

# Building at AI Speed: The Data Center Contractor's Playbook

A practical guide to protecting critical milestones, coordinating complex systems, and delivering repeatable results

AUTODESK Forma



# Contents


01 Building at AI speed

02 The high cost of disconnected construction

03 Coordinate before you construct

04 Accelerate delivery through prefabrication

05 Connect every team from office to field

06 Protect cost and schedule certainty

07 From construction complete to commissioning ready

08 Conclusion: Build the next data center better

# Introduction

## The pressure behind time to power

A delayed switchgear delivery can disrupt electrical installation. An unresolved routing conflict can hold up multiple trades. Missing equipment records can stall turnover even when installation is complete.

On a data center project, delays in one area can affect crews across multiple trades, putting critical milestones and project costs at risk.

AI-driven demand is raising expectations for delivery speed. Adding crews or tightening schedules offers limited relief when decisions stall or teams work from outdated project data. Contractors need practical ways to make complex work ready before it reaches the field and keep it moving through commissioning.

This playbook examines the decisions and workflows that help general contractors and specialty trades manage those pressures.



01

# Building at AI speed

## Why data center construction demands a different delivery approach

AI and cloud investment have made data centers a major construction growth market. According to Oxford Economics, data centers accounted for roughly 5% of U.S. office construction spending in 2014 and 32% in 2024. In a more recent forecast, the firm projected that U.S. data center construction spending would surpass traditional office construction spending in 2026.

Critical milestones depend on coordinated work across power distribution, cooling, and control systems. The installation sequence must account for the equipment and access each trade needs. A project can be progressing on paper yet remain far from energization if a critical equipment package is late.

### Plan backward from power-on

Start with the date systems need to be energized and tested, then map the approvals, delivery dates, installation prerequisites, and inspections that lead to it. Transformers, switchgear, generators, and cooling equipment deserve scrutiny because their procurement and commissioning dependencies can dictate the path to readiness.

### Plan for repeatable delivery

Multi-building campuses and recurring owner requirements create opportunities to reuse proven layouts, work packages, inspection templates, and fabrication details. McKinsey has identified potential schedule improvements of up to 20% from end-to-end approaches incorporating standardized designs and digital tools. That is an industry estimate, not a guaranteed project outcome.

**Put it into practice**

Identify five milestones that determine time to power. For each, name the prerequisite decision, equipment dependency, accountable team, and earliest warning sign of delay.

**Contractor takeaway**

As data center programs expand, contractors need a clear view of what each milestone depends on. Connecting milestone decisions and project information across design, procurement, construction, and testing helps teams see what must happen next.



02

# The high cost of disconnected construction

## When updated project data doesn’t reach the right teams

A revised drawing reaches the project manager but not the installing foreman. A supplier changes a delivery date but the look-ahead plan stays the same.

A resolved RFI does not make it into a subcontractor’s work package. Each gap looks minor until crews are standing by or installed work must be redone.

### Make decisions traceable

On a fast-moving data center project, knowing who owns a decision is just as important as having the right information. Centralizing project data and workflows in a common environment helps contractors manage drawings, models, RFIs, submittals, and field issues while maintaining a clear record of decisions. When the responsible team, approval status, and supporting information are visible together, project leaders can spot stalled decisions and communicate approved changes to the crews who need them.

### Make the consequence visible

A design change rarely affects just one trade. When an electrical room layout changes, contractors need visibility into the downstream impact on cable routing, equipment clearances, prefabricated assemblies, and installation schedules. Connecting design changes with project issues, affected documents, and responsible teams helps contractors understand the full scope of a change, coordinate responses across trades, and resolve conflicts before they become costly field disruptions.





## Measure what slows decisions

On a data center project, the speed of decision-making can directly affect field productivity. Contractors should track how long it takes for a field question to become an approved instruction and reach the crews responsible for execution. Centralized workflows provide visibility into response times, outstanding approvals, and recurring bottlenecks by trade or work area. This helps project leaders identify where decisions are delaying progress, prioritize critical issues, and keep installation work moving.

