SNS COLLEGE OF TECHNOLOGY

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COIMBATORE

DEPARTMENT OF CIVIL ENGINEERING

19CET304-DESIGN OF STEEL STRUCTURES

III YEAR / VI SEMESTER

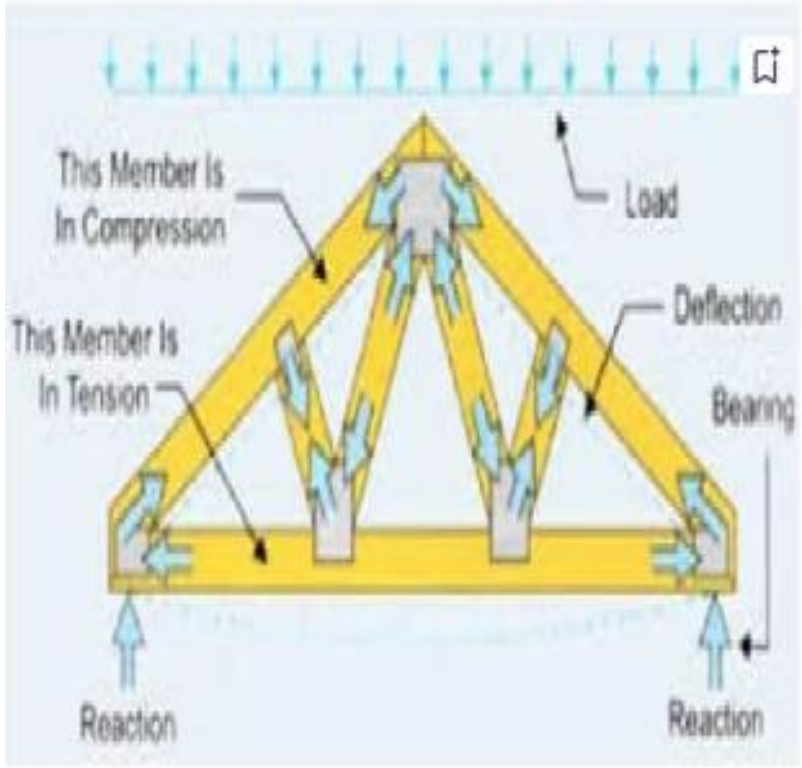
Unit 5 :DESIGN OF PLATE GIRDERS, GANTRY GIRDERS & ROOF TRUSSES
Topic 3- ROOF TRUSSES

Introduction

"A frame structure in which separate straight member are so arranged and connected at their end that the member form a triangle which lies in the same plane"

Normally it is provided for more than 6 m .

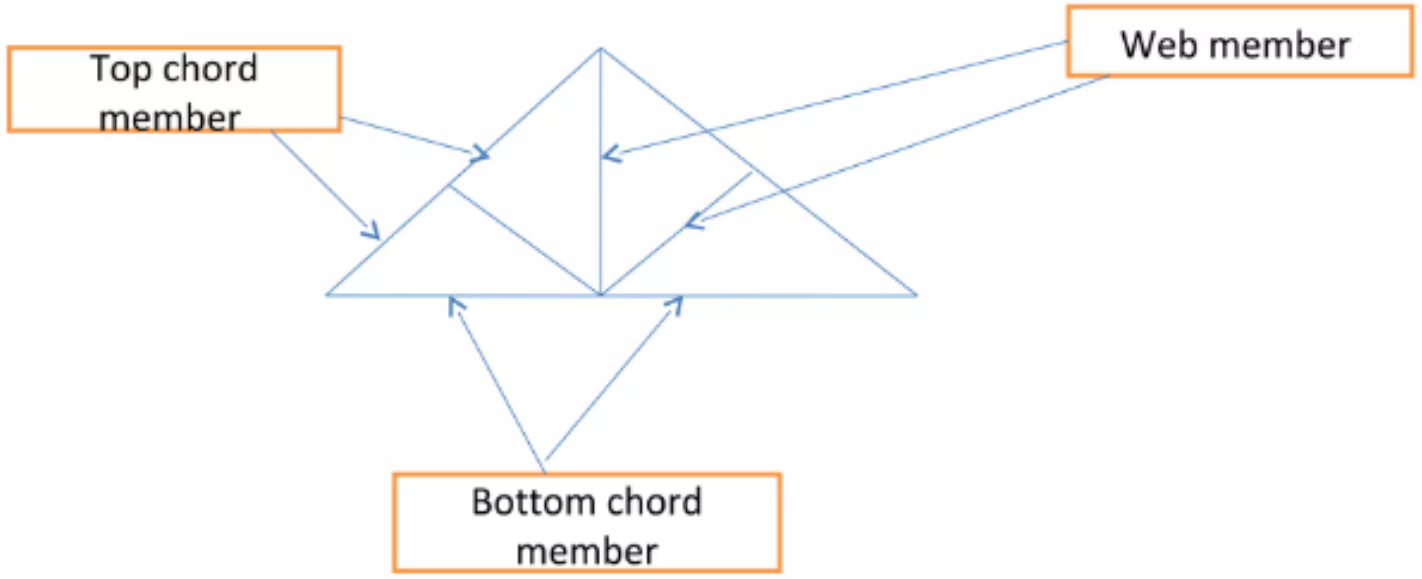
- ✓ Industrial shed
- ✓ Ceiling for large room
- ✓ Auditorium ,Cinema hall, marriage hall ,godowns etc.
- ➢ The member carrying compressive forces in roof truss is know as struts.
- ➢ The member carrying tensile forces in roof truss is know as tie member .



