

03

A CONSTRUCTION MANUAL ON HOW TO BUILD A **ROWLOCK** BOND HOUSE

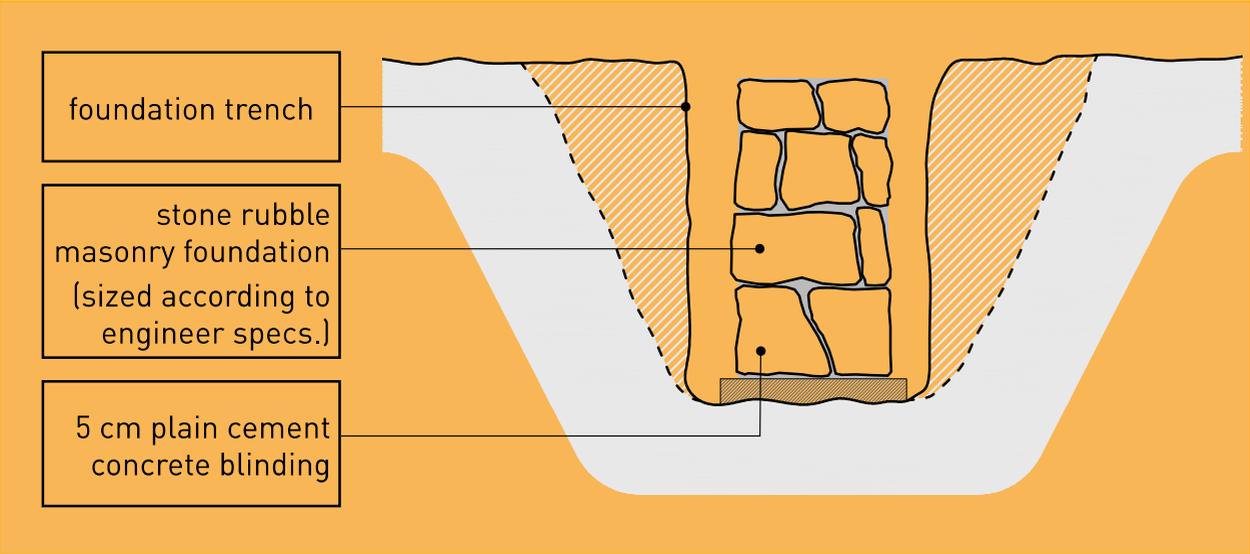
RowLock Bond
CONSTRUCTION PROCESS

THE ROWLOCK BOND SYSTEM

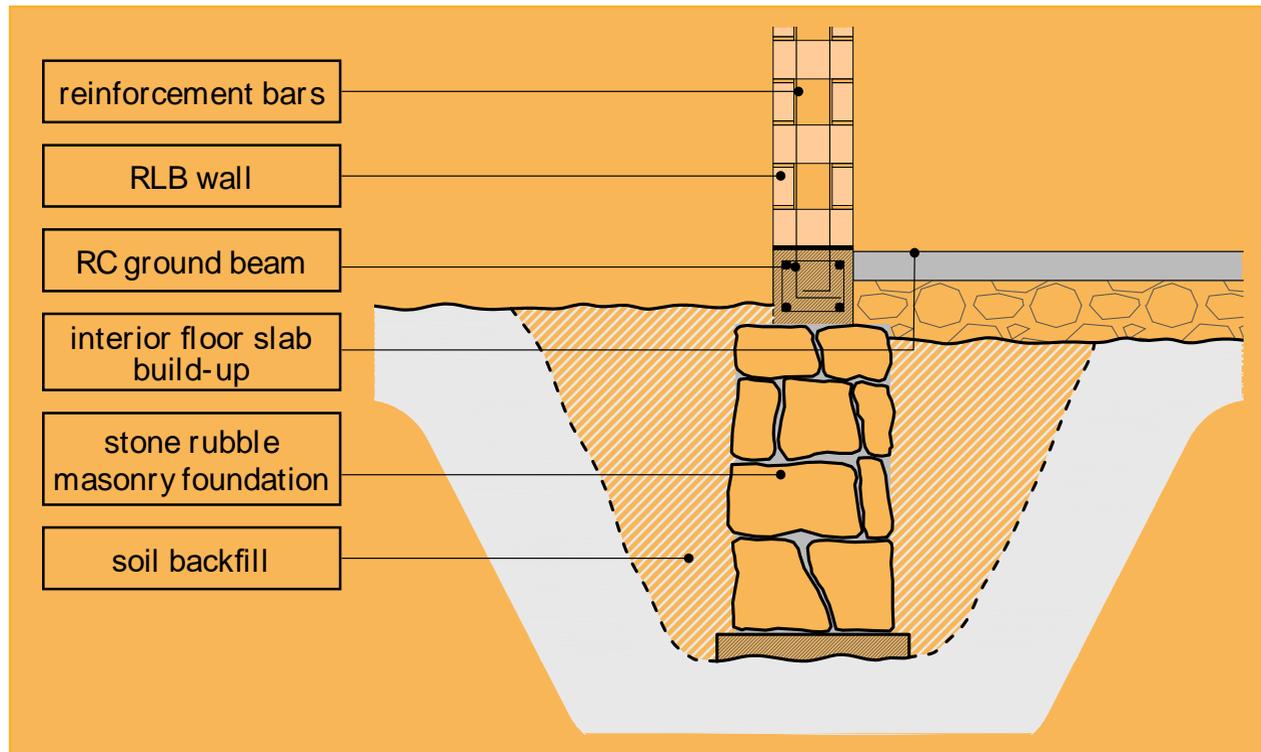
- 1 The foundations
- 2 The ground beam
- 3 The RLB brick wall construction
- 4 The reinforced concrete frame
- 5 The suspended slabs
- 6 The MEP
- 5 The roof