### Contractor spotlight | Modular Power Solutions (MPS)

MPS manufactures modular power systems for large-scale data center projects. The company uses Forma Build to keep project documentation and factory-floor requests connected, including engineering changes that require revised drawings.

MPS says it can reduce the number of meeting participants by 75% while distributing notes and action items to the relevant teams.

### Contractor takeaway

Follow one recent field change from the original question to the crew instruction. Wherever the chain breaks, there is a workflow to fix before the next change arrives.

03

# Coordinate before you construct

## Turn coordinated models into buildable, field-ready plans

Data center construction leaves little room for coordination errors. High-density electrical distribution, cooling infrastructure, cable trays, piping, and structural systems must fit within tightly constrained spaces, often while multiple trades work toward the same critical milestones.

Building Information Modeling (BIM) and Virtual Design and Construction (VDC) help contractors identify conflicts and plan installation before crews arrive on-site. A useful coordination plan also shows how crews will build and install each system, get access for the work, and maintain the equipment later.

### Identify conflicts before they reach the field

A conflict between a cable tray and a chilled-water pipe may appear minor in a model. In the field, it can require rerouting, additional supports, rework, and changes to multiple installation schedules. Bringing architectural, structural, mechanical, and electrical models together early helps teams identify these conflicts before fabrication or installation begins. Autodesk Forma for Model Management supports multidisciplinary model coordination, clash detection, and issue management in a shared environment. This gives general contractors and specialty trades a way to review conflicts, assign responsibility, and track resolutions before they affect construction.

### Go beyond clash detection to validate constructability

A clash-free model isn't necessarily a buildable plan. An overhead electrical assembly may fit perfectly within the available space but leave no practical way to lift it into position. Large equipment may require access that disappears once adjacent systems are installed. Cooling infrastructure may be coordinated geometrically but leave insufficient clearance for maintenance.

Contractors need to evaluate more than whether systems fit. They must also consider installation access, lifting paths, structural supports, equipment clearances, and the sequence in which work will be completed. By bringing superintendents, VDC teams, specialty contractors, and fabrication partners into coordination reviews, teams can identify these constraints while there is still time to adjust the plan.





## Coordinate installation sequences across trades

Even when building systems fit together, the order of installation can determine whether work proceeds efficiently. Consider a data hall with overhead cable trays, mechanical piping, and cooling infrastructure. If one trade installs its systems before another has completed work requiring the same access, the result may be restricted work areas, additional handling, or costly resequencing.

Model-based planning helps contractors visualize installation sequences, evaluate trade dependencies, and identify where access may become constrained. For critical electrical and mechanical spaces, teams should agree on installation order and the prerequisite work each trade needs completed before it can proceed. This is particularly important when delayed installation of power or cooling infrastructure could affect downstream testing and commissioning.

## Close the loop from issue to installation

Identifying and resolving an issue in a coordination meeting doesn't guarantee that the correct information reaches the field. Every significant coordination issue needs a clear owner, an approved resolution, updated project information, and confirmation that affected trades have received the change.

Connected model and issue management workflows help maintain that decision trail. When coordination issues, models, and project documents remain linked, teams can track outstanding decisions and reduce the risk of crews building from outdated information. The objective is to make coordination an ongoing part of construction execution, not an activity that ends when the model is approved.

## Contractor spotlight | DPR Construction

DPR describes its approach as "construction-informing design." Builders and trade partners contribute constructability input while design decisions can still change. Autodesk's customer article describes DPR using shared 2D and 3D information and connected design-to-construction workflows to support earlier, coordinated decisions.

## Release work packages, not assumptions

Before releasing a major MEP area for fabrication or installation, contractors should confirm that the plan is ready to execute.

## Field ready coordination check:

- **Approved information:** Are teams working from the current coordinated model and drawings?
- **Resolved issues:** Have critical clashes and constructability concerns been closed?
- **Installation sequence:** Is the order of work agreed upon by affected trades?
- **Equipment access:** Are lifting routes, connection points, and maintenance clearances validated?
- **Field communication:** Have approved changes reached the teams responsible for installation?

