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Contracting for Warehouse Automation: Key Legal Issues in a Hybrid Construction-Technology Environment

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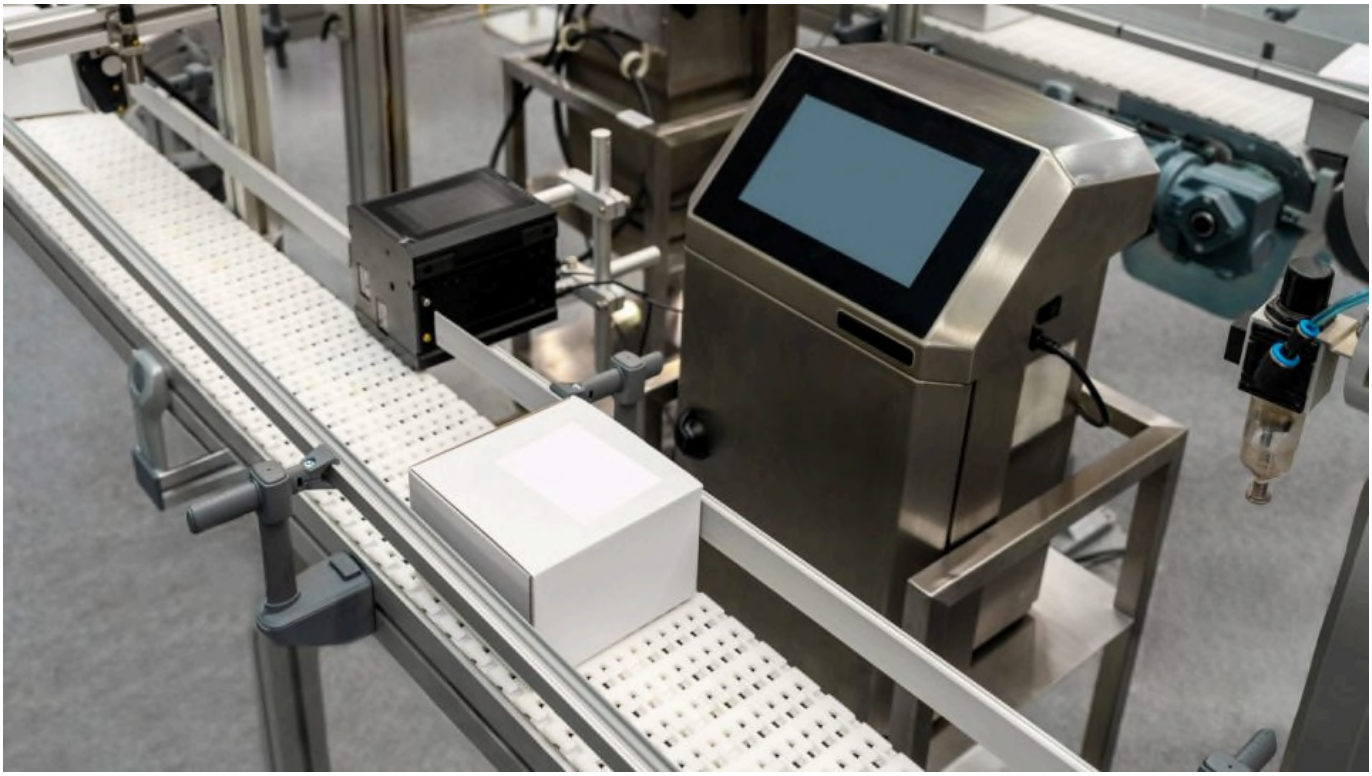
Summary

- Warehouse automation projects combine construction, engineering, proprietary software, and automation systems, requiring tailored contracts beyond traditional construction or purchase agreements to address integration, performance metrics, and cybersecurity.
- Standard industry forms like AIA or ConsensusDocs lack provisions for key issues such as commissioning, IP rights, and system performance; EPC-style frameworks often better reflect these projects' complexity.
- Contracts must clearly define roles (e.g., integrator), acceptance milestones, and performance benchmarks, as well as allocate responsibility for site conditions, payment structures, and codes of conduct compliance.
- Unique risks include liquidated damages tied to schedule, performance, and availability; software interoperability challenges; and evolving security and sustainability obligations, making comprehensive and coordinated documentation critical.



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Projects involving warehouse automation systems combine traditional construction, complex engineering, software development and licensing, and advanced automation technology. While they resemble traditional construction projects in many respects, they also involve additional complexities such as system integration, cybersecurity, intellectual property, and confidentiality. Understanding the unique contract structures, terminology, and risks in these projects is essential for stakeholders navigating this complex and specialized field.

In many cases, the objective for these projects is a facility with fully automated or semi-automated storage, sortation and/or fulfillment processes designed to meet various business needs. As an initial matter, it is important to note that while construction is a key function on these projects, most project stakeholders do not see these as "construction contracts." As a result, many owners may look to use purchase orders that would be used for capital equipment purchase, or contracts more suited to raw materials or finished goods, which lack the process focused details found in typical construction contracts. Meanwhile, common construction form agreements are poorly suited to warehouse automation.

AIA, ConsensusDocs, and DBIA forms focus on vertical construction and generally lack terms for performance metrics, commissioning, and software/IP concerns. Even EJCDC forms, while tailored to engineering based projects, do not adequately address the software and performance needs of automation projects. [1] These contracts often share elements of EPC (Engineer, Procure, Construct) contracts due to their reliance on

specialized equipment and performance criteria, but the addition of proprietary software and cybersecurity concerns adds further complexity.

