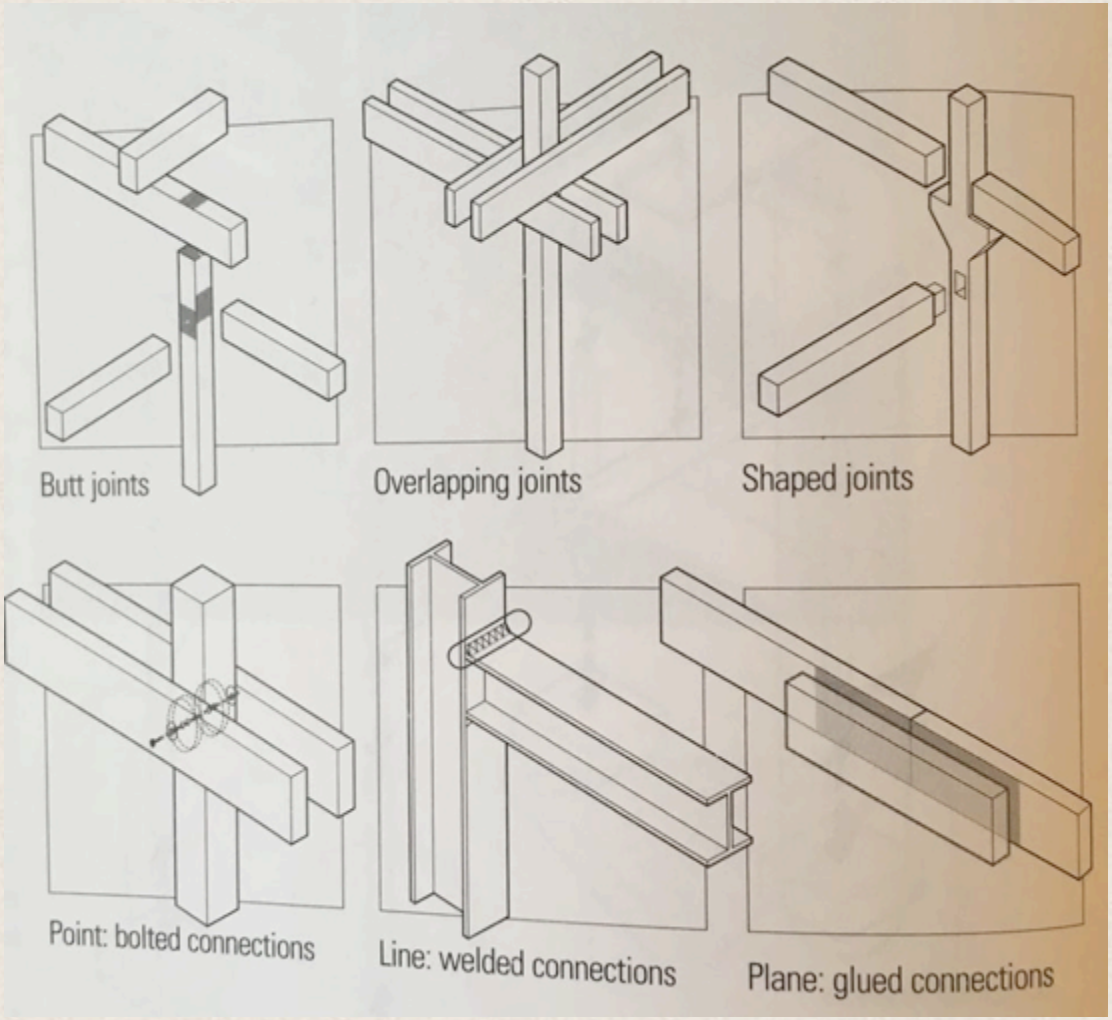
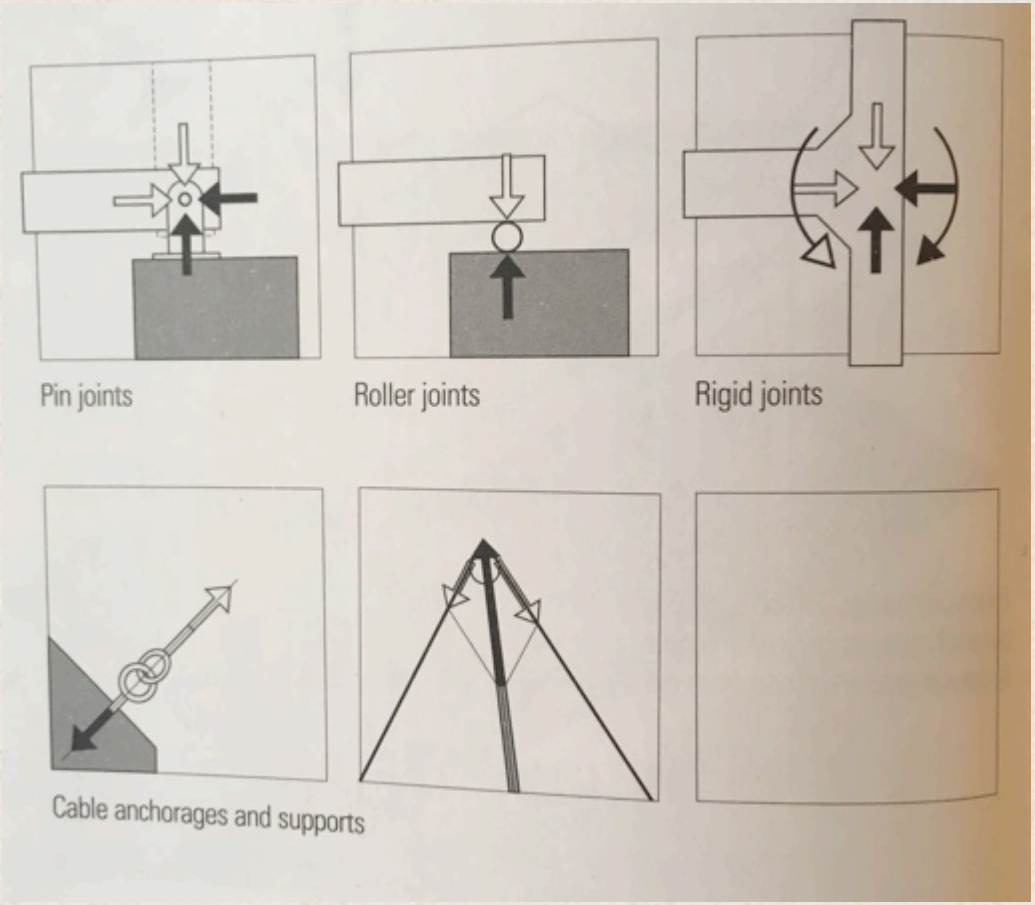
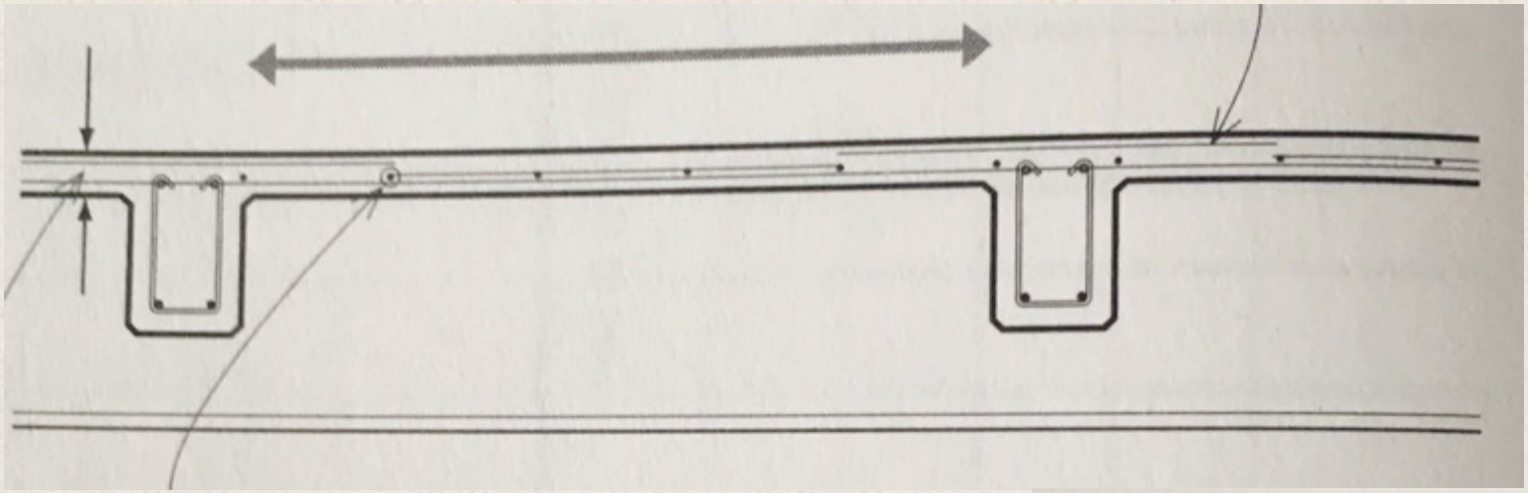
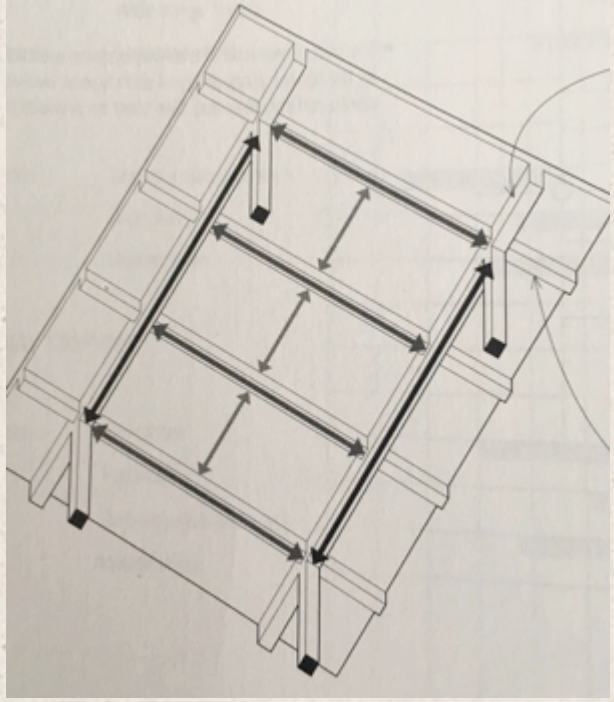
# Structures in Practice


