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Construction Claims in Semiconductor Fabrication Facilities: Legal Challenges and Risk Mitigation Strategies

Semiconductor Projects Demand Extra Vigilance:
These billion-dollar facilities involve extreme technical complexity and tight schedules that make construction claims almost inevitable without proper planning.

Four Common Claim Categories Drive Most Disputes:
Delays, scope changes, defective work, acceleration demands, and unusual site condition issues account for the majority of costly disputes in semiconductor construction projects.

Clear Contract Language Prevents Expensive Fights:
Well-defined clauses addressing scope of work, delays, ADR, payment terms, and scope of warranties can eliminate most grounds for contractor claims before they start.

Handle Risk Early to Prevent Disputes Escalation:
Avoid surprise claims: build in contingency plans, maintain detailed records, use digital project management tools, and don't let disputes fester. And, use ADR.

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Construction Claims in Semiconductor Fabrication Facilities: Legal Challenges and Risk Mitigation Strategies

BY GREG GILBERT

Semiconductor fabrication facilities, commonly referred to as fabs, are among the most complex and expensive construction projects undertaken globally. These facilities require extreme precision, advanced materials, and adherence to stringent environmental and safety standards. Given the high cost, long timelines, and technical complexities involved, construction claims frequently arise, often leading to disputes between owners, contractors, subcontractors, and suppliers.

This article explores the legal challenges associated with construction claims in semiconductor fabrication facilities, examining key causes of disputes, common types of claims, and risk mitigation strategies. It also addresses contract provisions, dispute resolution mechanisms, and best practices for managing risk in these high-stakes projects.

Unique Challenges in Semiconductor Fab Construction

TECHNICAL COMPLEXITY

Semiconductor fabrication plants must meet exceptionally high standards for cleanliness, precision, and stability. The presence of ultra-clean rooms, vibration-sensitive environments, and specialized manufacturing processes increases the risk of construction defects and schedule delays. Unlike standard commercial projects, minor deviations in execution can result in significant operational issues, leading to costly claims.

COST AND SCHEDULE SENSITIVITY

Fabs require massive capital investments, often exceeding several billion dollars.

The semiconductor industry is highly competitive, and delays in facility completion can lead to lost revenue, missed market opportunities, and increased costs. As of January 2025, companies in the semiconductor industry announced numerous new manufacturing projects in the U.S., totaling nearly $550 billion in announced investments since the CHIPS Act was first introduced by Congress.[1] The industry's cyclical nature also affects project funding, creating pressure to accelerate schedules, which can increase the likelihood of claims.

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REGULATORY AND ENVIRONMENTAL COMPLIANCE

These facilities must comply with strict environmental regulations, including emissions controls, hazardous materials handling, and water usage restrictions. Compliance failures or regulatory delays can trigger claims related to increased costs, scope changes, and project shutdowns.

SUPPLY CHAIN AND WORKFORCE CHALLENGES

The global supply chain for semiconductor manufacturing equipment is complex, involving specialized components that often have long lead times. Supply chain disruptions, labor shortages, and skilled workforce constraints can lead to claims for delay, acceleration, and additional costs. In fact, the Semiconductor Industry Association estimates a workforce gap in the United States workforce of 20% for technicians and a 39% workforce gap for both engineers and computer scientists.[2]

Common Types of Construction Claims in Semiconductor Fab Projects

DELAY AND DISRUPTION CLAIMS

One of the most common claims in semiconductor fab construction involves project delays. Delays can be caused by various factors, including:

- Late delivery of specialized equipment;
- Design modifications or incomplete design documents;
- Labor shortages or workforce disruptions;
- Unforeseen site conditions;
- Force majeure events such as natural disasters or pandemics.

1 Semiconductor Industry Association, *Re: Request for Information on Advancing the Domestic Manufacturing of Semiconductors in Commercial Information Technology (90 FR 3963, January 15, 2025)*, March 17, 2025. https://www.semiconductors.org/wp-content/uploads/2025/03/OMB-RFI-SIA-COMMENTS-3.17.25.pdf

2 Semiconductor Industry Association and Oxford Economics, *Chipping Away – Addressing the Labor Market Gap Facing the U.S. Semiconductor Industry,* July 2023. https://www.semiconductors.org/wpcontent/uploads/2023/07/SIA_July2023_ChippingAway_website.pdf

Disruption claims often arise when contractors experience inefficiencies due to excessive changes, interference by the owner, or poor coordination between trades.

SCOPE CHANGE AND EXTRA WORK CLAIMS

Semiconductor projects regularly experience scope changes due to evolving technology requirements or unforeseen technical challenges. Disputes arise when contractors and subcontractors believe they are performing work outside their contractual obligations without proper compensation. Key issues in scope-related claims include:

- Ambiguities in contract documents;
- Failure to issue formal change orders;
- Unilateral changes imposed by the owner or design team.

DEFECTIVE WORK AND CONSTRUCTION DEFICIENCY CLAIMS

Given the precision required in semiconductor fabs, minor defects in construction can have severe operational consequences. Claims related to defective work typically involve:

- Improper installation of vibration control measures;
- Failure to meet cleanroom air quality standards;
- Deficiencies in structural components affecting precision equipment stability.

