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MODULAR

Offsite Modular Construction Faster, Better, Cheaper & Greener

SUBMISSION of Evidence by Carl Henry Modular to
The House of Lords Science and Technology Select Committee
under the Chairmanship of Lord Patel

Regarding an inquiry into Offsite Manufacture for Construction

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NB: Questions posed by the committee are ***emboldened & Italicised***.

Perceived advantages of offsite manufacture for construction

1. What are the opportunities offered by offsite manufacture for construction? What are the likely drawbacks? What factors are likely to influence clients, architects, design engineers, contractors and the supply chain in deciding whether to choose offsite manufacture?

- a. OPPORTUNITIES: “Deliverability”;
 - i. Affordable residential housing
 - ii. Filling the UK housing shortage needs
 - iii. Providing jobs in highest areas of unemployment
 - iv. Positioning offsite factories where there are skilled people
 - v. Better comfortable working environment for employees
 - vi. Efficient production line techniques can be employed
 - vii. Develop efficiency by standardisation of many elements
 - viii. Robotics can be used to complete repetitive actions
 - ix. Potential to develop specialist factories as part of supply chain
 - x. Just-in-time delivery schedules can be employed for materials
 - xi. Bulk delivery of components and materials possible
 - xii. Reduction of pollution due to less transport movements
 - xiii. Factories can be positioned to take advantage of both road & rail
 - xiv. Intermodal transportation can be used by designing to ISO sizes
 - xv. Reduce negative impacts around building sites
 - xvi. Certainty of development completion timescales
 - xvii. Reduction of delays caused by bad weather
 - xviii. Ground works completed at the same time as the building is built
 - xix. Centralisation of components and materials
 - xx. Inclusion of more recyclable & sustainable materials such as steel
 - xxi. Opportunity to supply modules both B2B and directly B2C
 - xxii. Websites can be created where people can “design your own home” and a full quotation automatically created (excluding the cost of land) and payment taken.
 - xxiii. The cost of a modular home does not vary because of the geographic final location, the only geographic variable is the cost of land.

- b. DRAWBACKS: “Education”;
 - i. Resistance by traditional (House) builders
 - ii. Resistance by the brick & slate industries
 - iii. Acceptance by the public
 - iv. Acceptance by the mortgage market
 - v. Incorrect perception that this is lower quality construction
 - vi. Memories of post-war “prefab” housing.

2. It is often claimed that offsite manufacture can lead to;

- a. *lower costs, faster delivery and increased quality;*
- b. *increased productivity;*
- c. *improved health and safety;*
- d. *greater provision of new, affordable housing.*

What is the evidence for this?

- a. *lower costs, faster delivery and increased quality;* Generally through centralisation of labour and materials with reduced transportation of employees and materials. The key to faster delivery is that groundworks and the creation of the building take place in parallel resulting in a potential saving of 50% of the time required to complete. As all buildings are completed inside factories the conditions are totally controlled; heating, lighting and employee's facilities. With the availability of specialist equipment, leading materials available and production-line techniques the highest quality can be maintained.
- b. *increased productivity;* Due to the totally controlled working environment potential stoppages and downtime due to weather are eliminated also better working conditions leads to happier more productive workers.
- c. *improved health and safety;* Once again through the controlled working environments possible matters such as visibility is increased, errors caused by cold or wet hands avoided and systems and processes can be put in place more easily in a factory environment.
- d. *greater provision of new, affordable housing;* As our evidence is titled offsite modular construction of housing is: “Faster, Better, Cheaper & Greener!” Generally taking 50% of the time, Higher quality in structural and thermal qualities, due to time saved, transportation reductions, reduced financing periods and quicker delivery to the open market a minimum of 25% can be saved which can be ‘passed on’ to the open market & local government (Only land value will fluctuate around the country). Modular construction will allow a wider range of housing solutions, infilling on small sites (uneconomic for traditional builders), self supporting housing using air-rights (over shops, commercial buildings, carparks), both temporary and permanent housing

(Houses and flats) can be provided to suit special situations or local authority requirements. Land can be developed quickly and efficiently avoiding the requirement for land banking to create a “pipeline” of developable land.

Potential barriers to wider use of offsite manufacture

3. What are the drawbacks to offsite manufacture for construction?

- a. We do not see any drawbacks to the efficiencies provided by this method of construction.

4. What re-skilling of the construction workforce is required to facilitate a change to more off-site manufacture for construction?

- a. A large part of the industry will have to get used to working inside in clean and efficient factories.
- b. The industry will have to get used to using new more efficient materials.
- c. Builders will become more technical and use more specialist tools and automated systems on production lines.

5. Can the benefits of standardisation and factory manufacture be realised without hampering architectural ambition? If so, how?

- a. Due to the wide range of construction materials and finishes architects will be more liberated and have a wider scope for design creativity.
- b. Many more ecological and energy saving technologies can be incorporated into the very fabric of the buildings, even becoming part of the structure.

6. What R&D is needed, and by whom, to realise fully the potential benefits of off-site manufacture?

- a. Entrepreneurs running private organisations will be the very best to develop this opportunity.
- b. Passion, dedication and competition within the market place will produce the best results.

This submission has been made by;

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