THE FOUNDATION



THE GROUND BEAM



THE RLB Brick Wall CONSTRUCTION



THE RLB Brick Wall CONSTRUCTION



THE RLB Brick Wall CONSTRUCTION



THE RLB Brick Wall CONSTRUCTION



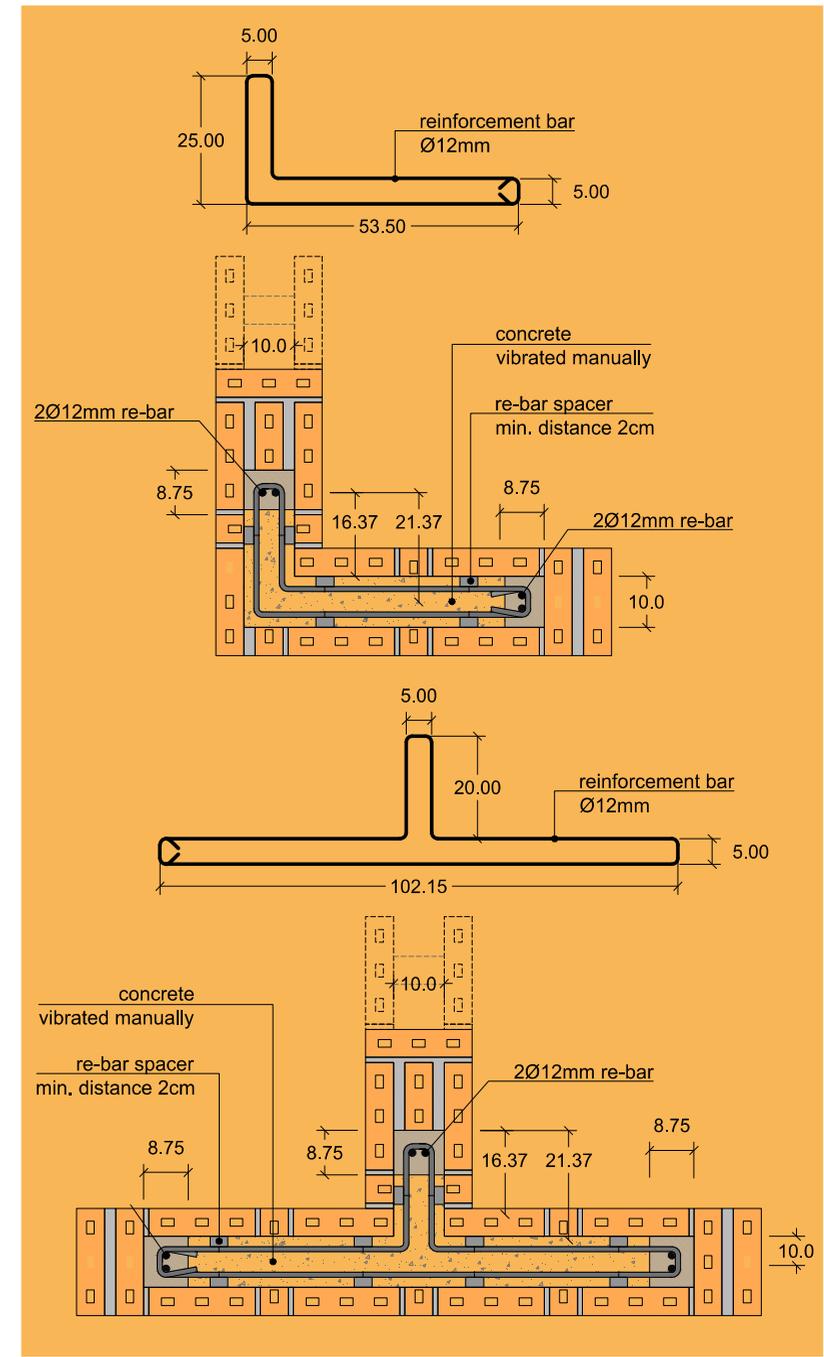
THE RLB Brick Wall CONSTRUCTION



THE REINFORCED CONCRETE Frame



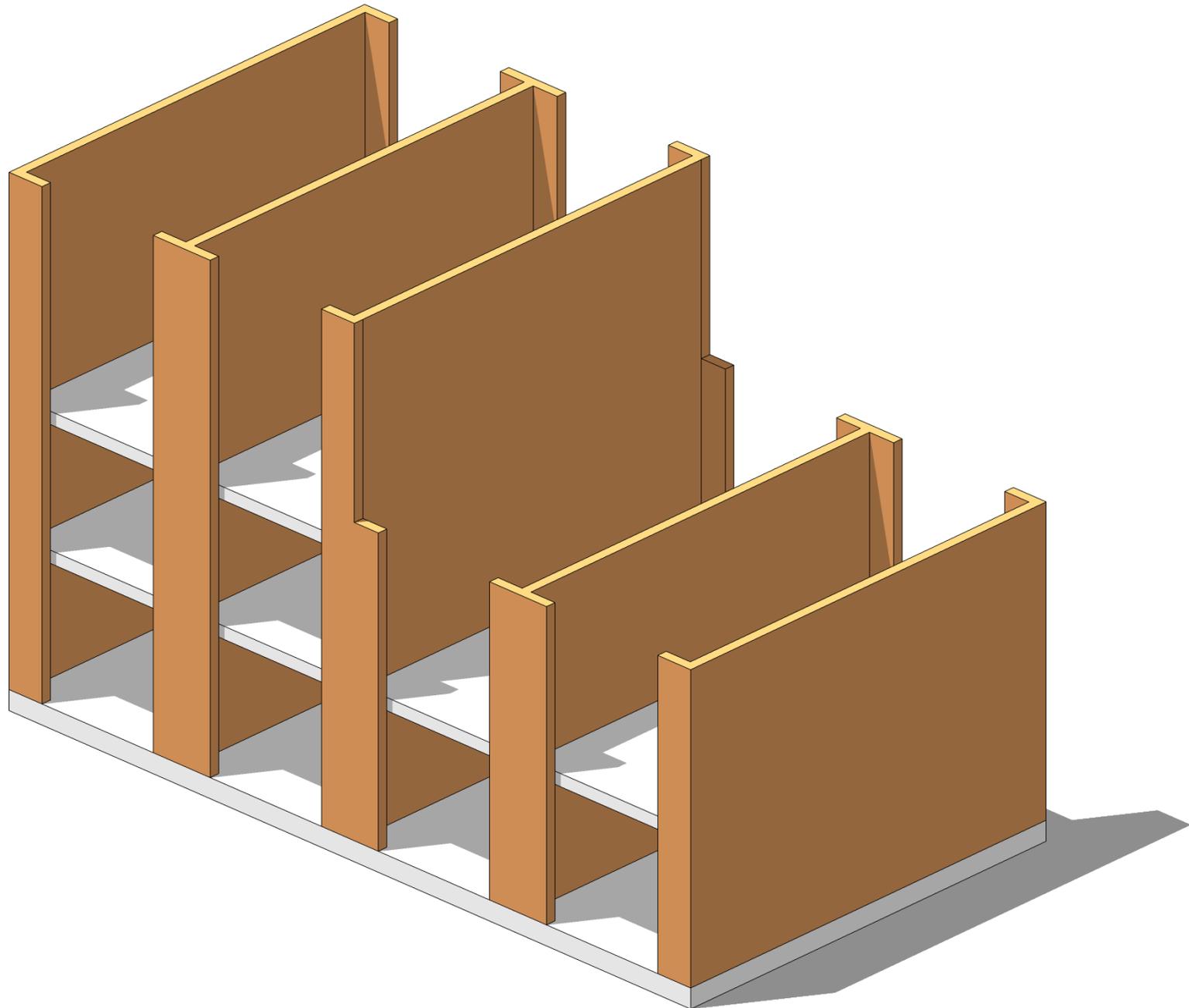
THE REINFORCED CONCRETE Frame



THE REINFORCED CONCRETE Frame



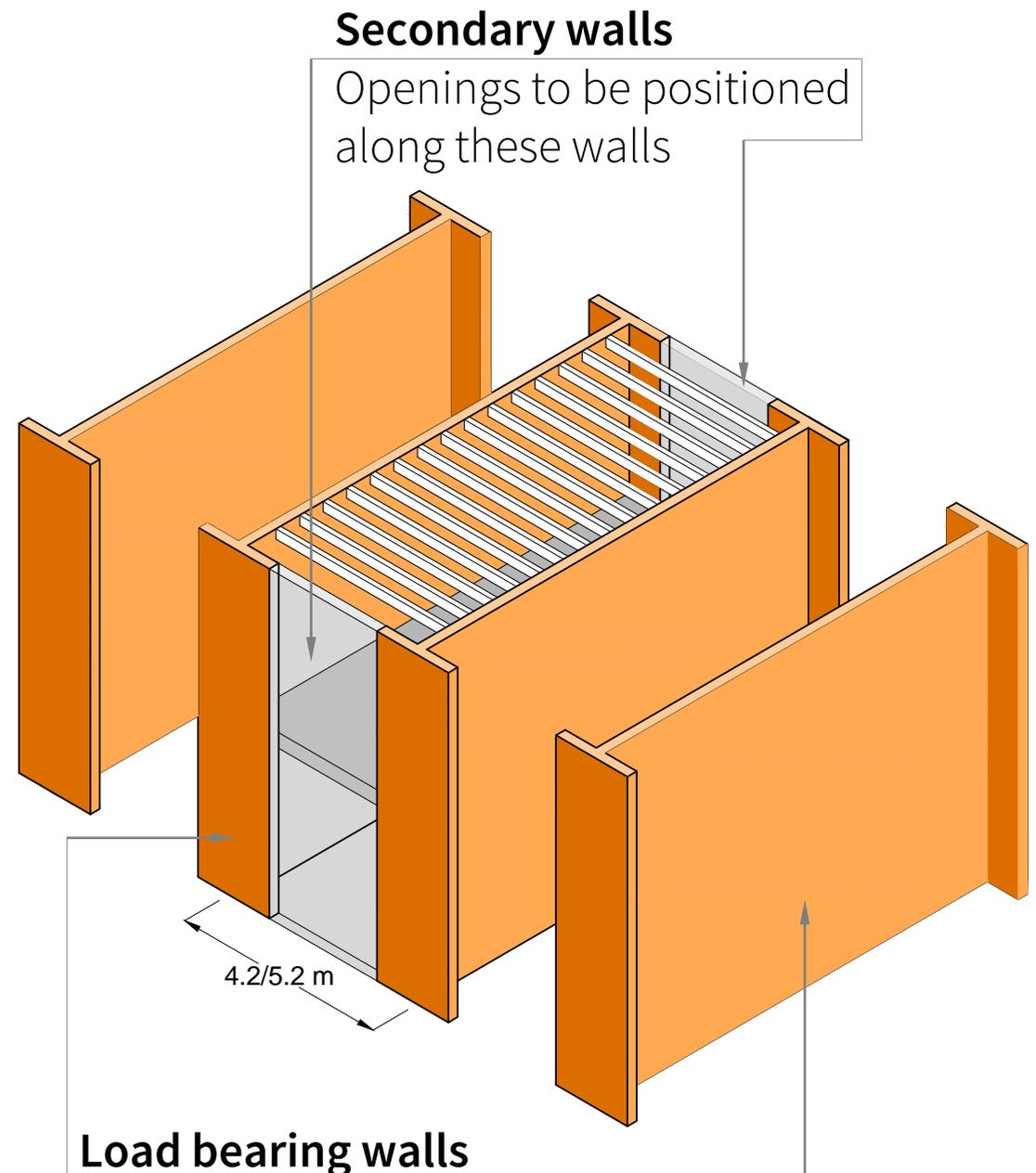
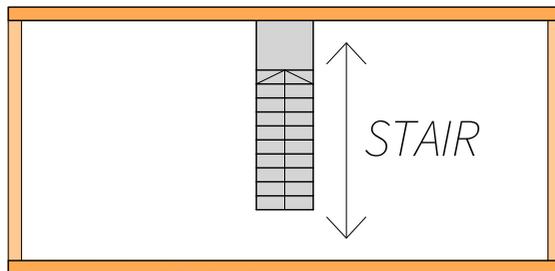
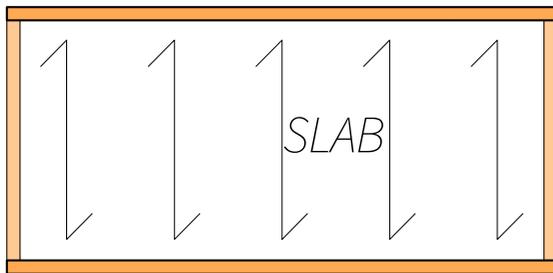
THE LOAD BEARING WALLS