Butt joints
Overlapping joints
Shaped joints
Point: bolted connections
Line: welded connections
Plane: glued connections

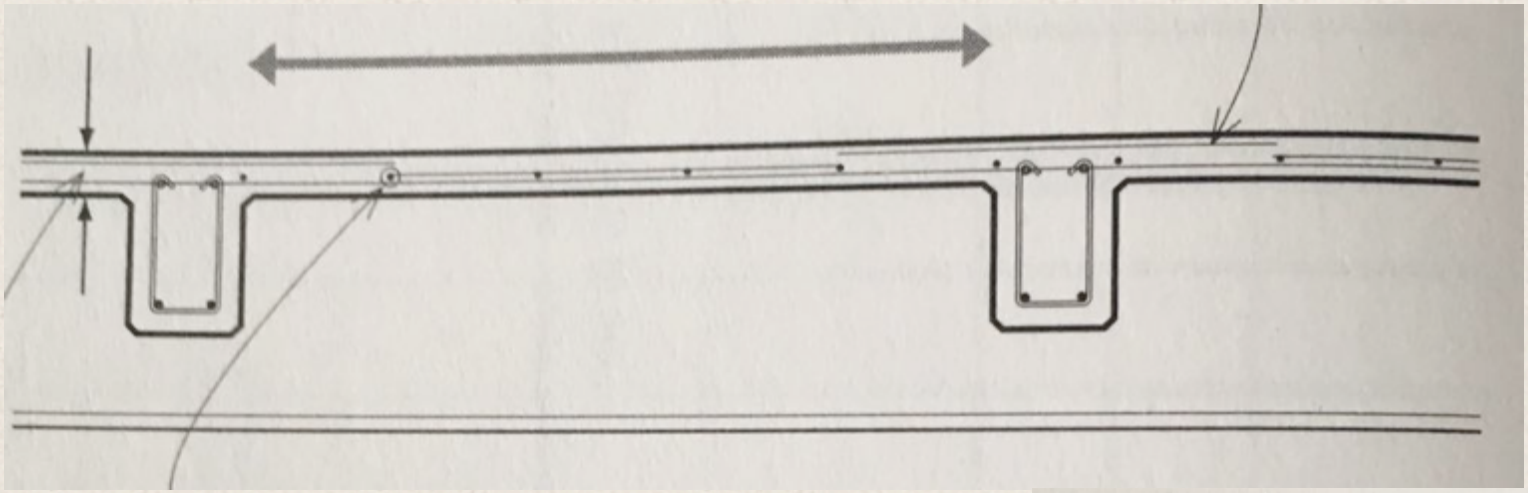

Pin joints
Roller joints
Rigid joints
Cable anchorages and supports

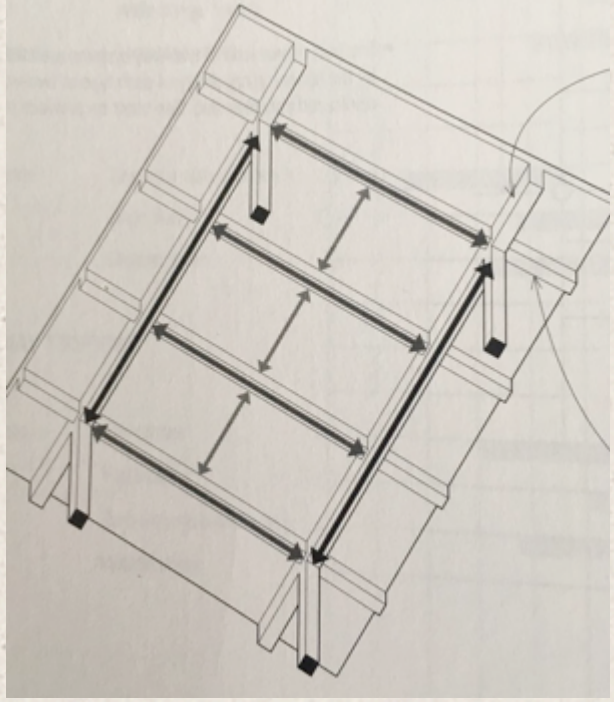
# One Way Slabs (cast in place)





# One Way Slabs (cast in place)



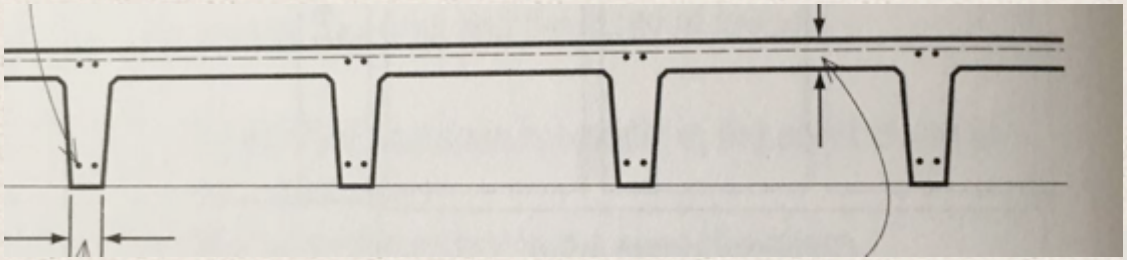


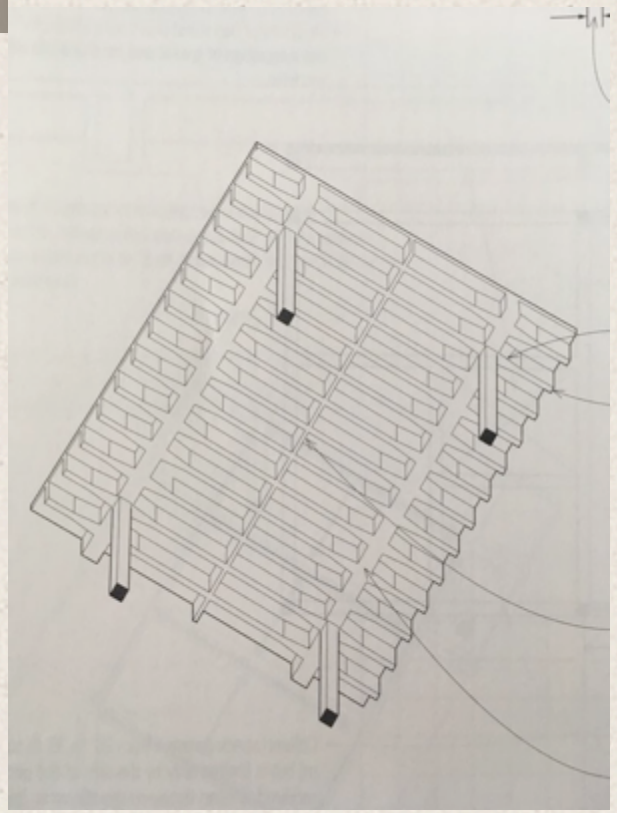
Rule of Thumbs:

- Beam depth = Span / 16
- Beam Width = 1/3 – ½ of beam depth
- Slab thickness = Span / 28 for floor slabs (min 100mm : Span /35 for roof slabs

