

Construction Disputes in Motion: Speed, Agility, and Adapting to Change



15th Annual Construction Disputes Report
North America | 2025

Construction Disputes in Motion: Speed, Agility, and Adapting to Change

During the year 2024, the average value of construction disputes in North America saw a significant surge, increasing by 40%—a stark contrast to the modest 1% rise observed from 2022 to 2023. Since 2021, dispute values have nearly doubled, and compared to 2019, they have tripled. Meanwhile, the average time required to resolve disputes has dropped by 14%, marking the lowest resolution timeframe in the past decade.



This year's Construction Disputes Report highlights the critical need for speed and agility in avoiding, mitigating, and resolving disputes amidst the fast-paced changes reshaping the construction industry. This year's report also incorporates sections that address factors within key market sectors. While last year's report focused on stakeholders adapting to rapid technological advancements—such as the integration of digital systems into projects and the interpretation of digital records—these challenges persist alongside new variables that can impact project delivery, such as shifts in the U.S. administration. These evolving factors present both complexities and opportunities, demanding that the industry not only adapt to change but also operate with efficiency and resilience to navigate an increasingly dynamic landscape.

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We define construction disputes as...

A disagreement in which two parties, typically the owner and the contractor, differ in the assertion of a perceived contractual right, resulting in a determination issued by the owner in accordance with the process specified in the contract. If the determination is disputed by the contractor, the matter becomes a formal dispute. The value of a dispute is the claimed value of additional work or event as asserted by the contractor. The length of a dispute is the duration between when the claim is formally submitted under the contract and the time of resolution or the conclusion of the hearing.

Introduction

Welcome to the 15th Annual Arcadis Construction Disputes Report: *Construction Disputes in Motion: Speed, Agility, and Adapting to Change*, which reveals key trends and insights into the construction disputes market in North America.

While every dispute is unique, recognizing trends in common causes and tracking statistical averages provides valuable insight into industry issues and can steer project participants toward best practices and away from potential problems. Guided by our experience over the past year and results from our annual industry survey, we are pleased to share our findings regarding current market trends.

Based on our research, the construction industry is undergoing rapid transformation, driven by advancing technology and shifting global dynamics. Innovations such as Artificial Intelligence (AI), digital platforms, and robotics are becoming essential tools across the sector, enabling greater efficiency and precision. However, project stakeholders are increasingly challenged by workforce shortages, skill gaps, supply chain disruptions, price volatility, and regulatory delays. These obstacles, coupled with the complexities of technology adoption and integration, require the industry to operate with speed and agility while adapting to constant change. As these factors continue to evolve, understanding and balancing their impact is critical to minimizing disputes and ensuring successful project delivery.

The construction industry is expected to face a dynamic and evolving landscape in 2025, with mixed forecasts shaping its trajectory. While public sector construction saw significant growth in 2024, fueled by federal programs and infrastructure investment, recent policy changes, such as halting disbursements under the IIJA and IRA, could disrupt some projects in the power, transportation, and renewable energy sectors. Despite this, and as detailed in Arcadis' Winter 2025 Market View Report, manufacturing remains a standout sector, having doubled in size since 2021 and continuing to grow steadily, with a 12% increase in 2024 alone. Residential construction, which experienced a strong recovery earlier in 2024, has slowed, though recent housing data suggests a potential rebound. Additionally, advancements in construction technologies, including Artificial Intelligence (AI) and digital platforms, are driving efficiency across the sector, while stakeholders continue adapting to challenges like workforce shortages, supply chain disruptions, and economic uncertainties. Overall, the construction industry in 2025 presents both opportunities and complexities, requiring agility and innovation to navigate a rapidly shifting market.

The report also reveals the following:

- Respondents are anticipating seeing more disputes in 2025 than in 2024.
- Contract and specification reviews remained into the top slot as the most effective dispute avoidance technique.
- Respondents continue to experience impacts due to rising material costs, supply chain disruptions and labor shortages and skills gaps.
- The building sector moved into the top slot having the most disputes during 2024.

If you have any feedback or insight that you wish to share, please contact us.



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Guest Foreword

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It is an honor to contribute this foreword to Arcadis' 15th Annual Construction Disputes Report, *Construction Disputes in Motion: Speed, Agility, and Adapting to Change*. Each year, this publication provides the construction industry with not only timely insights but also a critical lens through which we can better understand the trends, challenges, and opportunities in the construction industry as they concern dispute resolution. This year's report presents a striking picture of a sector in rapid transformation. In North America, construction disputes rose by a staggering 40% over the past year. Yet despite this increase, the time to resolve those disputes dropped by 14%, marking the shortest average resolution timeframe in a decade—just 12.5 months. Even more notably, the average value of disputes soared by over \$60 million, emphasizing both the growing complexity and financial stakes at play. Arcadis has done an exceptional job of not only capturing these data points but also contextualizing them within the broader forces reshaping our industry. From the impact of evolving technology to shifting global market dynamics, the report makes it clear: agility and adaptation are no longer optional—they are essential.

On behalf of the ABA Forum on Construction Law, we are particularly grateful for Arcadis' continued commitment to publishing this report, which serves as a cornerstone resource for industry professionals, legal practitioners, and stakeholders alike. The depth of the analysis—from root causes such as errors in contract documents and failure to adhere to contractual obligations, to the emphasis on proactive avoidance techniques like contract reviews, open communication, and risk management—provides invaluable guidance. While these strategies can seem broad, the real-world data supports their effectiveness when implemented thoughtfully. The Forum is proud to share a common mission with Arcadis: to elevate knowledge, promote collaboration, and foster innovation across the construction industry. Committed to providing attorneys, professionals, and industry participants with the education and resources they need to navigate a landscape that is both increasingly complex and full of opportunity, if you have not attended a Forum meeting yet, we encourage you to do so. Together, through education, and efforts like this exceptional report by Arcadis, we hope to shape a more informed, agile, and resilient construction community.





Navigating Disputes in a Volatile Construction Landscape

The construction industry is no stranger to uncertainty, but in 2025, the stakes are higher than ever. With fluctuating economic conditions, supply chain disruptions, and evolving regulations, the landscape has become increasingly unpredictable. These challenges often give rise to disputes, as stakeholders struggle to adapt to rapid change. Forecasts for the construction market in 2025 paint a picture of both opportunity and risk. Global construction spending is expected to grow, driven by infrastructure projects, renewable energy initiatives, and urban expansion. However, economic volatility, geopolitical tensions, and climate change will continue to impact costs, timelines, and resource availability.

