□ FLOOR Constructions

- – Materials Takes stretching forces?

YES	-	timber	**NO** (arches, vaults)	-	Brick
	-	steel		-	Stone
	-	RC		-	…etc.

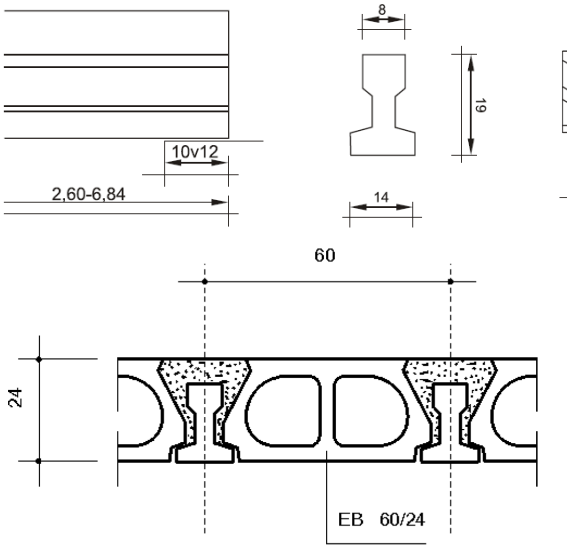
Combinations

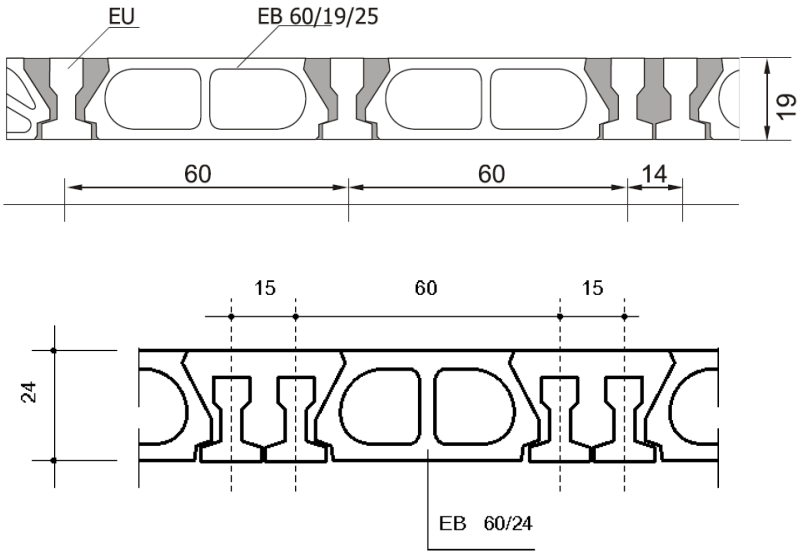
- Support need during the construction period:

1. Self supporting **2. or partly** **3. or not self supporting**

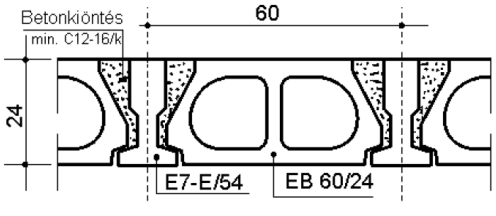
1. "E", "F", "G" beam types,
   UNIVAZ, SPAN-DECK hollow core panel,
   "T", "TT" panels,
   hot rolled steel joist,
   corrugated steel sheet floor
2. "PPB", Fert, Porotherm,
   prefab. formwork panels,
   some historical ceramic floor
3. monolithic slab (historical ceramic floors)

- RC. beam floors in detail (examples are currently used systems)
  - „E" type beam floor (prestressed) span (l) = 2,40-6,60 m
    attributes: not a comprehensive system, full cross-section high beams, needs cross-ribs, immediate 80% load bearing capacity

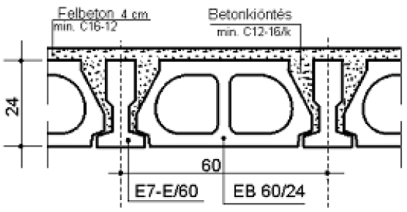




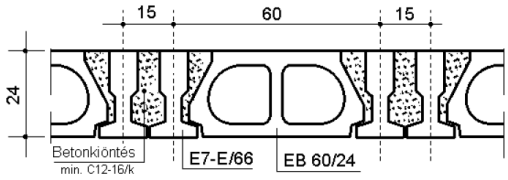
Az E7-E/54 jelű gerenda beépítése 540 cm-es falköznél