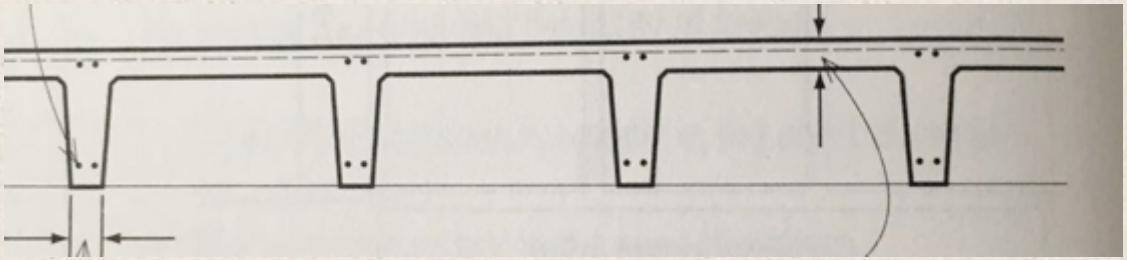
Max span = 1.8 – 5.5m

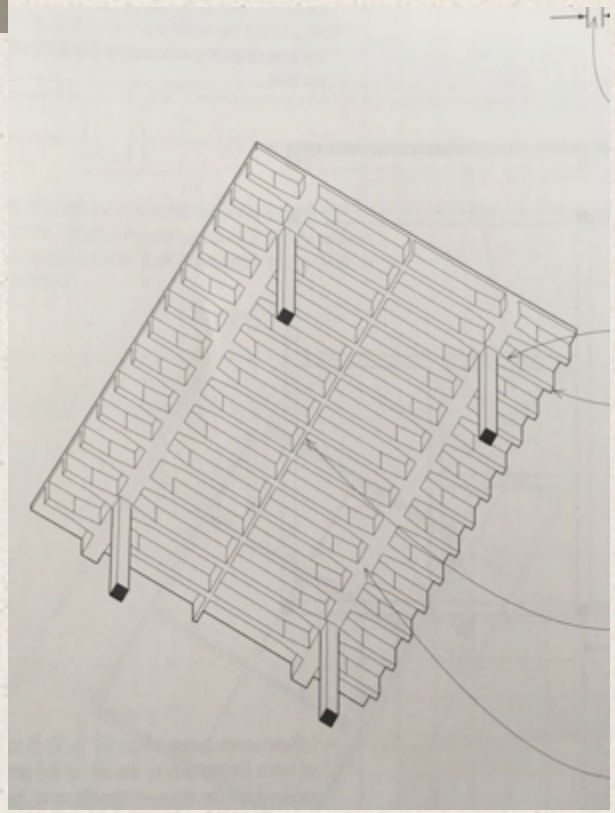
# Joist Slabs – Cast in moulds





# Joist Slabs – Cast in moulds

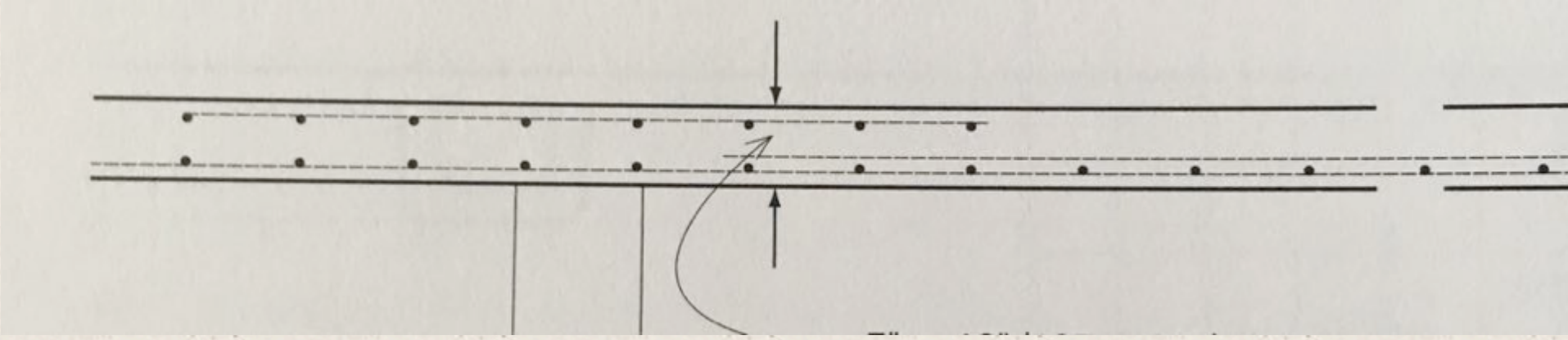


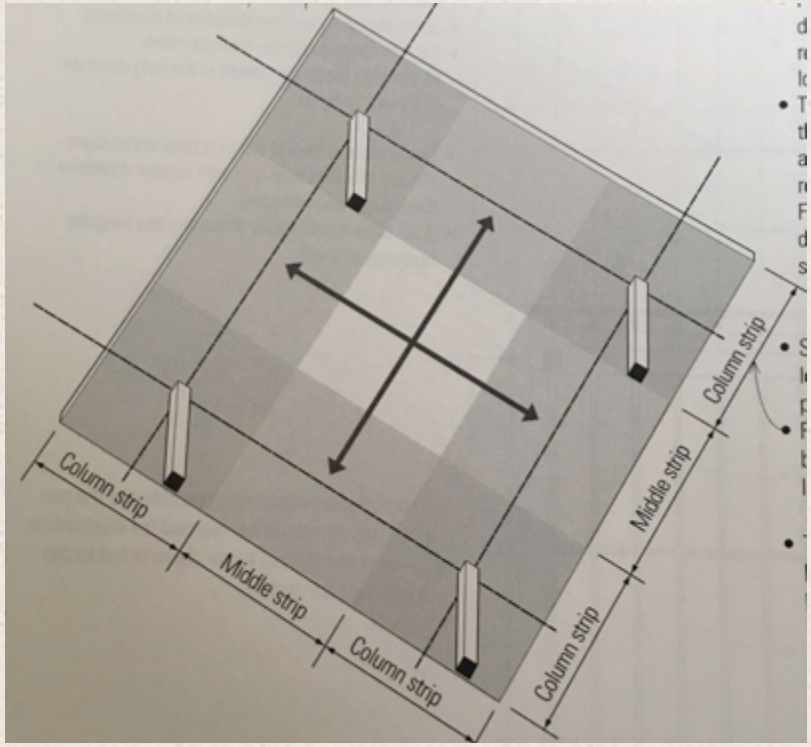


Rule of Thumbs:

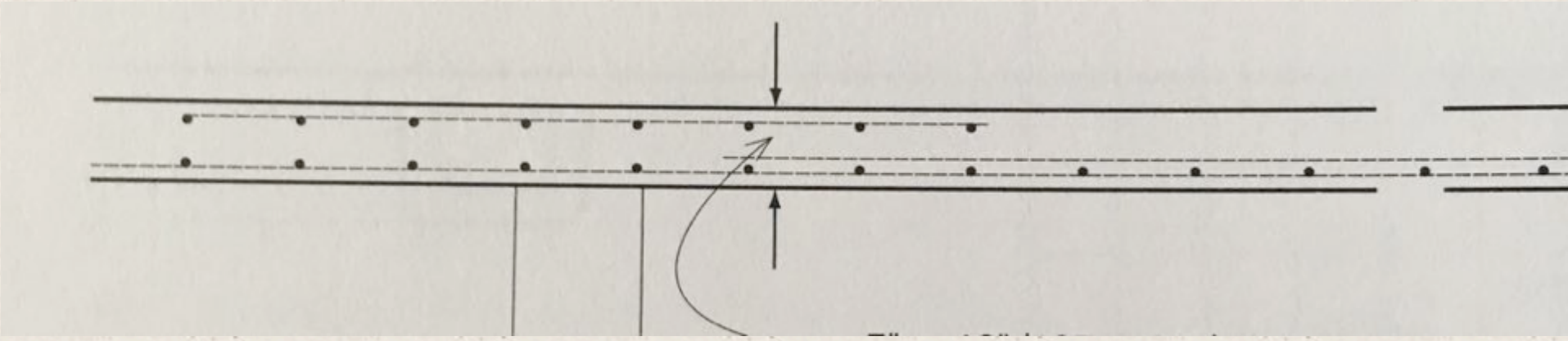
- 75mm-115mm slab depth
- Depth (total) = span/24
- 125-230mm joist width

# Flat Plates




Column strip
Middle strip
Column strip
Column strip
Middle strip
Column strip

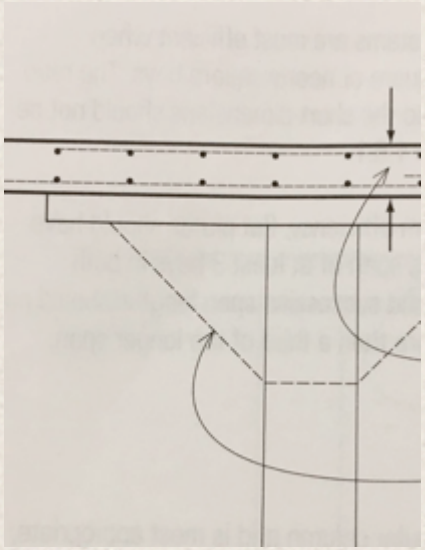
# Flat Plates

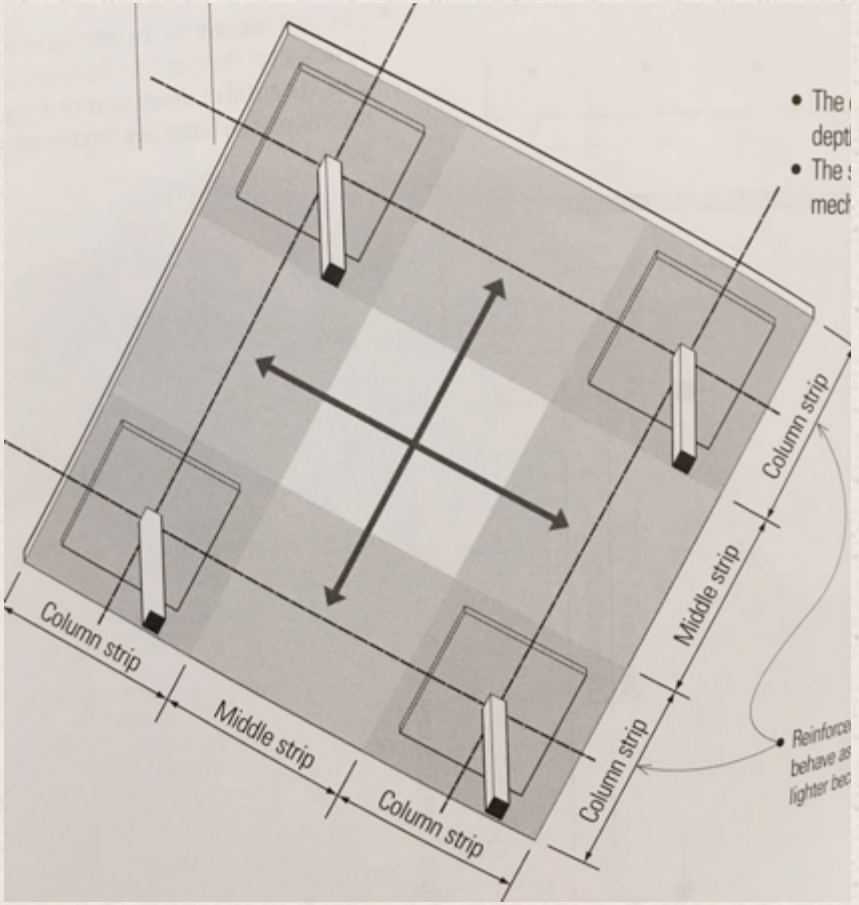


## Rule of Thumbs:

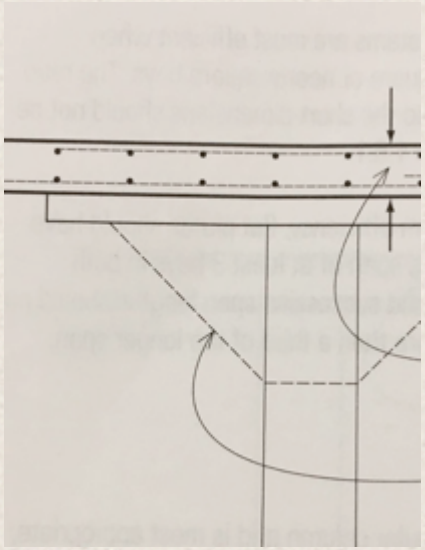
- Spans : 3.6 – 9.1m
- Slab depth = span/30 (125-305mm)