Determining liability in defect claims often requires expert forensic analysis, making them difficult and costly to resolve.

ACCELERATION AND COMPRESSION CLAIMS

To meet tight project schedules, owners may require contractors to accelerate work, often without formal change orders or additional compensation. Acceleration claims arise when:

- Contractors incur increased costs due to overtime, additional shifts, or expedited material procurement;
- Compression of construction activities leads to inefficiencies and quality issues;
- Contractors face penalties for failing to meet unrealistic deadlines imposed by the owner.

DIFFERING SITE CONDITIONS CLAIMS

Semiconductor fabs are often built in regions with specific geological or environmental constraints. Contractors may encounter unforeseen subsurface conditions, hazardous materials, or regulatory hurdles, leading to increased costs and schedule impacts. Claims in this category often involve disputes over whether the contractor should have anticipated the conditions based on available site data.

Key Contractual Provisions for Risk Mitigation

To minimize disputes and construction claims, semiconductor fab contracts should include specific and comprehensive provisions addressing common areas of conflict.

CLEAR SCOPE OF WORK AND CHANGE ORDER PROCEDURES

Contracts should define project scope in precise terms, including clear specifications, performance standards, and design deliverables. A structured change order process should require:

- Written documentation of scope changes;
- Defined approval procedures and cost/time impact assessments;
- Owner's responsibility for additional compensation due to changes.

DELAY AND FORCE MAJEURE CLAUSES

Given the high cost of project delays, contracts should specify:

- Excusable vs. non-excusable delays;
- Remedies for contractor-caused delays (e.g., liquidated damages);
- Extensions of time for force majeure events, supply chain disruptions, or regulatory delays.

DISPUTE RESOLUTION MECHANISMS

To avoid lengthy litigation, semiconductor construction contracts should incorporate alternative dispute resolution (ADR) provisions, such as:

- Mediation or dispute review boards to resolve conflicts early;
- Arbitration clauses for binding resolution outside the court system;
- Step negotiation clauses requiring escalating discussions between senior executives before legal action.

PAYMENT AND RETENTION PROVISIONS

Contracts should establish clear terms for progress payments, retention amounts, and final payment conditions. To avoid disputes over payment withholding, retention clauses should specify:

- The percentage of retainage and conditions for its release;
- Procedures for disputing withheld amounts;
- Interest penalties for late payments.

It is imperative for owners to confirm state and federal requirements for retainage, withholding clauses, and interest penalties. While these contract mechanisms are available in most states, the limits for each vary by state.

WARRANTY AND PERFORMANCE GUARANTEES

Semiconductor fabs require long-term performance warranties due to their technical nature. Contracts should define:

- Duration and scope of warranties for critical systems (e.g., cleanroom filtration, structural integrity);
- Contractor liability for defective work and corrective measures;
- Insurance requirements to cover performance-related risks.

Contracts should establish clear terms for progress payments, retention amounts, and final payment conditions.

Best Practices for Managing and Resolving Construction Claims

PROACTIVE RISK MANAGEMENT

Owners and contractors should implement proactive risk management strategies to identify and mitigate potential claims early. This includes:

- Conducting thorough design reviews and constructability analyses before breaking ground;
- Establishing contingency plans for supply chain disruptions and labor shortages;
- Engaging experienced project managers and legal counsel to oversee contract compliance.

REAL-TIME DOCUMENTATION AND COMMUNICATION

Proper documentation is crucial for defending against claims. Best practices include:

- Maintaining detailed project records, including daily reports, correspondence, and meeting minutes;
- Using digital project management tools for tracking change orders, schedules, and disputes;
- Ensuring all oral agreements are documented in writing.

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EARLY DISPUTE RESOLUTION AND NEGOTIATION

Disputes should be addressed at the earliest possible stage to prevent escalation. Effective strategies include:

- Implementing early dispute resolution mechanisms such as mediation or neutral evaluations;
- Encouraging open communication between stakeholders to find collaborative solutions;
- Engaging third-party experts to assess technical disputes objectively.

LEGAL AND INSURANCE CONSIDERATIONS

Given the high risks associated with semiconductor fab projects, owners and contractors should:

- Obtain appropriate insurance coverage, including but not limited to Builder's Risk, Pollution, Professional Liability, OCIP, CCIP, OPPI, and delay-in-startup (DSU) insurance;
- Ensure contract provisions align with insurance policies to avoid coverage gaps;
- Consult legal counsel before taking actions that could lead to claims or litigation.

Conclusion

Construction claims in semiconductor fabrication facilities are a significant concern due to the industry's technical complexity, high costs, and tight timelines. By implementing clear contract provisions, proactive risk management strategies, and effective dispute resolution mechanisms, stakeholders can minimize disputes and protect project investments. Addressing potential claims early, maintaining strong documentation, and fostering collaborative project management are key to successfully navigating the legal challenges associated with semiconductor fab construction.

As the semiconductor industry continues to expand with increasing demand for advanced chips, legal frameworks for managing construction risks will become even more critical. Stakeholders must stay informed about evolving industry standards, regulatory changes, and best practices to ensure successful project execution and avoid costly litigation.



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