THE **LOAD BEARING WALLS**

The load bearing walls are facing each other and support the load of the **floors** and **roof**

- the floor structure covers the **shortest span**
- the stair spans across and is supported by the **load bearing walls**

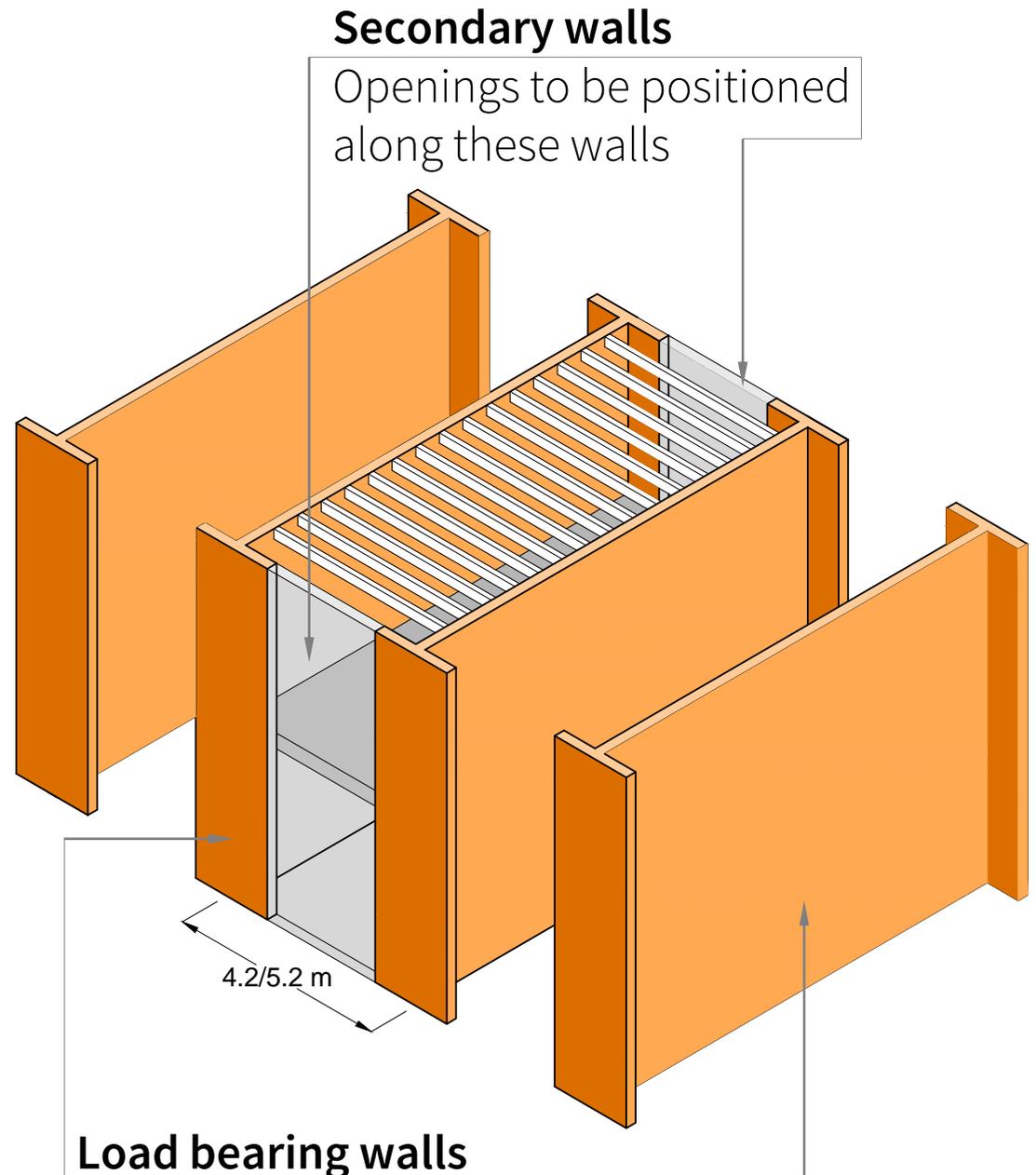
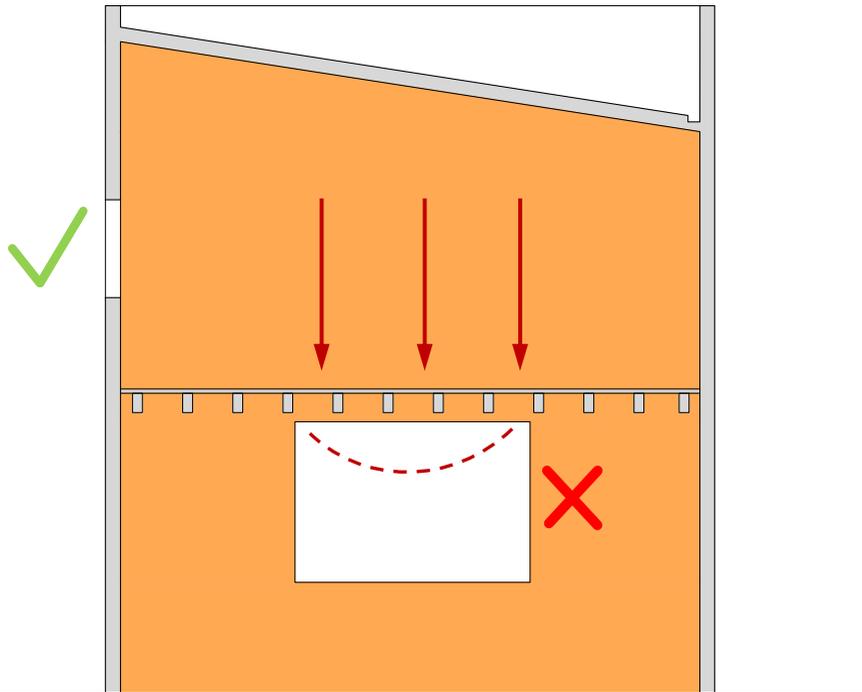


Load bearing walls

Few to no openings to preserve general stability
Floor structures anchor to these walls

THE LOAD BEARING WALLS

Openings along the load bearing walls:
more expensive \$\$\$ > extra lintels required
reduce structural stability

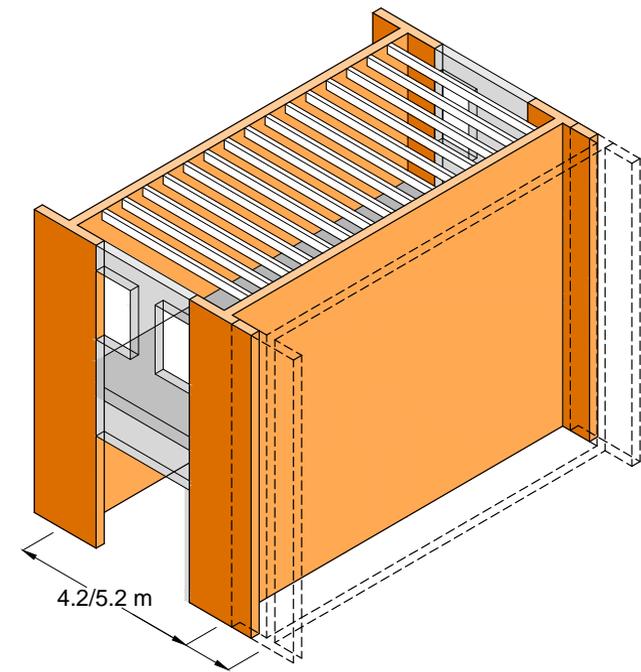
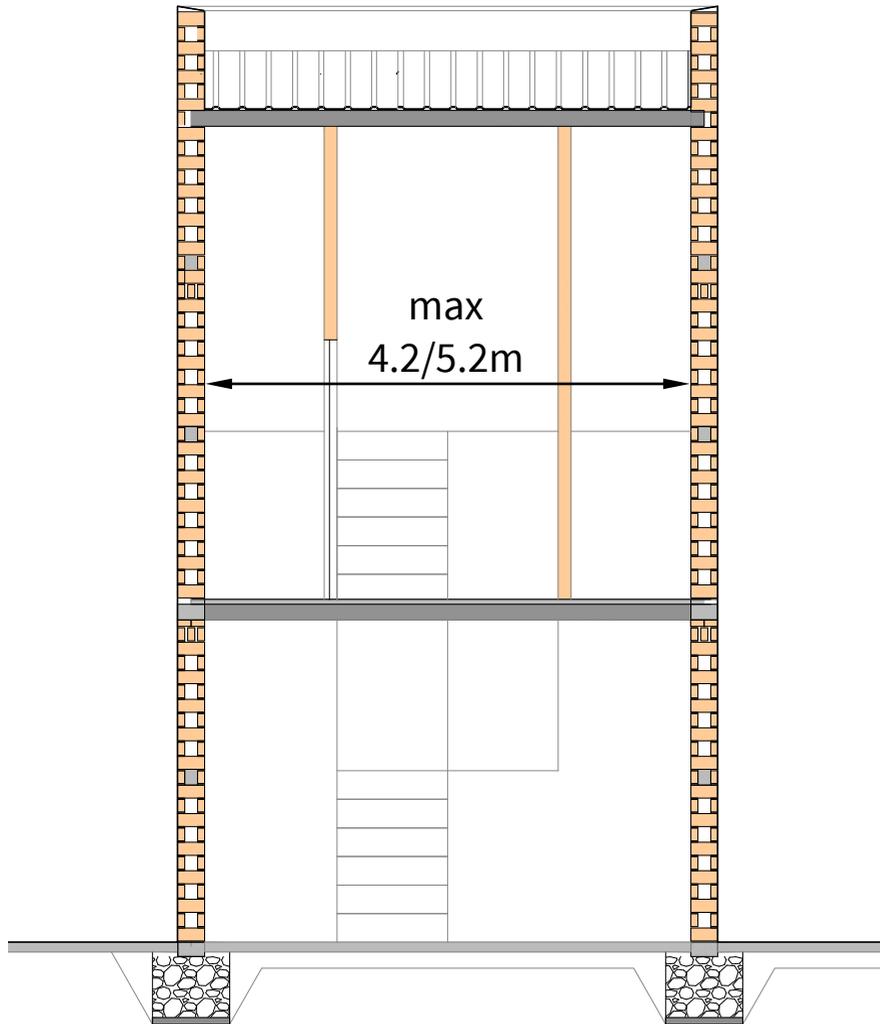


