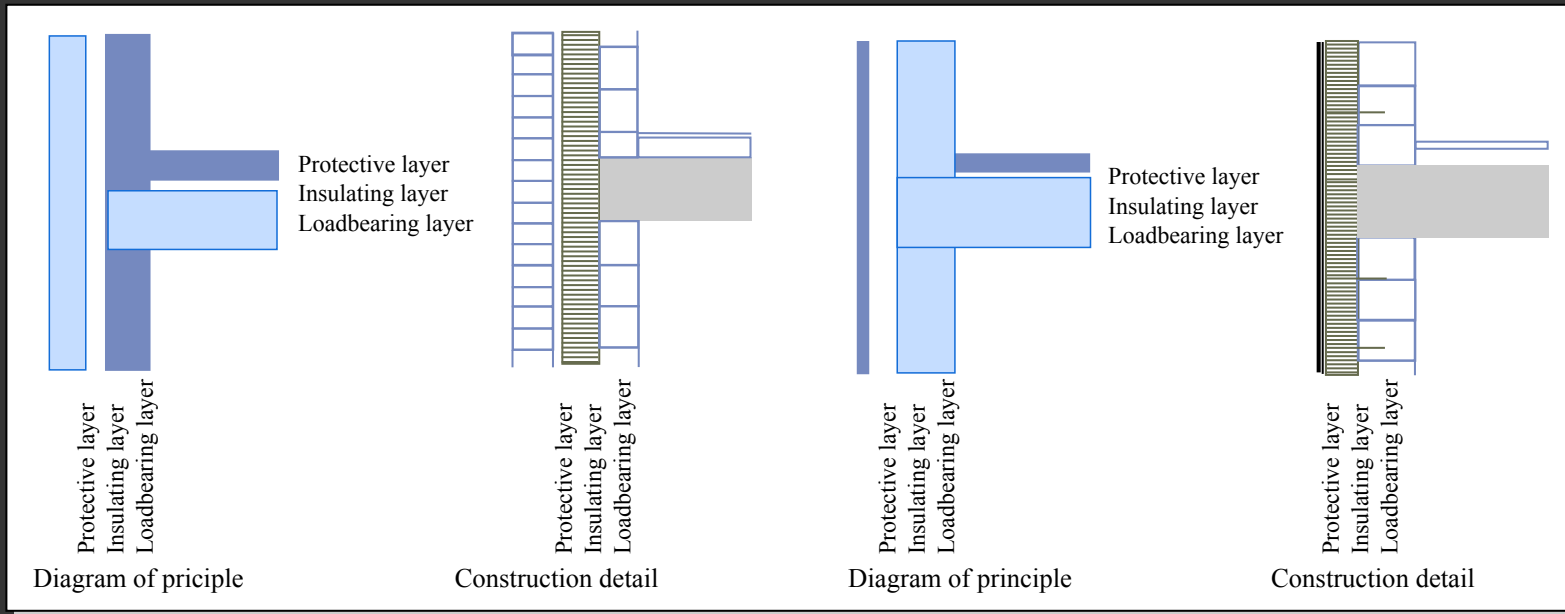


Building Elements

► Wall systems

■ Complimentary

- Monofunctional components
- Loadbearing layer inside

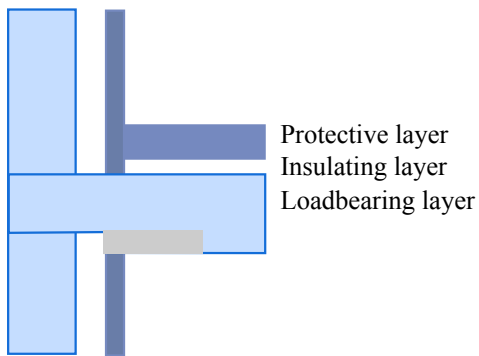


Building Elements

▶ Wall systems

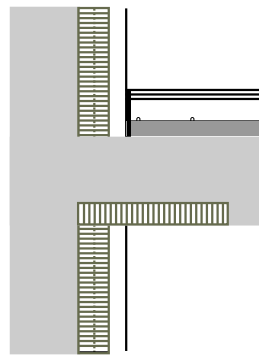
■ Complimentary

- Monofunctional components
- Loadbearing layer outside



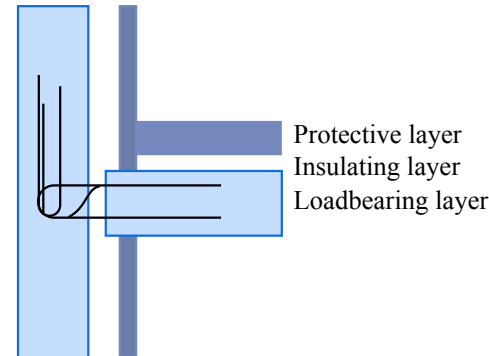
Loadbearing
layer
Insulating layer
Protective layer

Diagram of principle



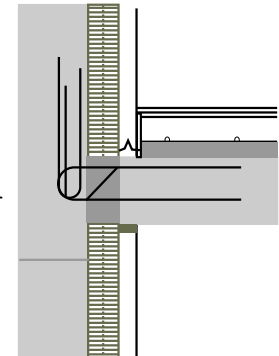
Loadbearing
layer
Insulating layer
Protective layer

Construction detail



Loadbearing
layer
Insulating layer
Protective layer

Diagram of principle



Loadbearing
layer
Insulating layer
Protective layer

Construction detail