Key risks such as labor shortages and material price spikes are likely to amplify disputes across all project stages. Contractors may face delays due to supply chain bottlenecks, while clients may demand project acceleration to avoid further cost overruns. These scenarios may lead to disagreements over contract terms, liability, and payment schedules, creating fertile ground for disputes.

Speed is becoming a crucial factor in resolving construction disputes in an era of constant flux. Traditional dispute resolution processes, such as litigation, are time-consuming and costly. As disputes arise in projects with tight deadlines and escalating expenses, stakeholders prioritize swift resolutions to minimize disruptions.

Speed is becoming a crucial factor in resolving construction disputes in an era of constant flux.

Alternative dispute resolution (ADR) methods, such as mediation and neutral evaluators, have gained traction for their ability to deliver faster outcomes. Adopting digital tools and technologies

further streamline dispute resolution processes. For example, real-time data tracking can provide instant access to project records, enabling quicker analysis and evidence-based decision-making.

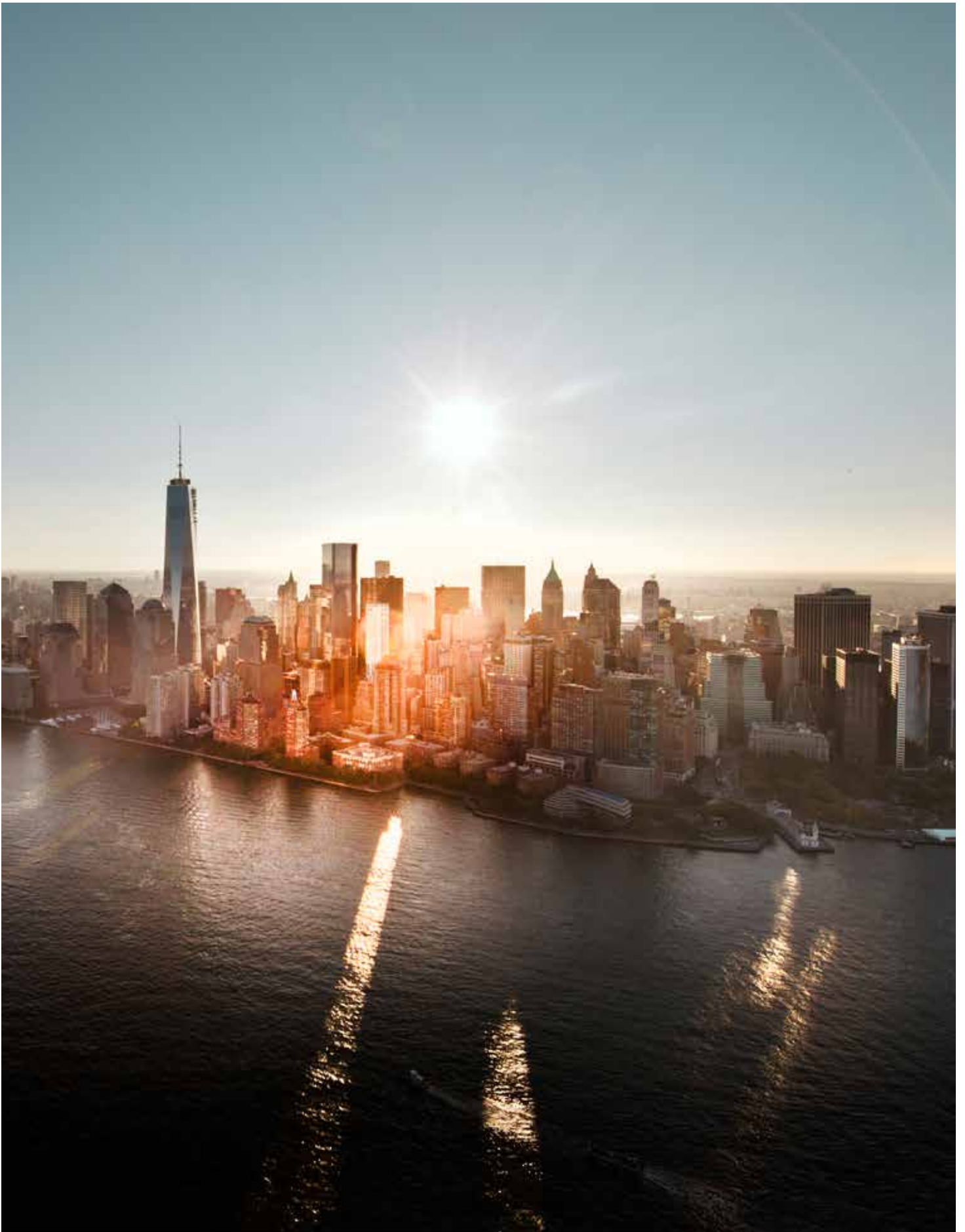
The emphasis on speed is not only about resolving disputes efficiently but also about preventing them. A proactive approach using risk management, supported by technology and data analytics, allows stakeholders to identify potential issues early and address them before they escalate into full-blown conflicts.

Agility is another vital attribute for mitigating disputes in a rapidly changing construction market. Contracts must be designed to accommodate uncertainty and change, with clear provisions for risk allocation and flexible timelines. Collaboration among stakeholders is equally important. Open communication and a willingness to quickly resolve unforeseen circumstances can prevent disputes from arising in the first place. Project teams must also be prepared to pivot when confronted with challenges such as regulatory shifts or technological disruptions.

Adapting to change is equally relevant to the skills required for dispute resolution. Project teams must embrace innovation to mitigate risks and address disputes effectively. Predictive analytics powered by artificial intelligence can forecast potential project disruptions, enabling stakeholders to take preemptive actions.

Additionally, the adoption of collaborative contracting models, such as integrated project delivery (IPD), can foster shared accountability and reduce adversarial relationships. By aligning incentives and promoting teamwork, these models encourage stakeholders to focus on the collective success of the project, rather than engaging in disputes.

By embracing these principles, stakeholders can turn potential conflicts into opportunities for growth and innovation.



Overall Findings

It is noteworthy that the average value of disputes significantly increased and the average time taken to resolve disputes decreased marginally from 2023 to 2024 as the industry continues to embrace digital technology. However, the average value of disputes remains at post-COVID historic highs.

A majority of survey respondents experienced challenges due to workforce shortages and skill gaps, supply chain disruption and price volatility. Overall, our respondents handled more disputes in 2024 than in 2023, and we expect this to increase in 2025. As noted in the introduction, this year's report highlights the rapid changes and impacts that the construction industry is currently facing. This is forcing project participants to do things differently.

Most of our respondents this year reported **increased dispute activity**.

