
# ADAPTABLE CONSTRUCTION IN HEALTHCARE

Building the future, today.

Architectural Wallsz

Modular Healthcare Solutions

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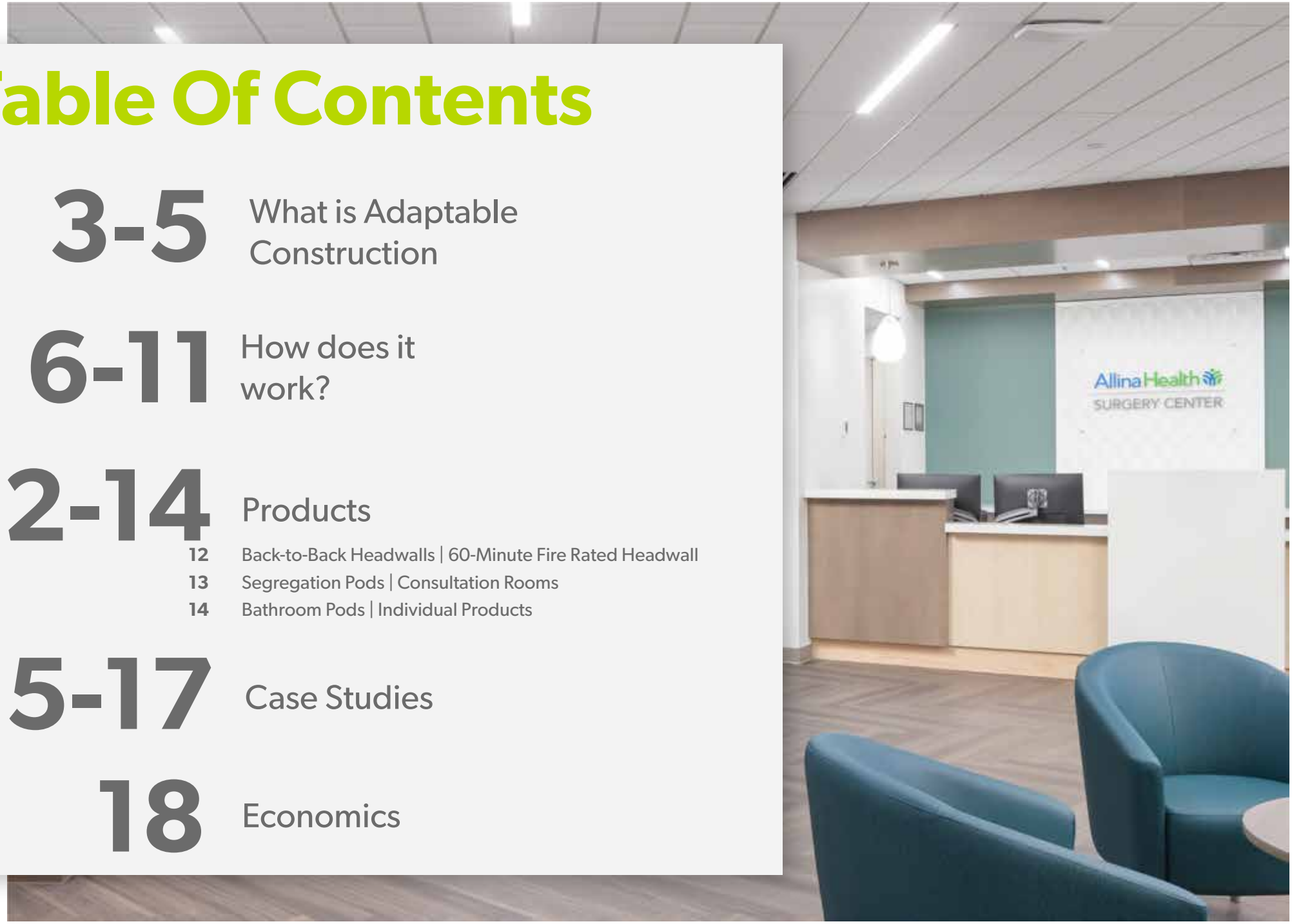


# Introduction

**Adaptive construction offers significant benefits for modern medical facilities. This approach, which leverages modular and prefabricated designs, allows interiors to be reconfigured, expanded or repurposed as healthcare needs evolve.**

The landscape of healthcare is continuously evolving, driven by advancements in medical technology, shifts in patient demographics and the increasing demand for more efficient, sustainable and adaptable healthcare environments.

