

Coating Failure Investigation Leads to Successful Mediation

ESi's comprehensive coating failure analysis supported plaintiff's claims against construction defendants, leading to successful mediation settlement.

The Situation

A major retail fulfillment center experienced extensive paint coating failures within weeks of application, with blistering predominantly affecting darker-colored coatings on sun-exposed facades. The facility owner (plaintiff) filed a suit against multiple defendants including the general contractor, painting subcontractor, installer, and architect, alleging defective workmanship and materials. ESi was retained by the plaintiff's legal counsel to conduct an independent investigation and provide technical assistance during litigation and mediation proceedings. The case involved a 463,000 square foot facility with precast concrete exterior wall panels that had been coated with a three-layer styrene acrylic paint system, with damages and repair costs potentially reaching into the millions of dollars.

Our Solution

ESi conducted a comprehensive multi-phase investigation to determine the root cause of the coating failures. Our approach included an independent on-site inspection with extensive photo documentation of the exterior walls, collecting coating samples from both failed and intact areas for laboratory analysis, and deploying drone technology to scan and collect aerial photographs and videos of the entire building envelope. We reviewed all client provided project documentation, including the opposing expert investigation

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Services Utilized:

- Failure Analysis
- Lab & Inspection Services

Our Solution *cont.*

reports, analysis, coating specifications, application records, and weather data during the coating application period.

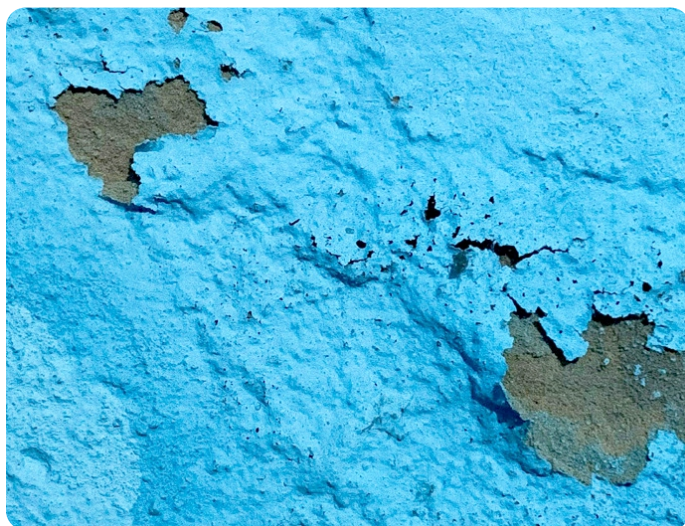
Our team analyzed the failure distribution patterns, noting that blistering occurred exclusively on sun-exposed facades (south, west, and east) and predominantly affected darker colored coatings, while white coatings and north-facing surfaces remained intact. We examined microscopic crosssections of coating samples, which revealed excessive air voids within the intermediate coating layer - a "foaming" condition that created structural weaknesses. Laboratory test data included pull-off strength measurements, tape adhesion testing, moisture content analysis, and water vapor transmission rate comparisons between different colored substrates.

Critical to our analysis was reviewing the coating manufacturer's technical data sheets, which clearly specified that coatings should not be applied in direct sunlight and required air, material, and substrate temperatures between 35°F to 90°F. We correlated this with field temperature measurements showing surface temperatures as high as 132°F on dark gray coatings and the application timeline, which showed coating was applied during peak summer months.

ESi's investigation successfully demonstrated that the coating failures resulted from a combination of improper application procedures and environmental factors – establishing clear liability against the construction team defendants. Our analysis identified the primary failure mechanism as cohesive separation within the intermediate coating layer due to excessive air voids, triggered by solar heat exposure on darker colored surfaces.

The Outcome

The comprehensive technical evidence we provided, including microscopic analysis and failure pattern documentation, was instrumental in achieving a favorable settlement during mediation for our client. By clearly establishing that the failures originated from coating system design flaws, inadequate manufacturer guidance regarding environmental constraints, and application issues by the defendants, we successfully supported the facility owner's claims while avoiding the uncertainty and costs of trial.



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