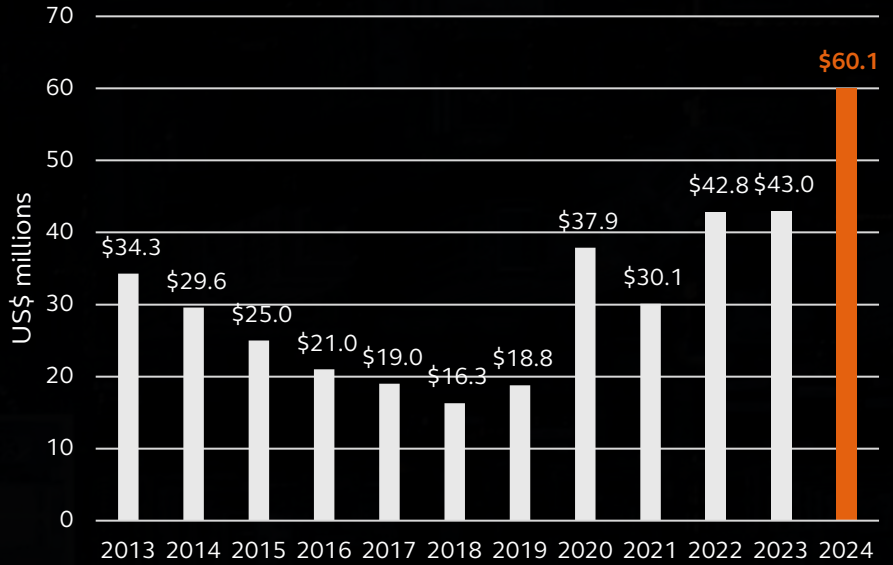
The highest value dispute reported by the respondents was

US\$1.1 billion

The average value of disputes increased significantly to

\$60.1 million

↑ **39.80%**

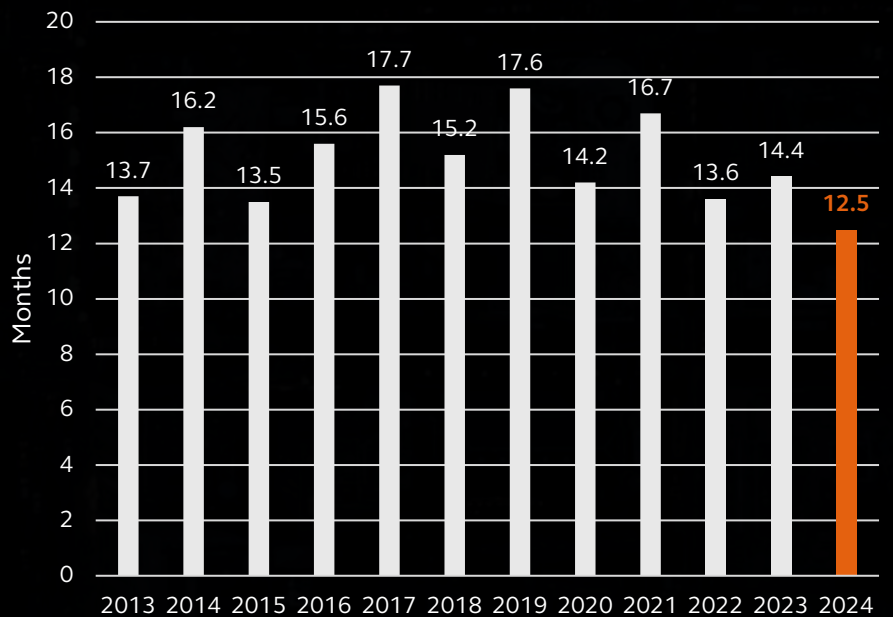


North America Average Dispute Value

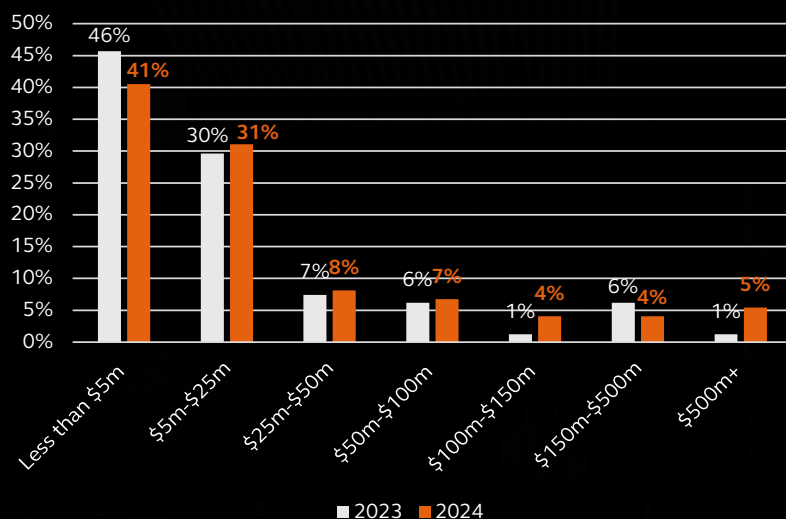
The average length of disputes decreased marginally to

12.5 months

↓ **13.40%**



North America Average Dispute Length



While the average value of disputes has increased significantly, a deeper review of the survey data reveals that the vast majority (80%) of claim values are \$25M or less and almost half of all claims are valued at less than \$5M. This indicates that the overall average is heavily influenced by only a few “mega” claims which drives the overall average up. Year over year, the distribution of claim values has not changed significantly.

Average Dispute Value Distribution

Overall dispute cause

2024 Rank		2023 Rank
1	Errors and/or omissions in the contract documents	1 (tied)
2	Owner/Contractor/Subcontractor failing to understand and/or comply with its contractual obligations	
3	Owner-directed changes	4

Most effective claims avoidance techniques

2024 Rank		2023 Rank
1	Contract and specification reviews	1
2	Communications (good)	6
3	Risk management	2

Most important factors in the mitigation/early resolution of disputes

2024 Rank		2023 Rank
1	Owner/contractor willingness to compromise	1
2	Accurate and timely schedules and reviews by project staff or third parties	2
3	Contractor transparency of cost data in support of claimed damages	4



North America

Over the past year, the average value of disputes in North America was \$60.1 million which is a significant increase over 2023's value (\$43.0 million). Values have trended up since 2021 when the average value was \$30.1 million. The 2024 results are over triple what we saw from our 2019 survey results. As we observed in last year's report, the results indicate that the industry has not fully recovered from the challenges it faced in 2020, compounded by supply chain and labor issues.

