Optimizing Winter Operations

Equipment & Materials

Bruce Hilborn
Layout

- Why is Winter Optimization Important?
- Material Optimization Strategies
- Equipment Optimization Strategies
- Questions
Why is Winter Optimization Important?

• **Material**
  - Reduced Costs
  - Environmental Impacts
  - Social Impacts

• **Equipment**
  - Reduced Downtime
  - Consistency & Reliability
  - Extended Life

*Responsibility to Stakeholders*
What Can We Do?

Be Better At Knowing Where Our Money is Being Spent

$1650 Per Winter Response
Material Optimization Strategies

Inverted Hierarchical Pyramid Matrix
Material Optimization Strategies

Frontline Staff
- Experienced Operators
- Historical Information
  - Effective Training
Frontline Staff - Training

• All Staff required
• Performed in-house
• Neighboring Municipalities
Material Optimization Strategies

Frontline Staff
- Experienced Operator
- Effective Training
- Historical Information

Material Reduction
- Pre Wetting
- Direct Liquid Application (DLA)
Material Usage Reduction – Pre Wetting

Salt and De-icing Liquid

Melting Ice

Road
Material Usage Reduction – Pre Wetting
Material Usage Reduction – Direct Liquid Application
Material Optimization Strategies

Frontline Staff
• Experienced Operator
• Effective Training
• Historical Information

Material Reduction
• Pre Wetting
• Direct Liquid Application (DLA)

Monitoring / Tracking
• Regular Stock Pile Surveys
  ▪ Telematics (AVL)
  ▪ Material Application Document
### Winter Route Maintenance Report

For Period (Task Start Date): 3/9/2019 - 3/10/2019

Crew(s): TESTRPCR08  
Supervisor(s): All  
* Only Work Orders with Main Task TRPRDS01T08 are included. Salt Inv Item is: 5020949. Pre Wet is: 5013871.

#### CREW: TESTRPCR08 - Roads Central

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# Winter Operations Detailed Report (Region of Waterloo)

**Vehicle Id:** 1272  
**Group(s):** RMOW, Central Yard, Philipsburg Yard, Heidelberg Yard, Signals, Signs & Markings, _unassigned  
**Report Period:** 2019/03/09 00:00:00 to 2019/03/10 23:59:00  
**Area:** not specified

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**Totals:** 585.4 306.8 278.6 32483 0 0 0
Material Application Document

- Flag Anomalies (March 10th)

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## Monitoring / Tracking

- Mag Chloride Application Rates – Set for 60L/T

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- Low Application [< 50L/T]
- Heavy Application [>70 L/T]
- No Application
Equipment Optimization Strategies

Frontline Staff
- Background Knowledge
- Route Familiarity
Frontline Staff

- **Routing Apps**
  
  ![inRoute Route Planner](image1.png)
  - inRoute Route Planner by Carob Apps, LLC
  - #126 in Navigation
  - 4.6, 3.1K Ratings
  - Free, Offers In-App Purchases

- **Driver Information Books**
  
  ![Winter Information 2017/2018](image2.png)
  - Winter Information 2017/2018
  - Bruce Hilborn

- **Controller Reference Sheets**
  
  ![Controller Reference Sheet](image3.png)
Equipment Optimization Strategies

Frontline Staff
- Knowledge of Equipment
- Route Familiarity

Industry Innovation
- Air/Pavement Advancements
- Vehicle Components
- Connectivity
Industry Innovation – Air / Pavement

• Thermal Mapping
Industry Innovation – Air / Pavement

- Weather Information

- NIPS

- MARWIS
Industry Innovation - Vehicles

- Hydraulic Gates
- Controllers
Industry Innovation - Vehicles

• Plow Blades

1. Rubber Casing
   - Minimized vibration
   - Light Weight
   - Sound dampening

2. Steel Segments
   - Contour forming
   - Less blade bounce
   - Help prevent road marker damage

3. Carbide Inserts
   - 0.955” carbide
   - Improved strength
   - Longer wear life
Industry Innovation – Connectivity
• Dash Cameras
Equipment Optimization Strategies

Frontline Staff
- Experienced Operator
- Effective Training
- Historical Information

Industry Innovation
- Air/Pavement Advancements
- Vehicle Components
- Connectivity

Preventative
- Calibrations
- Documentation
Preventative – Calibrations

- Average 5-6 Calibrations / Season
- "Factory Calibrated"
- Cost to not Calibrate: $10,350
Where is Your $1650 Going?
Questions?

Bruce Hilborn
Region of Waterloo
Transportation Operations, Civil Engineering Technologist
bhilborn@regionofwaterloo.ca
519-575-4757 Ext. 8301