Adaptive construction is a solution that not only meets the immediate needs of healthcare providers but also prepares them for future changes.

**-30%**

Adaptive construction methods can reduce project timelines by up to **30%.**

**70/30**

Traditional construction allocates **30%** of costs to materials and **70%** to labour. Adaptive constructed flips this ratio to **70%** materials and **30%** labour.

**-$CO_2$**

By manufacturing components off-site reduces CO2 emissions and overall environmental impact.

New facilities can open weeks or months ahead of schedule to meet patient demands and significantly reduce the environmental impact of construction activities.

# The Growing Demand For Adaptable Healthcare Facilities

**One of the primary challenges with traditional construction in healthcare is the long build times associated with new facilities or renovations which can take years to complete, during which time, needs and requirements change.**

The high costs and resource-intensive nature of traditional construction also make it difficult for healthcare providers to keep up with the rapid pace of change, leading to facilities that are ill-equipped to handle new technologies or shifts in patient care.

Inflexibility is another significant challenge. As new treatments and technologies emerge, facilities struggle to integrate the advancements without undergoing major, often-costly renovations, which disrupt patient care and operational efficiency.

On top of this, traditional construction methods generate significant waste and have a considerable environmental impact, which is increasingly at odds with the growing emphasis on sustainability in the healthcare sector.

# What Is Adaptive Construction?

**Adaptive construction refers to the innovative approach of designing and building spaces using modular and prefabricated components that can be easily reconfigured, expanded or repurposed as needs evolve.**

Unlike traditional construction methods, which are often rigid and difficult to modify, adaptive construction offers a dynamic solution that prioritises flexibility and future readiness. That means healthcare spaces that are ready to adapt to new technologies, treatment methods and patient needs.

With adaptive construction, modular walls and prefabricated interiors can be easily reconfigured to create new patient rooms, expand existing spaces or integrate new medical technologies without the need for major structural overhauls. This adaptability is crucial for healthcare providers who need to respond quickly to changes in patient care requirements or to scale up services in response to increased demand.

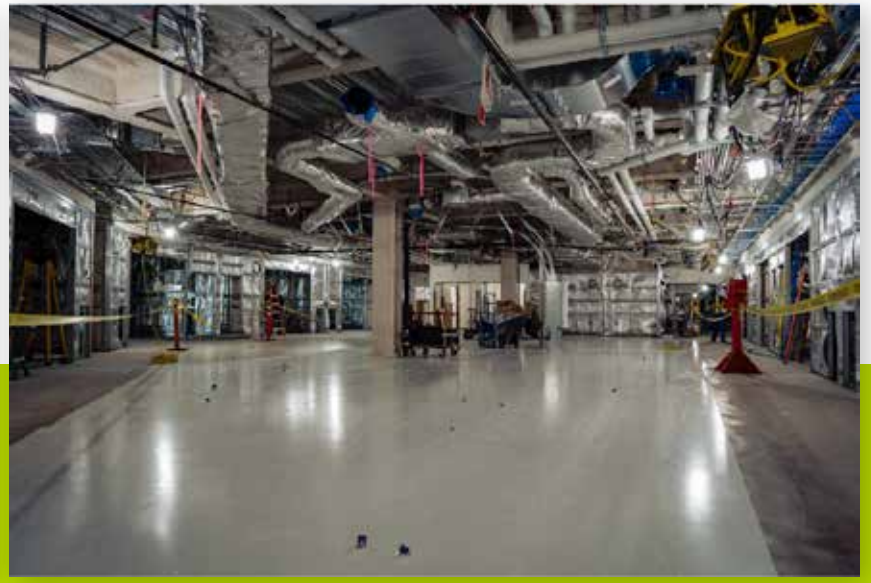
# How Does It Work?