In 2024, the average time to resolve construction disputes in North America decreased from 14.4 months in 2023 to 12.5 months—a reduction of 13.4%. This marks the lowest average dispute resolution time reported in the past decade. Furthermore, it represents a significant improvement compared to 2021, when the average duration was 16.7 months, reflecting a reduction of 4.2 months. Coupled with a notable increase in dispute values over the last five years, these findings suggest that the industry is making meaningful progress in streamlining the dispute resolution process. The data also highlights a trend among project stakeholders aiming to avoid formal litigation, where outcomes can be less predictable.

Last year's report, *Managing Construction Disputes in the Digital Age*, highlighted how the construction industry is rapidly adapting to technological advancements, including the integration of digital systems into project workflows and the management of digital records. Today, Artificial Intelligence (AI) is increasingly becoming a part of everyday life, influencing industries and reshaping traditional processes. In construction, AI is transforming day-to-day operations, from project planning and design optimization to predictive maintenance and risk mitigation. AI-powered tools enable faster, data-driven decision-making, allowing contractors to improve efficiency, reduce material waste, and allocate resources more effectively. Technologies such as autonomous drones, AI-powered project management platforms, and predictive analytics are streamlining workflows, enhancing safety, and driving productivity across job sites.

However, while the benefits of AI are undeniable, there are still many unknowns about its long-term impact on the construction industry. Questions remain regarding its reliability in critical applications, ethical considerations surrounding data use, and the potential for unforeseen risks in dispute resolution processes. Stakeholders are still navigating the balance between leveraging AI's capabilities and understanding its limitations, as the technology continues to evolve. As the industry embraces this digital transformation, it is essential to remain aware of these uncertainties and proactively address them to unlock AI's full potential while mitigating potential challenges.

Our survey results for the 2025 Arcadis Construction Disputes Report reaffirm concerns raised in previous editions. While inflation showed signs of stabilization in 2024, with construction material price trends plateauing, the industry continues to grapple with other significant challenges and opportunities. According to Arcadis' Winter 2025 U.S. Market View Report, the construction sector is expected to rely more heavily on private sector performance, with growth driven by advancements in construction techniques and innovations such as modular construction, sustainable building practices, and renewable energy integration. These developments are anticipated to enhance efficiency and productivity, paving the way for a dynamic and thriving market outlook.

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Despite these promising advancements, uncertainties remain. Inflationary pressures related to key materials like steel and aluminum continue to pose risks, particularly with ongoing tariff implications. Coupled with workforce shortages, supply chain disruptions, and regulatory hurdles, the industry faces a complex landscape that demands adaptability and resilience from stakeholders. Nevertheless, with strategic investments in technology and sustainability-focused practices, construction activity is poised for robust expansion in 2025, presenting exciting opportunities to operate with speed, agility and adapt to change.



Dispute Causes

For 2024, errors and/or omissions in contract documents once again topped the list of the most common causes of construction disputes in North America, marking the third consecutive year this issue has ranked among the top two. Close behind, the failure of Owners, Contractors, or Subcontractors to fully understand and/or comply with their contractual obligations retained its position in second place for the second year running. Rounding out the top three were Owner-directed changes, which, in many cases, are closely linked to errors or omissions in contract documents. These findings highlight the critical need for clearer contract drafting, stronger compliance measures, and proactive communication to mitigate disputes within the industry.

This year's survey results reaffirm the ongoing challenges of delivering complex projects under tight deadlines and budget constraints. Respondents consistently pointed to errors and omissions in contract documents as the leading cause of disputes in North America for 2024, highlighting the critical role that clear and comprehensive documentation plays in avoiding conflicts. These errors often stem from miscommunications during project planning, design flaws, or inconsistencies in contractual specifications. Ambiguities in project documentation and scope definitions only compound misunderstandings among stakeholders, leading to delays, cost overruns, and quality issues that escalate disputes.

Additionally, the failure of project participants to thoroughly understand and comply with their contractual obligations remains a significant concern, ranking as the second most common cause of disputes this year. Misaligned expectations, unclear scope requirements, and lapses in adherence to agreed-upon timelines and standards are frequent triggers for conflict. Respondents highlighted that a lack of contract knowledge among both owners and contractors often amplifies these issues, creating a cycle of misinterpretation and dispute. As noted in the survey results, unrealistic schedules and budget pressures further fuel these conflicts, with many stakeholders struggling to balance performance demands with contractual compliance.

To effectively mitigate disputes, survey respondents emphasized the importance of early stakeholder engagement and collaborative approaches. Engaging project teams upfront to clarify scope, responsibilities, and expectations can prevent misunderstandings before they arise. Furthermore, aligning schedules and budgets with realistic projections and fostering accountability across all parties are essential strategies for reducing disputes. Proactive measures such as contract training programs, centralized communication platforms, and the implementation of early resolution forums like mediation or dispute review boards were widely recommended.

As the construction industry continues to adapt to rapid changes—including advancements in technology, sustainability requirements, and regulatory pressures—agility and collaboration will be critical in ensuring successful project outcomes. By combining robust planning, transparent communication, and clear documentation, stakeholders can navigate the complexities of modern projects with speed and agility while minimizing the risk of disputes.

Errors and/or omissions in contract documents once again topped the list of the most common causes of construction disputes in North America.



Looking Forward

The construction industry continues to evolve rapidly, facing mounting pressures from tighter schedules, rising costs, and shifting market demands. Supply chain disruptions, price escalation, labor shortages, and delays remain prominent contributors to disputes, with 56% of survey respondents identifying these issues as key sources of conflict in 2024. Disputes frequently emerge over cost allocation, schedule adjustments, and contract modifications, underscoring the need for project stakeholders to adopt proactive strategies to mitigate risks early. According to the Winter 2025 U.S. Market Report, fluctuating material costs, including steel tariffs that could increase frame costs by 7-10%, are further exacerbating financial pressures across the industry.