Load bearing walls

Few to no openings to preserve general stability
Floor structures anchor to these walls

THE **MAXIMUM SPAN**

between load bearing walls



The maximum span allowed between walls varies according to the selected flooring technology

TIMBER floor

Variable span according to type and size

MaxSpan floor, 12cm

span **4,20m**

MaxSpan floor, 16cm

span **5,20m**

THE FLOORS

timber floor

SYSTEM:
TIMBER BEAMS

+

TONGUE and GROOVE FLOORING

STRUCTURE:

typical beam size

H: 16cm - W: 6cm - L: 3.8/4.5m

ADVANTAGES compared to concrete:

Cost effective and easy to build

Good para-seismic properties (lightweight)

Flexible (modifications possible anytime)

DISADVANTAGES compared to concrete:

Supply challenges Not sufficiently dry

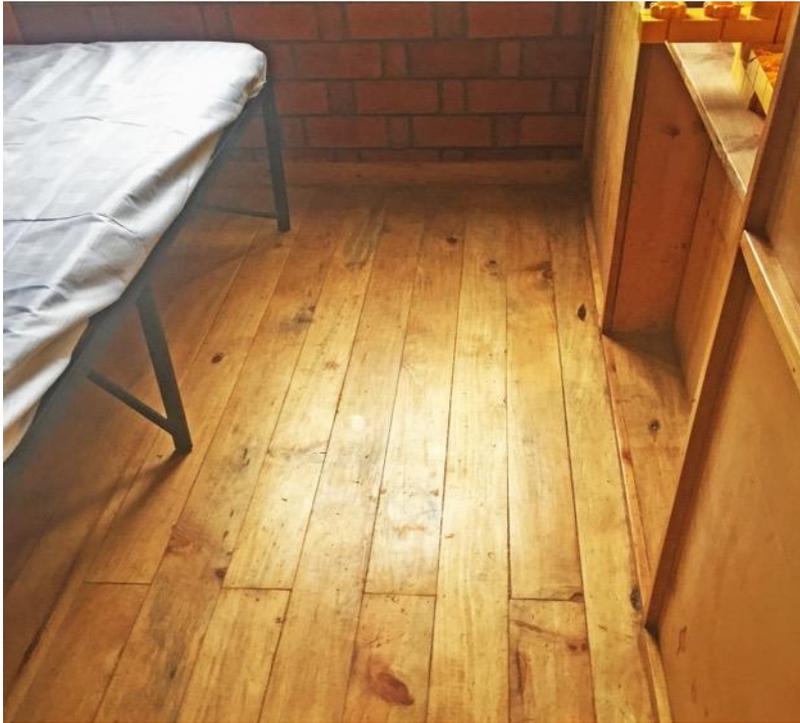
Size constraints > limited span

Less fire resistant



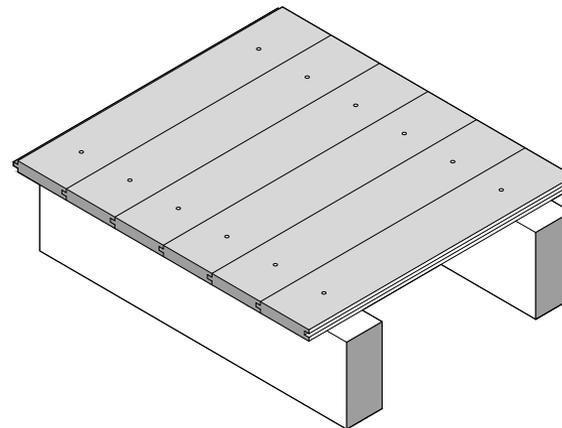
THE FLOORS

timber floor



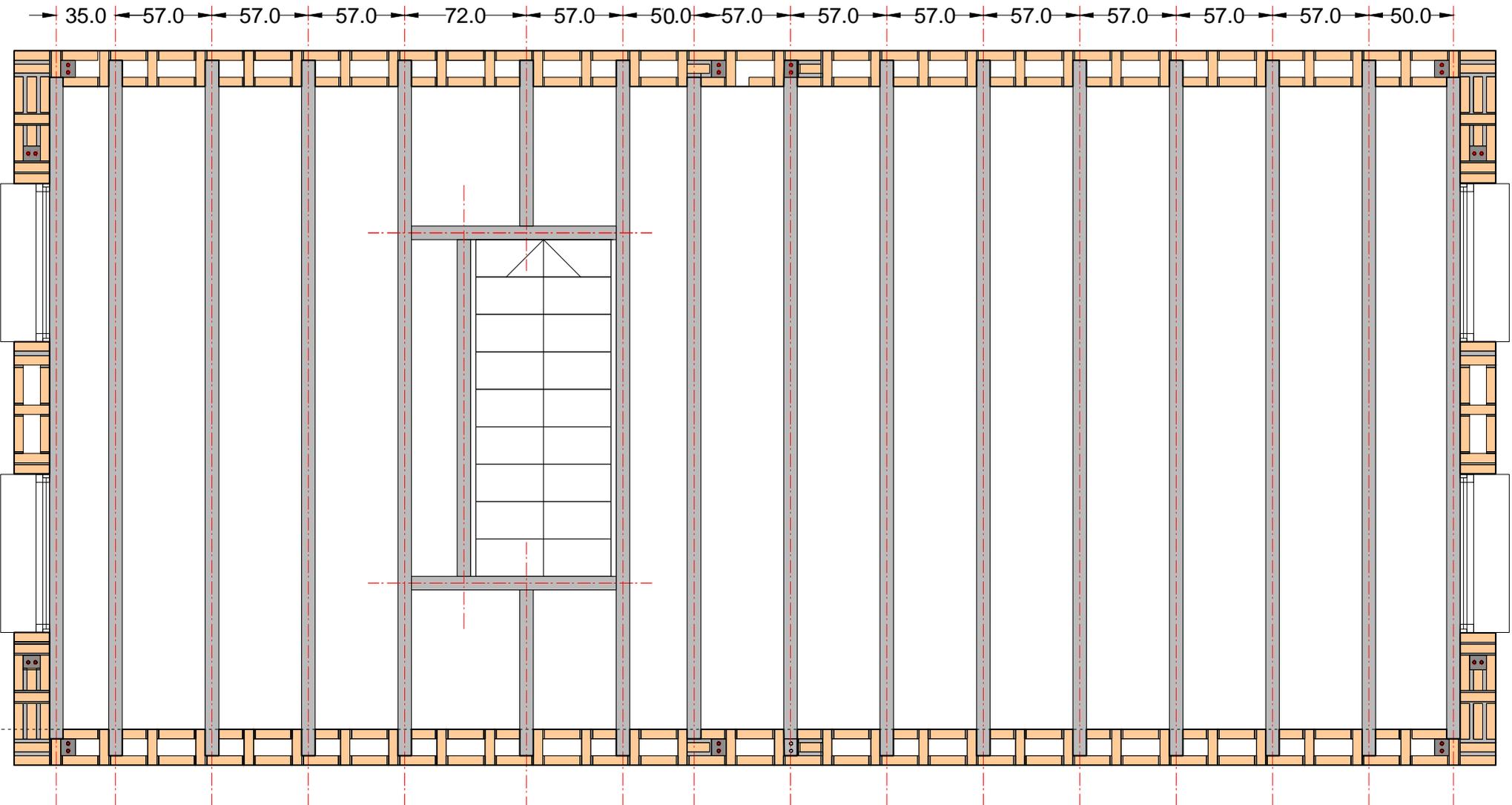
T&G FLOOR: MAIN FEATURES

- Cheap and beautiful
- Surface to be treated with care
- Less durable/sound insulating than Maxspan (used best for slabs within unit/duplex)
- Suitable only for timber interior partitions



