

“Always do what's right.”

# Reduction of Operational Costs and Environmental Footprint Through Better Airstrip Management

May 2<sup>nd</sup>, 2023



**BETTER ROADS. BETTER BOTTOM LINE. BETTER PLANET.**



## How are we different?

- We are world leading experts on road & airstrip, dust control and stabilization
  - Roads & airstrips are what we do – period. All Cypher technologies are focused on improving roadway infrastructure.
- We employ engineers, engineering technicians, and construction managers.
- We have our own soils lab and run our own engineering tests.
- Our products are developed using this knowledge of soils and their engineering properties as a barometer of their performance.
- **100% Canadian made!**

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# Core Values

- Cypher Green Roads
  - Donate up to 5% of project value to local community near project site
  - Donation is made on behalf of the customer, in the form of the same product being used at the airport site
  - Develops shared best practices between the customer and the community
  - Elevates CSR/ESG strategies for engagement with the local community



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 **DUST/BLOKR<sup>®</sup>/SB**

- Non-corrosive, higher performing & substantially lower cost alternative for airstrip dust control & stabilization



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- Accepted for use by Transport Canada at airports and aerodromes
- Applicable for applications on runways, airstrips, tarmacs, helipads and service roads
  - Reduces grading, aggregate use and watering requirements
  - Increases CBR
  - Reduces loose gravel and foreign object damage (FOD)
  - Helps shed water resulting in more stability in wet conditions



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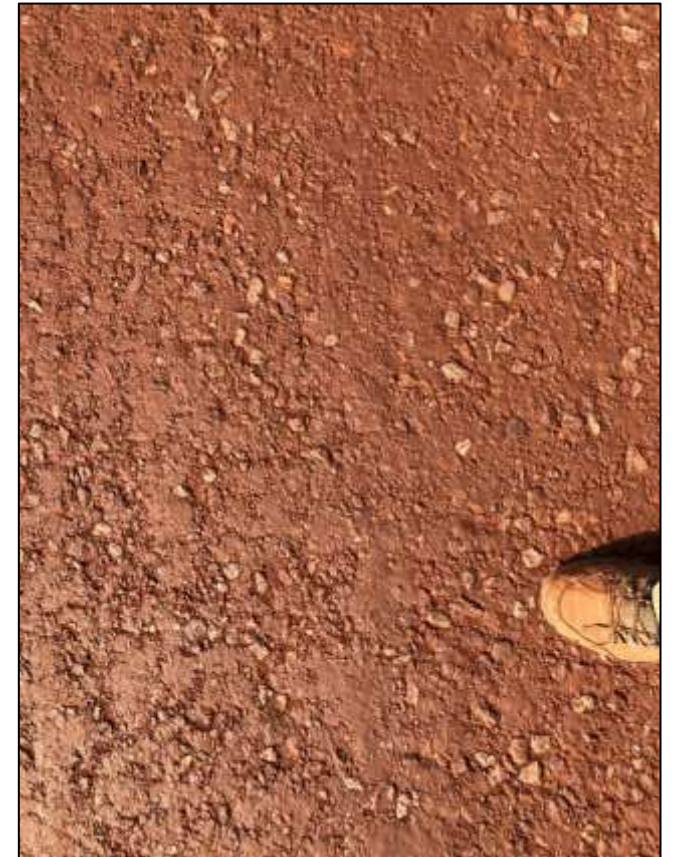
- Certified to Boeing Standards
  - Requirement for airstrip dust control to show how the product is safe to use around airplanes (won't cause rust)
- US EPA Safer Choice Certified
  - ZERO environmental impact
  - Does not contain chlorides or any oil-based products such as hydrocarbons or glycerin
- Airstrip Specification now Developed
  - Spec created with the assistance of the Standards Council of Canada



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- Applied globally on haul roads, secondary roads, stock piles, airstrips, tarmacs, helipads, etc.
- Concentrated liquid binder composed of three main constituents: sugar, starches and a mineral component
- Applicable to almost any material/aggregate type and is designed to withstand heavy traffic
- Reduces costly road maintenance requirements:
  - Grading
  - Re-sheeting
  - Watering



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- Easy Adoption

- Comes in a concentrated form that can be diluted with any quality of water prior to application (average dilution ratio of 15-20%)
- Applied with standard equipment and techniques
  - No specialization in the water truck spray bar is required
- Treated airstrips can be used instantly
- Airstrips can be maintained (graded) after application and product remains effective

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- Case Study – Red Sucker Lake

