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How Airports Modernize Without Closing: Designing For Operational Continuity During Construction

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DESIGNING FOR CONTINUITY IN AIRPORT MODERNIZATION

Airports are complex, high-performing environments. They're part transit hub, part workplace, part public square, and for many travelers, the first impression of a city — especially at a busy international airport. They are among the only building types that must remain fully operational during construction. No pauses. No "closed for renovation." No downtime.

So, how do airports manage airport modernization during construction while millions of passengers continue to move through them every day, often without realizing anything is happening at all?

The truth is, it takes an incredible amount of planning, coordination, and creative problem-solving to deliver a successful modernization program without disrupting service, and that's where thoughtful architecture and smart design take center stage.

Whether it's a new security checkpoint, a consolidated rental car facility, upgrades to parking garages and moving walkways, or a major airport expansion, the goal is always the same: keep the airport running safely, smoothly, and predictably, even while it's transforming behind the scenes.

WHY IS MODERNIZING AN ACTIVE AIRPORT SO COMPLEX?

Airports during renovations are highly complicated environments where thousands of people move through interconnected airport infrastructure systems every hour. While construction teams work to improve capacity, efficiency, and the overall passenger experience, the airport itself must continue to operate without disruption.

Design solutions must be technically precise and centered on how travelers move and feel. Temporary walls, phased circulation routes, and interim structures need to maintain clarity and consistency. Many of these transitions are

intentionally subtle — not to hide the work, but to help travelers stay focused and confident during their journey.

Thoughtful design keeps the airport familiar and functional during change. Success in active airport modernization is measured by what doesn't happen: gate areas remain open, baggage claim systems stay online, security operations continue, and passengers move through the terminal with minimal disruption.

HOW DO AIRPORTS MINIMIZE DISRUPTION DURING CONSTRUCTION?

What most passengers don't realize is that a temporary wall in an active airport is rarely "just a wall;" it often includes acoustic control, dust protection, fire-rated assemblies, and integrated wayfinding. Some are engineered so close to active construction zones that only inches separate heavy work from public space, and yet the atmosphere remains calm.

Lighting also plays a role in maintaining a sense of normalcy. Designers use consistency, brightness, and directional cues to guide movement and reduce uncertainty. Floor transitions, ramps, and corridor widths are carefully planned to support code requirements, accessibility, and smooth traffic flow.

These are small decisions to protect the passenger experience during moments of significant change.

HOW DOES DESIGN PROTECT THE PASSENGER EXPERIENCE DURING CONSTRUCTION?

Design protects the passenger experience during construction through strategic phasing and close coordination with airport operations, Transportation Security Administration (TSA) requirements, airline schedules, and contractor workflows. This turns airport modernization into a strategic exercise, where design serves as a decision-support tool, helping teams evaluate tradeoffs between temporary systems, construction sequencing, schedule impacts, and costs, while always prioritizing safety and operational continuity.

In many cases, entire expansion projects are delivered through multiple micro-phases. A temporary baggage system might operate for six months while a permanent system is upgraded. A circulation path might shift three or four times to accommodate structural changes. Mechanical rooms may need to be relocated before other work can continue.

Phasing and enabling projects allow airports to function continuously through change. Effective phasing allows the airport to continue meeting demand while major portions of the building are being rebuilt.

HOW DO AIRPORTS BALANCE OPERATIONAL CONTINUITY AND PASSENGER EXPERIENCE DURING CONSTRUCTION?

No matter how complex the project is, the focus always comes back to people. Modern airports cater to travelers with diverse needs, preferences, and comfort levels, and many already find these environments stressful or overwhelming. Active construction can heighten these feelings unless it is planned with care and people in mind.

This is why intuitive design and consistent cues are so important. Clear sightlines, predictable pathways, and thoughtful wayfinding help passengers stay oriented. Accessible routes must remain reliable and logical, even as layouts shift. And wherever possible, changes should be introduced gradually to maintain continuity and minimize disruption.

When travelers feel supported, even temporary conditions can feel seamless and easy to navigate.

WHY DOES AIRPORT CONSTRUCTION OFTEN HAPPEN AT NIGHT?

Quiet overnight hours enable crews to complete work that cannot be done with passengers present, such as structural adjustments, system cutovers, or airfield improvements.

Working within an active airport requires exceptional coordination. Crews must align with flight schedules, operational restrictions, safety requirements, and security procedures. Materials must be staged discreetly, and all systems must remain active and monitored at every stage.

This disciplined approach is what keeps airports functioning reliably despite ongoing construction.

HOW DO AIRPORTS MODERNIZE WHILE PREPARING FOR FUTURE DEMAND?

Every modernization project is ultimately an investment in the future. Whether the goal is to improve passenger flow, expand gate capacity, streamline rental car operations, or enhance airfield movement, the results must support long-term performance and resilience.

Airports today are planning decades in advance. They're designing for increased demand, new technology, more sustainable systems, and the evolving needs of travelers. The work happening behind the scenes today will shape how people experience these spaces for years to come.

About the Authors

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About the Article

This article was written for the GFT Blog page. Founded in 1915, GFT has been a driving force in shaping infrastructure and improving communities in more than 65 countries, specializing in natural resources, transportation, water, power, and facility-related projects. The company embraces sustainability and innovation in projects and internal activities and achieves results while being responsible stewards of the environment. A results-driven firm, GFT is consistently ranked in the top one percent of engineering firms worldwide.