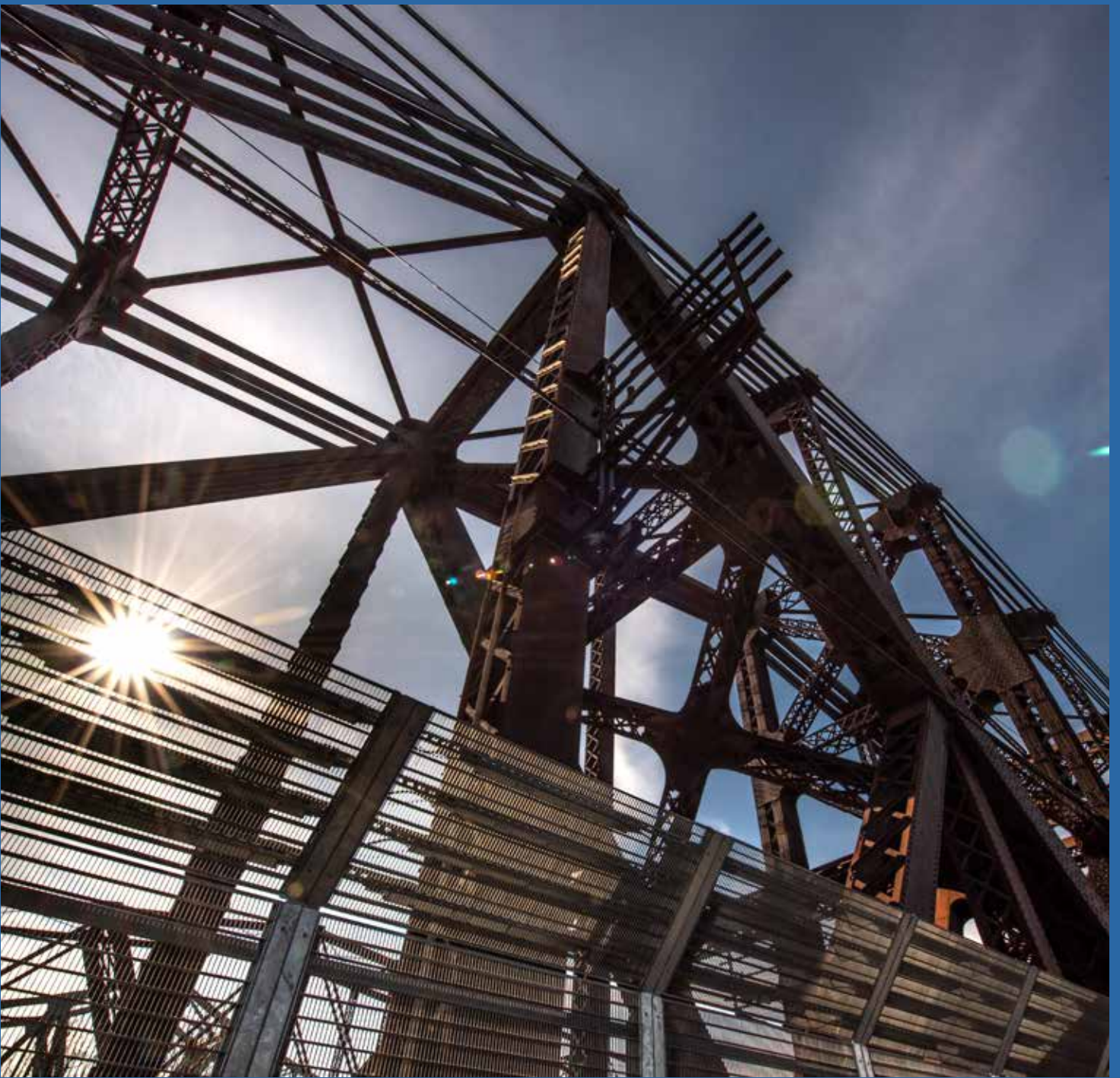
At the same time, technological advancements, particularly the integration of Artificial Intelligence (AI), are transforming how projects are delivered and disputes are managed. AI is increasingly being leveraged for predictive scheduling, risk assessment, and real-time monitoring, enabling stakeholders to identify potential issues and respond with agility before disputes arise. In sectors such as manufacturing and technology, where growth remains robust, AI-powered tools are helping to streamline processes, enhance collaboration, and improve decision-making. For example, the data center market—forecasted to reach \$430 billion by 2032—is benefiting from AI-driven efficiencies that optimize project delivery timelines and resource allocation. However, alongside its benefits, AI introduces new challenges, including managing digital records, navigating cybersecurity risks, and adapting to evolving technological standards, which can complicate dispute avoidance and resolution.

Despite these advancements, the fundamentals of effective dispute mitigation remain essential. Contract and specification reviews continue to rank as the most effective techniques for avoiding disputes, followed closely by risk management. These findings emphasize that successful dispute resolution begins with strong planning, clear communication, and adherence to contractual obligations. As AI reshapes the construction landscape, stakeholders who leverage its capabilities while remaining agile and proactive will be best positioned to deliver projects on time, on budget, and with minimal disputes. Speed, adaptability, and collaboration will define the industry's ability to thrive in this era of rapid change.

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Challenges Facing the Construction Industry in 2025



Building

The building construction industry finds itself at a crossroads: economic shifts, technological advancements, and environmental demands are reshaping how buildings are designed, constructed, and maintained. The forecast for 2025 paints a picture of tempered growth in construction spending. After years of significant gains, the pace of construction is expected to slow, with institutional facilities leading the way while commercial and industrial construction sees modest increases. Manufacturing, which experienced a surge in spending in recent years, may even decline. Economic pressures, such as inflation and rising interest rates, are likely to temper investment, while tariffs on imported materials could further strain budgets. The buildings industry faces obstacles that will further dampen growth. Stricter environmental regulations push construction practices that prioritize energy efficiency, carbon neutrality, and waste reduction. Builders must balance these demands while grappling with rising costs and fluctuating material availability.

Despite the challenges, 2025 offers opportunities for transformative change. Builders are increasingly turning to eco-friendly materials, such as recycled steel and low-carbon concrete, to meet stringent regulations. Designs incorporate renewable energy sources, passive heating and cooling systems, and resilient features capable of withstanding climate risks.

Technology is revolutionizing the construction process. Building Information Modeling (BIM) continues to gain traction, enabling precise planning and efficient execution. Drones, Artificial Intelligence (AI), and sensors are enhancing site management, improving safety, and reducing errors. Meanwhile, Virtual Reality (VR) and Augmented Reality (AR) are allowing architects, contractors, and clients to visualize projects in greater detail long before the first brick is laid.

Modular construction is emerging as a solution as well, particularly in addressing housing shortages. By assembling pre-built components on-site, builders are reducing waste, cutting costs, and completing projects faster.

Nonetheless, the challenges that lie ahead are daunting. Rising material costs, driven by inflation and supply chain disruptions, threaten to derail budgets. Transitioning to sustainable practices, while necessary, adds an additional layer of complexity, especially for smaller firms with limited resources.

Labor shortages remain another pressing issue. The industry is struggling to attract workers with the technical skills needed for a more digitized construction process. Automation and robotics are filling some gaps, but without significant investment in workforce development, the workforce shortage will plague the industry. Upskilling programs and partnerships with educational institutions help to bridge the gap between traditional construction skills and the demands of a tech-driven industry.