- In 2019, Cypher lost the bid to treat the Red Sucker Lake airstrip with Dust/Blokr, as tendered by NAMO
- The winning bid was 120% more expensive
  - Added cost to the tax payer of \$149,982.38
- Due to the fact that the product chosen was manufactured and shipped from abroad, and was in a ready to use form (as opposed to a concentrate) – an estimated 7X more GHG was produced in the transportation of the product to Red Sucker Lake
- Case featured in the May/June 2022 edition of Wings Magazine, titled "Clearing the Air"



- Case Study – RoadLab / Arcelor Mittal

- In 2018, Arcelor Mittal provided RoadLab with samples of their slag, standard aggregate and Dust/Blokr for CBR comparison testing
- CBR = California Bearing Ratio
  - Planes have CBR ratings required for the strength of airstrips needed to safely land on them
- Treated and untreated CBR tests performed at varying application rates of Dust/Blokr
- **Results showed CBR gains ranging from 79% – 307.1%**



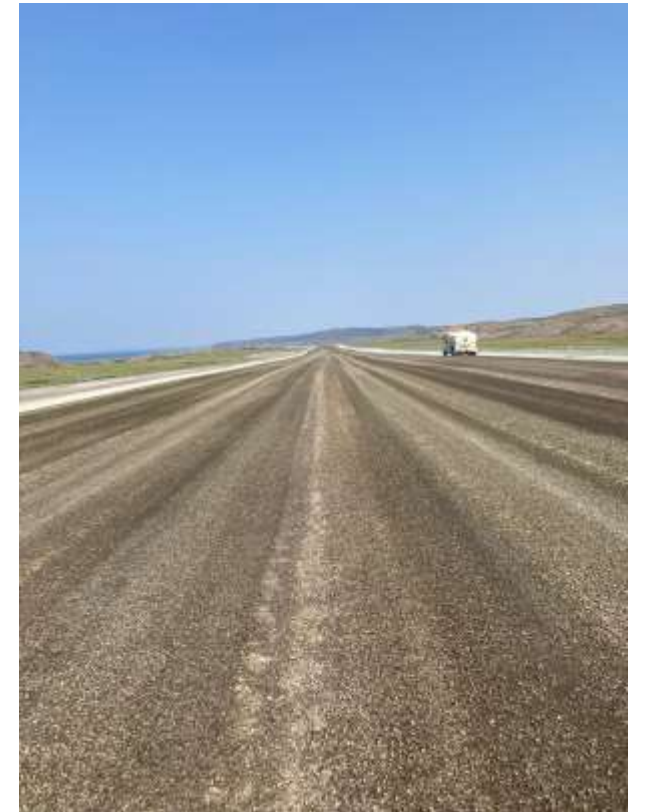


- Case Study – Sanirajak runway (Nunavut)
  - In 2022, Sanirajak (formerly called Hall Beach) applied Dust/Blokr to their airstrip & tarmac via Kudlik Construction
  - **Cost Savings - \$205,760.50 Total Savings (38%)**
  - **Project dimensions**
    - 136,131 m<sup>2</sup>
  - **Volume of Dust/Blokr used**
    - 82,000 liters



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- Case Study – Agnico Eagle, Hope Bay Mine (Nunavut)
  - In 2022, Hope Bay applied Dust/Blokr to their primary airstrip
  - **Airstrip dimensions**
    - 1500 m X 43 m = 64,500 m<sup>2</sup>
  - **Volume of Dust/Blokr used**
    - 800 ml / m<sup>2</sup> = 51,600 liters



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- Case Study – Agnico Eagle, Hope Bay Mine (Nunavut)
  - Runway pictured, after treatment with Dust/Blokr, several months after treatment
  - **CBR achieved**
    - 55
  - **Additional Notes**
    - Excellent firmness

\*Runway feedback, pictures & data provided by CBR Technology Inc.