Building Elements

▶ Wall systems

- Complimentary
- Synthetic
 - Non-hierarchic element with multiple functions
 - Compact systems or sandwich systems

Building Elements

▶ Wall systems

- Complimentary
- Synthetic
 - Example: Polyurethane wall

Photographs removed due to copyright restrictions:

Glass House, New Canaan, USA (Johnson, 1995)

Gate House, New Canaan, USA (Johnson, 1995)

Building Elements

▶ Wall systems

- Complimentary
- Synthetic
 - Example: Straw wall

Photographs removed due to copyright restrictions:

Tscheppa House, Disentis, CH (Schmidt, 2002)

Simonton House, Pudrum, Nebraska

Building Elements

▶ Openings

- Reveal, sill and head/lintel

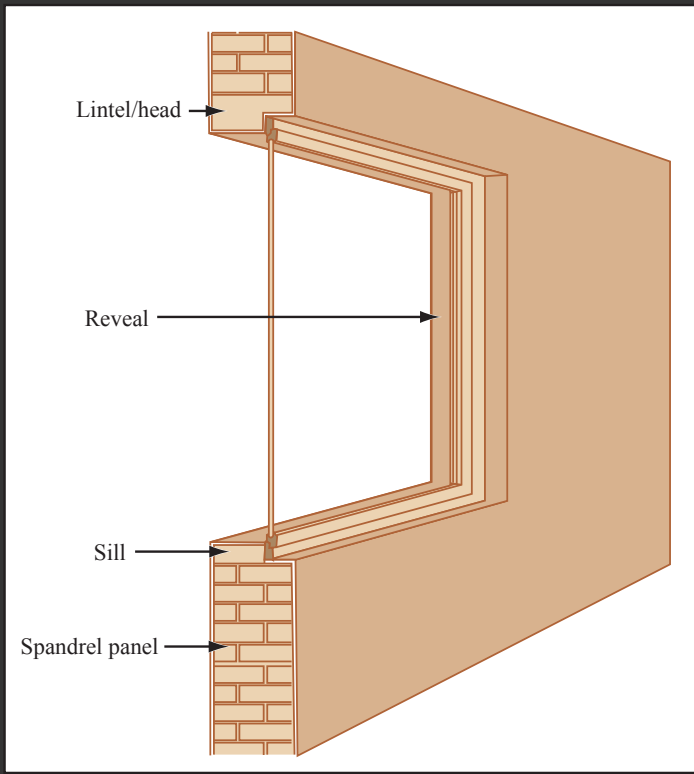


Image by MIT OCW.