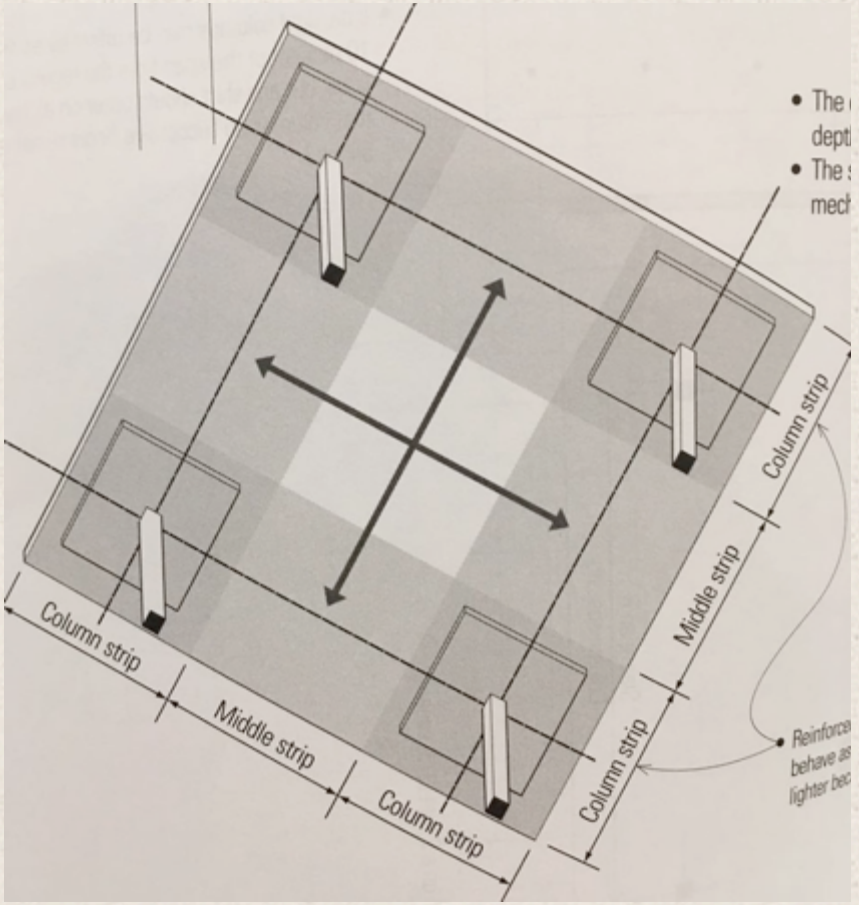
# Flat slabs – (thickened at column supports)





# Flat slabs – (thickened at column supports)

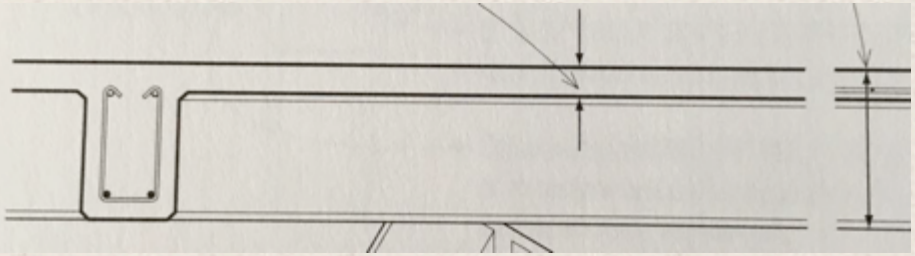


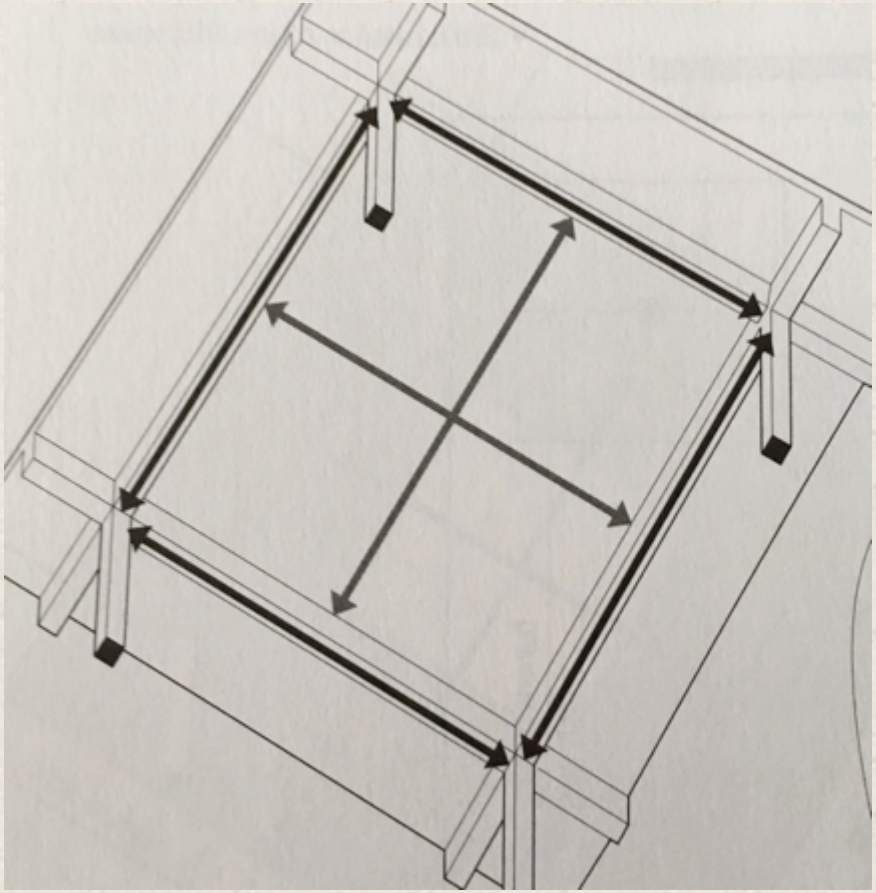



## Rule of Thumbs:

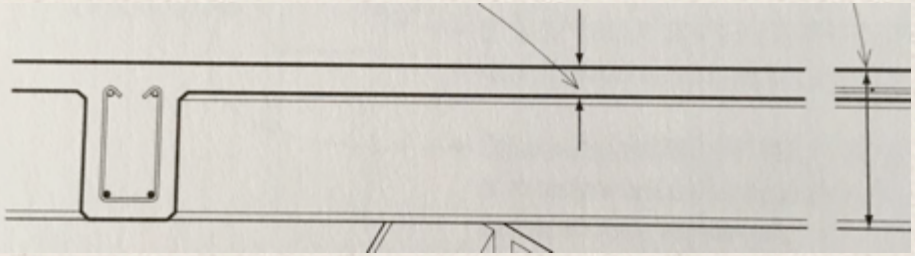
- Spans : 6-12m
- Slab depth = span/25 (150mm-305mm)

