawing or Living rooms	SE W
• Dining rooms	SE SW
• Bed rooms	SE NW
• Verandah	S W
• Kitchen	NE SE
• Stairs, Stairs case & stores	NE NW

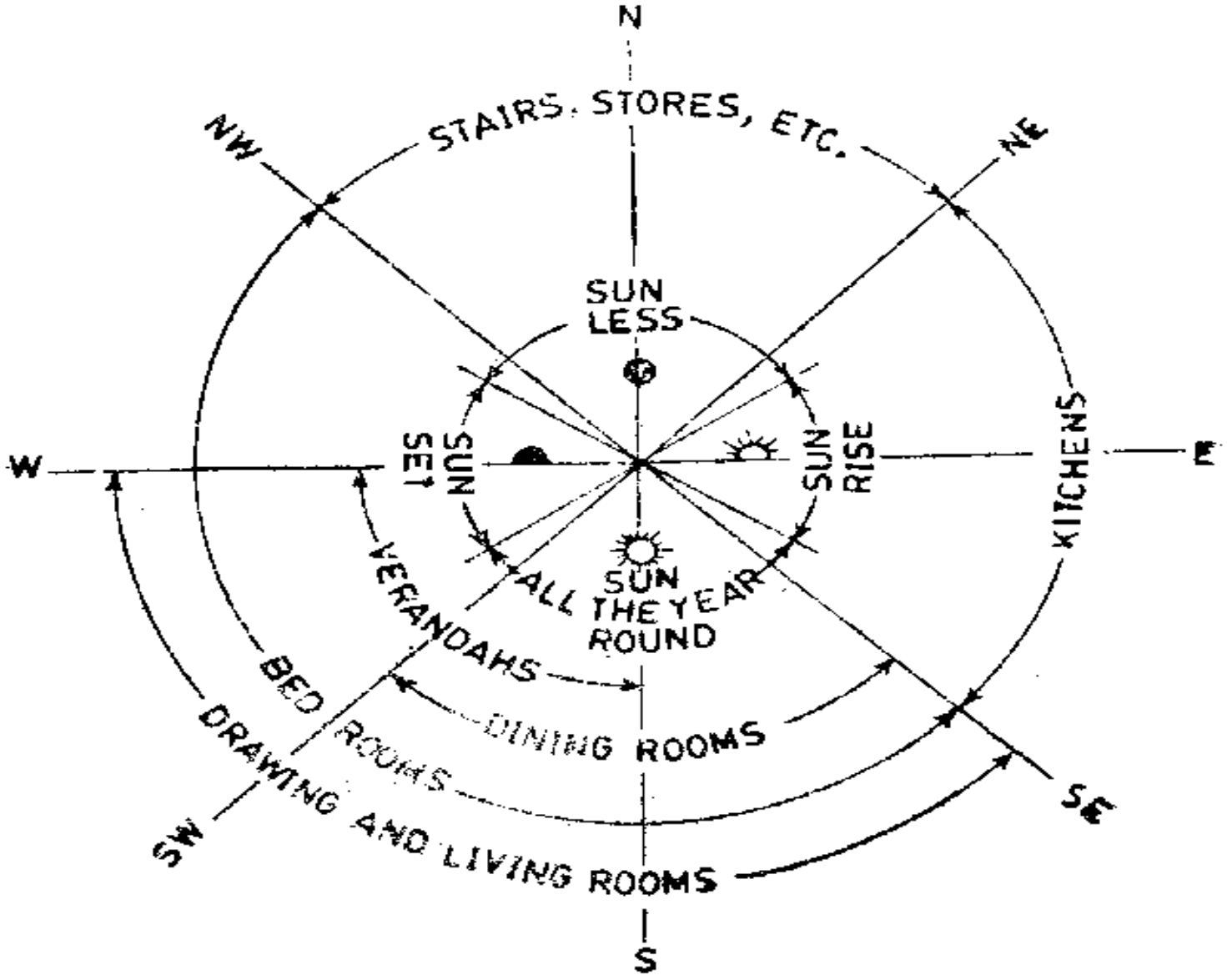


Fig. 1.2. Method of placing Rooms of a Residential Building w.r.t. the direction of Sun.

Useful links

- Brick Masonry
  - http://www.bia.org/html/frmset_thnt.htm
- CAD TUTOR
- Commands
  - http://www.cadtutor.net/tutorials/