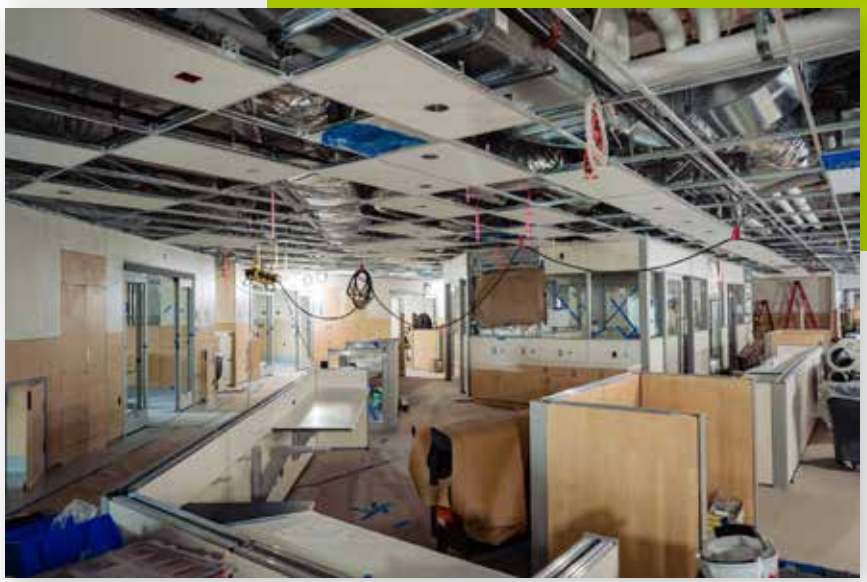
**Adaptive construction typically involves the use of modular frames and pre-finished boards that are manufactured in controlled environments off-site.**

The modules are then transported to the construction site for assembly, which significantly reduces on-site labour, construction timelines and disruption to ongoing operations.

The materials are manufactured exactly to the drawing specifications, minimising waste generated by off-cuts on site.

This process not only speeds up project completion but also enhances the quality and precision of the build, as the controlled environment allows for greater accuracy and adherence to design specifications.





# The Benefits of Adaptive Construction

**Adaptive construction offers a wide array of benefits that address the pressing needs of modern healthcare facilities.**

## Reduced Delivery Times

Adaptive construction reduces project timelines by up to **30%**. The speed of adaptive construction is helped by off-site manufacturing, which reduces the time and labour required for on-site construction.

## Reduced Carbon Footprint

Traditional construction methods contribute to high levels of CO2 emissions due to the extensive use of energy and materials. Modular construction reduces CO2 emissions by minimising the need for on-site construction activities. Off-site manufacturing processes are also more energy-efficient and utilise sustainable materials, such as those with high recycled content, and incorporate energy-efficient systems.

## Reduced Waste

Traditional construction generates large amounts of waste, including excess materials, packaging and debris from on-site activities. In the UK, construction and demolition account for approximately **59%** of waste. Our methods are designed to minimise waste at every stage of the process and our precision manufacturing means materials are used efficiently, with minimal offcuts and scrap.

## Compelling Cost Efficiency

Traditional construction typically allocates around **30%** of costs to materials and only **70%** to labour but adaptive construction flips this ratio. We allocate **70%** to materials and **30%** to labour. This shift not only optimises resource use but also leads to greater cost efficiency because fewer materials are wasted and the reliance on expensive, time-consuming, on-site labour is reduced. The materials purchased today can be re-used repeatedly throughout the lifecycle of the building.

# How A Project Unfolds

## Concept and Design

The design phase of modular interiors is crucial, as it involves meticulous planning to ensure that each module meets the specific needs of the healthcare facility. This includes considerations for space utilisation, patient flow, accessibility and the integration of medical technology.

## Off-Site Manufacturing

Constructing modules in a controlled factory setting minimises the risks and delays associated with traditional on-site construction.

## On-Site Assembly

Once the modules are complete, they are transported to the construction site for assembly. This is much faster than traditional construction because most the work has already been done off-site. The modules are often assembled on-site in a few days or weeks, depending on the size and complexity of the project.