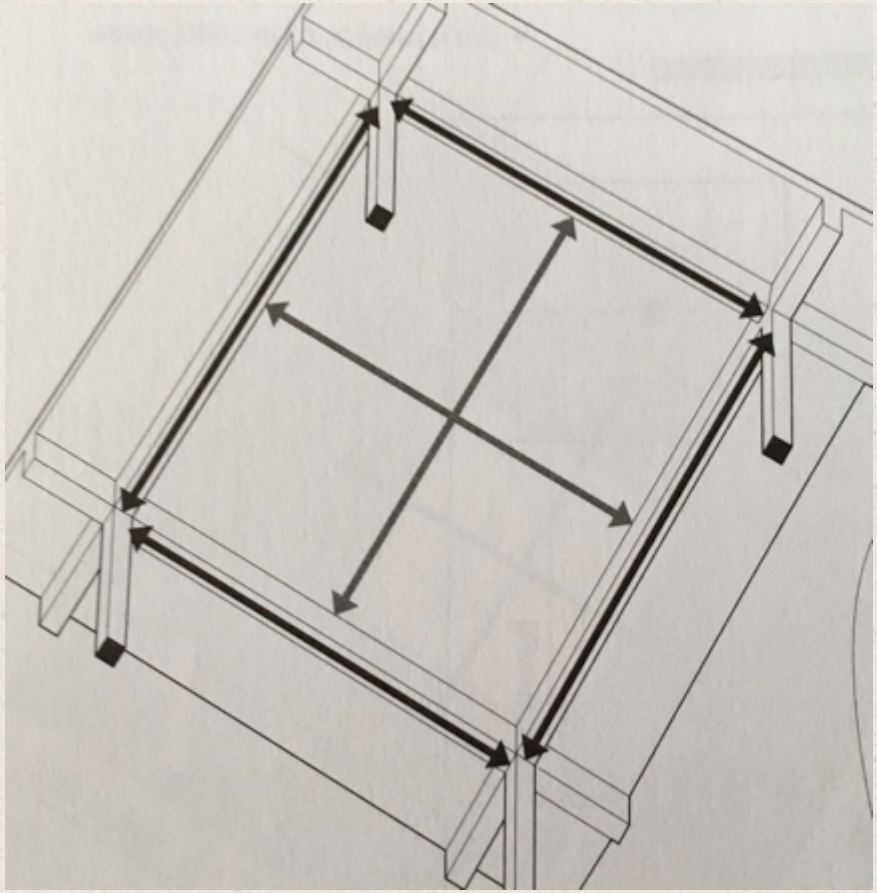
# 2 way slabs with beams





# 2 way slabs with beams



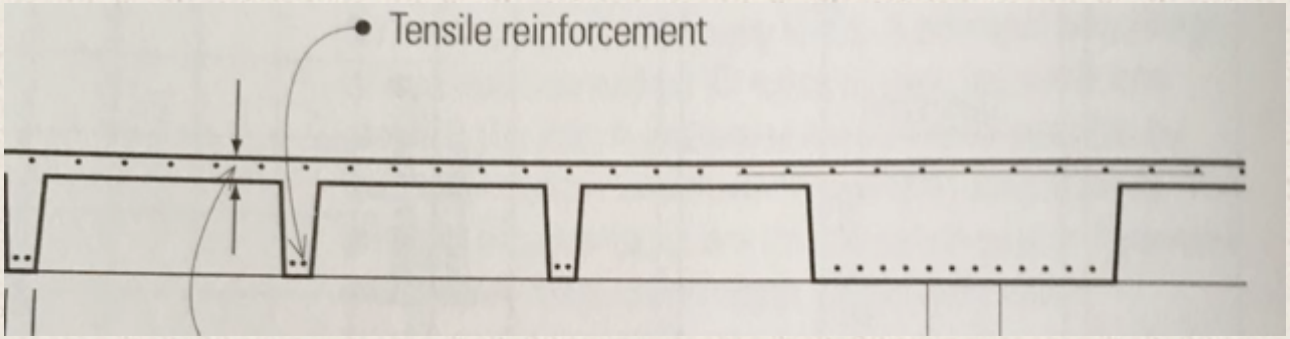


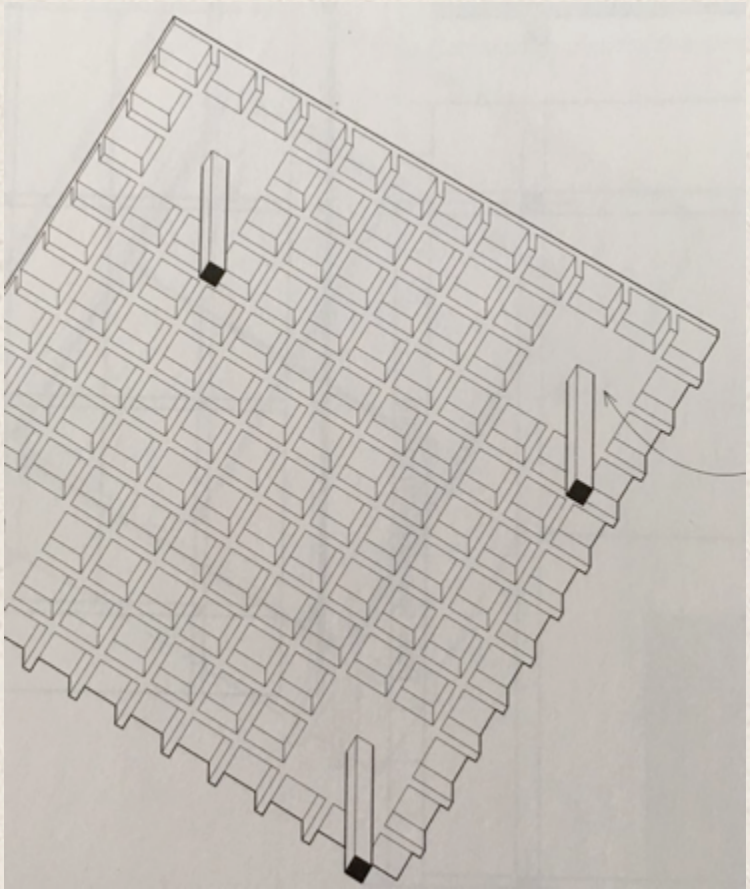
Rule of Thumbs:

- Spans : 4.6-9.1m
- Slab depth = span/16

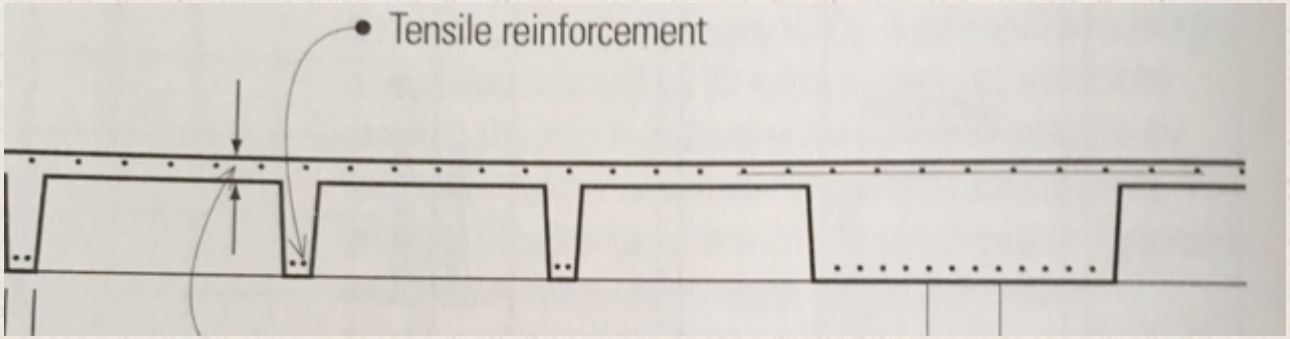
(perimeter=180mm, slab=100mm)

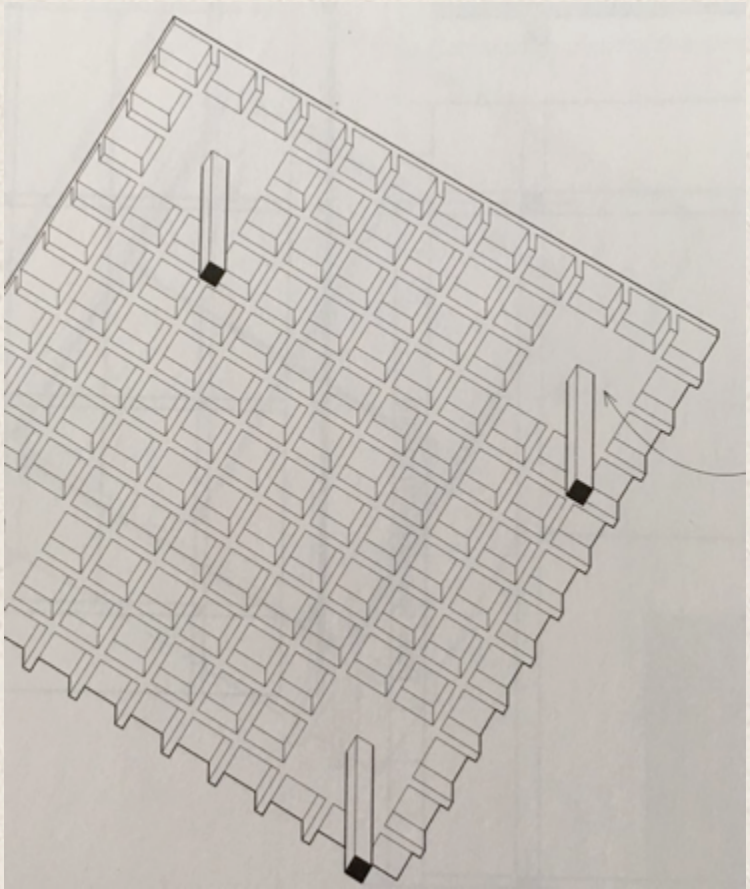
# Waffle slabs



# Waffle slabs

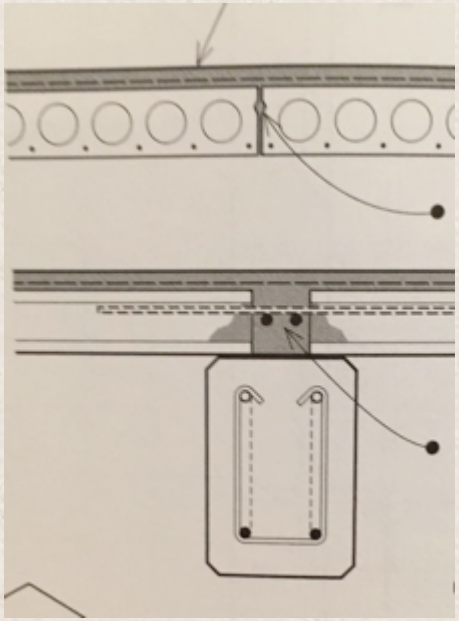


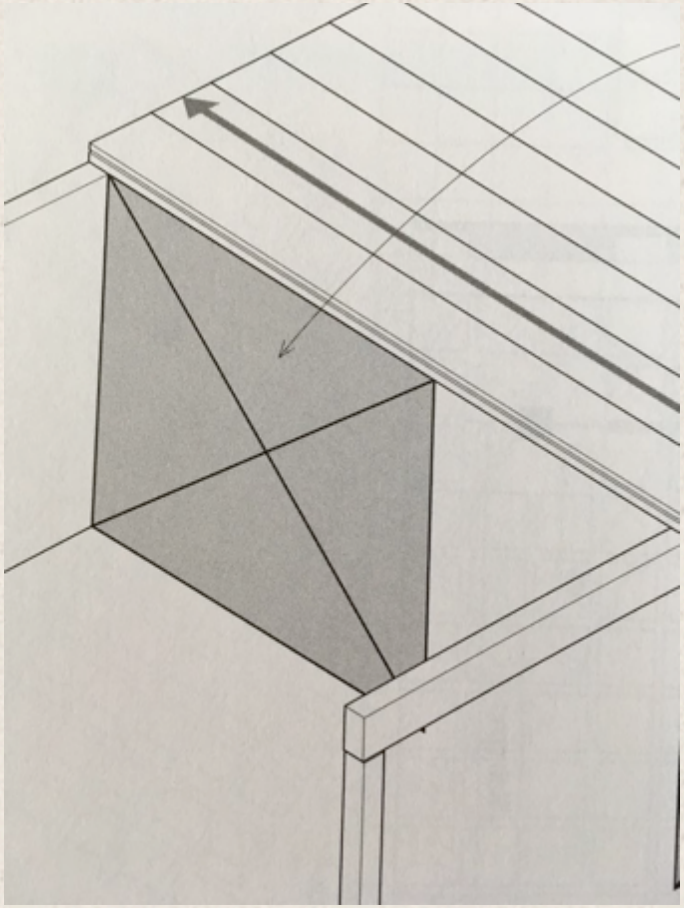



Rule of Thumbs:

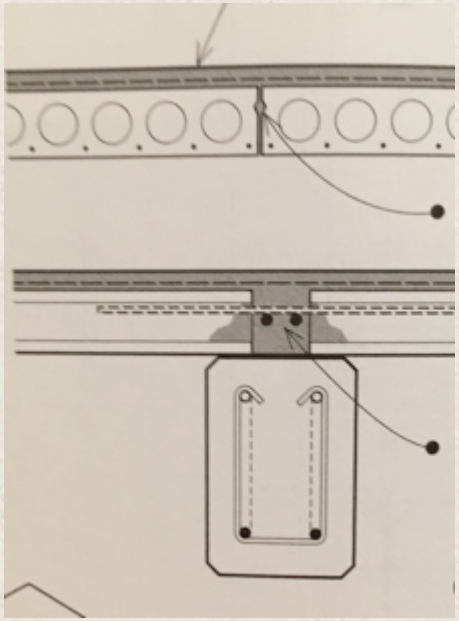
- Spans : 7.3-12.2m
- Slab depth = 75-115mm
- Total depth = span/24
- rib width = 125mm-150mm

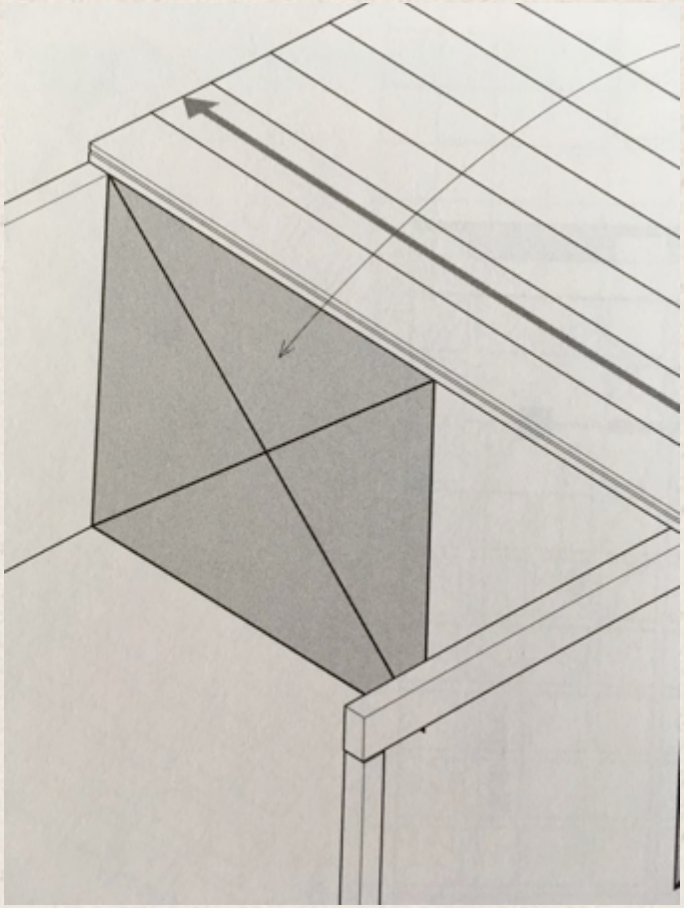
# Pre cast concrete slabs





# Pre cast concrete slabs





Rule of Thumbs:

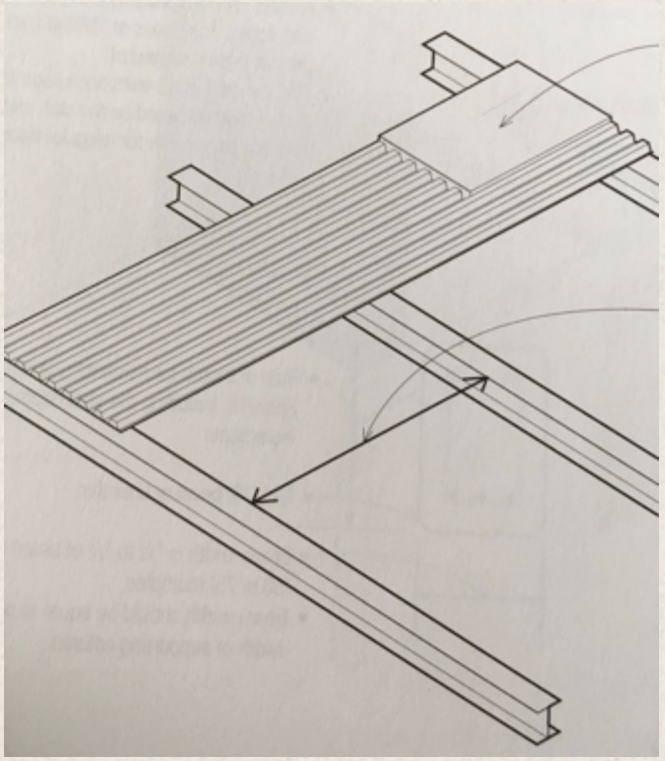
- 1200 typical width
- 3.6m-11.6m span

Depth = span/40

Beam depth = Span/16 (includes slab depth)
Beam width = same as column

Solid slabs span = 3.6m-7.3m) Depth = span/40

# Steel beams

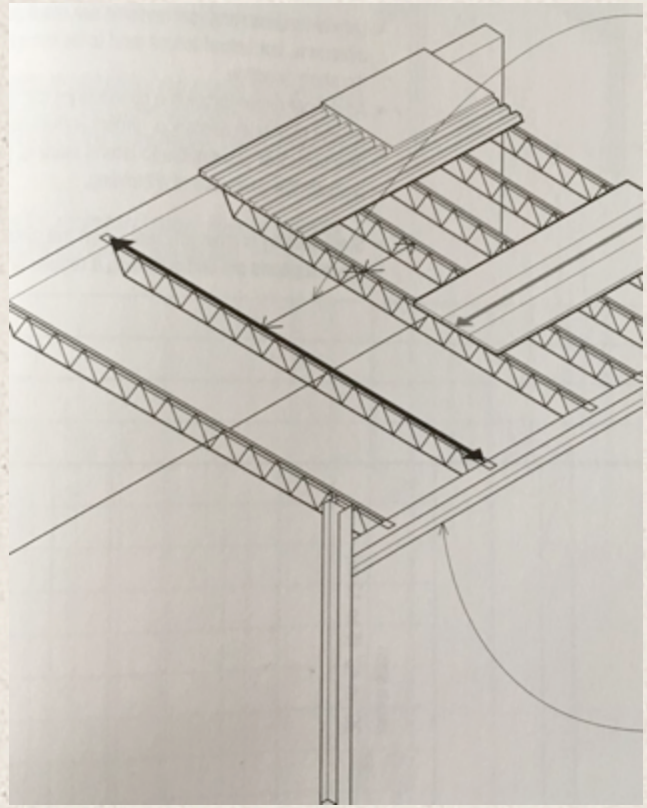


Rule of Thumbs:

- Steel beams span 6-12m
- Depth = span /20

Beam width = 1/3 – ½ beam depth

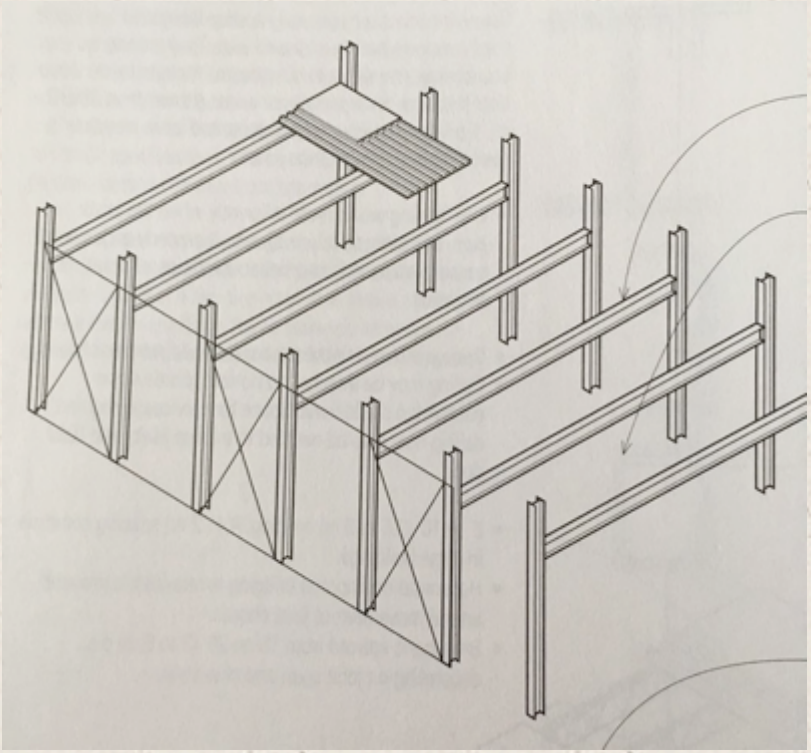
# Open web steel joists



Rule of Thumbs:

- Spans >10m
- 0.6 – 3m spacing (1.2m common)
- Long span (LH) joists 455-1220mm deep)
- Deep long span (DLH) 1320mm-1830mm deep