A consistent readiness check helps contractors catch unresolved dependencies before crews, equipment, and materials are committed.

### Contractor takeaway

Measure coordination by work readiness. "Can every affected trade install from the approved plan?"



04

# Accelerate delivery through Prefabrication

## Move suitable work off-site without moving risk downstream

On an accelerated data center project, not everything needs to be built in the field. Prefabrication and modular construction allow contractors to manufacture selected assemblies in controlled environments while other construction activities progress on-site. Electrical distribution modules, mechanical piping assemblies, equipment skids, and cable tray systems are all potential candidates.

This approach can reduce onsite labor requirements, improve quality consistency, and shorten installation windows. But the benefits depend on choosing the right assemblies and managing the handoff from design through fabrication to installation.

### Choose the right work to move off-site

Prefabrication is most effective when assemblies are repeatable, sufficiently defined, and practical to transport and install. For data center contractors, that means evaluating more than potential labor savings. A large electrical module may reduce onsite assembly time but introduce new requirements for transportation, lifting access, connection tolerances, and delivery sequencing.

Before committing to off-site production, teams should evaluate design stability, fabrication capacity, site constraints, and the potential impact of late changes. The goal isn't to prefabricate everything, move the right work into an environment where it can be produced more efficiently.

**Research snapshot | Industrialized construction**

In Autodesk's 2026 State of Design & Make research on industrialized construction, 76% of respondents said projects using these methods were more predictable in schedule and cost than traditional projects; 84% of organizations using them said finished-project quality improved. These are broader construction survey findings, not data center project performance measurements.



## Freeze what matters before fabrication

A coordinated model is the starting point. Fabrication-ready information must include approved dimensions, connection points, support requirements, equipment clearances, model revisions, and responsibility for interfaces between trades.

Contractors also need a clear process for releasing assemblies into production and communicating changes after release. Connected model, document, and issue workflows help teams track approvals and maintain a reliable record of what has been authorized for fabrication. A change discovered after an electrical module has been manufactured or shipped can quickly erase the schedule advantage of building it off-site.

## Connect the factory to the look-ahead plan

Prefabrication shifts work away from the jobsite, but it also creates new dependencies between manufacturing, logistics, and field execution.

Contractors should track fabrication progress alongside submittal approvals, material availability, factory inspections, shipment dates, unloading and rigging requirements, and installation readiness. A completed module arriving before the receiving area is available creates congestion and additional handling. A ready workface without its critical assembly can leave crews idle.

Connecting fabrication milestones to the construction look-ahead schedule helps teams coordinate deliveries with actual site conditions. For critical power and cooling systems, this coordination can be especially important to protecting downstream testing and commissioning milestones.

## Repeat the proven package

Data center programs often feature similar equipment configurations, infrastructure layouts, and installation requirements across multiple facilities. Contractors can build on that repetition by developing reusable fabrication packages that include approved drawings, assembly specifications, quality checks, connection details, and proven installation sequences.

But standardization should not eliminate the need to validate project-specific requirements. Equipment selections, site conditions, owner standards, and local regulations may require changes to an otherwise proven assembly. By capturing lessons learned and managing revisions consistently, contractors can improve fabrication efficiency without assuming that every facility is identical.

### Contractor takeaway

Prefabrication succeeds when manufacturing and site execution are planned together. Before releasing an assembly, confirm the approved design, trade interfaces, transport and lifting requirements, and installation date.

Then track it through fabrication, delivery, and field acceptance. The goal is not simply to build faster off-site, but to install the right assembly at the right time without rework.

05

# Connect every team, from office to field

## Reduce the time between a field question and a usable answer

Skilled electricians and mechanical crews should not spend their shift finding the right drawing or waiting for a response.

On data center sites, crews need current instructions, completed prerequisite work, available materials, and quick visibility into changes that affect their area.