### Design

Seeing is believing and with ICE our clients see everything. With stunning renderings and cinematic flythroughs, this highly visual specification and configuration tool changes the way clients experience the design process. Decisions are fast and easy with this immersive, dynamic experience and everyone can experience the power of real-time changes, instant pricing and order certainty with realistic visuals.

### Manufacture

Off-site manufacturing allows for greater precision and quality control. Since modules are built in a factory, they benefit from consistent production processes, leading to higher quality finishes and reduced material waste and VOC emissions. This method also accelerates the construction timeline, as modules can be built concurrently with site preparation, rather than sequentially as in traditional builds.

### Build

The assembly process is designed to be as seamless as possible, minimising disruption to ongoing operations in healthcare facilities. A hospital may continue to operate normally while a ward's interior is upgraded with modular solutions, with minimal interference from this construction. This is a significant advantage in healthcare settings where patient care cannot be interrupted.

# Sustainability

**Traditional construction methods generate substantial amounts of waste but with adaptive construction, precision manufacturing ensures materials are used to their fullest extent, with any offcuts or surplus materials being recycled or repurposed.**

We integrate sustainable practices into our manufacturing process by using materials that are low in volatile organic compounds (VOCs) and certified by organisations including the Forest Stewardship Council (FSC). These materials contribute to better indoor air quality and reduce the overall environmental footprint of healthcare facilities. Our approach not only minimises the depletion of natural resources but also supports the circular economy by encouraging the reuse and recycling of materials.

Our modular units include recirculated ventilation systems, LED lighting and insulated wall panels. We offer HEPA 14 Filtration System in all our pods.

We believe in a better, more sustainable way to build and follow the three principles of a circular economy - design out waste and pollution, keep products and materials in use and regenerate natural systems.

**90%**

Modular construction can reduce waste by up to **90%** compared to traditional methods.

**60%**

Our wall assemblies use aluminum with **50** to **60%** recycled content.

**80%**

Our walls are also approx. **80%** recycled denim

# Future-Proofing Design

## Scalability and Flexibility

Healthcare facilities must expand or reconfigure their spaces as needs change. A healthcare facility built using modular components can easily add new patient rooms, operating theatres or specialised treatment areas as demand increases. These additions can also be made with minimal disruption to ongoing operations.

## Technological Integration

Adaptive construction allows for the seamless incorporation of new technologies, such as telemedicine capabilities, advanced diagnostic equipment and smart building systems that enhance patient care and operational efficiency. Easy access into the wall cavities means integrated technologies can be quickly and seamlessly adapted or replaced, with minimal disruption.

## Long-Term Environmental Impact

By using durable, high-quality materials and incorporating energy-efficient systems, adaptive construction reduces the need for frequent renovations or replacements, which can be costly and environmentally damaging.

# Seamless Integration

**One of the most important aspects of adaptive construction is its ability to integrate seamlessly with existing infrastructure.**

Panelised units are designed to connect easily with the existing building, whether they are being added to an existing floorplate or defining a new floorplate. This integration is facilitated by the precision manufacturing of bespoke modular components, which are designed specifically to fit the space they are inhabiting.

Adaptive construction also allows for easy integration of essential systems within the cavity of the walls, such as medical gases, power, technology and plumbing. These systems are often pre-installed in the modules during the off-site manufacturing process, which simplifies the on-site assembly and reduces the time needed to get the facility up and running.

# Our Products

**We provide a range of individual products for bespoke solutions as well as complete fit outs. Our products allow for a considered, tailored approach and provide solutions which have minimal impact on day-to-day services.**

## Back-to-Back Headwalls

Architectural Wallsz's Back-to-Back Headwalls offer modular solutions designed to enhance patient care and operational efficiency.

These headwalls integrate medical gases, electrical wiring and accessory mounts within a streamlined design. They support fast-track installations, minimal on-site disruption and improved infection control, making them ideal for modern healthcare environments. As they're back-to-back, the wall is also shared which saves space within the environment.