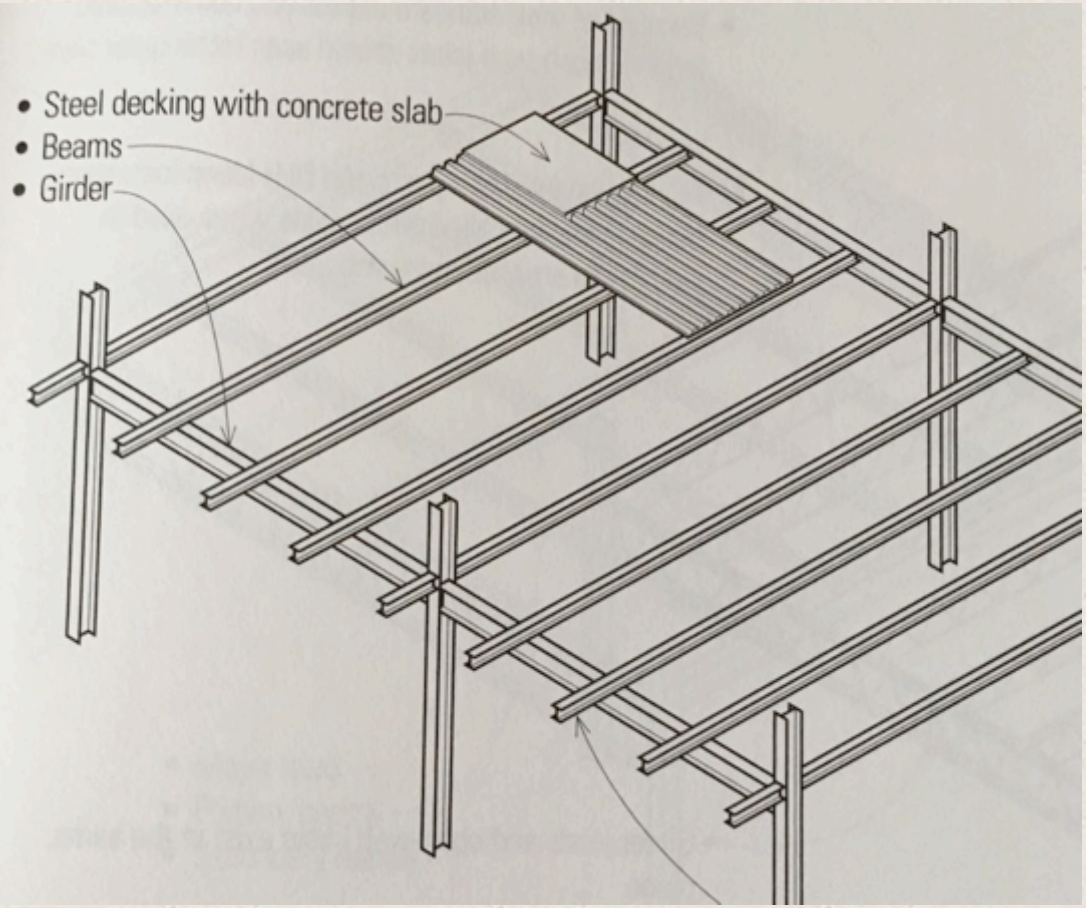
# One-way beam system



Rule of Thumbs:

- Spans 6-12m

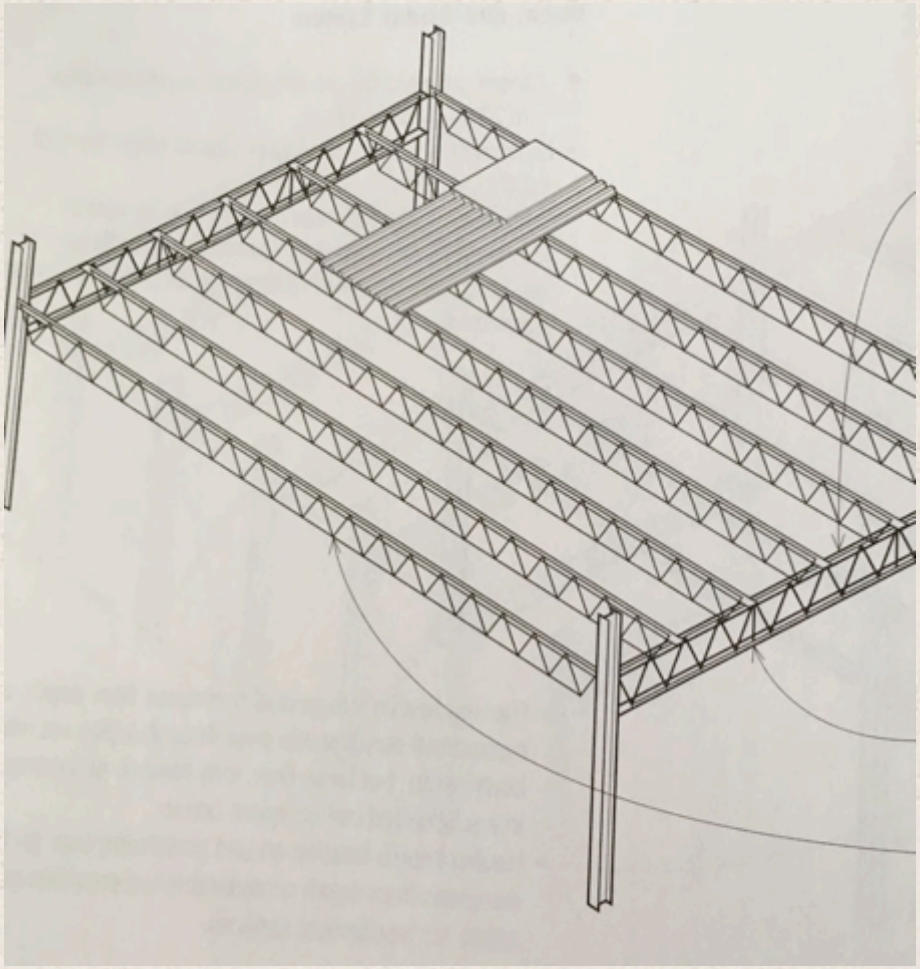
# Beam & girder system




Rule of Thumbs:

- Spans 6-12m
- Secondary beams = 7-20m

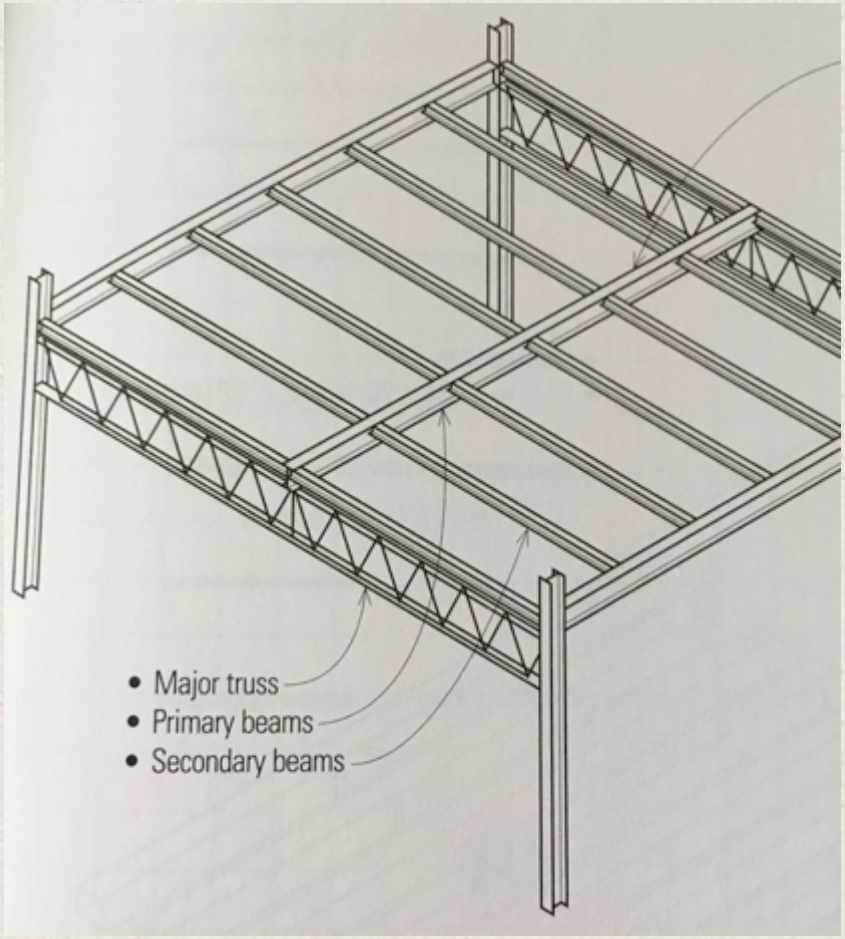
# Trussed system



Rule of Thumbs:

- 3.6m – 18m span)