### Create a dependable project information foundation

A common data environment (CDE) gives project teams a structured place to manage drawings, models, and other records, including access permissions, revisions, reviews, and approvals. Forma Data Management provides that foundation within Autodesk Forma. When revised drawings, related issues, and approvals stay connected, contractors can confirm which information has been approved for use and what decisions are still outstanding.

### Put that information in field hands

The Forma mobile app supports access to drawings, models, and documents and lets field teams capture photos, inspections, forms, and issues on-site. For an electrical crew installing a congested power distribution route, the important benefit is speed of response: record the condition at the point of work and route it to the right decision-maker without rebuilding the context later.

### Make quality part of daily work

Capture inspection evidence, corrective actions, and sign-offs as equipment and systems are installed. Records tied to the work are easier to review during construction and easier to assemble for turnover.



## Contractor spotlight | Rosendin Electric

Electrical contractor Rosendin Electric uses Forma to centralize project information, standardize quality workflows, and improve collaboration between office and field teams. With Bridge in Forma, Rosendin can share project information with general contractors while maintaining ownership of its data. For data center contractors, Rosendin demonstrates how a connected data environment can improve accountability, support consistent quality, and keep teams aligned across complex projects.

## Contractor takeaway

Pick a recent inspection and follow the record from the field to the office. Can you find the photos, corrective action, and final sign-off without searching across inboxes or separate folders? If not, improve that handoff while the work is still fresh.



06

# Protect cost and schedule certainty

## Treat procurement, change, and progress as one control problem

Data center projects can build a contractor's backlog quickly, but they can also put margins under pressure.

Specialized equipment, evolving designs, aggressive schedules, and complex electrical and mechanical scopes make costs difficult to predict. An estimate that was accurate at bid day may no longer reflect the work six months later. A delayed switchgear delivery can force crews to resequence work. An equipment substitution can affect multiple trades. Changes that aren't documented or evaluated promptly can turn into costs that are difficult to recover.

Cost and schedule pressures develop together. As conditions change, contractors need to see what those changes mean for the budget, the schedule, and the work that remains.

### Build estimates on reliable information

Cost control begins before construction. On data center projects, evolving equipment specifications, power requirements, cooling strategies, and construction methods can significantly influence quantities and costs.

When takeoffs and estimates rely on disconnected spreadsheets or outdated drawings, design changes can create gaps between what was priced and what must be built. Model-based takeoff and connected estimating workflows help contractors maintain more consistent quantities, track revisions, and understand how scope changes affect project costs.

Autodesk Forma's preconstruction capabilities support this process by connecting takeoff and estimating activities with project information, helping teams develop a more reliable foundation for cost planning. Just as important, contractors should document the assumptions behind their estimates. Equipment selections, allowances, exclusions, and installation requirements need to remain visible as designs evolve.





## Treat procurement as a critical schedule dependency

For data center contractors, procurement is not simply a purchasing activity. It can determine when major construction and commissioning milestones are achievable. Transformers, generators, switchgear, and specialized cooling equipment may require lengthy procurement and manufacturing periods. A delay can affect installation sequences, labor planning, and the readiness of entire electrical or mechanical systems.

Contractors need visibility beyond the purchase order. Submittal approvals, manufacturing milestones, delivery commitments, transportation, and installation readiness all influence the schedule.

Connecting procurement information with project schedules and field planning helps teams identify risks earlier and evaluate alternatives while options remain available.

## Understand the full impact of changes

On a data center project, a single change can affect far more than the original scope. Replacing an electrical component may require different supports, cable connections, clearances, or installation methods. Those adjustments can affect adjacent trades, prefabricated assemblies, material orders, and scheduled work.

The challenge is capturing the full impact before it becomes additional labor, rework, or lost productivity. Connected change management workflows help contractors document proposed changes, assign responsibility, evaluate cost and schedule implications, and maintain a clear record of approvals. Forma's cost-management capabilities can help connect change information with financial workflows, giving teams better visibility into potential exposures and approved adjustments. For contractors, the priority is to make the financial consequences of decisions visible while there is still time to respond.

