

- ▶ Building material of the 20th century
- ▶ Outstanding structural properties
  - Higher buildings
  - Longer spans
  - Slender constructions

Photographs removed due to copyright restrictions:

Vogesen School, Basel (CH) (Diener&Diener, 1994)

Bibliothèque Nationale, Paris (Labrouste, 1875)

Menier Chocolate Factory, France (Saulnier, 1872)

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Photographs removed due to copyright restrictions:

Illinois Institute of Technology, Chicago (Mies van der Rohe 1940)

Farnworth House, Plano (USA) (Mies van der Rohe, 1945)

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Glass skyscraper, Chicago (project) (Mies van der Rohe, 1922)

Crystal Palace, Universal Exhibition (Paxton, 1851)

- ▶ Building material of the 20th century
- ▶ Outstanding structural properties
  - Higher buildings
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  - Glazed buildings
  - Prefabrication
  - Orthogonal assembly but free "veil" form

Photographs removed due to copyright restrictions:

Guggenheim Museum, Bilbao (Gehry, 1997)

## ► Frames

- with cantilevering beams

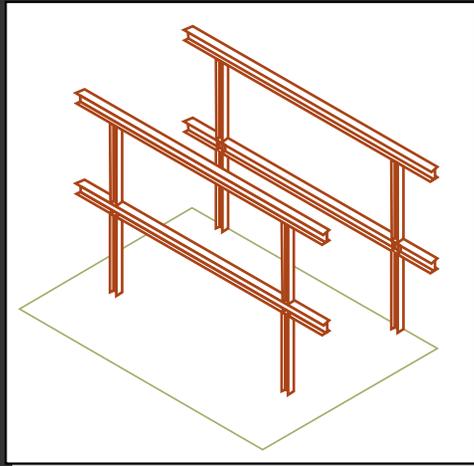


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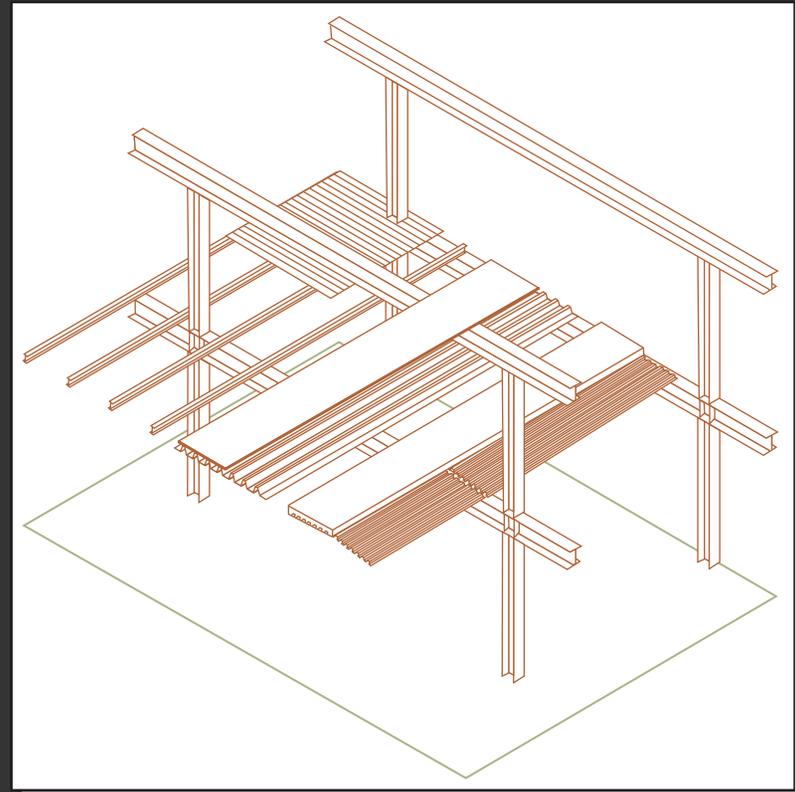


Image by MIT OCW.

