BUILDING INFORMATION MODELLING

Developers have been utilising digital BIM applications across our construction projects for many years, to design out defects, test build programmes and model lifetime energy performance. There are great efficiencies to be had from implementing BIM technology at the design stage.	BENEFITS • Collaborative quality control and assurance • Detailed performance data mapped from the outset, gauging how each installed component contributes to energy performance, enabling further improvements to be made • Designs can be changed and approved in real time with both customers and residents • Reductions in temporary works costs such as scaffolding, infrastructure and waste

STRUCTUAL INSULATED PANEL SYSTEM (SIPS)

A high-performance building system typically used for residential and light commercial construction. Panels consist of an insulating foam core sandwiched between two structural facings, typically oriented strand board (OSB). SIPs are manufactured under factory controlled conditions and can be fabricated to fit nearly any building design. SIPs can greatly reduce the energy consumption homes. The off-site manufactured SIPs system supported the pre-cast concrete floors on each level, significantly reducing heat loss and improving air tightness throughout the development.	BENEFITS • Build speed is improved compared to 'traditional' methods, with a simpler planning process • Reduced site labour and supervision requirements • Panels are airtight, eliminating draughts and reducing heat loss, which can greatly reduce fuel costs • Factory-build panel systems ensure accuracy and high degree of quality control

PASSIVHAUS

The Passivhaus standard focuses on a 'fabric first' approach, with design and chosen building materials maximizing energy-efficiency and thermal performance, without the need for bolt-on features such as solar panels. Through excellent air-tightness and mechanical heat recovery, the need for internal heating systems can all but removed from the home. The Council's Development partner, Wates delivered the first social housing scheme in the UK to be built to this standard, in partnership with Orbit Group. In this instance, a timer frame solution, brickwork, render and thermawood for maximum hear retention.	BENEFITS • Passivhaus standards greatly reduce the level of energy needed in the home, minimizing carbon emissions • The ongoing running of Passivhaus homes is highly affordable with far cheaper energy bills, as there is no requirement for radiators or heating systems. The build costs to achieve this standard are obviously greater, but are quickly offset over time • User comfort- internal temperatures are comfortable all year round and the silent, mechanical ventilation ensures good air quality

TIMBER PANEL FRAMES

Manufactured in a highly controlled environment, timber frame panel systems are made from treated softwood timber, over which a structural sheet material (known as sheathing) is fixed. A vapour-permeable but waterproof membrane is fixed to the outside. Systems are available	BENEFITS • Engineered to the highest level of accuracy and quality • Significantly simplifies on-site construction

in open (with no insulation material) or closed (fully insulated) format to suit individual projects. The outer skin of the homes will be typically stone, brick, render or timber to suit local vernacular and planning requirements.	• Promotes greater efficiency and supply chain integration • Brings predictability and greater control to the construction process • Meets and often exceeds all current building regulations • Performs well in terms of fire and flood resistance • Improves construction health and safety • Has fewer defects and high customer satisfaction is by far the most environmentally friendly way to build
OFF-SITE MANUFACTURE	
Off-site manufactured housing production is currently a key area of focus across the UK residential sector. OSM has been widely used across the commercial construction sectors for many years, with hotels, offices and student accommodation commonly being delivered through this method. Production can be scaled to meet demand and building to a range of standard house types ensured consistent, high-quality results.	BENEFITS • The controlled factory environment allows for a much faster build without delays due to bad weather. On site, a fully constructed OSM home is achievable in under 48 hours. • Fewer defects due to the factory-controlled production process • Reduced on-site labour and supervisory requirement • Very little on-site waste • Efficient to build and is highly airtight, reducing energy bills for residents
VOLUMATRIC CONSTRUCTION	
Another highly flexible OSM solution, volumetric units are completely constructed in a factory environment and can be delivered to site with electrics, plumbing, kitchens and bathrooms all pre-installed, also including internal decoration as required. Delivered to site and installed om pre-payment foundations, the system can be scaled to multiple storeys and tailored for single ‘pod’ apartments up to four-to-five bed houses.	BENFITS • Minimal on-site construction and installation required, with units being installed quickly and efficiently • Consistent quality standards, with specialist trades being undertaken in factory conditions • Design standards can be scaled to high levels of air tightness and thermal performance, including mechanical ventilation and other sustainable technologies • Low annual energy bills and running costs for residents