## 60-Minute Fire Rated Headwall

Architectural Wallsz recently launched a prefabricated wall system tested to European standards for a 60-minute Fire Rated Solid Headwall.

This cutting-edge solution is classified under BS EN 13501-1 for Reaction to Fire and provides a 60-minute rating under BS EN 1364-1 for Fire Resistance.

Traditionally, installing acoustic fire rated walls with bedhead services on either side can require as much as 360mm thickness, taking up valuable space. The AWallsz system, which uses two standard 100mm panelised walls on either side of a 30mm fire septum, supports the containment of medical gases, power and data within the wall cavity. This minimises the space required, reduces surface-mounted components and simplifies ongoing maintenance.

The wall is also available in a variety of healthcare finishes, giving architects and healthcare providers the flexibility they need for aesthetic and functional design choices.

## Segregation Pods (Negative/Positive Pressure)

Architectural Wallsz's Segregation Pods are designed to enhance infection control and patient care.

We offer both negative and positive pressure environments with built-in HEPA 14 filtration systems. These pods provide 99.997% air purification, ensuring safety and compliance with healthcare standards.

With easy-to-clean, impact-resistant surfaces, they support rapid assembly, flexibility and reconfiguration. Our Segregation Pods allow healthcare providers to swiftly adapt to changing needs while maintaining a calm and private environment for patients.

## Consultation Rooms

Architectural Wallsz's Consultation Rooms are designed to create private, high acoustic spaces that enhance patient comfort and ensure privacy during medical consultations.

These prefabricated modular rooms are built to meet healthcare standards, with easy-to-clean surfaces and integrated technology options. The rooms can also be quickly reconfigured or expanded to accommodate changing healthcare needs, offering a flexible solution that minimises disruption and maximises efficiency within medical environments.

## Bathroom Pods

Our Bathroom Pods provide fully integrated, prefabricated bathroom solutions, tailored to healthcare environments.

Designed for quick installation, these pods are built with hygiene, durability and functionality in mind. They incorporate easy-to-clean surfaces and customisable fixtures to meet specific healthcare standards and ensure minimal downtime during installation.

Ideal for hospitals and medical facilities, Bathroom Pods streamline the construction process while providing flexible, high-quality solutions that enhance patient care and operational efficiency.

## Individual Products for Bepoke Needs

The beauty of modular construction is that it's not just relevant for new builds and total renovations.

Each of our individual modular products offer flexibility, rapid installation and customisation to ensure efficient operation, patient safety and seamless integration into existing spaces with minimal disruption.

# London Hospital

## Prefabricated Mammogram Pods

**A recent project required us to create Mammogram Pods that provided a patient-centric experience, while meeting the complex requirements of a listed building. This project showcases our ability to deliver high-quality prefabricated solutions that meet complex healthcare requirements, while maintaining a historic building's integrity.**

### The Challenge

The need for radiation shielding, infection control and maintaining the building's structural integrity presented several challenges. Large rooms with high ceilings were unsuitable for intimate mammography procedures, so the solution needed to be a freestanding unit that did not connect to the walls, floors or ceilings.

### The Solution

We delivered a prefabricated solution that was custom-designed to fit the constraints of the building and provide a comfortable, private environment for patients. Working closely with the project team, including architects and engineers, we provided realistic visualisations and virtual reality walkthroughs to finalise the design before construction began. The entire system was manufactured off-site and installed on-site in just three weeks.

### The Outcome

The prefabricated mammogram pods provided the ideal balance of privacy, functionality and compliance. The installation was carried out quickly and efficiently and the freestanding nature of the pods ensured the integrity of the listed building was maintained. The hospital team was delighted with the final result, which improved workflow and provided a calming environment for patients undergoing mammograms.

# Stoke Mandeville Hospital

## Implementing a Segregation Pod

**One notable project that showcases the impact of adaptive construction is the installation of a pressurised Segregation Pod at Stoke Manderville Hospital. Engaged by Sodexo, we were tasked with supplying and installing a ventilated Pod to enhance the hospital's ability to manage infectious diseases efficiently.**

### The Challenge

The primary challenge was to provide a solution that could be rapidly deployed without compromising the hospital's strict hygiene and safety standards. The need for negative pressure environments and HEPA filtration systems to control airborne pathogens was critical, particularly during the COVID-19 pandemic.