Components of Roof truss

The member of roof truss classified into two category

- ✓ **Main member:** Carrying load and distributing the applied load , provide the stability
- ✓ **Secondary member :** provide the stability to the primary member



Need of Roof truss

- ✓ Day light requirement
- ✓ Required more head room
- ✓ More clear span available
- ✓ No provision for internal supports
- ✓ To reduce the addict moisture
- ✓ To provide the proper ventilation
- ✓ Light load on structure
- ✓ There is less chances of excess bending

Factor affecting selection of roof truss

- ✓ Span
- ✓ Annual rain/snow fall
- ✓ Pitch of truss
- ✓ Maximum natural light requirement
- ✓ Roof covering material
- ✓ Style of your home
- ✓ Availability of funds
- ✓ Types of building
- ✓ State building code
- ✓ Functionality
- ✓ Aesthetic view
- ✓ Energy efficiency

Advantage and disadvantage of Roof truss

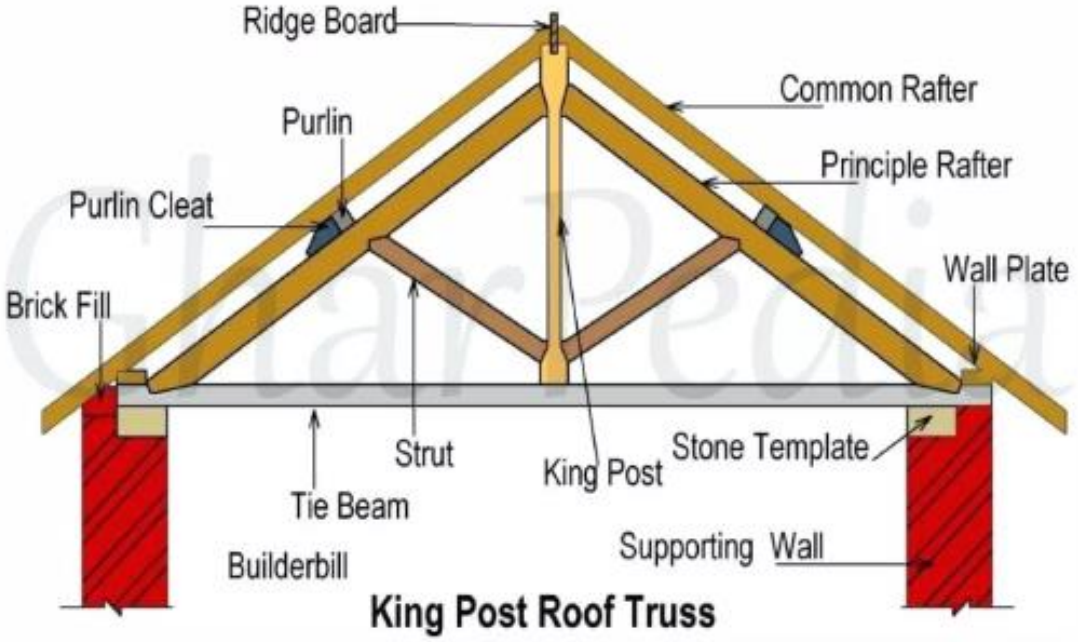
- ✓ Suitable for sloping roof
- ✓ Suitable for light load and large span
- ✓ It permitting variety of roof shape
- ✓ Providing greater vertical span
- ✓ Most economical for spanning 6 m
- ✓ Dead load of structure