## Connect field progress to financial performance

A budget report only tells part of the story. Contractors also need to understand whether installed progress matches the labor hours and costs being incurred. For example, an electrical contractor may have committed significant labor to a distribution system but completed less installation than planned because equipment access was restricted or prerequisite work was delayed.

If field progress, productivity, commitments, and cost forecasts are tracked separately, these problems may not become visible until margins have already been affected. Connecting field information with cost management helps project teams compare planned and actual performance, identify emerging pressures, and update forecasts based on current conditions. This allows contractors to address productivity issues, evaluate recovery options, and manage financial exposure before problems compound.

## Make schedule risk visible before milestones slip

A project can appear on schedule while critical dependencies are already at risk. A late equipment approval, unresolved access constraint, or delayed fabrication package may not immediately affect reported progress. But each can reduce the time available to complete installation and testing.

Contractors should regularly review schedule-critical constraints alongside procurement updates, open changes, and field progress. The goal is to distinguish activities that are simply behind plan from those that threaten critical milestones, particularly energization and commissioning.

When schedule discussions are informed by current project data, teams can prioritize the issues that matter most and take corrective action sooner.

### Contractor takeaway

Protecting margins requires visibility into cost and schedule exposure before it becomes unavoidable. Keep estimating assumptions current, track long-lead equipment against installation milestones, document the full impact of changes, and connect field progress to financial forecasts. The earlier contractors identify emerging risks, the more options they have to protect profitability.



07

# From construction complete to commissioning ready

## Connect testing, documentation, and asset information for a smoother transition to operations

Installed equipment isn't the same as operational readiness. For data center contractors, completing construction is only one milestone. Before a facility can support critical workloads, electrical distribution, backup power, cooling, controls, and other interconnected systems must be inspected, tested, and accepted.

An incomplete test record, unresolved deficiency, or missing equipment document can delay commissioning even when installation is finished. The challenge is ensuring that the work, its verification, and the information required for turnover are ready together.

### Plan for commissioning from the start

Commissioning readiness starts long before the final installation is complete. Data centers require carefully sequenced testing across electrical, mechanical, cooling, and control systems. Each activity depends on completed installations, available equipment, documented inspections, and coordination among specialty trades, commissioning authorities, and owner representatives. Contractors should identify these requirements early and incorporate them into construction planning.

By tracking system readiness, testing prerequisites, and outstanding work throughout the project, teams can address gaps before they threaten energization or commissioning milestones.

### Keep critical information in one place

One of the biggest challenges at turnover is gathering the information produced throughout construction. Approved drawings, equipment specifications, inspection records, test results, warranties, operating manuals, and corrective actions may be spread across different systems, contractors, and suppliers. When that information is fragmented, verifying system readiness becomes difficult, and assembling a complete handover package can require significant effort.

A common data environment helps contractors centralize project documentation, manage revisions, and maintain a traceable record of completed work. With Autodesk Forma, connected document, quality, and issue management workflows can help teams organize the information needed for testing and turnover as construction progresses. Instead of searching through emails and disconnected folders at the end of the project, teams can locate current records, confirm outstanding requirements, and give owners a more complete picture of what has been installed and verified.



## Connect asset data to future maintenance

For data center owners, the information collected during construction has value long after the project is handed over. Accurate equipment records help operations teams understand what was installed, where it is located, how it was tested, and what maintenance it requires. Contractors can support that transition by capturing asset identifiers, manufacturer information, model and serial numbers, warranties, operating instructions, and inspection and test records throughout installation. When this information is organized and linked to the relevant assets, owners have a stronger foundation for maintenance planning, troubleshooting, and future equipment replacement. It can also support digital twin and facility management initiatives, where reliable asset information is essential.
The goal is to deliver more than a completed facility. It is to provide the information owners need to operate and maintain its critical infrastructure.

### Owner perspective | Edged

Data center developer Edged uses Forma to standardize project information and digital delivery workflows across its growing portfolio of facilities. By establishing consistent data standards, Edged developed real-time KPI dashboards and workflows that feed its global digital twin database. For contractors, the lesson is clear: the information captured during construction can become a valuable operational asset when it is organized, consistent, and accessible beyond handover.