B2Gold –  
Otjikoto Mine,  
Namibia

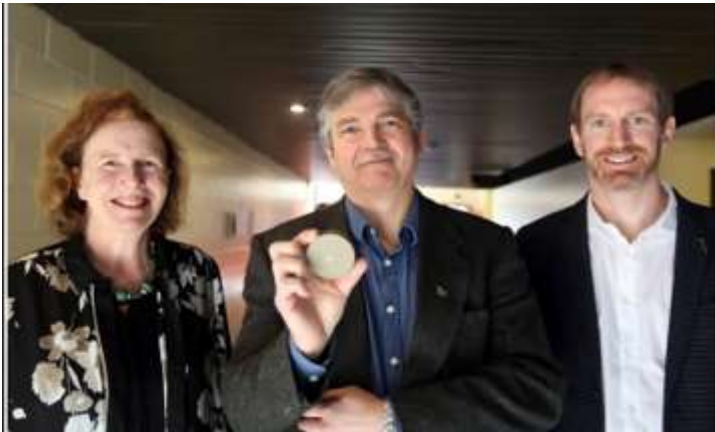
- **Imagine if  
your airstrip  
looked and  
performed  
like this!**



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The logo for ROAD//STABILIZR features the same stylized green icon as the CYPHER ENVIRONMENTAL logo on the left, followed by the word "ROAD" in green, a double slash "//" in orange, and the word "STABILIZR" in green, with a registered trademark symbol (®) to the right.

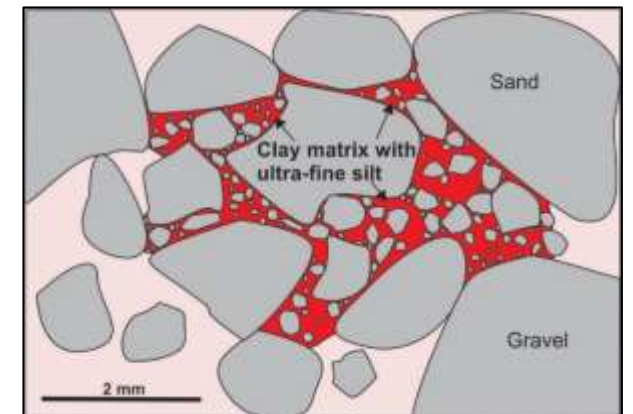
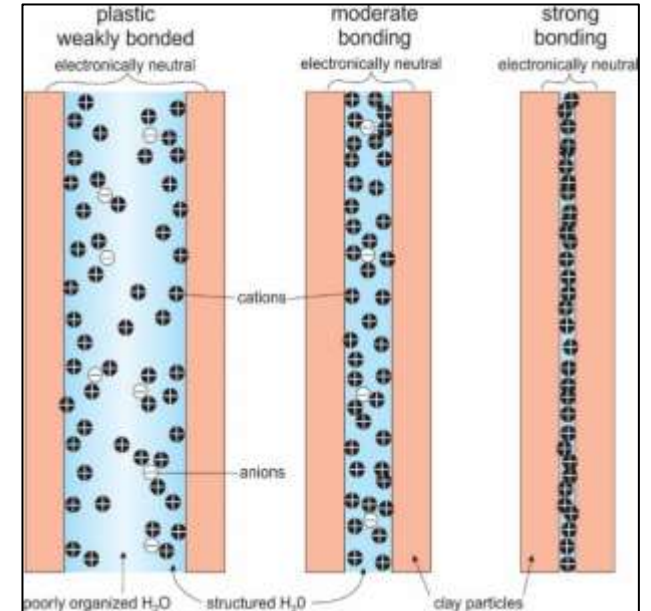
- Long term stabilizer for high clay-content materials to provide lasting, stable airstrips & service roads with only one application



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- Facilitates the release and removal of excess adsorbed water in a clay-based soil through compaction, enhancing densification
- Catalyses stronger electrostatic bonding between clay particles to bind all aggregate together in a more compact and dense form
- Clay component then acts like a flexible cementing agent locking aggregate together



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The logo for ROAD//STABILIZR features a stylized green icon of three stacked, slightly offset rectangular shapes on the left, followed by the text "ROAD//STABILIZR" in a bold, green, sans-serif font. The word "ROAD" is in a darker green, and "STABILIZR" is in a lighter green, with two orange diagonal slashes between them.

- Benefits
  - Provides long term stability for airstrips and service roads
  - One application lasts for years
  - Desired effect is to enhance the engineering properties of treated materials to reduce long-term OPEX
  - Increase CBR and density
  - Reduce permeability, swell potential, deflection and rolling resistance
- All of the above results in lower costs to build airstrips and service roads (using cheaper materials) and maintain them: less grading frequency, less re-sheeting, less need to water for dust control.

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- Case Study

- 12% reduction in cost to build roads, as reported by Eng-Tech Consulting Ltd.
  - When compared to MB Provincial Road building standards
  - Mainly due to lower cost of clay materials, as compared to the use of aggregates
  - Most likely even greater disparity for airstrips due to high logistical cost to procure and produce aggregates in remote locations



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SMB Bauxite  
Mine – Guinea

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## Contact Us

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