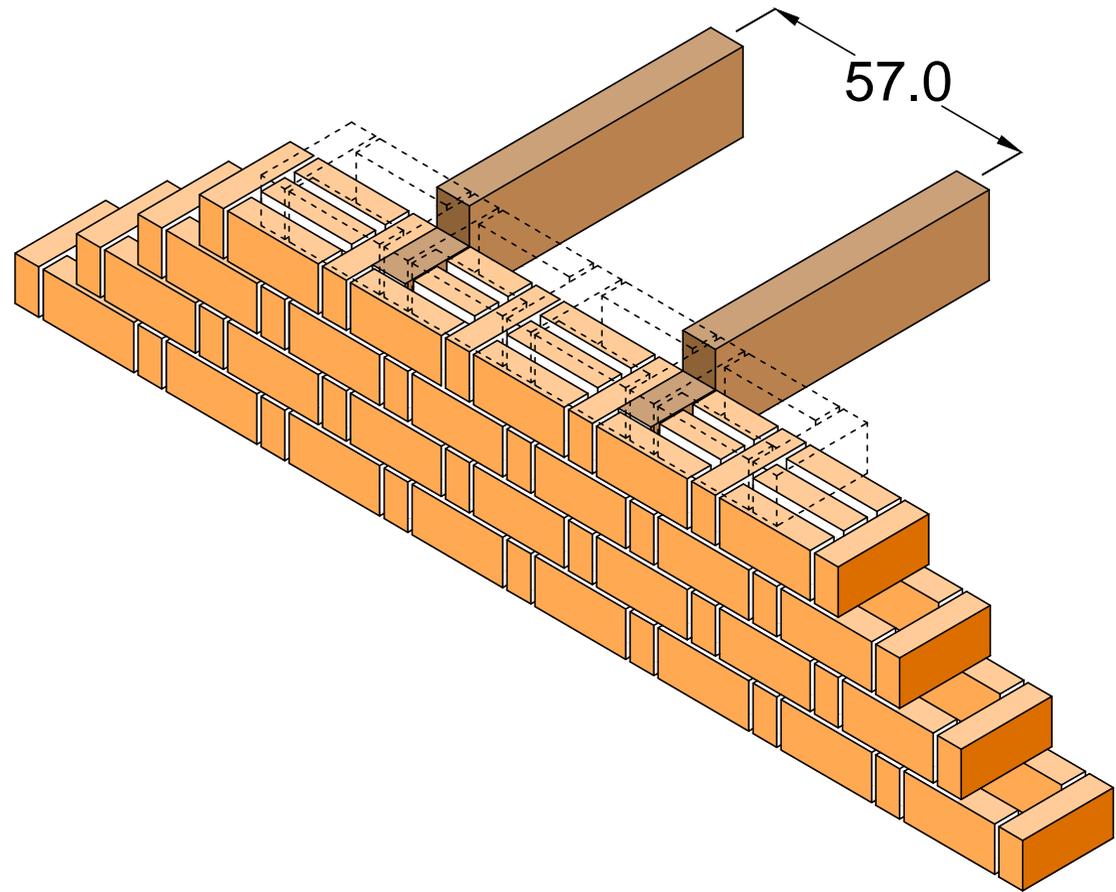
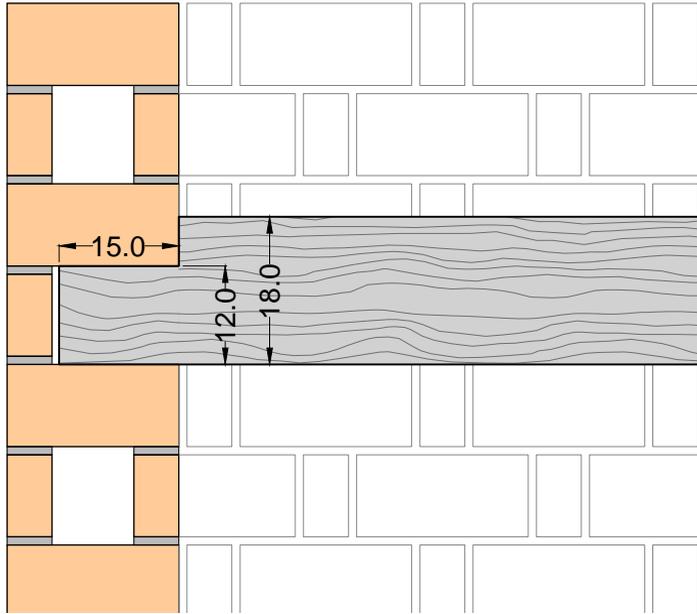
THE FLOORS

timber floor



THE FLOORS

timber floor



THE FLOORS

Hollow clay-block concrete floor (Maxspan)

The hollow clay block slab is a **lightweight** technology that uses a system of precast beams and Maxspan hollow clay blocks to create a **quick semi-dry floor**

MAJOR ADVANTAGES:

- Weight reduction by removing parts of solid concrete and replacing it with hollow blocks
- Suitable for medium spans 4/5m with moderate life load (mainly residential)
- Cheaper than a solid RCC slab (for spans between 4 and 5 meters)
- Good sound proofing and excellent fire resistance

