

The Importance of Effective Construction Management in Data Centers

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In today's digital age, data centers form the backbone of cloud computing, artificial intelligence, and the vast array of digital services we rely on daily. As the demand for data centers rises, companies are racing to expand these facilities. However, the construction of data centers is complex, costly, and prone to delays that can have significant financial repercussions. Any construction missteps, delays, or coordination issues can result in inefficiencies and lost revenue. This underscores the need for effective construction management approaches and best practices.

WHY CONSTRUCTION MANAGEMENT IS CRUCIAL FOR DATA CENTERS

Rapid Demand Growth and Business Opportunities

With the growing demand for cloud services, artificial intelligence (AI), and big data, companies need to construct new data centers quickly to stay competitive. Poor construction management—such as miscoordination, procurement delays, or failure to meet compliance standards—can stifle this growth. Delayed data center projects prevent companies from capitalizing on market opportunities, causing them to lose out on potential contracts and business prospects.

The Cost of Delays: A Revenue Perspective

Data centers represent significant capital investments. Their profitability hinges on services like cloud storage and computing, which generate high-margin revenue. Any delay in



construction can result in millions in lost revenue. Every day a data center isn't operational means that companies cannot bill clients, which can lead to contract breaches, tarnished reputations, and lost customers who seek faster service from competitors.

Fast-Track Construction: Precision and Coordination Required

Building a data center requires much more than basic construction. It demands the integration of advanced security systems, sophisticated cooling mechanisms, redundant power sources, and specialized equipment. Managing these elements requires seamless coordination across various trades. Fasttracking construction without proper planning can lead to errors, rework, and extended delays.

Long-Term Risk Mitigation and Scalability

Effective construction management not only focuses on the present but also anticipates future challenges. Design oversights, procurement delays, or regulatory issues can derail a project. Addressing these risks early in the process saves money and prevents future complications. Well-managed projects also ensure that data centers are built with scalability in mind, allowing for growth without costly retrofits or disruptive downtime.

THE CHALLENGES OF COORDINATING TRADESPEOPLE IN DATA CENTER CONSTRUCTION

Coordinating the various skilled trades involved in data center construction is one of the biggest challenges construction managers face. These projects involve multiple highly specialized teams, and without proper coordination, the project timeline can stretch, costs can balloon, and quality can suffer. Let's look at some of the specific challenges and the solutions to address them.

Challenge 1: Complexity of Multiple Specialized Tradespeople

Data centers require several specialized contractors, each responsible for installing critical systems:

- » Electrical Contractors: They handle complex electrical systems, including backup generators, redundant power supplies, and Uninterruptible Power Supply (UPS) systems. These installations require close coordination with mechanical and structural teams.
- » Mechanical Contractors: They are responsible for critical cooling systems to prevent server overheating. Any delays in their work can disrupt the entire project timeline.
- » Structural Contractors: They manage the infrastructure that supports heavy server racks and raised floors. They must work closely with other trades to ensure that the facility is ready for the next phase of construction.
- » IT and Telecom Contractors: They install networking systems like fiber optics and server equipment, which must be carefully scheduled alongside electrical and mechanical work to avoid overlap.
- » Security and Fire Protection Contractors: Security systems and fire suppression mechanisms need to integrate seamlessly with other infrastructure, requiring constant coordination.

Solution: Centralized Project Management and Trade Coordination

A dedicated construction management team can oversee the entire project, ensuring that tasks are completed in the correct sequence without interference. Project management tools provide a visual timeline, task dependencies, and progress tracking, helping to mitigate potential conflicts before they cause delays.

Challenge 2: Phased Coordination and Task Dependencies

The work of one trade often depends on the completion of another. For instance:

- » Electrical systems must be installed before certain cooling mechanisms.
- » IT infrastructure cannot be installed until the building's structure is complete.

When these aren't properly coordinated, the entire project timeline suffers from cascading delays. Poor planning can also lead to overlapping trades working in the same space, increasing the risk of miscommunication, accidents, and damage to equipment.

Solution: Phased Scheduling and Regular Coordination Meetings

Construction managers should plan the project in clearly defined phases, ensuring that each trade completes its work before the next begins. Regular coordination meetings keep all teams aligned, allowing them to address potential conflicts early and preventing small issues from escalating into major setbacks.

Challenge 3: The Impact of Poor Coordination on Time, Cost, and Safety

When tradespeople are poorly coordinated, the consequences can be severe:

- » Schedule Delays: If one specialty contractor falls behind, it delays the entire project, resulting in missed deadlines and postponed revenue generation.
- » Cost Overruns: Delays often lead to increased labor and material costs. Rushed work can result in costly rework, and changes made out of sequence can lead to inefficiencies.
- » Safety Concerns: Poor coordination increases the risk of accidents when multiple trades work in the same space

without proper communication. This can lead to injuries, equipment damage, and liability issues.

Solution: Proactive Risk Management and Safety Protocols

Anticipating potential issues and setting contingency plans is crucial to staying on schedule. Additionally, implementing clear safety protocols and holding regular safety briefings ensures that skilled tradespeople understand how to work together safely, reducing the likelihood of accidents.

Challenge 4: Ensuring Quality and Performance

Rushing to meet deadlines can result in subpar workmanship, leading to cooling inefficiencies, power supply issues, or network failures – any of which could cause downtime or require costly repairs.

Solution: Quality Assurance and Regular Inspections

Construction managers should conduct frequent onsite inspections to ensure work meets the required standards. Addressing issues immediately helps maintain the integrity of the data center's systems, ensuring long-term reliability and performance.

CONCLUSION: THE VALUE OF CONSTRUCTION EXCELLENCE

In the fast-evolving digital world, data center demand is skyrocketing. Delays or poor management during construction not only disrupt project timelines but also result in lost revenue, diminished customer trust, and potential long-term operational issues. Effective construction management is the linchpin for success, ensuring that data centers are built efficiently, are scalable, and meet the rising demands of the digital economy.

The stakes are high, and companies must ensure that their construction management processes are designed for excellence, not just to meet deadlines but to secure profitability and future growth.



About the Author

Pam is the Vice President of Marketing for the Utilities sector at TRC. With over 20 years of experience in the utilities industry, Pam leads strategic marketing initiatives that elevate TRC's brand and support its mission to drive innovation and sustainability in the energy sector. Pam's expertise spans marketing strategy and industry thought leadership, enabling her to effectively connect TRC's services with the evolving needs of utility clients.

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