Disadvantage :

- ✓ Problems in transportation
- ✓ aesthetic appearance of the roof is very low
- ✓ wooden roofs are susceptible to fire
- ✓ Cost is high
- ✓ Corrosion

Various Term used in steel Roof truss

- ✓ Span
- ✓ Rise
- ✓ Pitch
- ✓ Slope
- ✓ Purlins
- ✓ Rafter
- ✓ Sheathing
- ✓ Panel
- ✓ Bay
- ✓ Ridge line
- ✓ Principal Rafter
- ✓ Camber
- ✓ Eaves



King Post Roof Truss

Type of Steel Roof Trusses

- When the span exceeds 10 m, timber trusses become heavy and uneconomical. Steel trusses are more economical for larger spans.
- Steel trusses are fabricated from rolled steel structural members such as channels, angles, T-sections and plates.
- Most of the roof trusses are fabricated from angle-sections because they can resist effectively both tension as well as compression, and their jointing is easy.

Steel trusses may be grouped in the following categories :

(a) Open trusses

(b) North light trusses

(c) Bow string trusses

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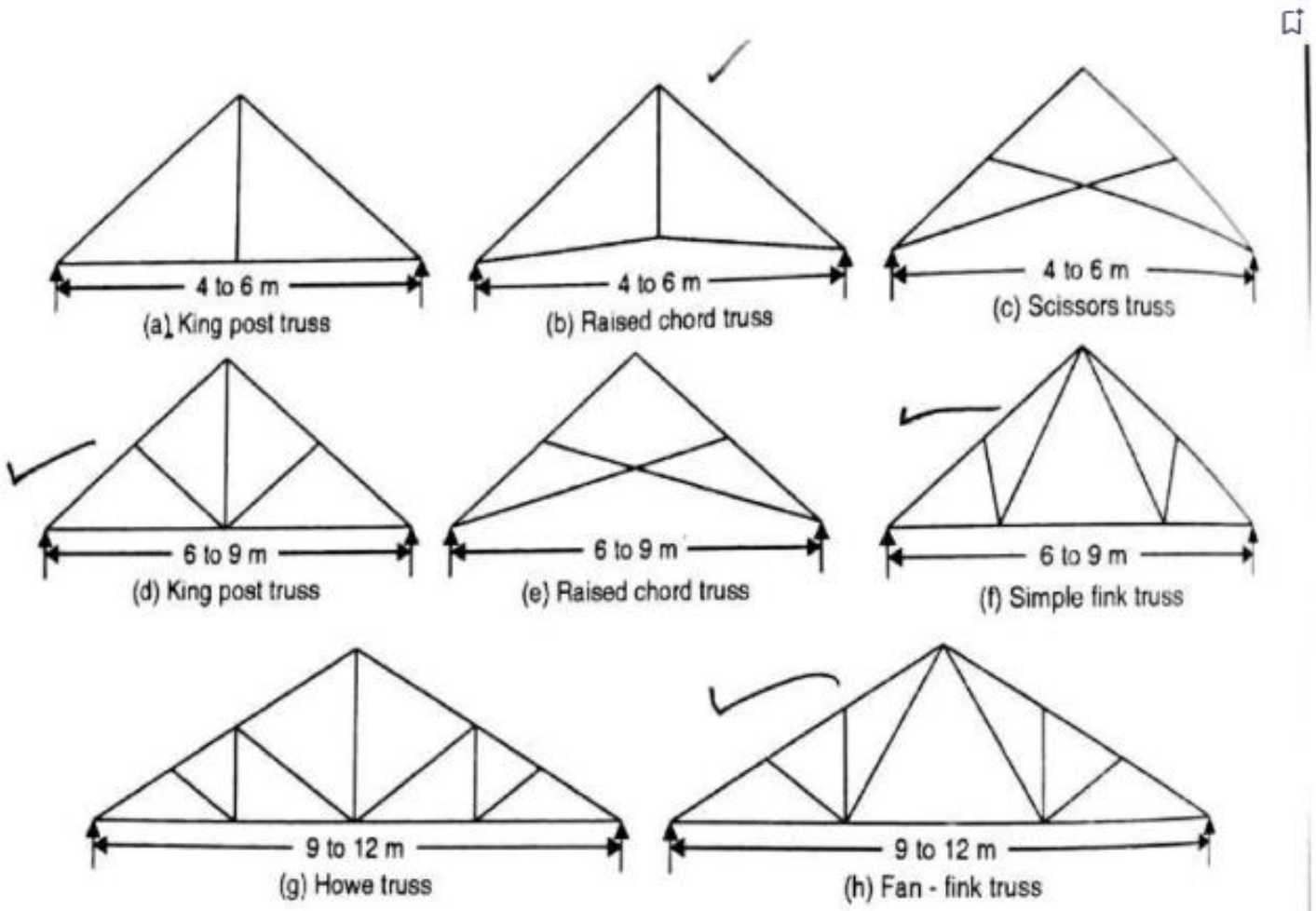

FIG. 15.19. STEEL TRUSSES.