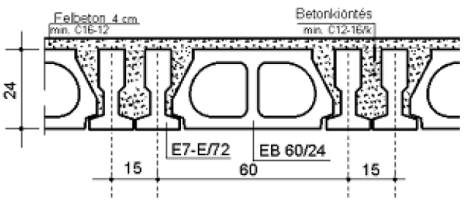
Az E7-E/60 jelű gerenda beépítése 600 cm-es falköznél

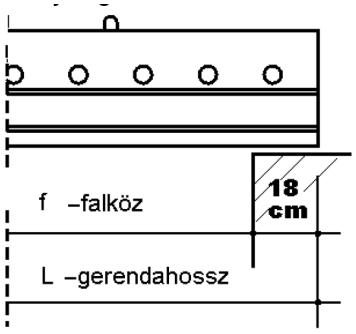


Az E7-E/66 jelű gerenda beépítése 660 cm-es falköznél

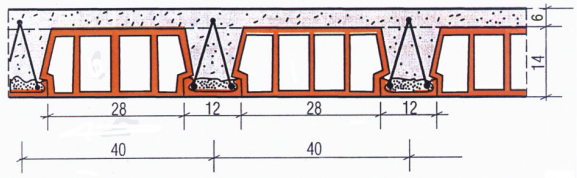


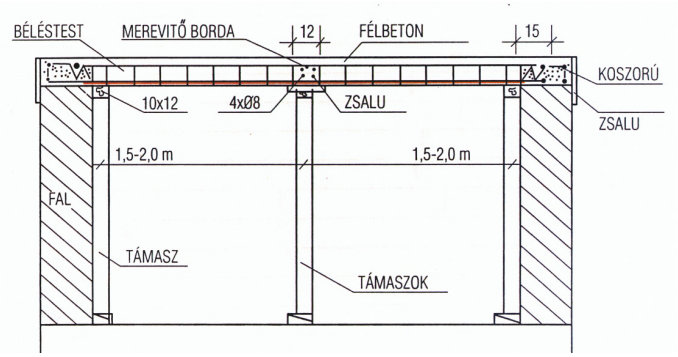
Az E7-E/72 jelű gerenda beépítése 720 cm-es falköznél