### The Solution

We developed a modular Segregation Suite equipped with built-in air filtration, plumbing and negative pressure room with positive pressure ventilated lobby. These pods were designed for rapid assembly and adhered to the UK Government's Health Technical Memoranda (HTM) guidance. The reconfigurable nature of these pods allowed the hospital to adapt to varying patient loads and infection control needs without lengthy downtimes.

### The Outcome

The adaptive pods significantly improved patient and staff safety by reducing the spread of infections. The modular design also meant the hospital could quickly reconfigure spaces to respond to future health crises or changes in healthcare delivery needs.

# Royal Shrewsbury Hospital

## Implementing Segregation Pods

**We delivered an innovative healthcare solution for Royal Shrewsbury Hospital that addressed critical needs for flexibility, infection control and reduced disruption during installation.**

### The Challenge

Royal Shrewsbury Hospital needed to rapidly expand its healthcare infrastructure while maintaining high standards of infection control and minimising disruption to ongoing operations. The project also required a system that could be quickly installed without sacrificing patient and staff safety.

### The Solution

We provided modular, prefabricated wall systems designed to integrate medical services within a clean, adaptable framework. These walls allowed for quick assembly, flexible design options and enhanced infection control features such as easy-to-clean surfaces and integrated HEPA filtration to ensure safety and compliance with healthcare standards.

### The Outcome

The prefabricated wall system was installed swiftly and efficiently and minimised disruption to hospital operations. The final installation enhanced infection control measures while offering flexibility for future reconfigurations. The hospital staff praised the solution's adaptability and efficiency in addressing the immediate needs.

# The Economics

**In an industry where financial efficiency is as crucial as operational effectiveness, the economic benefits of adaptive construction are increasingly hard to ignore.**

## Reduced Construction Costs

Our precision manufacturing not only reduces lifetime material costs but also minimises the need for expensive on-site labour. The shorter construction timelines associated with modular interiors offer significant project savings, and improve revenue regeneration by getting the facility up and running much sooner.

## Optimised Resource Allocation

Adaptive construction flips the traditional cost structure by reducing the reliance on single-use materials. Focusing on more efficiently-used labour. This is where the **70/30** flip between labour and materials pays dividends, with **70%** of costs allocated to reuseable materials and **30%** of costs allocated to labour.

## Lower Maintenance & Costs

Our solutions require lower maintenance and operational costs because the modular components used in adaptive construction are typically designed for durability and ease of maintenance. We incorporate energy-efficient systems and sustainable materials too.

## Future-Proofing and Value Retention

Not only can modular components be easily reconfigured, expanded or relocated but the use of durable, high-quality materials means these facilities also retain their value over time, while traditional buildings require expensive renovations to remain functional.

## Swift Delivery & Reduced Downtime

Traditional construction projects can be highly disruptive and often close parts of a facility. The swift and efficient nature of modular construction means modifications can be made with minimal impact on daily operations.

# Just To Recap

**In this eBook, we have shown you the transformative power of adaptive construction and how our solutions are leading the way in creating flexible, sustainable and cost-effective healthcare spaces. Here's a recap on how our solutions are unique.**

## Flexibility

Modular systems allow healthcare facilities to quickly adapt to new technologies, evolving patient needs and expanded services.

## Cost-Effectiveness

A **70/30** shift from labour to materials improves resource allocation, maximising cost efficiency without compromising quality.

## Efficiency

Reduced construction times of up to **30%** ensure that facilities can minimise downtime and maximise operational efficiency.

## Sustainability

By reducing carbon footprints, minimising waste and using sustainable materials, we help contribute to the healthcare sector's environmental goals.

# Get In Touch

**Interested in learning more about prefabricated healthcare solutions?**

Get in touch with us at Architectural Wallsz today to see how we can help you transform your healthcare facility with flexible, future-proof solutions.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