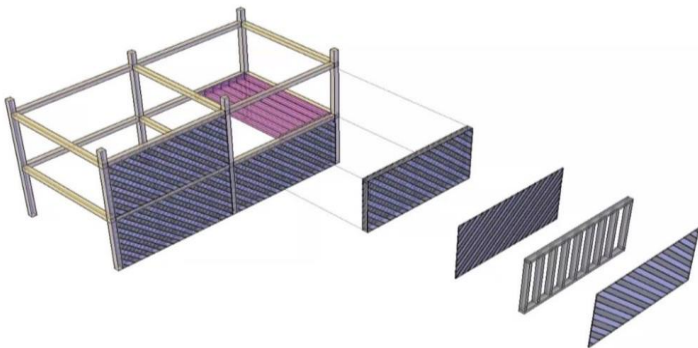


Case Study Post-and-Beam for DfA and DfD/R in Cuenca, Spain

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Existing baseline design and design criteria

Semi-detached two-storey residential building intended for a single family. Designed for symmetric row repetition, for this case study it is planed to execute two rows of 20 houses each with a ground surface per building of approximately 81 m²

Post-and-beam for DfA and DfD/R

Post-and-beam main structure is combined with a detachable panels system that grant the future adaptability of the house spaces.
All elements are cut and performed by numeric control cut machines and are used wood-to-wood traditional connections for easy installation and disassembling.
Wooden and steel screws are used to ensure the connections as required.



Post-and-beam house under construction in Barahona (Guadalajara) Novadomus Hábitat

SUSTAINABILITY CRITERIA
“Zero-mile” high grade materials
Salzmann pine, main local species
Trend to minimize the quantity of adhesive
High energy performance, energy efficiency near to Passivhaus

CONSTRUCTION CRITERIA
Sawn timber structure elements
Wood-to-wood traditional connections
Based on traditional post-and-beam system
Factory manufactured. Quick and easy in-situ assembly
Standardized as possible (Wall, floor and roof panels)

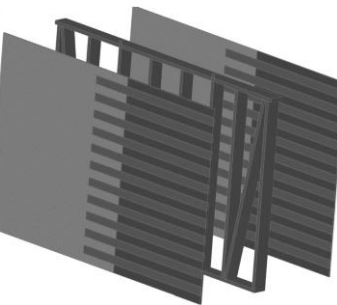
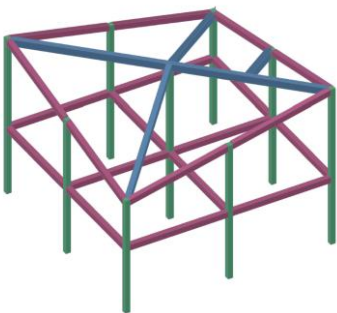
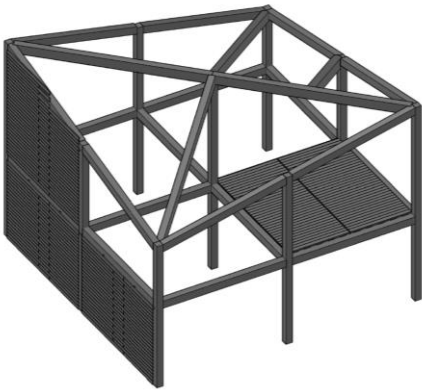
DISASSEMBLING CRITERIA
Industrial deconstruction to raw materials
Avoid steel-nails in connections as possible
Standard panels designed to be moved without removing any structural element
Materials and construction systems of choice allow easier dissassembling

- 🌿 **Obstacles to DfA**
- Storey number conditioned on the first structural pattern
 - Some of the standard panels grant the global stability of the structure and could not be easily detached
 - Sawn timber use results in dimensional stability and geometry issues

- 🌿 **Obstacles to DfD/R**
- Post-and-beam traditional system precludes deconstruction and pre-industrialization



Building location



- 🌿 **Improvements to DfA**
- Crossover between systems supposes reaching both systems advantages
 - Wood-to-wood traditional connections enables an easier assembling
- 🌿 **Improvements to DfD/R**
- Wooden nails used instead of steel common nails
 - Industrial deconstruction speeds up disassembling work in-situ

POST-AND-BEAM	CROSS-SECTION
POSTS	200 x 200 mm ²
BEAMS	200 x 240 mm ²
RIDGE BEAMS	200 x 300 mm ²

FLOOR PANELS	CROSS-SECTION
PLATES	40 x 200 mm ²
T-JOISTS	40 x 200 mm ² (BOTH PIECES)

WALL PANELS	CROSS-SECTION
TOP PLATE/SOLE PLATE	40 x 200 mm ²
STUDS	40 x 200 mm ²



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