Photograph and floor plan removed due to copyright restrictions:

Van Heusden House, Laax, CH
(Olgiati, 1964)

Building Elements

▶ Openings

- Reveal, sill and head/lintel
- Positioning and size
- Thermal and sound insulation
- Water/moisture protection
 - Opening rebate
 - Rebate between sash and outer frame

Building Elements

▶ Openings

- Reveal, sill and head/lintel
- Positioning and size
- Thermal and sound insulation
- Water/moisture protection
- Window placement in opening's depth
 - Architectural appearance
 - Thermal bridges

Building Elements

▶ Openings

■ Outer and sash frames materials

- Untreated wood
- Painted wood
- Wood inside and metal outside
- Plastic frames (PVC)
- Aluminum or steel

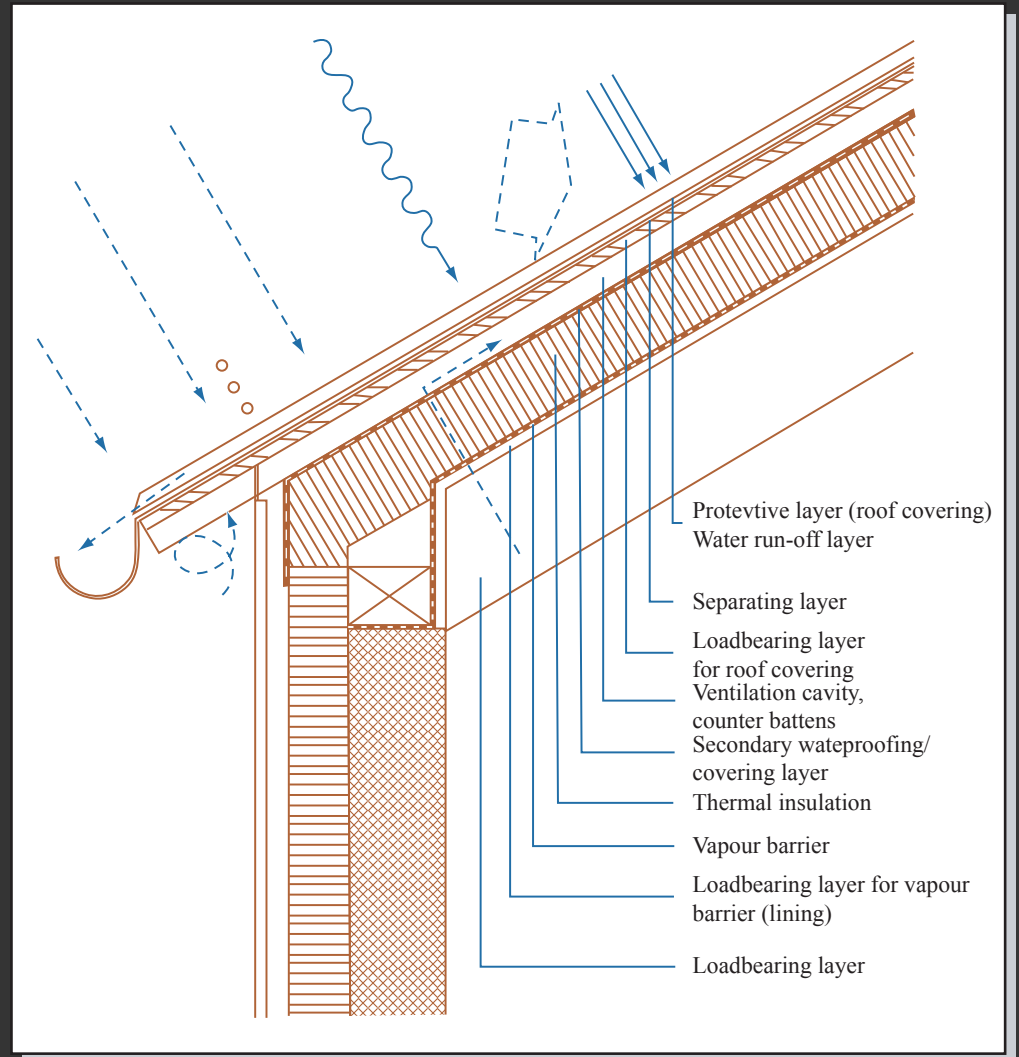
■ Glass types

- Float
- Window
- Rolled or patterned
- Wired

Building Elements

▶ Roofs

- Provide shelter
- Finish off building
- Keep water out



Building Elements

▶ Roofs

■ Cold deck

- Waterproof layer separated from insulation by ventilation cavity
- No vapor barrier necessary

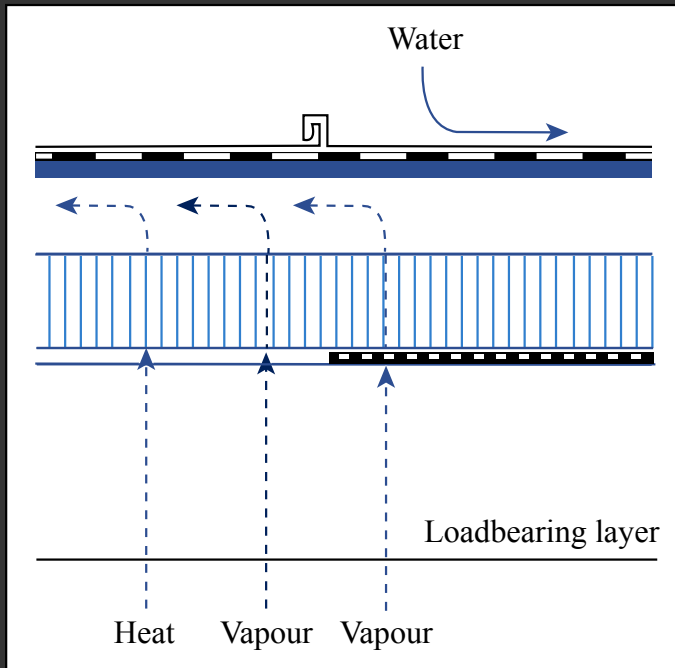


Image by MIT OCW.

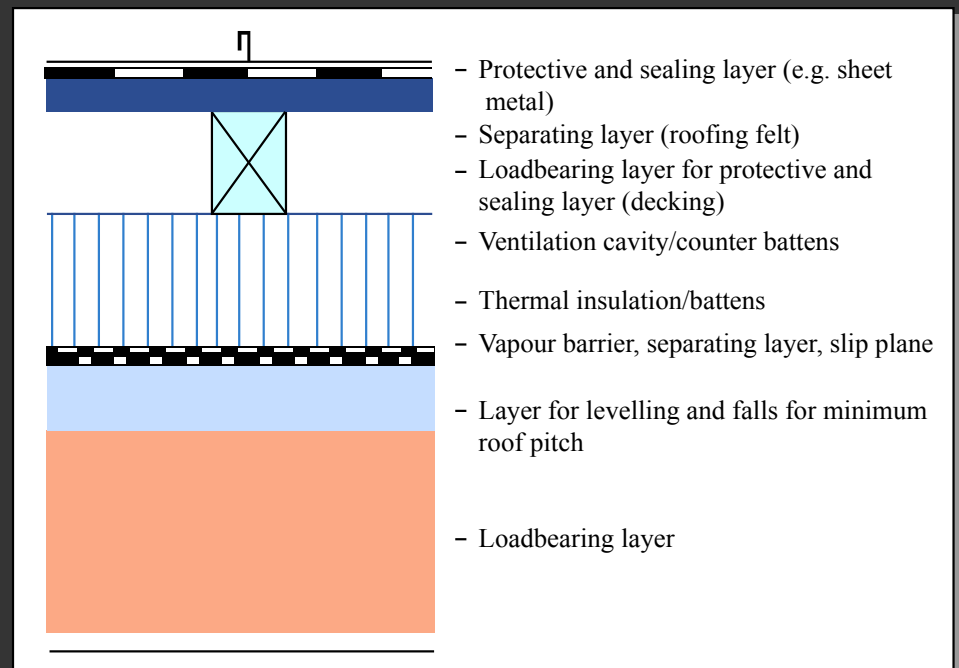


Image by MIT OCW.