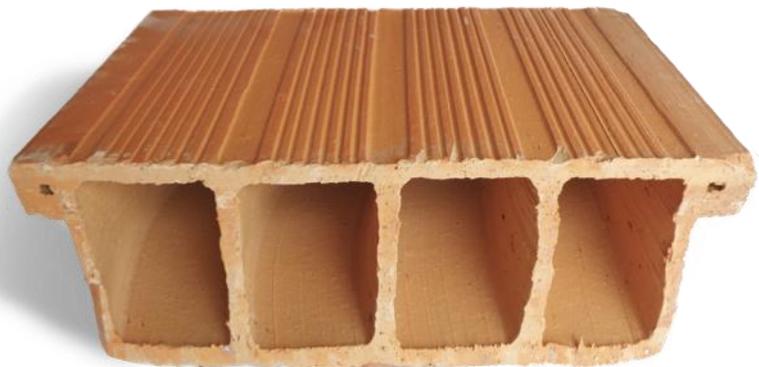


THE FLOORS

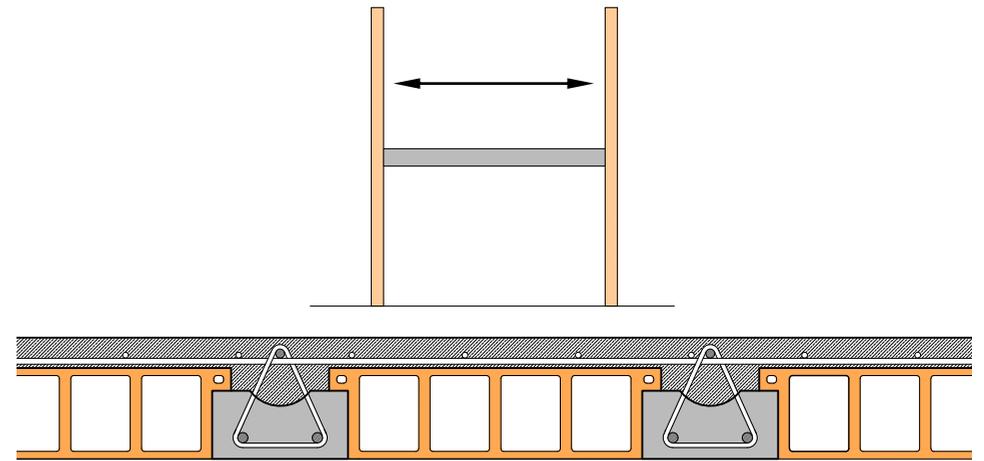
Max Span floor



12cm

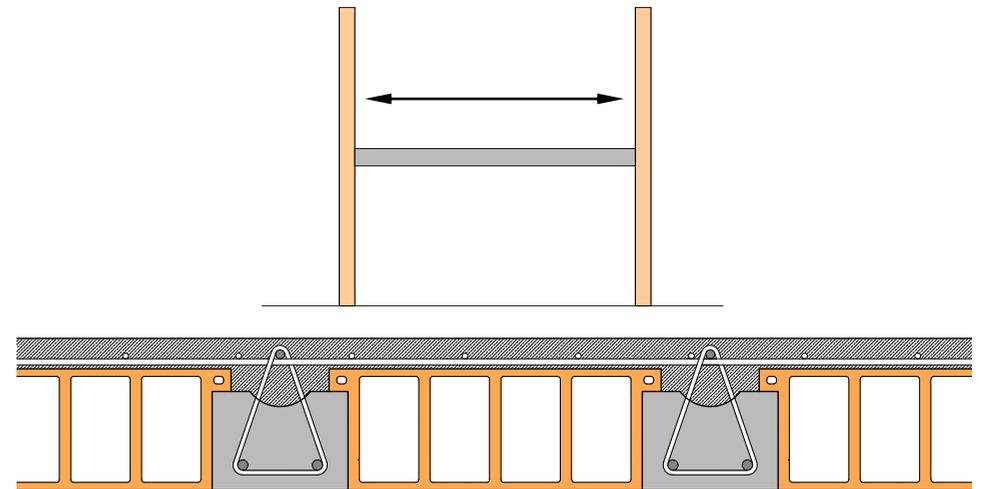


16cm



MaxSpan floor, 12cm

maximum span **4,20m**



MaxSpan floor, 16cm

Maximum span **5,20m**

THE FLOORS

*Max Span floor
- prefab*



THE FLOORS

Max Span floor - prefab



THE FLOORS

Max Span floor – in situ



THE FLOORS

Max Span floor – in situ



THE FLOORS

Max Span floor



THE FLOORS

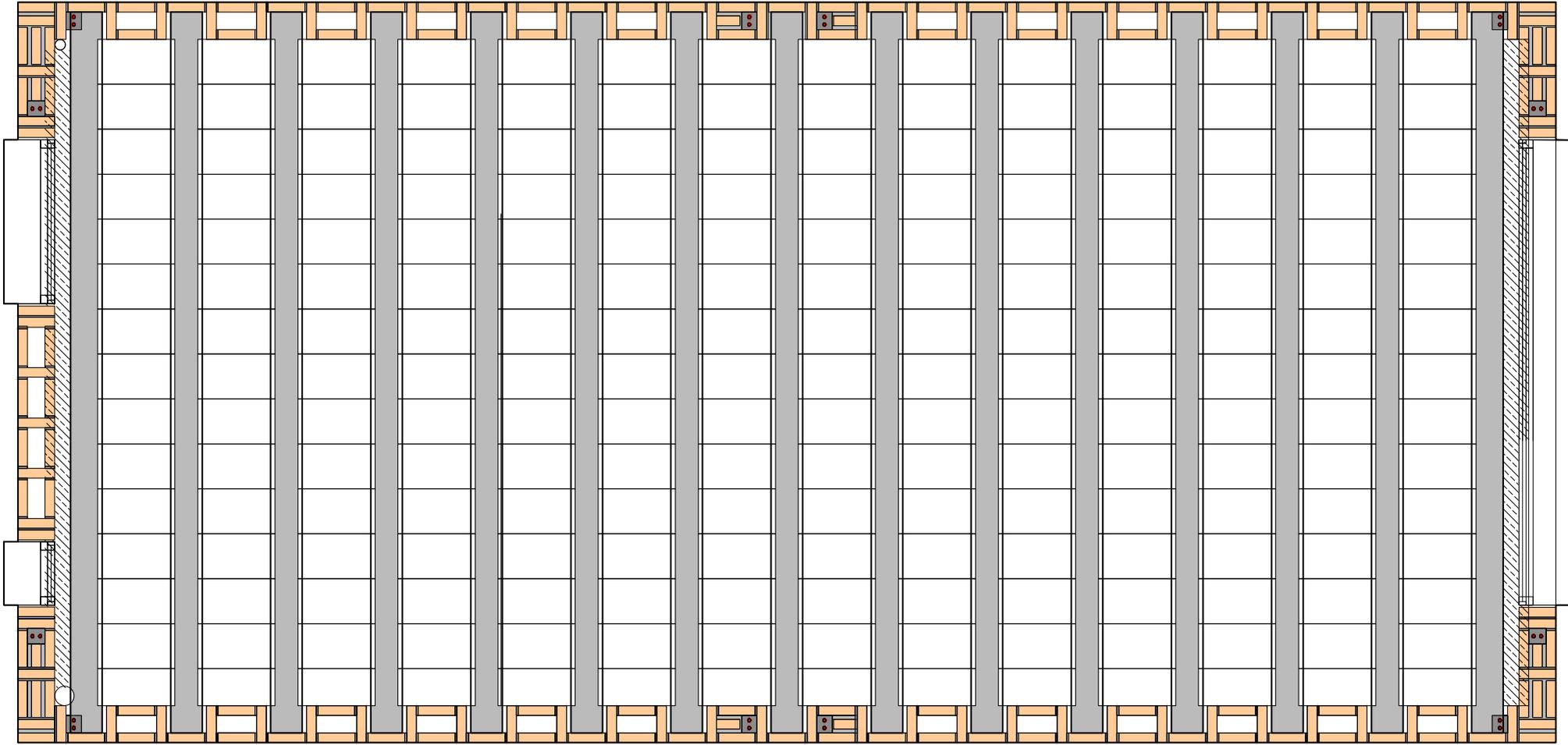
Max Span floor - finishing



THE FLOORS

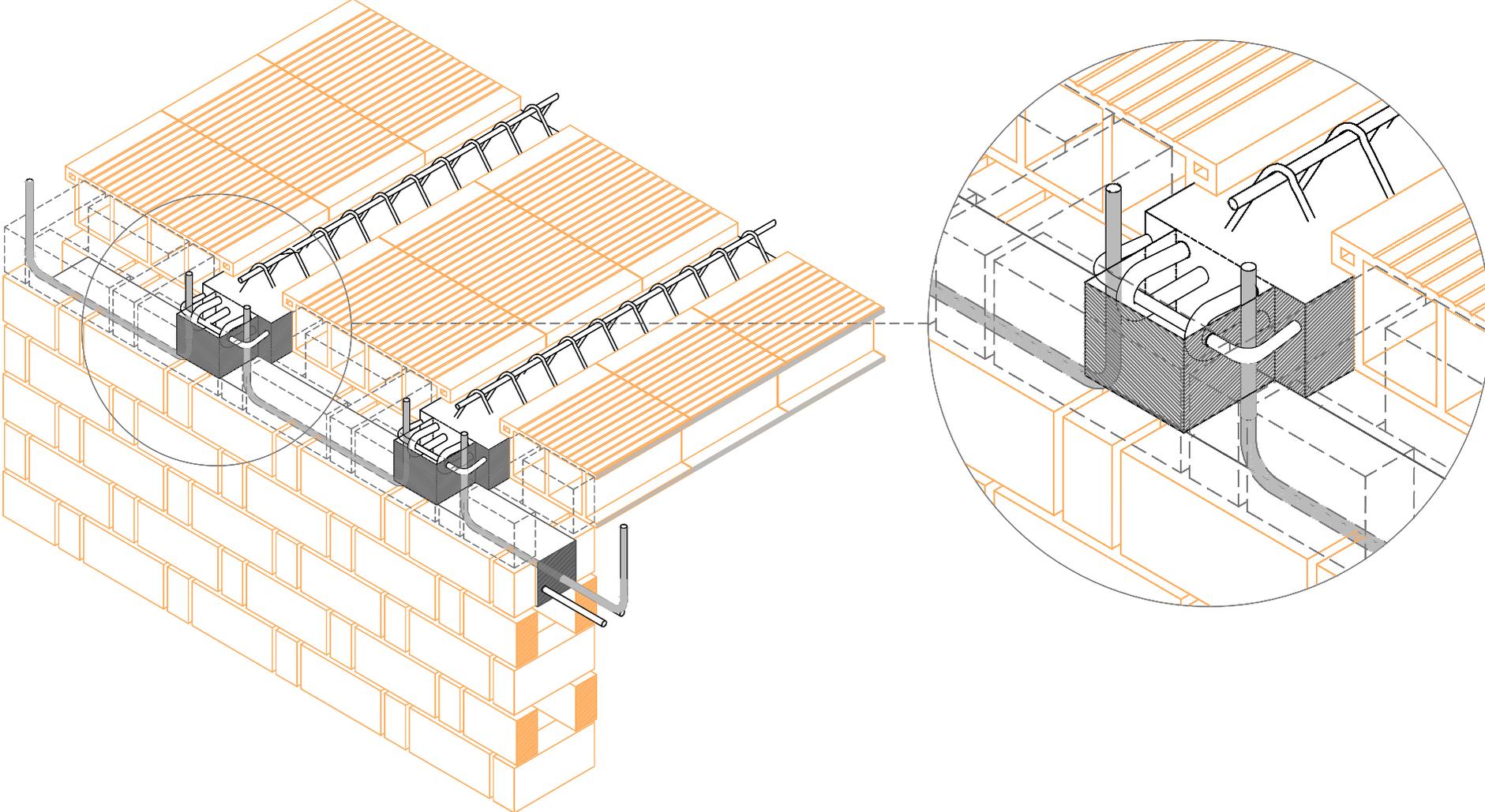
Max Span floor

← 57.0 → 57.0 → 57.0 → 57.0 → 57.0 → 57.0 → 57.0 → 57.0 → 57.0 → 57.0 → 57.0 → 57.0 → 57.0 → 57.0 → 57.0 →