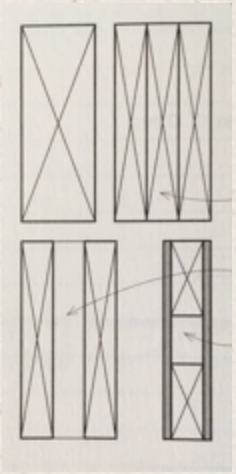
# Triple layer system



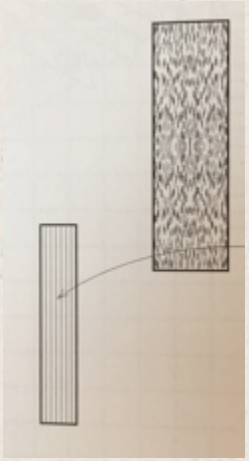

## Rule of Thumbs:

- 3.6m – 18m span

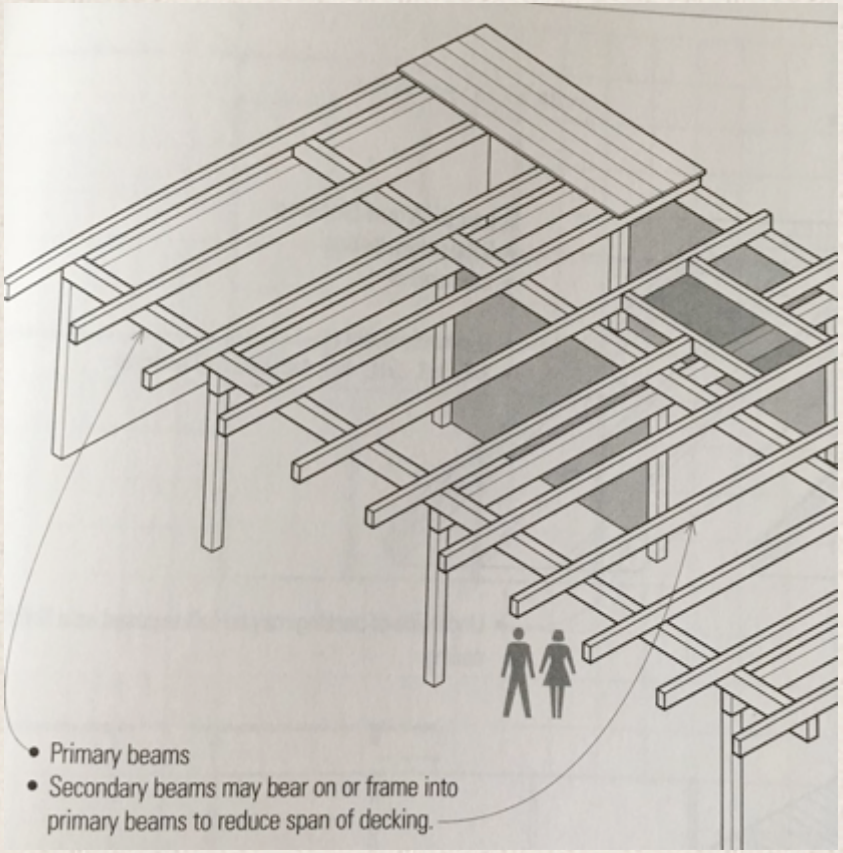
Wood



Solid timber



Glulam /Parallel strand laminated veneer

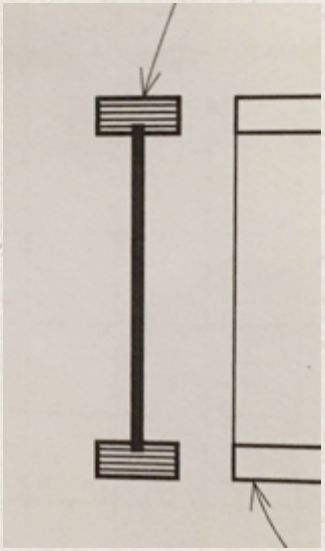



Rule of Thumbs:

Solid: depth = span/15
Beam width = 1/3 – ½ depth

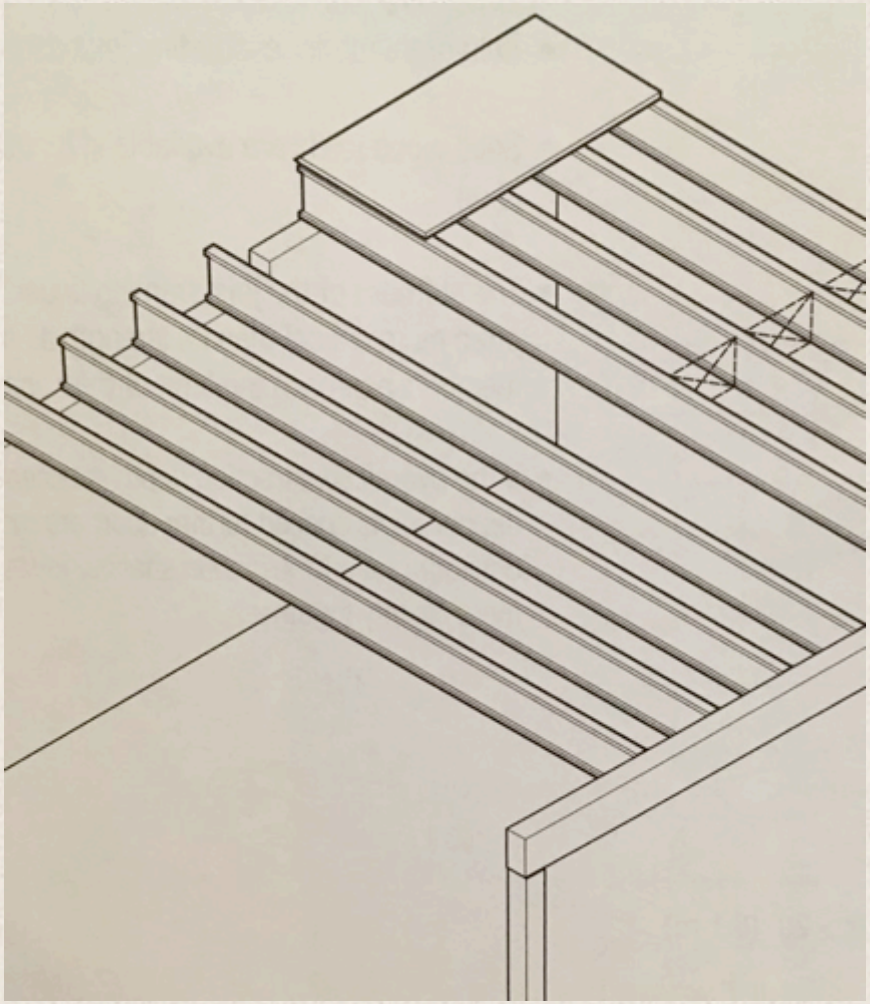
Others: Depth = Span/20
Width = ¼ - 1/3 beam depth

# Pre fabricated I joists



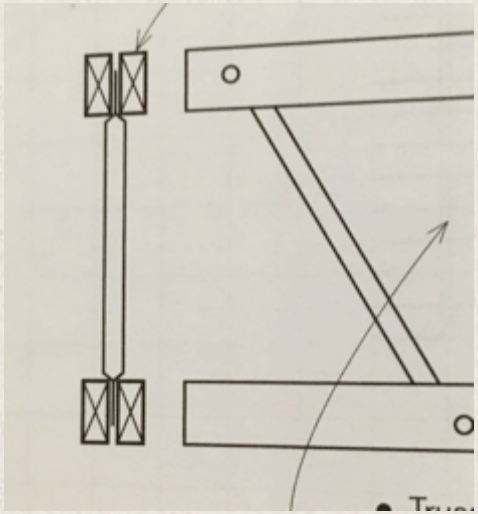
Rule of Thumbs:

4.9 -18.3m spans
Depth = Span / 18



# Pre fabricated I joists

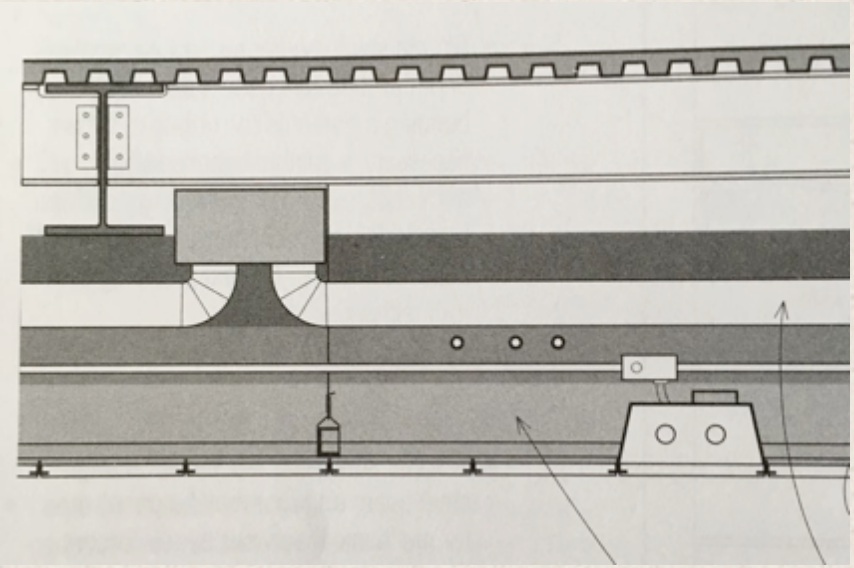
# Pre fabricated Wood trussed joists

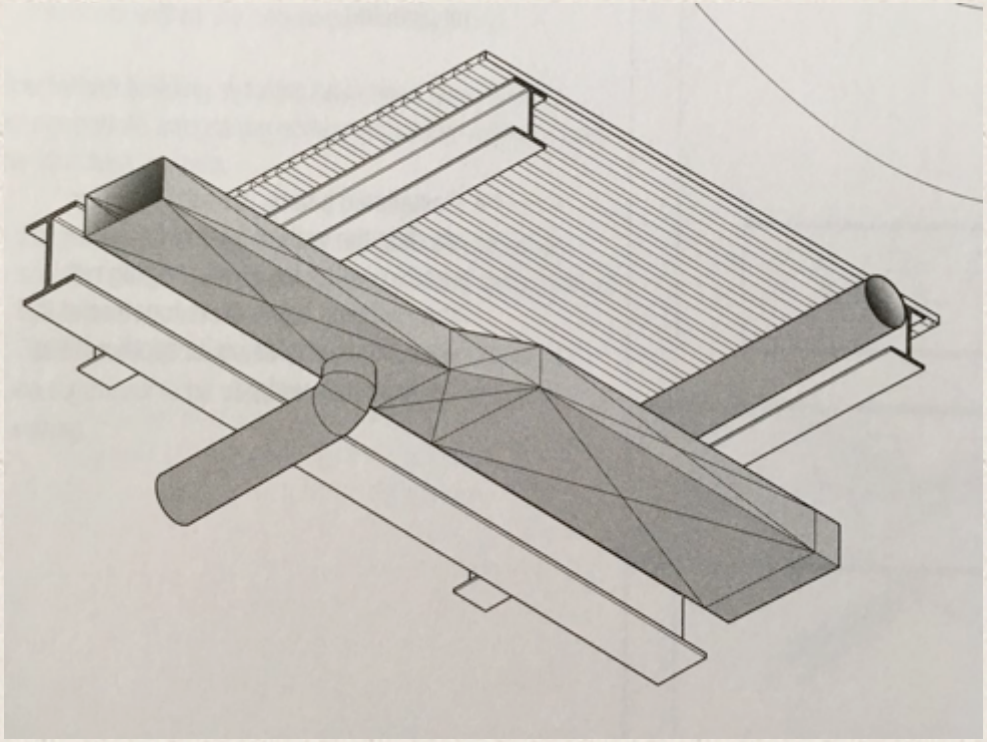


Rule of Thumbs:

4.9 -18.3m spans
Depth = Span / 18

# Space for Services





Rule of Thumbs:

- Allow 455mm below deepest portion of floor for services.