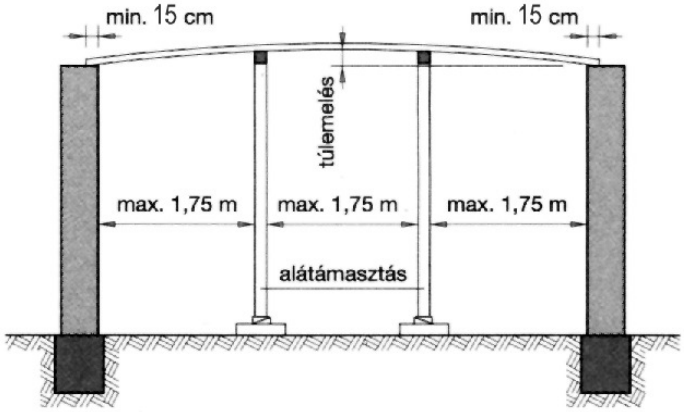




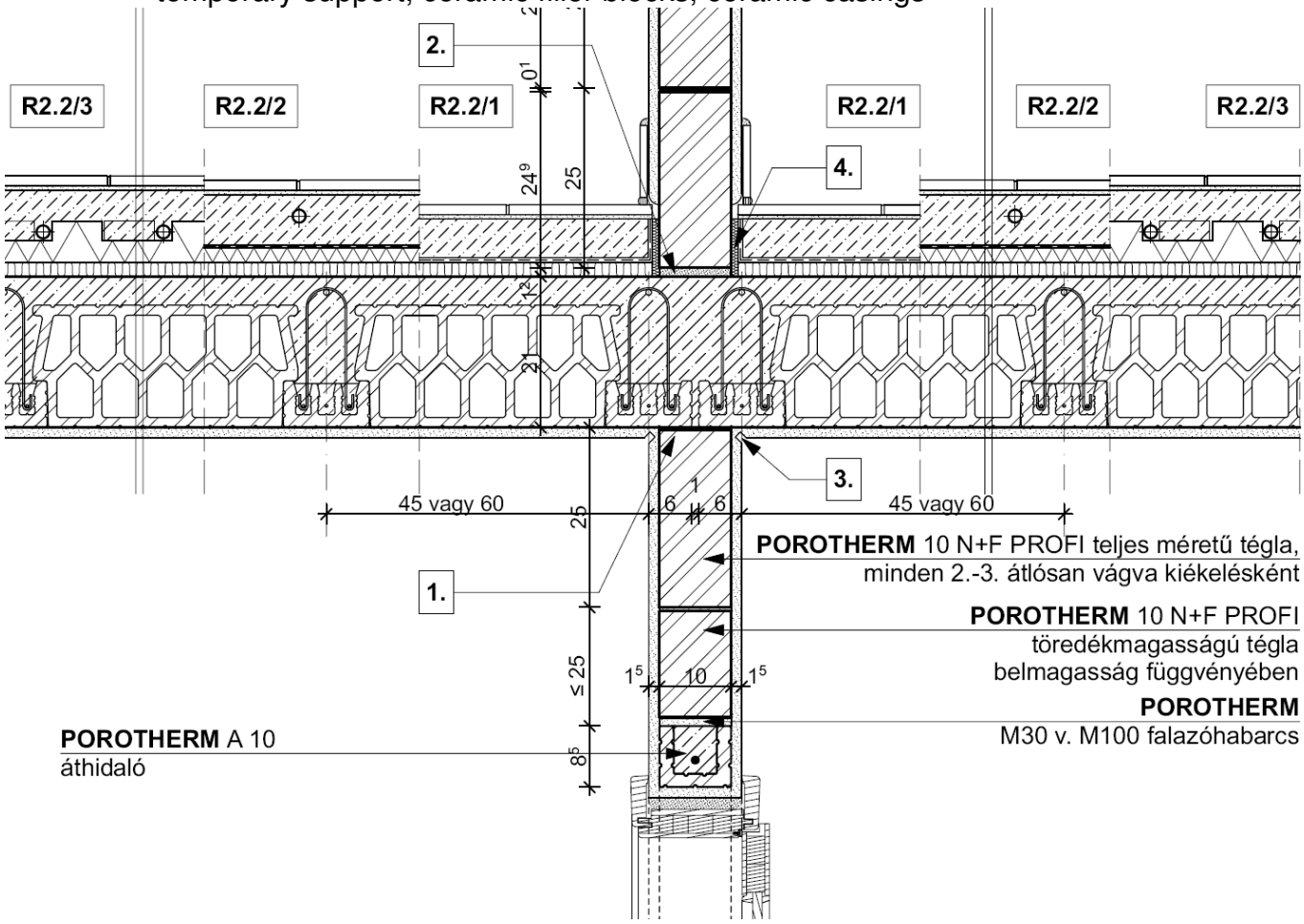
- FERT beam floor (soft steel) l= 3,0-6,6 m
  attributes: partially pre-fabricated, needs cross-ribs and temporary support, ceramic filler blocks, ceramic casings