THE FLOORS

Max Span floor



THE FLOORS

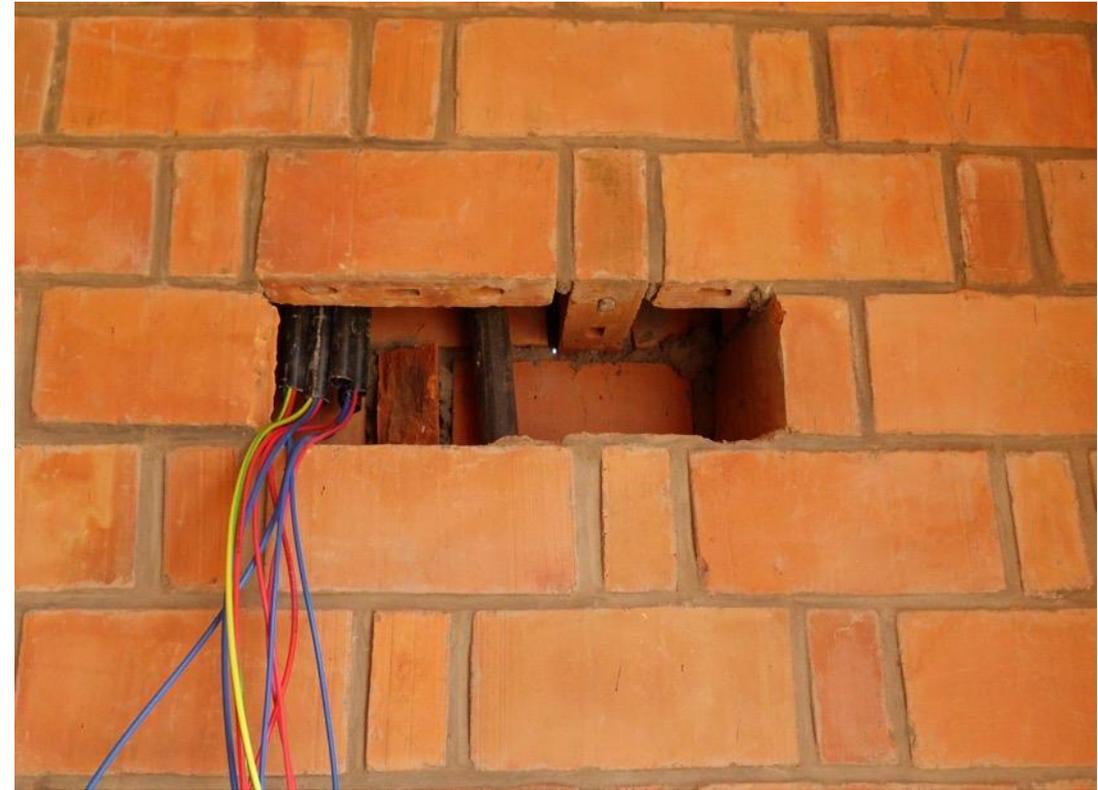
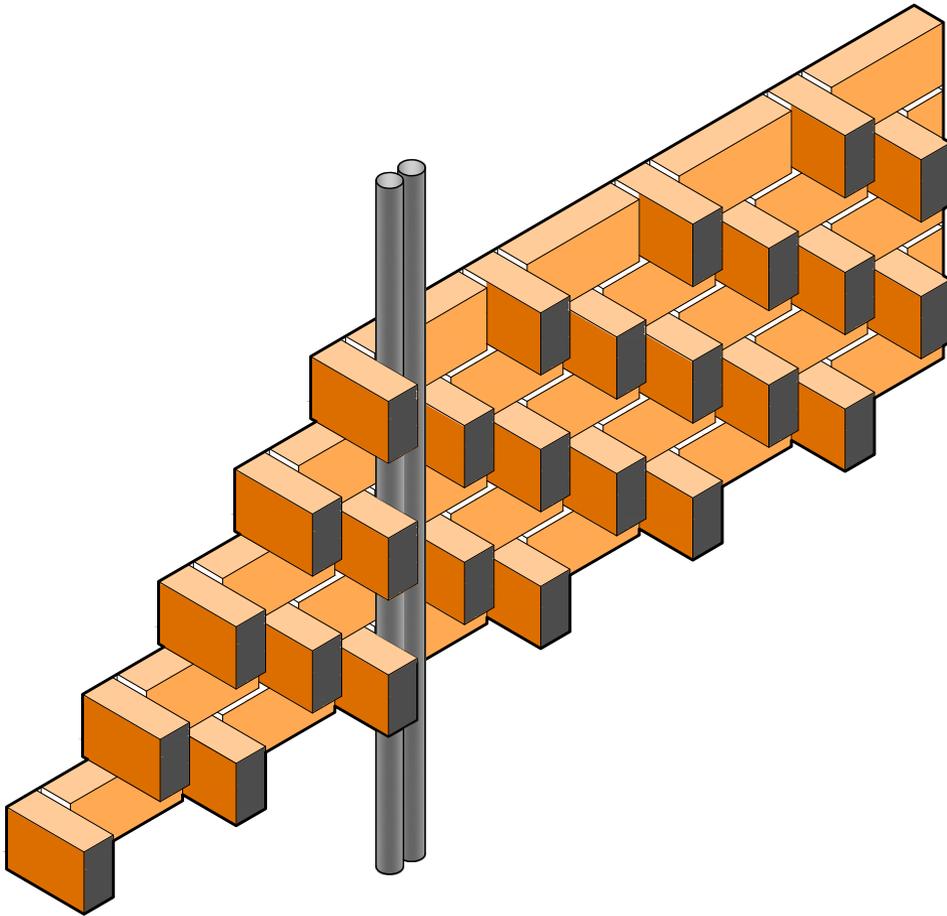
Max Span floor



THE Mechanical-Electrical-Plumbing INTEGRATION

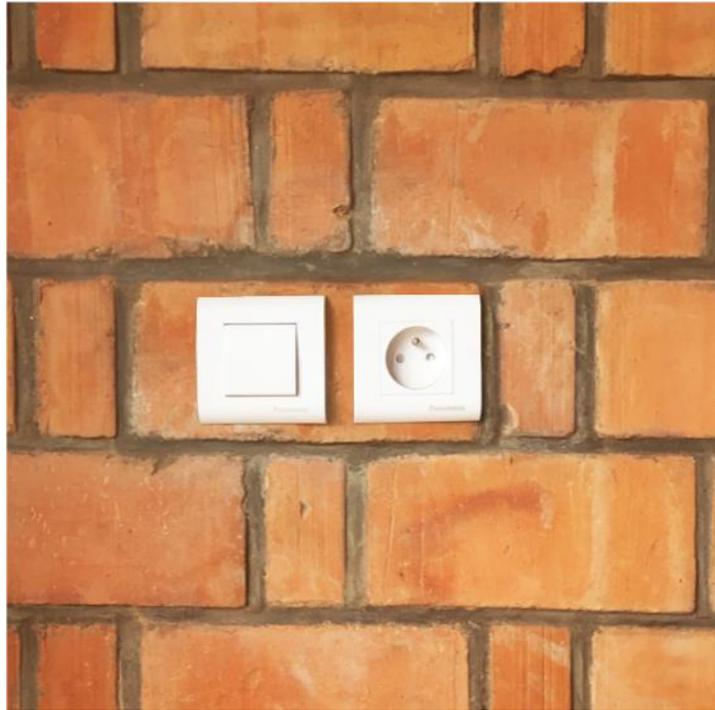
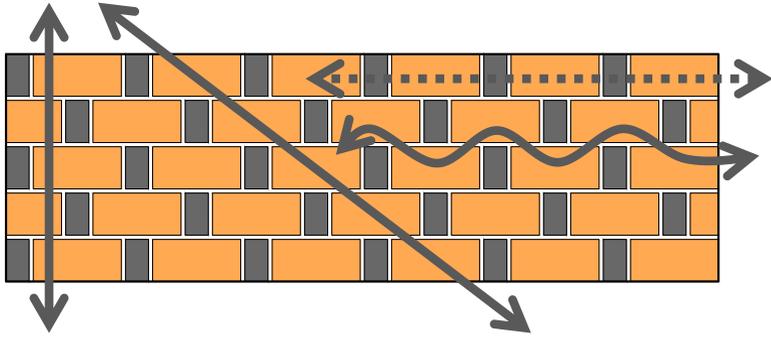
VERTICAL
HORIZONTAL
DIAGONAL