Warehouse automation contracts often use unfamiliar terminology. For example, roles such as integrator, construction manager, and design-builder carry distinct responsibilities. Provisional acceptance may indicate initial testing success, while substantial completion signals operational readiness. Defining these terms clearly is essential.

In traditional construction (e.g., hotels or wastewater facilities), a general contractor or construction manager oversees coordination. Even with complex equipment like filtration or power systems, this role is clear. In warehouse automation projects, however, the "integrator" may handle automated material handling systems, integrating physical construction, such as racking and conveyors, as well as automation, software, and data connectivity. Contracts must reflect this expanded scope. Typically, owners will enter into separate agreements: one with a general contractor for the facility, and another with the integrator for the automation systems installed within the facility.

In traditional construction projects (such as for the construction of a hotel or waste water treatment facility), an entity referred to as the construction manager or general contractor typically oversees the project's coordination and completion. This is the case even where the project will include the integration of complex mechanical equipment such as filtration systems or power generation equipment. In the context of warehouse automation projects, however, this role is generally referred to as an "integrator." Integrators are generally responsible for ensuring the successful integration of complex systems, such as automation equipment, software platforms, and data connectivity. This distinction underscores the multifaceted nature of these projects and the need for contracts to address these expanded responsibilities.

Negotiation of contracts for warehouse automation projects is often complicated by the fact that many customers (even large multinational companies) lack contracts that fit this form of project. Standard construction agreements often fall short due to performance-based acceptance criteria. Simple purchasing contracts are also inadequate, as they focus on delivery quantities rather than system performance or installation. Tailored agreements are essential.

Software is critical to identifying, routing, and tracking orders or goods. IT security must be addressed contractually given rising cyber threats. Integration with enterprise systems also creates technical challenges, demanding clear contract terms for cybersecurity, software performance, and interoperability. Contracts also typically include detailed exhibits specifying equipment, performance criteria, and installation requirements. These must align with the main contract to avoid disputes.

Warehouse automation contracts frequently include multiple types of liquidated damages. Performance LDs are applied when the system fails to meet contractual performance benchmarks, such as throughput rates or system response times. Schedule LDs are linked to project timelines and are often tied to a "go-live" date, which is akin to substantial completion. Availability LDs, though rare, may apply if the system uptime falls below a contractual threshold, causing interruptions to operations. Defining these LDs clearly is crucial. For instance, schedule LDs are typically limited to the go-live milestone, with rare imposition on interim milestones such as equipment delivery.

Large customers often require adherence to comprehensive codes of conduct, which may include ethical labor practices, environmental sustainability standards, and vendor compliance requirements. These codes are typically incorporated into the contract, but are often located elsewhere (such as the customer's website) making it essential to review and negotiate their scope to avoid unexpected obligations.

While these projects are sometimes installed in an existing facility, making site conditions seem less of a focus, issues like floor load capacity, power availability, and ceiling height must align with the system's needs. Clear responsibilities for addressing these site interdependencies should be outlined in the contract.

Payment structures often differ from traditional construction agreements. Typical approaches include milestone payments tied to specific project achievements, such as completion of engineering, equipment delivery or system commissioning. Monthly requisitions or percentage complete models, common in traditional construction, are less suited for system-based projects. Retainage, the withholding of a portion of payment until completion of punch list items, is also common. Defining the milestones for release of retainage is essential to avoid disputes. Payment security in warehouse automation projects sometimes may involve letters of credit or bonds. Determining the appropriate mechanism depends on factors like project size, duration, and the parties' financial strength.

Warehouse automation contracts require a tailored approach to address the interplay between designing, engineering, construction, equipment, and software. By focusing on the unique challenges outlined above, parties can mitigate risks, ensure project success, and establish a solid foundation for collaboration.

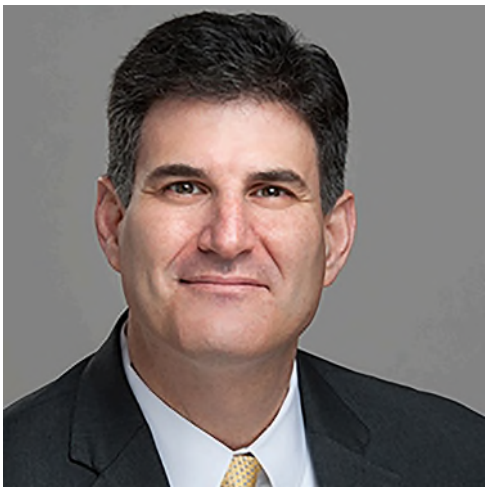
Warehouse automation projects are distinct, blending construction, automation, and software. They resemble EPC contracts in complexity, but proprietary software and integration elevate their demands. Tailored agreements are critical to aligning risk, ensuring success, and supporting collaboration. The contractual landscape must reflect this complexity. Stakeholders must avoid the temptation to retrofit traditional construction or purchase agreements and instead adopt tailored contract structures that

reflect the unique roles, acceptance criteria, and integration demands of these projects. With thoughtful contract drafting and a clear understanding of the technical and legal issues involved, parties can allocate risk appropriately, streamline project execution, and foster successful outcomes in this fast-evolving sector.

Endnotes

1. The lack of any effective standard form contract likely stems from the fact that there is no US based standard form contract for the Engineer-Procure-Construct delivery model that is the best fit for these projects.

Authors



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Ken practices in the firm's Boston, Massachusetts and Concord, New Hampshire offices and chairs the firm's Construction Law Practice Group and Warehouse Management and Material Handling Group. For nearly than 30 years, Ken...