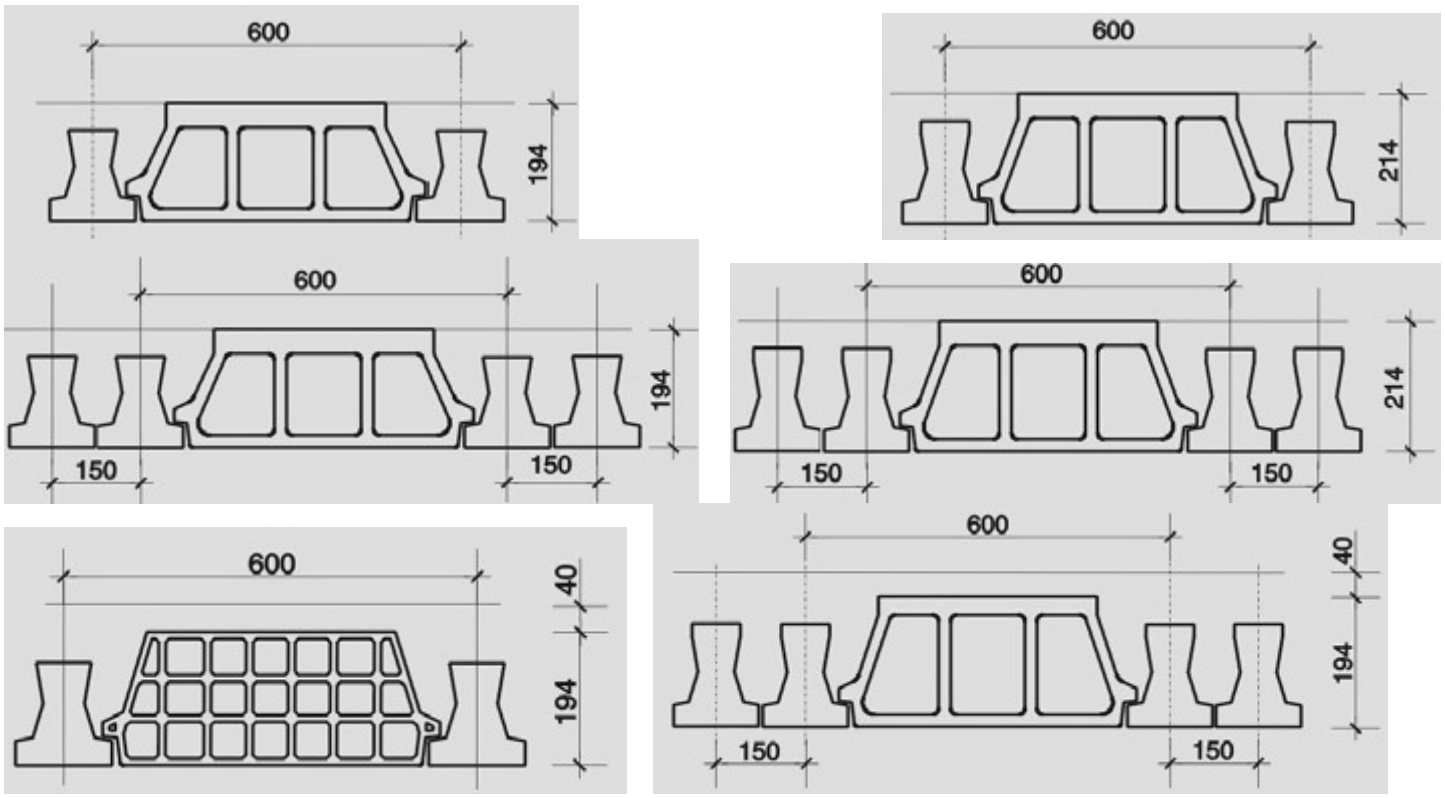




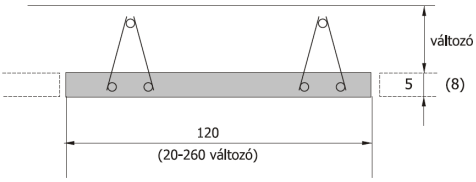
- PTH floor (partially pre-fabricated, prestressed) l= 2,25-7,00 m
  attributes: due to its low area weight, proper air noise insulation capacity requires an additional 6cm top layer of concrete, comprehensive system, needs cross-ribs and temporary support, ceramic filler blocks, ceramic casings