MEP CONNECTIONS



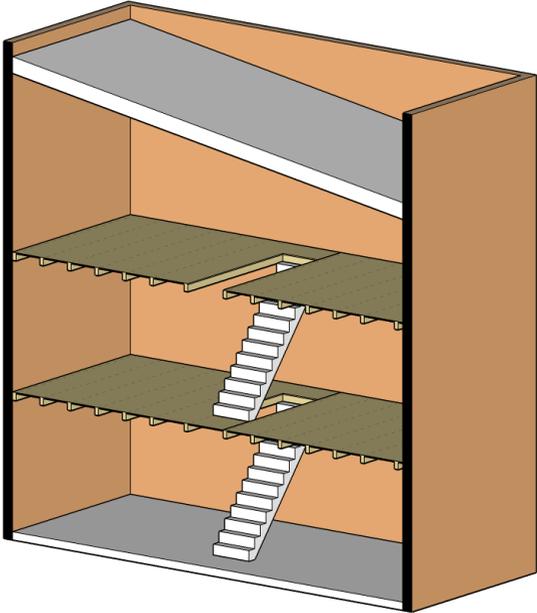
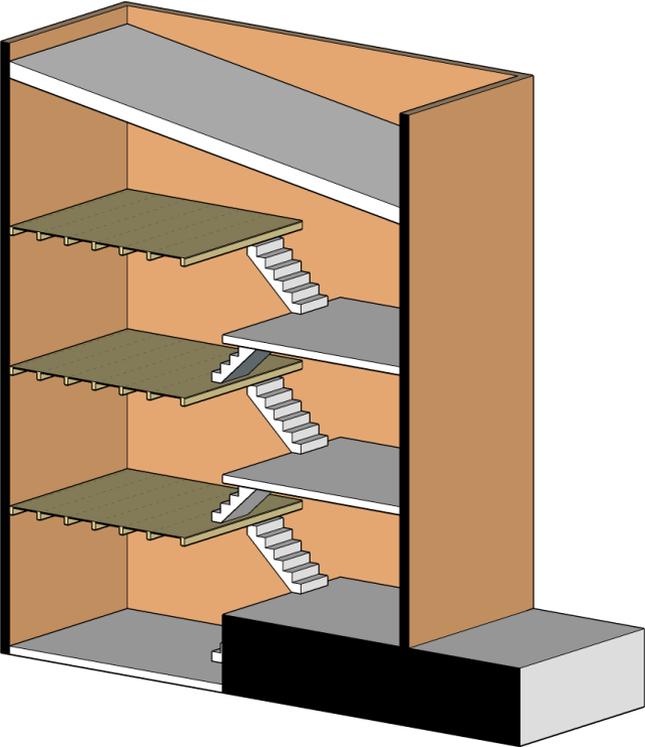
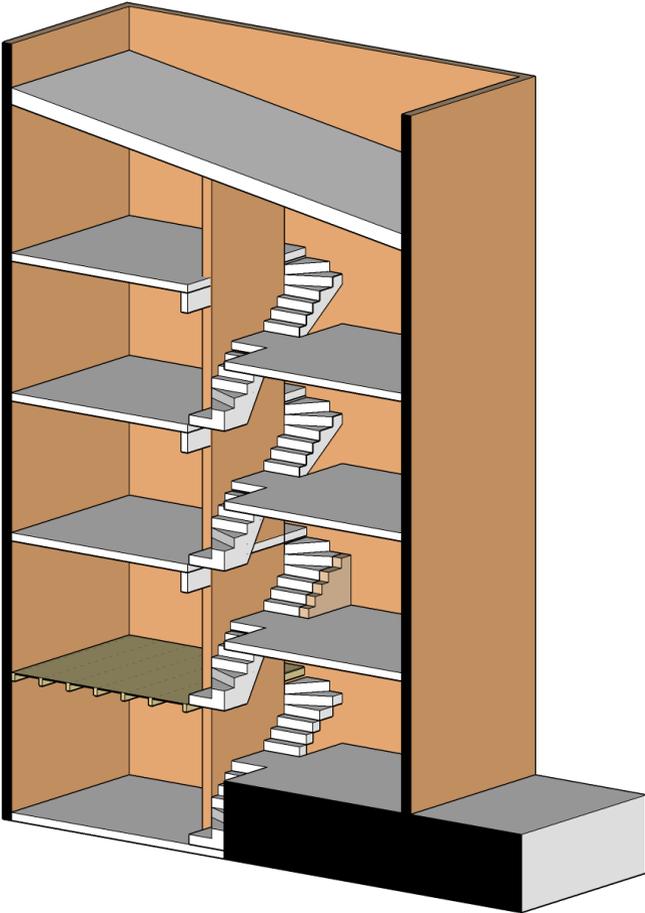
- > **EASY** integration when planned in advance
- > Still possible to **RETROFIT** if not planned

THE Mechanical-Electrical-Plumbing INTEGRATION



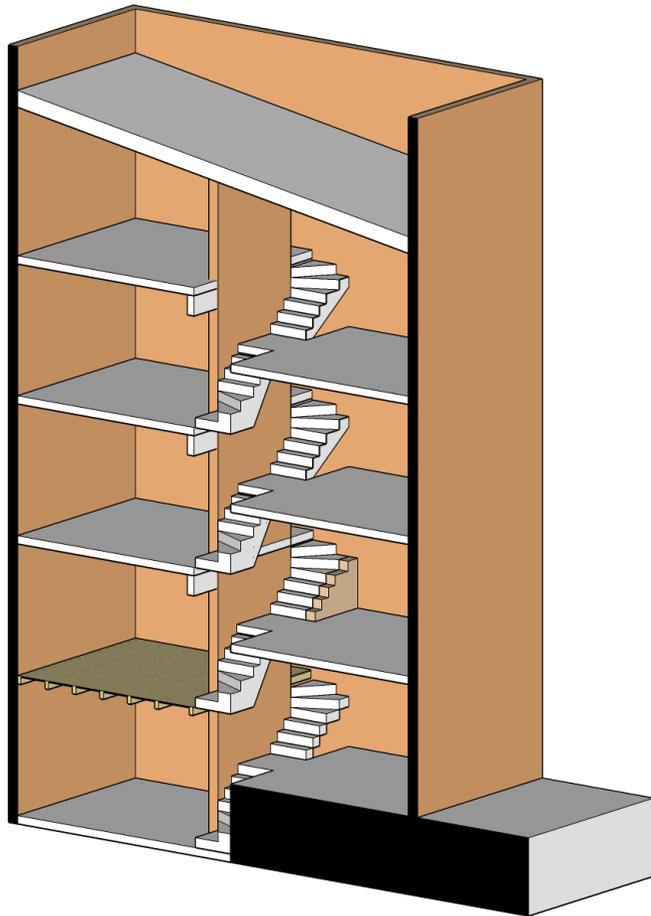
THE STAIRS

RLB typical construction details



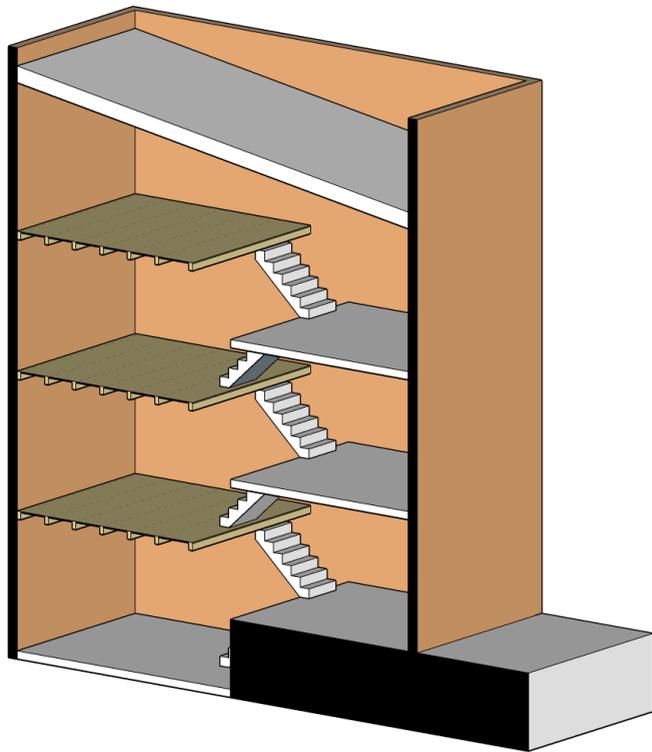
THE STAIRS

RLB typical construction details



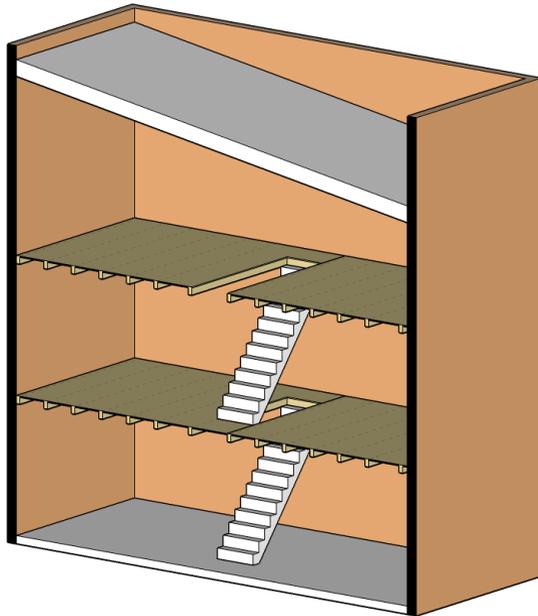
THE DETAILS

RLB typical construction details



THE STAIRS

RLB typical construction details – stairs





THE ROOF



THE **RLB CONSTRUCTION PROCESS**

Resources website

www.madeingreatlakes.com



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development
and Cooperation SDC

skat Swiss Resource Centre and
Consultancies for Development

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Climate Responsive COnstruction