Case Study



POLYMEF

Port of Vancouver Centerm Terminal Expansion - 2022



Location:

Duration: Fall 2021 - Spring 2022

Contractor: All Roads Construction

Client/Owner: Port of Vancouver - Centerm Consultant

Engineer: EXP

Surface Tech Product: ACE XP

Project Scope & Objectives

Given the harsh winter conditions and logistical challenges associated with transporting polymermodified binders from Edmonton, *All Roads*

Construction proposed the use of Surface Tech's ACE XP aramid fiber as an alternative to traditional polymer binders. The project aimed to demonstrate that fiber reinforcement could provide a comparable, if not superior, performance while streamlining logistics and reducing costs.

To achieve these objectives, the project employed Surface Tech's ACE XP aramid fiber technology, integrated into a PG 64-28 asphalt binder. This combination was chosen for its ability to enhance pavement durability, providing a stronger and longer-lasting surface that could better withstand Calgary's climate and the heavy traffic on this part of the ring road.

What We Did

We collaborated closely with All Roads Construction to ensure the successful implementation of ACE XP in this high-profile project.

Technology Implementation:

To address the project's specific requirements, All Roads Construction utilized three different binder grades—PG64-22, PG70-22, and PG76-22. However, to mitigate the risks and challenges of transporting these binders during winter, they proposed substituting polymer-modified asphalt with fiber-reinforced asphalt using ACE XP. *Extensive testing confirmed that a single dose of 65 grams per ton of ACE XP could replace PG70-22, while a double dose of 130 grams per ton could replace PG76-22.*

Automated Dosing & Quality Control:

Automated dosing ensures precise and consistent fiber dosing which includes an Allen Bradley programmable logic controller (PLC), interfaced seamlessly with the variable speeds of the asphalt plant. *This allowed for real-time adjustments and produced detailed quality control reports at the end of each shift, ensuring transparency and accuracy.*

Collaborative Testing & Proposal Development:

Surface Tech worked with Kontur Geotechnical and Blankenship Asphalt Tech and Training (BATT Lab) to conduct thorough testing of the fiber-reinforced asphalt. *The results demonstrated that ACE XP effectively meets the project's performance requirements, leading to the acceptance of this solution by the Port Authority and P3 groups.*

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Challenges Overcome

The primary challenges were the logistical difficulties associated with transporting polymer-modified binders during the winter and the need to maintain the project's tight schedule. By substituting traditional binders with ACE XP fiber reinforcement, the project not only avoided these logistical hurdles but also stayed on time and within budget.



Economic & Environmental Advantages

Economic Advantages:

The substitution of ACE XP for traditional polymer-modified binders resulted in significant cost savings by eliminating the need for special storage and shipping. The streamlined logistics and reduced reliance on weather-dependent transportation also contributed to the overall cost-effectiveness of the project.

Environmental Advantages:

The use of ACE XP enhanced the durability of the pavement, leading to a longer lifecycle and reduced maintenance needs. This, in turn, lowered the environmental impact by minimizing the frequency of repairs and the associated emissions and material use.

Client Feedback & Results

The project's successful completion was met with positive feedback from all stakeholders. All Roads Construction praised the ease of integrating ACE XP into their processes and the performance benefits it provided. The detailed proposal and transparent testing data helped gain the confidence of the Port Authority and P3 groups, ensuring the project's success.

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