## ► Frames

- with cantilevering beams
- with continuous columns

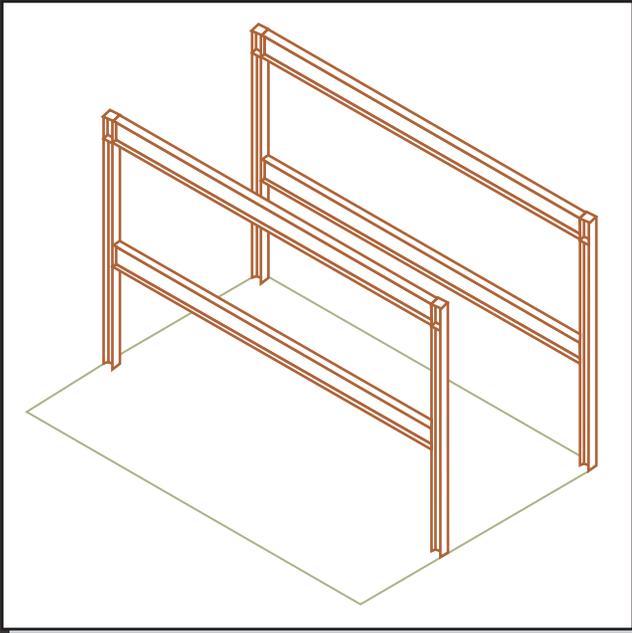


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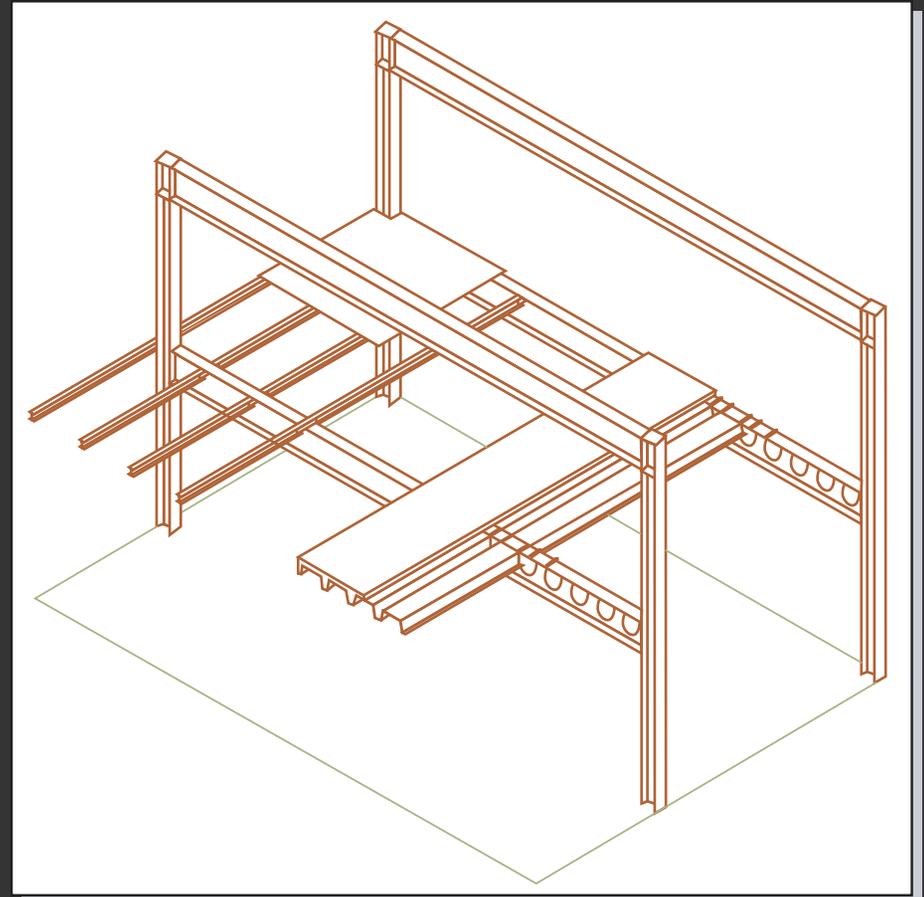


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## ► Frames

- with cantilevering beams
- with continuous columns
- two-way frames

Photograph removed due to copyright restrictions:

Tea House, Vienna (Marterer, 1998)

