



The Build Phase of Data Center Construction

Data center projects leave little room for error once construction begins. By the build stage, teams are no longer reviewing plans on paper. They are installing systems, checking tolerances, coordinating trades, and making sure the facility is coming together as planned. At this stage, teams verify materials, construction practices, enclosure performance, mechanical systems, electrical installations, and network infrastructure to support long-term data center quality.

During this phase, field work begins to reveal how well the project is coming together. In-factory inspection, expediting, and post-shipment inspections keep projects on-time by quickly identifying and resolving material issues. Installation quality determines whether systems are installed correctly. Enclosure testing examines air infiltration, water penetration, and structural integrity. Mechanical review focuses on HVAC-R checks related to cooling system operation and balance. Information and communications technology testing assesses fiber performance, cabling, and telecom performance. Electrical validation includes safety testing and certification for all electrical/electronic equipment installed in the building, as well as field evaluations for custom equipment that must meet National Electrical Code and National Fire Code

“During the build phase of data center construction, field work begins to reveal how well the project is coming together.”

requirements. These build-phase services support construction quality and performance verification.

What Is Checked During the Build Phase

Some of the most important reviews during the build phase happen in the factory and in the field as work is being installed. Intertek highlights several areas of focus:

- Factory acceptance testing to help ensure that key equipment was built as designed
- Field verification of installation and workmanship
- Enclosure testing for air infiltration, water penetration, and structural performance
- Review of steel, piping, tanks, and related components



The Build Phase of Data Center Construction

- Testing of fiber, cabling, telecom systems, and equipment
- Mechanical and HVAC-R checks tied to cooling system operation and balance
- Electrical equipment installed and deployed throughout the building according to local electrical code

Intertek's build-phase summary ties those reviews to construction outcomes. Field verification helps prevent rework and scheduling delays. Air, water, electrical, and structural field testing confirms envelope performance under pressure or weather load. Evaluation of steel, piping, and equipment helps detect hidden defects before operation. Fiber, cabling, and telecom testing support network reliability and interoperability. HVAC-R performance checks verify cooling system balance (Intertek). Electrical certification protects equipment users from fire and shock hazards and is a requirement of owner specifications.

Why Problems Get Harder to Fix

As construction advances, flexibility begins to decrease. A slab or installation problem can impact subsequent trades, and compliance gaps in electrical hardware will create approval delays. An enclosure issue might not be visible until testing starts. A mechanical imbalance can carry over into startup. A network problem can affect performance across connected systems. That's why the build phase requires quality experience and expertise. It's the stage where project teams can still resolve issues while access is available and before final testing begins.

Intertek Services During the Build Phase

Intertek supports data center construction with services that include:

- Data center inspection
- Data center monitoring

- Equipment inspection – in-factory and on-site
- Equipment expediting – field/desk and proactive/reactive
- Construction materials and building product testing and inspection
- Nondestructive examination for steel, piping, tanks, and related components
- Information and communications technology equipment testing
- Mechanical and HVAC-R performance evaluations
- Electrical safety testing and certification (ETL)

Preparing for Commissioning

The build phase does not end with installation. It also affects how smoothly the project moves into commissioning. By that point, teams want to know that the enclosure, mechanical systems, electrical installations, and network infrastructure have been checked in the field and are in place, according to specification requirements.

When installation issues, hidden defects, or coordination gaps are found during construction, teams have a better chance to address them before startup, testing, and turnover begin.

Click here to learn more about Intertek's data center services.

LinkedIn Insights (Issue 014)



1.800.WORLDLAB



icenter@intertek.com



intertek.com/building

*Click here to
subscribe
to our LinkedIn
Newsletter*