The building construction industry in 2025 will be defined by its ability to adapt, innovate, and collaborate. While challenges such as rising costs, labor shortages, and climate risks loom large, the potential for transformative growth is undeniable. By embracing sustainability, technology, and workforce development, the buildings sector can deliver smarter, greener, and more resilient buildings that meet the needs of a changing world.

Collaboration will be key. Transparent communication among stakeholders and proactive planning will help to mitigate risks, from supply chain disruptions to compliance challenges. By fostering a spirit of partnership, the industry can collectively navigate uncertainty and thrive. The future of construction is not just about building structures—it's about building solutions.

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Transportation

Transportation construction projects are often capital-intensive, requiring substantial public and private investment. Governments face budgetary limitations, particularly in developing countries, which impede infrastructure development. Securing funding for large-scale projects remains a significant challenge. Transportation construction activities are heavily scrutinized for their environmental impact. Emissions, land degradation, and biodiversity loss associated with projects have led to stringent regulations that increase project costs and timelines. While technology can improve efficiency, many construction firms face difficulties in adopting advanced technologies such as Building Information Modeling (BIM), automation, and IoT due to high costs and a lack of skilled labor. Global supply chain disruptions, exacerbated by the COVID-19 pandemic, have led to delays in material procurement, increased costs, and labor shortages, and further complicating project timelines. Rapid urbanization has created significant challenges in transportation planning and construction, particularly in densely populated areas where space for new infrastructure is limited.

Governments can collaborate with private entities to secure funding and share risks. PPPs have proven effective in financing large-scale transportation projects and ensuring efficient project execution. To address environmental concerns, adopting green construction practices and sustainable materials can reduce the ecological footprint. Renewable energy sources and eco-friendly designs are increasingly being integrated into transportation infrastructure. Firms can invest in advanced technologies like BIM, drones for surveying, and predictive analytics to optimize project planning and execution. Training programs can address the shortage of skilled labor needed for technological integration. Building resilient supply chains with diversified sourcing strategies can mitigate disruptions. Real-time monitoring and predictive analytics can improve supply chain forecasting and management. Cities must focus on smart urban planning to address congestion and cater to urbanization needs. Intelligent transportation systems (ITS) and modular construction techniques can help optimize land use and improve efficiency.

The transportation construction market is expected to witness robust growth over the next decade, driven by increasing investments in infrastructure development globally.

The transportation construction market is expected to witness robust growth over the next decade, driven by increasing investments in infrastructure development globally. According to industry estimates, the market's compound annual growth rate (CAGR) is projected to range between 5% and 7% from 2023 to 2030. Key growth areas include governments in developing nations are

prioritizing road construction to improve connectivity, with rising emphasis on sustainable transportation, rail projects are expected to receive significant investment, increasing air travel demand is driving airport construction and modernization, particularly in Asia-Pacific.

The use of recycled materials, renewable energy, and energy-efficient designs is becoming a standard practice to meet sustainability goals. Technologies like Artificial Intelligence (AI), IoT, and BIM are revolutionizing construction processes, enabling better planning, real-time monitoring, and predictive maintenance. Automation, including autonomous vehicles and equipment, is enhancing efficiency and safety on construction sites. Climate change is driving demand for resilient infrastructure capable of withstanding extreme weather events, fostering innovation in materials and design.

The transportation construction market is poised for growth, but it must navigate challenges such as funding constraints, environmental concerns, and technological adoption hurdles. By leveraging public-private partnerships, investing in green technologies, and adopting smart urban planning practices, the industry can overcome these obstacles. Emerging trends like digitalization, sustainable construction, and resilient infrastructure will shape the sector's future, ensuring long-term growth and adaptability in a rapidly changing landscape.



Industrial Manufacturing

The industrial manufacturing construction market plays a critical role in driving global economic growth by supporting the development of factories, production facilities, warehouses, and advanced manufacturing hubs. However, the sector faces several challenges that necessitate innovative strategies to ensure sustainable growth.

Global supply chain disruptions, exacerbated by geopolitical tensions, the COVID-19 pandemic, and transportation challenges, have impacted on the availability of key construction materials (e.g., steel, concrete). This leads to project delays and increased costs. Escalating costs of raw materials and energy continue to strain budgets for construction projects. Fluctuating commodity prices and inflation have made cost estimation and planning increasingly complex. The industrial manufacturing construction sector is experiencing significant labor shortages due to aging workforces, a lack of skilled workers, and competition from other industries. This shortage affects project timelines and overall productivity. Governments worldwide are implementing stricter environmental regulations and sustainability requirements. Companies now face challenges in adopting eco-friendly designs, sourcing sustainable materials, and reducing carbon emissions during construction. While technology offers immense benefits, the slow adoption of advanced tools like Building Information Modeling (BIM), IoT, and artificial intelligence in construction processes remains a challenge. Smaller firms, in particular, struggle with the cost and expertise required for implementation.

Adopting technologies like BIM, robotics, and IoT can improve project planning, reduce waste, and enhance operational efficiency. Prefabrication and modular construction methods are gaining traction as cost-effective solutions. To address environmental concerns, firms are integrating green building materials, renewable energy solutions, and waste management systems into projects. These practices not only reduce environmental impact but also align with evolving regulatory requirements. Investing in training programs to upskill workers in advanced construction techniques and technologies can bridge the labor gap. Collaboration with educational institutions and apprenticeship programs can help expand the talent pool. To mitigate risks from supply chain disruptions, companies are exploring local sourcing options, building partnerships with multiple suppliers, and adopting digital supply chain management tools for greater transparency and efficiency. Firms are increasingly using risk management frameworks to identify potential disruptions early and implement contingency plans to maintain project timelines and budgets.

The industrial manufacturing construction market is projected to grow steadily, driven by rising demand for production facilities in sectors like automotive, pharmaceuticals, and electronics. According to industry analysts, the market is expected to grow at a compound annual growth rate (CAGR) of 4-6% between 2023 and 2030. Increased investments in automation, sustainable infrastructure, and technological advancements will be key drivers of growth.

The adoption of modular and prefabricated construction is accelerating, allowing projects to be completed faster, more efficiently, and with reduced waste. Technologies like artificial intelligence, IoT, and cloud computing are revolutionizing project management, resource tracking, and predictive maintenance in manufacturing construction. Green building practices, renewable energy integration, and net-zero carbon goals are becoming standard in industrial construction projects, driven by government policies and consumer expectations. Emerging markets in Asia-Pacific, Latin America, and Africa are witnessing increased industrial manufacturing construction activities due to rising infrastructure demand and favorable government policies. Post-pandemic, the focus is on building resilient facilities capable of withstanding disruptions and ensuring continuity in manufacturing operations.

