

PERSPECTIVE

Construction Coordination Beyond Clash Detection

Objects can fit in their final positions and still be difficult to install, inspect, operate, or maintain. Coordination needs to consider how the work actually happens.

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Geometry answers an important question

Having worked with three-dimensional construction information for many years, I respect the value of detecting geometric conflicts. Finding two components competing for the same space before they reach the field is an important capability. It gives the team an opportunity to resolve a problem while the options are still relatively open.

But a model with no reported clashes is not a complete statement of constructability. It reflects the geometry, rules, tolerances, and scope included in that particular check. If the check did not represent installation access or a maintenance envelope, a clean result says nothing about those conditions.

I want the team to understand what was checked and what remains outside the check.

Final position is only one condition

Picture an assembly that fits neatly between adjacent construction. In its final position, nothing overlaps. Now consider the route required to bring it into place, the room needed to rotate it, and the space a worker needs to make the connection.

Is there enough room to hook up the services? Can someone reach the connection, position a wrench, and complete the movement needed to tighten a bolt? A fastener may be visible but inaccessible. A connection may fit geometrically while leaving no practical room for the hands, tools, or equipment needed to assemble it. A panel may open only after another component is removed.

The relevant envelope depends on the task. Installation access, inspection access, operating clearance, and future replacement access may all differ. Treating them as one generic clearance can hide the actual requirement or create unnecessary restrictions.

Look above, below, and inside the room

Coordination also has to reach beyond the main occupied room. Interstitial spaces above ceilings and below floors can contain dense arrangements of structure, ductwork, piping, cable trays, and equipment. Those systems can clash with one another, with the structure, or with the access space needed to connect and service adjacent work.

A room may appear fully coordinated while the space above it contains a valve that cannot be reached or equipment that cannot be removed. Below a raised floor, services may fit individually but leave insufficient room to make a connection or reach the components beneath them. The check needs to account for both physical interference and the practical use of the space that remains.

The same concern applies inside walls. Consider a medical-gas line or another concealed service. Is there enough space to make the joint, use the required tools, and inspect the work before the wall closes? Where a component requires ongoing access, does the access panel provide a usable route to it, or does another service or framing member block the way?

An opening alone does not establish access. Its location, dimensions, depth, and the obstructions between the opening and the component all matter. Being able to see something is different from being able to work on it.

I want coordination to account for these concealed spaces as deliberately as it accounts for the room itself. The question is whether the systems fit—and whether the team can connect, inspect, and service them under the conditions in which the work will actually happen.

Distinguish an intended connection from a conflict

Construction assemblies contain intentional contact and overlap. Components join, bear on one another, pass through prepared openings, and form layered systems. A useful coordination process has to distinguish those relationships from unintended interference.

That requires more than a simple statement that two shapes intersect. What are the objects? Are they intended to connect? Is an opening or sleeve represented separately? What allowance applies to the installation? Is the apparent conflict a modeling convention that requires review rather than a physical problem?

I do not want a team spending its time clearing thousands of predictable false alarms. I want the checks to reflect the relationships between the components and to expose the cases where those relationships are uncertain. Better classification and explicit rules can make the review more meaningful.

Add the sequence of construction

Two systems may coexist in the final model but require a particular order of installation. The first trade may temporarily occupy the space needed by another. A lift or temporary support may need a path that disappears when adjacent work is completed.

Consider equipment placed before a wall closes an access route. The finished model may look exactly right regardless of when the equipment arrives. The construction plan cannot be indifferent to that timing. The same dependency applies when concealed services must be connected and inspected before wall or ceiling closure.

Coordination therefore needs a connection to work packages and sequence. The project should record which access assumptions depend on another activity remaining incomplete. When the sequence changes, those assumptions deserve another look.

This does not mean every movement must be simulated in detail. It means the team should identify where sequence materially changes feasibility and preserve that dependency.

Make the rule and evidence visible

A clearance issue should explain the applicable requirement and where it came from. It may originate in a manufacturer’s instruction, the design, an owner standard, or a project-specific construction plan. The responsible reviewer needs that context to judge whether the proposed solution is acceptable.

The record should also distinguish a required envelope from an assumed one. An early planning allowance can be useful, but it should not silently become a final acceptance criterion. As product information develops, the team should be able to replace assumptions with verified requirements.

The same discipline applies to field verification. A model can represent intended access. An observation can establish whether the installed condition provides it. Those are related forms of evidence, but they are not interchangeable.

Ask a better coordination question

Instead of stopping at whether objects collide, I would ask whether the team can install, connect, inspect, use, and maintain the affected work under the planned conditions. Each answer may rely on different information and a different responsible party.

That wider question also changes what happens after an issue is resolved. The solution should remain connected to the installation instruction or inspection that protects it. Otherwise, an access decision made during coordination can disappear when the work reaches the field.

For me, this is a natural next step for construction intelligence: preserving the purpose of the space around an object, not just the object’s shape. A clean geometric check is valuable. A clear understanding of how the assembly will function through construction and operation is more valuable still.

What Comes Next

Next, I’ll follow another important connection: whether the product installed in the field matches the product and configuration that were approved.

Read online: inertiasystems.com/resources/blog/a-clash-free-model-is-only-the-beginning

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