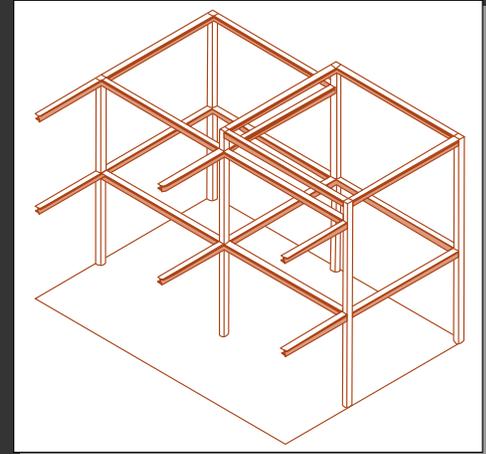


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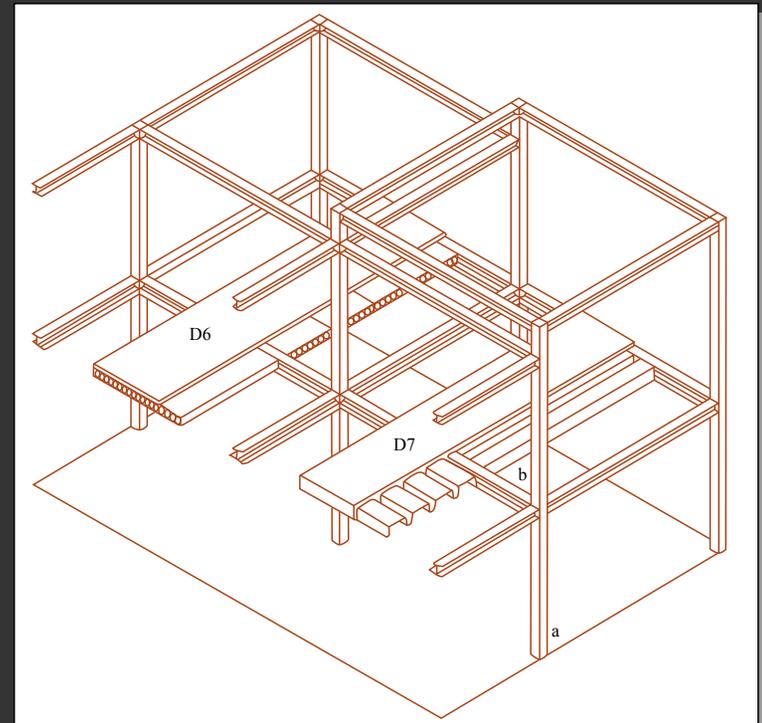


Image by MIT OCW.

