Plenary Answers: Using MMC in different scenarios

Below are different scenarios. Consider the benefits and drawbacks of using each type of construction method in each scenario.

**A one-off house design within a special architectural interest conservation area.**

|  |  |  |
| --- | --- | --- |
|  | Benefits | Drawbacks |
| Traditional | * Would be in keeping with the local architecture and would have to use specified materials | * Longer construction time * More waste generated in comparison to other MMC * Expensive due to the associated labour costs |
| Volumetric | * More energy efficient * Can be built off-site as a single unit or separate components, and delivered and assembled on-site * Can be creative with design if the site is difficult to access or on a sloping site | * May have issues moving the prefabricated unit to site due to traffic and road limitations * Requires heavy lifting to lift units into place |
| Panelised | * More energy efficient * Lower weight * Relatively easy to transport to site * Relatively easy to make changes to the panel design | * Will need to be clad in more traditional materials, in keeping with the materials in the local environment |

**A collection of 22 identical houses for a social housing project.**

|  |  |  |
| --- | --- | --- |
|  | Benefits | Drawbacks |
| Traditional | * Could be more in keeping with the local architecture * Smaller on-site workforce | * It takes more time for construction due to the intensive handling of materials * Potential delays due to weather and ground conditions |
| Volumetric | * Quick to construct * More energy efficient * Improved quality control with all units * Greater quality assurance (QA) and quality control (QC) * Fewer delays to adverse on-site weather conditions | * Lack of customisation * Expensive transportation costs * Need for heavy lifting gear on-site and potential road closures |
| Panelised | * Panels made off-site and delivered when required * Identical panels made off-site will reduce overall manufacturing costs * Less on-site waste | * Time the timber is left exposed if the panels are not clad quick enough once assembled on-site could result in moisture increase, and mould developing * Panelised components are often bulky and large, and therefore difficult and expensive to transport * Trucking and transport limitations can make it more expensive to work with panels over 8.5 feet in width, and length limitations must also be considered * Panels are pre-built, and therefore it is difficult to make adjustments on-site |

**A high-rise office block with limited site access.**

|  |  |  |
| --- | --- | --- |
|  | Benefits | Drawbacks |
| Traditional | * Facing materials can be used to match local buildings | * It takes more time for construction * High-rise scaffolding required adds to cost and increases risks |
| Volumetric | * Quickly constructed due to off-site manufacture of units that are delivered just-in-time (JIT manufacturing) * More energy efficient * Identical units that can be stacked | * If access is limited, e.g. in terms of the width of roads, there may be an issue supplying volumetric units * High-rise lifting gear required |
| Panelised | * Potentially fewer access issues than volumetric as panels will be smaller than whole units * Small design and manufacture changes can be made with panels | * Need more assembling on-site |

**A single-storey building for an outdoor pursuits centre within a dense forest that can only be closed to the public for two weeks.**

|  |  |  |
| --- | --- | --- |
|  | Benefits | Drawbacks |
| Traditional | * Possibly in keeping with the look of other buildings in the area * Can use a range of materials so the building is more in keeping | * Will take longer than two weeks to construct * A lot of vehicles coming and going may damage the area |
| Volumetric | * May be able to construct within timeframe – off-site and delivered just-in-time (JIT manufacturing) * Less waste so potentially more within the ethos of the client | * May be issues with access if it is a dense woodland * May not be in keeping with area |
| Panelised | * Easier to transport through dense woodland * Panels can be manufactured ahead of the two-week shutdown and delivered to site on day one of the project * Smaller panels can be used, delivered and assembled on-site | * May not be in keeping with area * Woodland roads may not be suitable for the type of vehicle required to lift large panels * Lifting gear may not be able to get through the woodland * Height required to lift panels may be restricted by surrounding trees and vegetation |