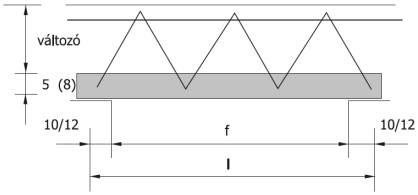


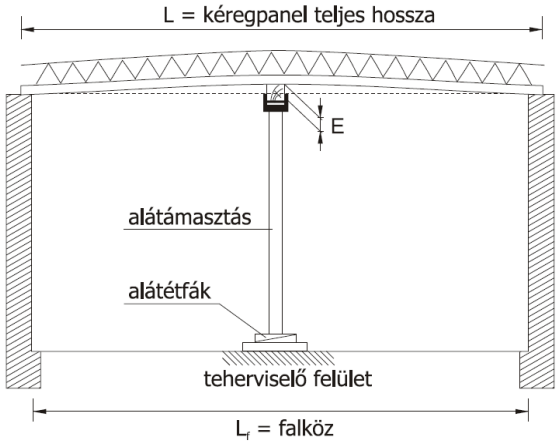
- PPB floor (prestressed, partially pre-fabricated)
  attributes: 14 different kinds of module combinations, 3 filler blocks types (ceramic, concrete, durisol), needs cross-ribs and temporary support

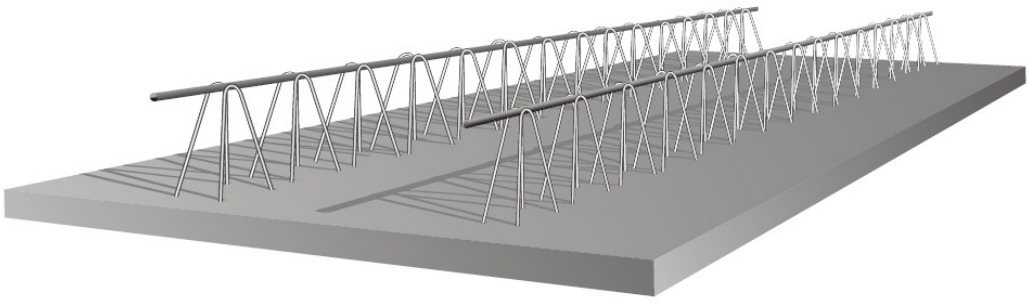


- <u>MESTER floor</u> (soft steel) from LEIER
  attributes: concrete casings, steel strips for upper rip reinforcement, comprehensive system, needs cross-ribs and temporary support
- <u>PLANK floors</u> (cylindrical hollows, pre stressed)
- <u>Prefabricated formwork panel (centering)</u> l_0= 2,4-12 m
  attributes: unifies the advantages of beam and plank type floors, may be built quickly, no forming required, temporary suppor required, possible inlays, possible unilateral load bearing reinforcement









- A sensitive area of FLOORS is the connection to ring beam, lintels, balconies, slabs etc. due to unwanted heat bridge effects: current energy saving requirements demand the elimination of HEAT BRIDGES!
  <u>possible SOLUTIONS are:</u>
  - additional, external insulation placed into the forms (at crowns and transoms)
  - outside slabs and beams — all-around insulation (not practical)
    heat bridge gap tools (load bearing – not optimal)
    a design that already places gaps into sensitive heat bridge areas (non load-bearing)
  - <u>HEAT BRIDGE GAP basic idea of operation</u>
    (ISO-TRAGEN, HÖCH, BAU-HAUS type products)
    - stainless steel reinforcement installed into hard foam insulation (stainless steel required because of condensation)
    - carrying of tension and pressure forces as well as tearing
    - 7-10 cm thick, 10-60cm wide elements
- <u>floor construction stages</u>
  - transportation
  - temporary support installation
  - placement of beam units (balconies, shafts, etc.)
  - surmounting (over-rising)
  - filler blocks are put in place (ceramic, concrete etc.)
  - placement of steel upper reinforcements (eg. steel mesh)
  - placement of beam conection steel reinforcement
  - pouring of the concrete
  - after treatment
  - support removal

- <u>Main rules at arranging floor constructions:</u>
  - fulfill the average load bearing requirements (depending on the span)
  - joist must not be in the chimney wall (timber 12 cm distance from chimney)
  - Minimum ring beam cross dimension 12 cm
  - special loads (For i. partition wall, monolithic area) → arrangement (double, triple joists)
  - **cross ribs to avoid buckling**
  - changing of span
  - technology of balconies → **monolithic** (frost-resistance)
  - support of balconies → **cantilever**
    - **1 Self supporting** → parallel with joists, or ring beam (or heat-bridge-gap)
    - **2 partly** → parallel or perpendicular with joists, or ring beam, (or heat-bridge-gap)
    - **3 not self supporting** → anywhere