## ► Issue of fire-protection

- Heat affects steel's load-carrying ability

- Strategy depends on

- Building use
- Occupancy
- Space heating
- Number of storeys

- Protection measures

- Oversizing
- Intumescent paint
- Concrete cladding or filling

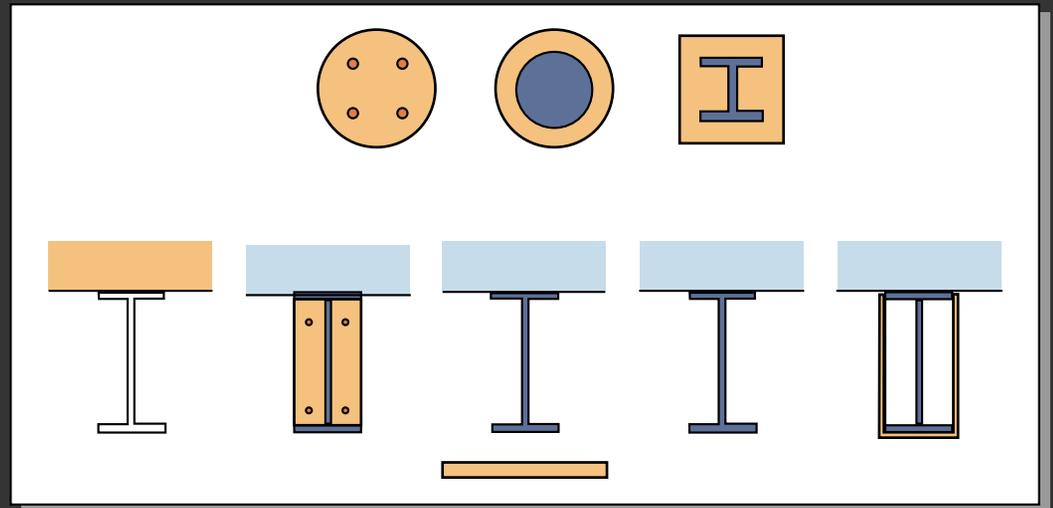
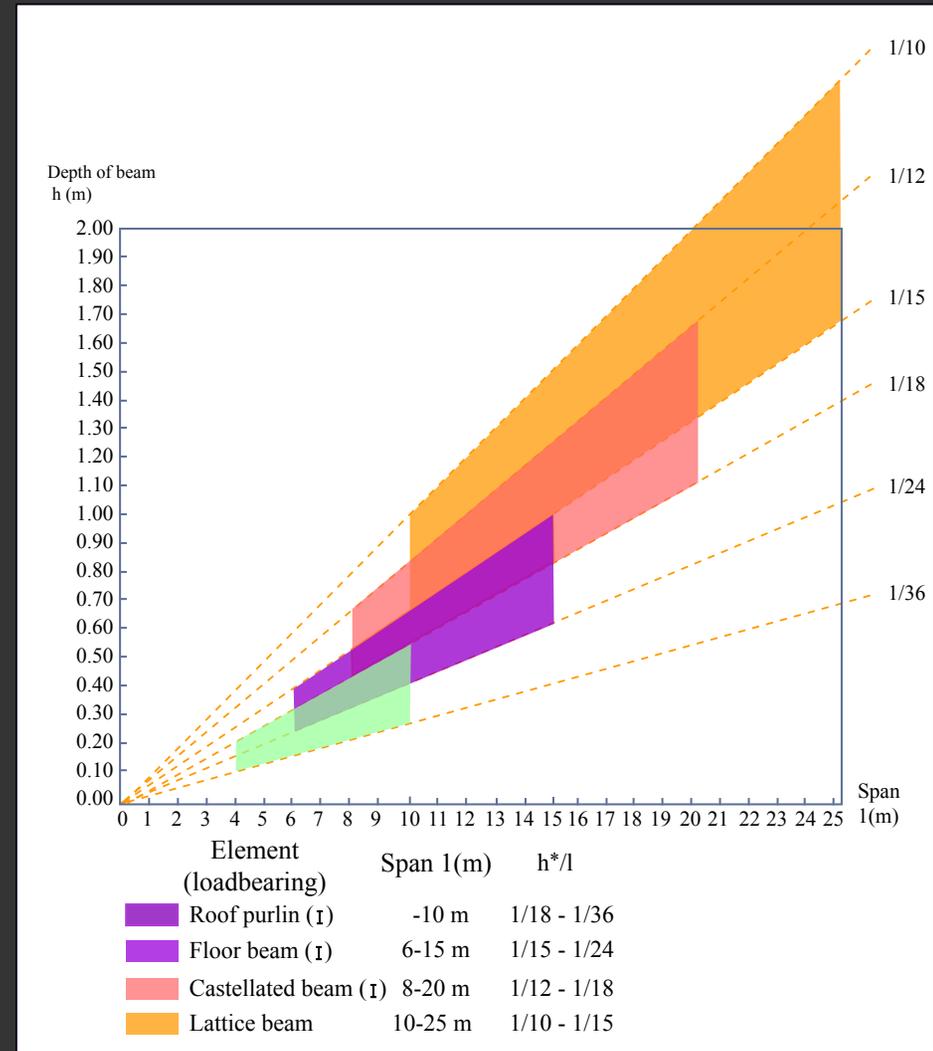


Image by MIT OCW.

## ► Trusses for extreme spans

- Senior citizen's home by MVRDV (1997)



## ▶ Diagonals and diamonds

- Ornamental quality
- Form directly related to structure

Photographs removed due to copyright restrictions:

Faculty of Law, Cambridge (UK) (Foster, 1995)

Mediathek, Japan (Ito, 2001)

Swiss Re Tower, London (Foster, 2000)

## ▶ Diagonals and diamonds

- Ornamental quality
- Form directly related to structure

Photographs removed due to copyright restrictions:

Sabolovka Radio Mast, London (Suchov, 1919)

Prada Epicenter Store, Tokyo (Herzog&DeMeuron, 2001)

Swiss Re Tower, London (Foster, 2000)

## ▶ Canopy

- Independent structure
- Space generator

Photographs removed due to copyright restrictions:

Hall of Labor, Turin (Nervi, 1961)

Stansted Airport, London (Foster, 1991)

## ► Folding of metal for reinforcement

- Aluminum-based loadbearing constructions (Jean Prouvé)

Photographs removed due to copyright restrictions:

Méridienne de l'Observatoire, Paris (Prouvé, 1951)

Centenaire de l'Aluminium, Paris (Prouvé, 1954)

- ▶ Main reference for lecture contents:
  - "Constructing Architecture" by Deplazes: pp. 113-138
- ▶ Additional readings relevant to lecture topics:
  - "Fundamentals of Building Construction" by Allen &
  - "Building Construction Illustrated" by Ching & Adams  
chapters on steel