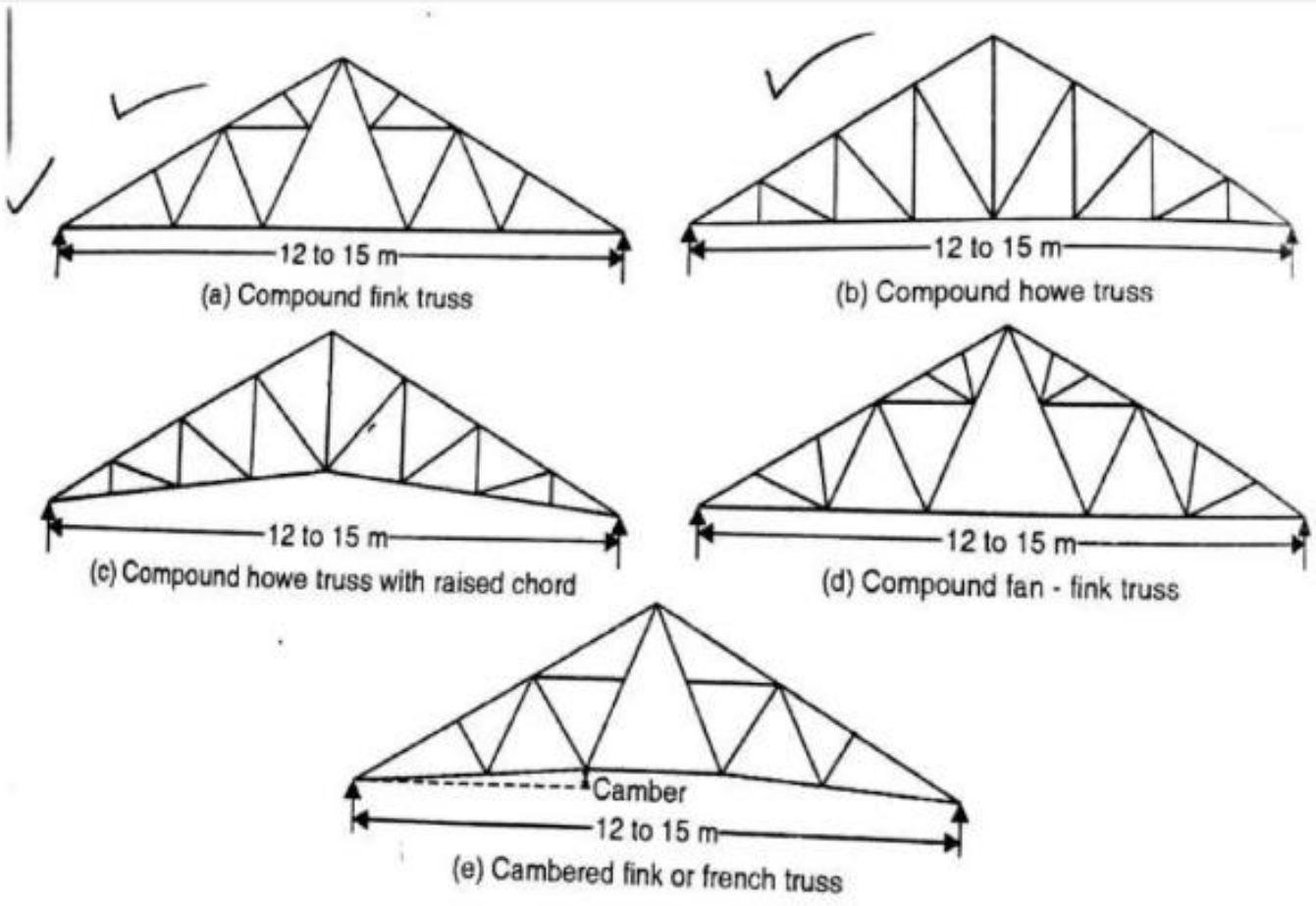

FIG. 15.20. STEEL TRUSSES.