The industrial manufacturing construction sector is experiencing significant labor shortages due to aging workforces, a lack of skilled workers, and competition from other industries.

The industrial manufacturing construction market is expected to grow despite challenges like supply chain disruptions, rising costs, and labor shortages. By adopting innovative strategies, embracing sustainability, and leveraging technology, industry players can navigate complexities and capitalize on emerging opportunities. With trends like modular construction, digital transformation, and global expansion shaping the industry, the future of manufacturing construction looks promising.



Guest Commentary

Tony Sanger

Vice President, Production Facilities, Rivian Automotive

The Collaborative Imperative in Construction

The construction industry stands at a pivotal juncture, grappling with demands for greater speed, enhanced agility, and seamless adaptation to an ever-evolving landscape. As highlighted in this 15th Annual Construction Disputes Report, the traditional adversarial approach to project delivery is increasingly outmoded in an era where rapid change is the only constant. The true path to navigating these complexities and minimizing disputes lies not in rigid frameworks or isolated efforts, but in fostering robust collaboration and pioneering innovative contracting agreements.

At the heart of successful project execution, particularly in complex and dynamic environments, is strong collaboration amongst all parties involved. This extends beyond mere cooperation; it demands a shared vision, mutual respect, and a collective commitment to problem-solving. When owners, contractors, designers, and suppliers work in genuine partnership, sharing risks and rewards, they unlock efficiencies that are otherwise unattainable. This symbiotic relationship enables quicker decision-making, proactive identification of challenges, and a collective agility to pivot when unforeseen circumstances arise.

Crucially, the mechanisms facilitating this collaboration are efficient and innovative contracting agreements. Standard contracts, often laden with prescriptive clauses designed for dispute rather than prevention, can inadvertently erect barriers to effective communication. Modern contracting models—such as integrated project delivery (IPD), early contractor involvement (design assist), or CMAR contracts—are designed to break down these traditional silos. These agreements incentivize open communication, establish clear escalation paths, and embed mechanisms for joint problem-solving from a project's inception. They shift the focus from assigning blame to finding collective solutions, thereby streamlining workflows and accelerating project timelines.

By prioritizing transparency and direct communication, these agreements foster an environment where potential issues are discussed openly and resolved collaboratively before they escalate into formal disputes. This proactive approach not only mitigates financial and schedule risks but also builds stronger relationships and trust among project stakeholders. In essence, innovative contracting acts as a catalyst, transforming a potentially fragmented group of entities into a cohesive, high-performing team.

In an industry where speed and agility are now non-negotiable, and the ability to adapt to change defines success, embracing collaboration and intelligent contracting is no longer an option—it is a strategic imperative. It is the most effective way to unlock project potential, minimize friction, and deliver outstanding results in the fast-paced world of construction.

Rivian Automotive is a company that develops and manufactures electric vehicles and accessories. They are headquartered in Irvine, California.





Technology

The technology sector serves as the backbone of modern economies, driving innovation, connectivity, and efficiency across industries. From artificial intelligence (AI) breakthroughs to advancements in green technology, the sector reflects a relentless pursuit of progress. At the same time, the future promises even more transformative developments that will reshape how we live, work, and interact with the world around us.

Technology projects today are characterized by rapid innovation. One of the most prominent areas of development is artificial intelligence (AI) and efforts to create systems capable of solving complex problems, automating routine tasks, and enhancing human creativity. AI applications are revolutionizing industries such as healthcare, where machine learning algorithms are being used to predict diseases, personalize treatments, and improve diagnostics. The tech sector also places a strong emphasis on advancements in renewable energy and sustainability. Projects focused on clean energy, such as solar, wind, and battery technologies, are addressing the urgent need to transition to greener solutions. Companies are investing heavily in energy storage solutions, while nations are funding large-scale renewable energy grids to reduce carbon emissions and combat climate change.

The technology sector is also heavily invested in connectivity. With the rollout of 5G networks, projects enable faster and more reliable communication, paving the way for advancements in autonomous vehicles, smart cities, and the Internet of Things (IoT). This increased connectivity is driving innovation in industries ranging from transportation to agriculture, where IoT devices are optimizing processes and improving efficiency.

One essential component that underpins nearly all technology sector projects is the growing demand for data centers. As digital transformation accelerates, data centers are critical for storing, processing, and managing the massive amounts of information generated by AI, IoT, and cloud computing systems. These facilities serve as the backbone of modern digital infrastructure,

enabling businesses to scale and innovate effectively. Data centers are also vital for supporting the increasing reliance on cloud-based services. As AI systems become more advanced and require increasing computational power, data centers equipped with high-performance computing (HPC) capabilities will be in demand. However, the growth of data centers also creates concerns about energy consumption and environmental impact. Many projects are focused on building sustainable, energy-efficient facilities powered by renewable energy sources.

Even greater innovation is inevitable. Quantum computing, advanced AI, space exploration, and biotechnology promise to transform industries. Quantum computing systems, for instance, will require specialized data centers to manage their unique infrastructure needs. Meanwhile, the decentralized Web3 movement will likely drive demand for edge computing, where smaller, localized data centers process information closer to the source. As the sector continues to push boundaries, balancing innovation with ethical and environmental considerations will remain essential.

The technology sector serves as the backbone of modern economies, driving innovation, connectivity, and efficiency across industries.



Environment

As we look toward the future, this dynamic industry is expected to play a pivotal role in combating climate change, conserving resources, and building resilient cities. In 2025, the sector is projected to experience remarkable growth, fueled by increasing demand for sustainable infrastructure and eco-friendly buildings. Governments around the globe are introducing stricter regulations and offering incentives that encourage green construction, driving investments in energy-efficient projects. The global green building market, valued at \$350 billion in 2022, is anticipated to surpass \$600 billion by 2025. Additionally, renewable energy systems like solar panels, wind turbines, and geothermal technology are becoming integral to construction, with buildings increasingly moving toward energy-positive designs.

A number of trends are shaping the sector's evolution. Net-zero energy buildings are rapidly becoming the norm as industries and governments commit to reducing carbon footprints. Sustainable materials, including cross-laminated timber (CLT) and carbon-neutral concrete, are increasingly replacing traditional construction materials. The adoption of circular construction practices—where waste is minimized through recycling and repurposing—continues to gain traction, supported by modular and prefabricated techniques. Meanwhile, smart infrastructure is emerging as an essential component of future cities, with IoT-enabled systems efficiently managing energy, water, and other resources while ensuring resilience against climate-related disasters. Financing is also evolving, with green bonds and loans becoming the preferred method for funding eco-friendly projects, driven by the growing influence of Environmental, Social, and Governance (ESG) criteria. Perhaps most significantly, there is a shift toward community-centric development, ensuring that sustainability is also inclusive by prioritizing affordable housing, accessible urban designs, and meaningful community engagement.

