

PROJECT SPOTLIGHT: GRAVEL RUNWAY STABILIZATION

*Stabilize the Surface, Improve Strength,
Restore Reliability: EK35® Enhances
Runway Performance in Arctic Alaska*

37% Increase in CBR value	0 Interruptions to daily aircraft operations	52,600 Metric tons of crushed surface course aggregate installed
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CHALLENGES

- Improve the performance of poor-quality, moisture-sensitive aggregate.
- Deliver a stable runway surface that holds up to the underlying thawing permafrost.
- Perform all runway repairs and EK35® application while keeping the runway in acceptable condition to allow safe access for cargo, passenger, and emergency aircraft.
- Deliver a reliable runway to provide year-round access for a 20-year design life.

SOLUTION

- Completed laboratory design testing to determine the optimum volume of EK35® and confirm that the required strengths will be achieved.
- Implemented a comprehensive, multi-component design:
 - Excavated runway down 1 meter and installed rigid installation to slow the thawing permafrost.
 - Installed a layer of wicking geotextile over the insulation to promote drainage.
 - Resurfaced the runway with 52,600 metric tons of Crushed Surface Course Aggregate.
 - Applied EK35® to the runway surface .
- Transitioned from a topical application to a 3" blended installation.
- Phased the runway construction in stages to allow for runway operations to continue.

RESULTS

- **Improved Structural Strength and Durability:** EK35® increased the CBR strength of the surface aggregate from 23.4 to 32.0 (37% increase) after 30 days compared to the untreated aggregate.
- **No Runway Closures or Flight Delays:** The installation was performed without any interruptions to daily flights.
- **Reliable Performance Restored:** The runway rehabilitation restored safe and reliable operational conditions to facilitate year-round aircraft movements.
- **Continuous Improvement:** Valuable lessons were learned and documented to achieve more efficient installations and optimal outcomes in future installations.



PROJECT BACKGROUND

Product: EK35®

Location: North Slope, Alaska

Industry: Aviation Infrastructure

The runway provides critical year-round access for an Arctic community where air transport is the only reliable connection for goods, transportation, and medical services. Over time, the existing gravel runway experienced surface degradation, including water ponding, rutting, and soft conditions that led to unsafe operations and periodic runway closures.

Due to poor local aggregate quality, thawing permafrost, and harsh environmental conditions, a multi-component solution was required to improve the performance, reliability, and lifecycle of the runway infrastructure. Dust control and surface stabilization using EK35® were a critical part of the design and resulted in a durable, strengthened surface.

LOOKING FORWARD

This project demonstrates that EK35® can significantly improve the strength, stability, and consistency of marginal aggregate materials in extreme Arctic environments. The use and flexibility of EK35® provides a practical solution for improving surface performance where high-quality aggregate is limited and environmental conditions make traditional construction approaches ineffective.