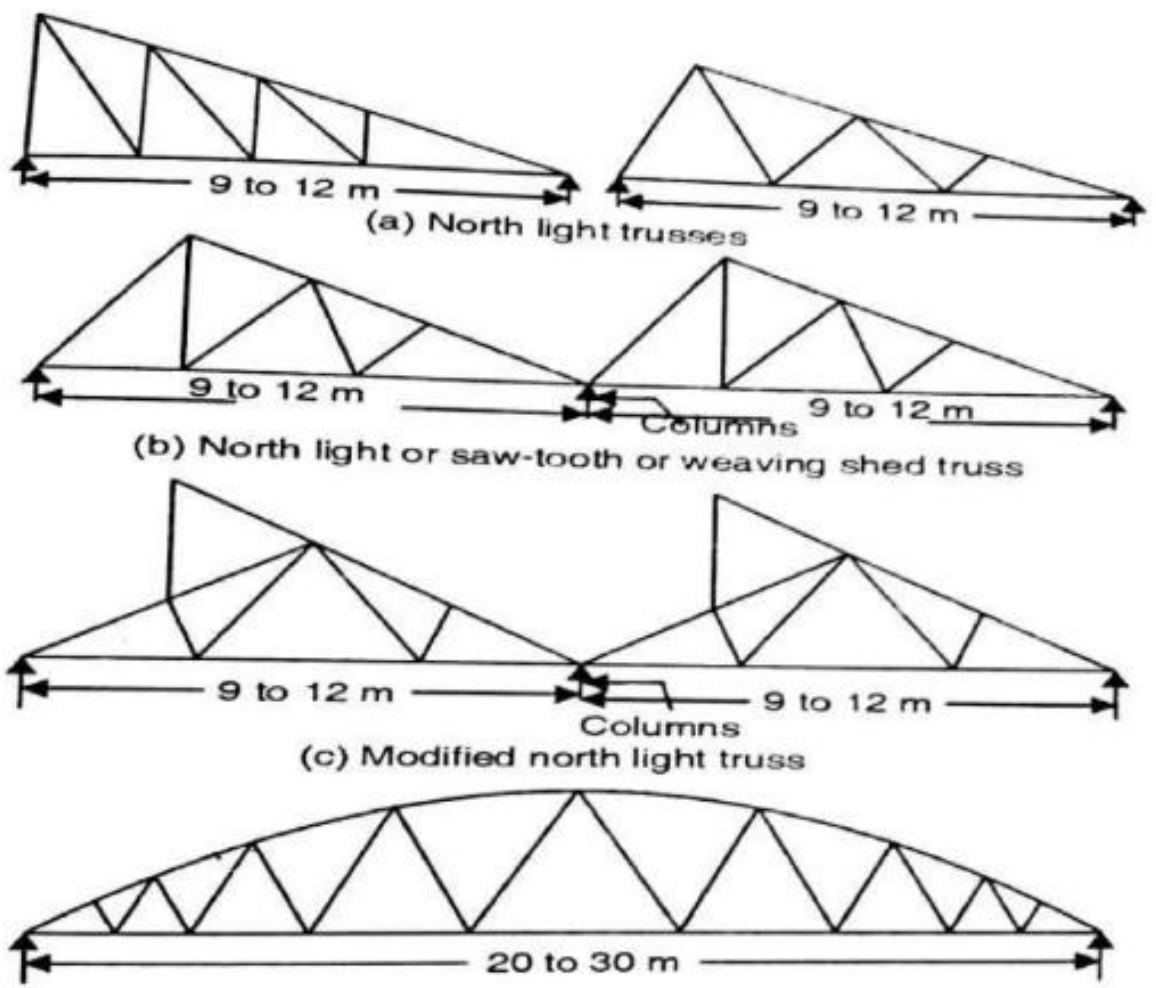

FIG. 15.21. STEEL TRUSSES.

Roofs Covering

The structural elements consists of;
-Trusses
-Portals
-Slabs
-Domes
-A. C sheets covering
-G. I sheets coverings
-Shingles
-Slates, etc

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Roofs Covering

- The following are the roof-covering materials commonly used for pitched roofs:

1. Thatch covering
2. Wood shingles
3. Tiles
4. Asbestos cement sheets
5. Galvanized corrugated iron sheets
6. Eternit slates.
7. Light weight roofing

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THANK YOU