Despite these promising developments, the environmental construction sector faces notable challenges as it moves forward. Along with the rising cost of sustainable materials and the risk of supply chain disruptions, is the challenge of navigating the complex and ever-evolving regulatory landscape, especially for companies operating across regions with differing standards.

To overcome these obstacles, the sector is embracing innovative solutions. Technology will be a key enabler, with AI, IoT, and BIM optimizing resources, reducing costs, and streamlining operations. Blockchain technology could also enhance transparency and traceability in green supply chains. Governments and industry leaders continue to invest in education and training programs to equip workers with the skills needed for sustainable construction. On-going efforts to simplify and harmonize regulations on a global scale encourage compliance and reduce administrative burdens for businesses. Additionally, investments in research to develop cost-effective, sustainable materials are making green construction more accessible to all.

As we look toward the future, this dynamic industry is expected to play a pivotal role in combating climate change, conserving resources, and building resilient cities.

The environmental construction sector is positioned to lead the charge toward a more sustainable future. While challenges remain, the industry's commitment to innovation, collaboration, and resilience ensures that it can meet the demands of the modern world. By transforming cities, infrastructure, and building practices, the sector is contributing to the global fight against climate change.



Energy

As we move forward in 2025, the energy construction sector stands at the forefront of a global transformation tasked with building the infrastructure that will power the future. The next few years will see the energy construction sector growing at an impressive pace, fueled by the relentless push for renewable energy and a shift toward smarter, more efficient systems. In 2025, global spending in this sector is expected to exceed \$2 trillion annually, with projects like solar farms, wind turbines, and hydroelectric systems leading the charge. It's also about upgrading what we already have. Retrofitting existing facilities to reduce emissions and improve energy efficiency will be a cornerstone of the sector's efforts.

Energy storage is another area poised for explosive growth. With renewable sources like wind and solar becoming integral to the global energy mix, the ability to store and distribute energy efficiently has become critical. Construction projects will increasingly focus on integrating grid-scale batteries to ensure the stability and reliability of energy systems.

Several trends are reshaping the energy construction industry including the rise of decentralized energy systems. Microgrids and community-based systems emerge as viable alternatives, offering enhanced resilience and tailored solutions for localized needs.

Hybrid energy solutions are becoming more common as developers combine sources like solar, wind, and natural gas to create systems that are more reliable and adaptable. Offshore projects, including floating solar panels and wind farms, are gaining traction, addressing land scarcity while harnessing the untapped potential of oceans.

Growth isn't without its obstacles. Supply chain disruptions remain a pressing issue making it difficult to secure critical materials like rare earth elements and advanced battery

components. Regulatory hurdles continue to slow progress. Navigating the labyrinthine approval processes for large-scale renewable energy projects can delay timelines and inflate costs.

Perhaps the most critical challenge is the workforce gap. The demand for skilled professionals is outpacing supply, leaving the industry scrambling to train and recruit the expertise needed to keep up with the pace of development.

Despite these challenges, the energy construction sector is proving its resilience. Innovation will be key to overcoming obstacles, and investment in research and development is already driving breakthroughs in sustainable materials, energy storage, and construction techniques. Technology will be the sector's greatest ally. By embracing digital transformation, companies can optimize operations, reduce costs, and mitigate risks. At the same time, the focus on resilience—designing infrastructure capable of withstanding the impacts of climate change—will ensure the longevity of new energy systems.

The construction industry forecast for energy projects in 2025 is one of rapid growth and innovation. The transition to renewable energy, coupled with advancements in energy storage and infrastructure modernization, will drive significant activity across the sector. Governments, private companies, and communities will need to work collaboratively to ensure the development of sustainable, reliable, and resilient energy systems to power the future.

Construction projects will increasingly focus on integrating grid-scale batteries to ensure the stability and reliability of energy systems.

Guest Commentary

John Linenberg PE, LEED AP BD+C

Group Vice President at Walbridge

Over the past several years the number of giga projects has increased as well as the number of mission critical campus programs. These programs frequently involve new technology as well as non-traditional delivery systems. With speed to market key for these programs, project teams are working on fast pasted projects often without similar project experience. In addition, key materials deliveries have extended, and onsite labor is in constrained. Modular design and construction are moving to address onsite labor shortages and schedule acceleration.

New and rapidly changing technology is being implemented throughout the course of programs, causing changes throughout the design and construction process. Design teams must react to the owner changes to support the procurement of long lead items and the status of construction in the field. These issues underscore the need for clearer documentation and improved communication among project stakeholders. Emphasizing early stakeholder engagement to understand project criteria and collaborative approaches as key mitigation strategies is crucial.

The Arcadis data reflects these changes in the industry. Owner directed changes have become a more significant cause of disputes. Project teams need to look at methods to properly document these changes and make sure they allocate the required amount of time to incorporate the changes including any research needed to evaluate new technologies.

While there are positive shifts, core challenges persist. The average dispute value in North America has increased, a significant jump from previous years, even as the average resolution time has decreased. This indicates that while disputes are resolved quicker, they are becoming more financially impactful, putting industry's push towards avoiding formal litigation is a positive sign, highlighting a collective desire for more predictable and efficient dispute resolution processes.

Looking ahead in 2025, the industry continues to face challenges such as workforce shortages, skill gaps, and supply chain disruptions (tariff uncertainty). Strategies to overcome these include investing in AI, Modular design and construction, upskilling the workforce, and diversifying suppliers. Also, a return to the basics on documenting changes, but now with AI technology.

Walbridge is a full-service construction company headquartered in Detroit.



Methodology

This research was conducted by the Arcadis North America Contract Solutions team. It is based on the survey results within the construction industry. Only input from North America was included in the 2025 report.

About Arcadis

Arcadis is the world's leading company delivering data-driven sustainable design, engineering, and consultancy solutions for natural and built assets. We are more than 36,000 architects, data analysts, designers, engineers, project planners, water management and sustainability experts, all driven by our passion for improving quality of life. As part of our commitment to accelerating a planet positive future, we work with our clients to make sustainable project choices, combining digital and human innovation, and embracing future-focused skills across the environment, energy and water, buildings, transport, and infrastructure sectors. We operate in over 30 countries, and in 2023 reported €5.0 billion in gross revenues.

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International Construction Costs 2025



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