## Close issues before they delay acceptance

Commissioning readiness also depends on resolving outstanding work. Incomplete inspections, open quality issues, missing test documentation, and unresolved deficiencies can prevent systems from progressing into testing and acceptance.

Connected issue management workflows help contractors assign responsibility, track corrective actions, and verify resolution while maintaining a clear record of outstanding requirements. Project leaders can review readiness by system or equipment package instead of relying on fragmented closeout reports. This helps teams focus on the issues that could delay critical milestones and reduces the risk of last-minute surprises.

### Contractor takeaway

Successful turnover starts long before construction ends. By centralizing project information and capturing quality, testing, and asset records as work progresses, contractors can simplify commissioning preparation, reduce documentation gaps, and give owners reliable information to support future operations and maintenance.

08

# Conclusion: Build the next data center better

## The connected advantage for building at AI speed

Successful data center delivery depends on more than the performance of individual teams. It depends on how effectively those teams work together.

Design decisions affect fabrication. Procurement shapes installation schedules. Field execution determines commissioning readiness. Every handoff matters. Autodesk Forma helps contractors connect project data and workflows across design, preconstruction, construction, and operations. When teams can see how a change affects downstream work, they are better positioned to resolve issues before critical milestones are at risk.

### Connect the entire build, not just individual workflows

On a data center project, even a small information gap can have consequences across multiple trades. Forma creates a connected foundation where models, documents, coordination issues, approvals, field activity, and project information can work together.

Instead of managing each phase in isolation, contractors can maintain continuity between design intent and what happens in the field. For general contractors and specialty trades, that means less time reconciling information and more time making decisions that keep critical work moving.

### Turn complexity into a competitive advantage

Dense electrical distribution, sophisticated cooling infrastructure, specialized equipment, and rigorous testing requirements create dependencies across a data center project. Contractors need to see how those systems and their installation schedules affect one another, especially when changes occur.

Forma helps teams coordinate these complexities earlier and maintain visibility as work progresses. From model coordination and preconstruction planning to field execution, quality, and cost management, connected workflows help contractors identify risks, resolve issues, and understand the downstream impact of changes.

That visibility becomes especially valuable when every decision can affect time to power. The advantage isn't simply managing more information. It's being able to act on the right information before problems reach the critical path.

### Make every project the foundation for the next

The most successful data center contractors won't just deliver one complex project well. They'll find ways to repeat that success across an entire program.

Every completed project generates valuable knowledge, from proven coordination approaches and fabrication packages to installation methods, quality records, and cost performance. Forma helps contractors organize and preserve that information within connected workflows, making it easier to apply lessons learned, standardize successful practices, and improve consistency across future builds. For contractors supporting owners with expanding data center portfolios, that repeatability can become a meaningful competitive advantage.

# The future of data center construction is connected

Building at AI speed doesn't mean asking crews to work harder or accepting greater risk to meet aggressive deadlines. It means giving contractors a better foundation for planning, coordinating, and executing complex work.

One that connects people across disciplines. One that keeps decisions and project information moving from design to field. One that helps teams see risks earlier, protect critical milestones, and build on what they've already learned.

Autodesk Forma brings that connected approach to data center construction, helping contractors move faster without losing control of the complexity behind every build.

Every power-on milestone depends on decisions made long before commissioning. Keeping those decisions connected gives the next build a stronger starting point.

**Explore Autodesk Forma for Data Center Contractors.**

Explore now





AUTODESK

Autodesk is changing how the world is designed and made. Our technology spans architecture, engineering, construction, product design, manufacturing, media, and entertainment, empowering innovators everywhere to solve challenges big and small. From greener buildings to smarter products to more mesmerizing blockbusters, Autodesk software helps our customers to design and make a better world for all.

For more information visit construction.autodesk.com

**United States** +1 (866) 475-3802
construction.autodesk.com