Building Elements

▶ Roofs

■ Cold deck

■ Warm deck

- Waterproof layer laid immediately above thermal insulation
- Vapor barrier on warm side of insulation

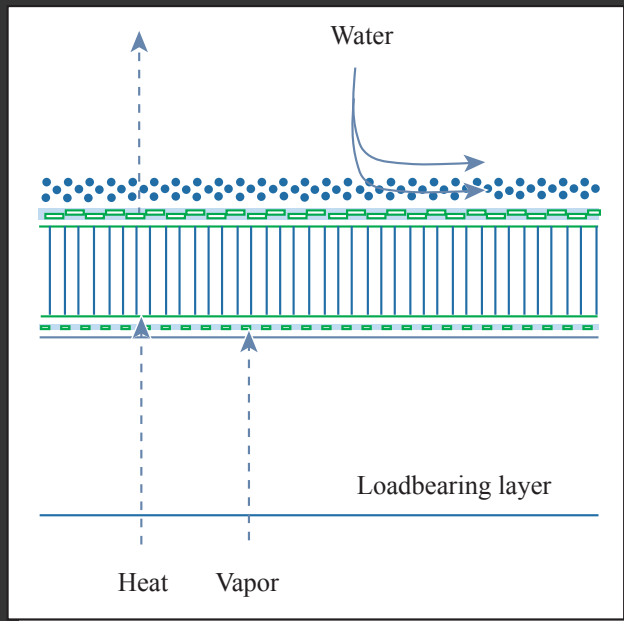


Image by MIT OCW.

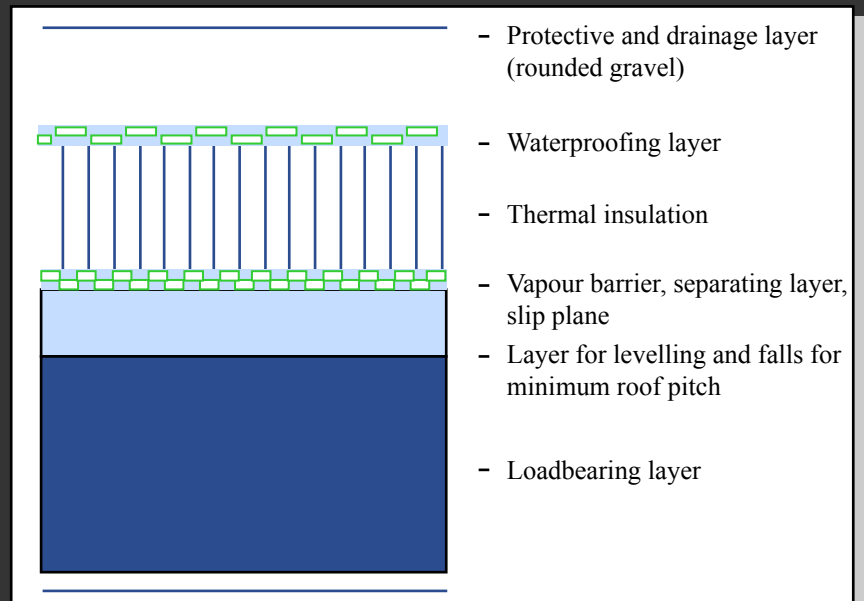


Image by MIT OCW.

Building Elements

▶ Main reference for lecture contents:

- "Constructing Architecture" by Deplazes: pp. 140 - 146 + 286 - 289 + 184 - 200 + 211 - 224

▶ Additional readings relevant to lecture topics:

- "Fundamentals of Building Construction" by Allen &
- "Building Construction Illustrated" by Ching & Adams
chapters on roofs, openings, wall systems