



**ALBERTA HIGHWAY SERVICES LTD.
STARS TECH ECO-ST TRIAL
2023 WINTER OPERATION REPORT**



MEETING AGENDA

- 1** INTRODUCTION
- 2** FEBRUARY 20 SNOW EVENT
- 3** FEBRUARY 24 SNOW EVENT
- 4** FEBRUARY 28 SNOW EVENT
- 5** MARCH 5 SNOW EVENT
- 6** FINDINGS



#1

INTRODUCTION

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Alberta Highway Services Limited (AHSL) received 12, 1000kg bags of ECO-ST on February 13, 2023.

AHSL initiated the ECO-ST trail on February 20, 2023.

AHSL selected an approximate 4.7km long section of 4 lane highway and a 2.0km section of a 1 lane off ramp to use in the trail.

During each snow event, AHSL applied the ECO-ST using the same method and at the same rate as our traditional road salt.

4 snow events occurred during the 2023 trail.

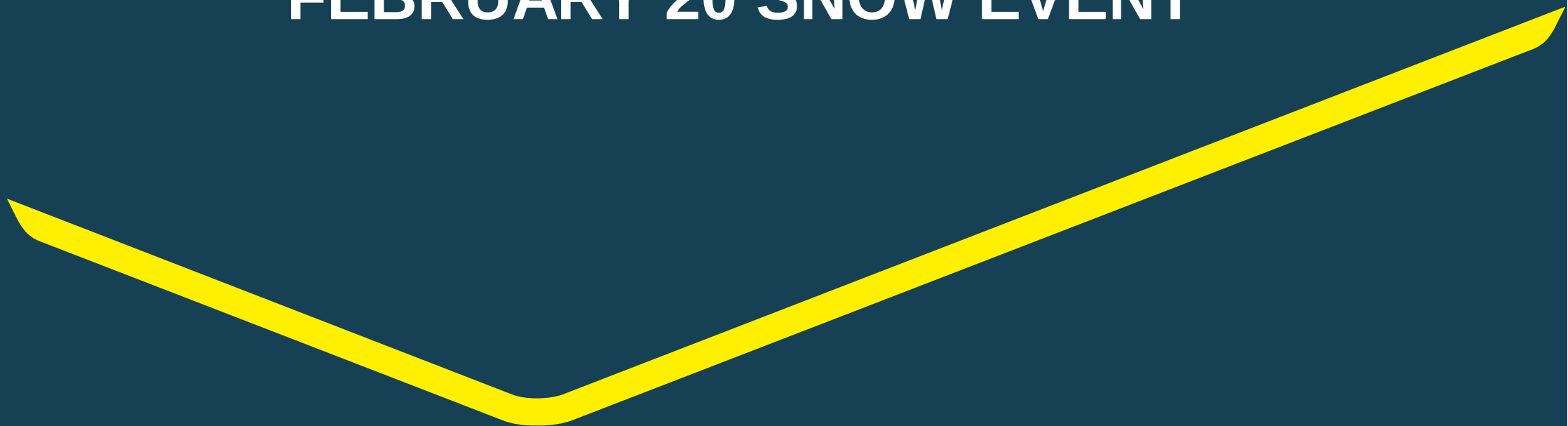
- February 20
- February 24
- February 28
- March 5

AHSL used 8 of the 1000kg bags during the trial.



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FEBRUARY 20 SNOW EVENT



OVERVIEW - FEBRUARY 20 SNOW EVENT

- Air Temperature: -4°C
- Surface Temperature: -1°C
- Precipitation Amount: 8-10cm
- Surface Conditions at application: Loose snow, slush, hard packed in wheel paths
- Material Mix: 75% sand, 25% ECO-ST
- 15 Minute Observation: sno30 Minute Observation: Driving lane just about bare wet, melting, ice breaking down
- 60 Minute Observation: Bare Wet

FEBRUARY 20 SNOW EVENT



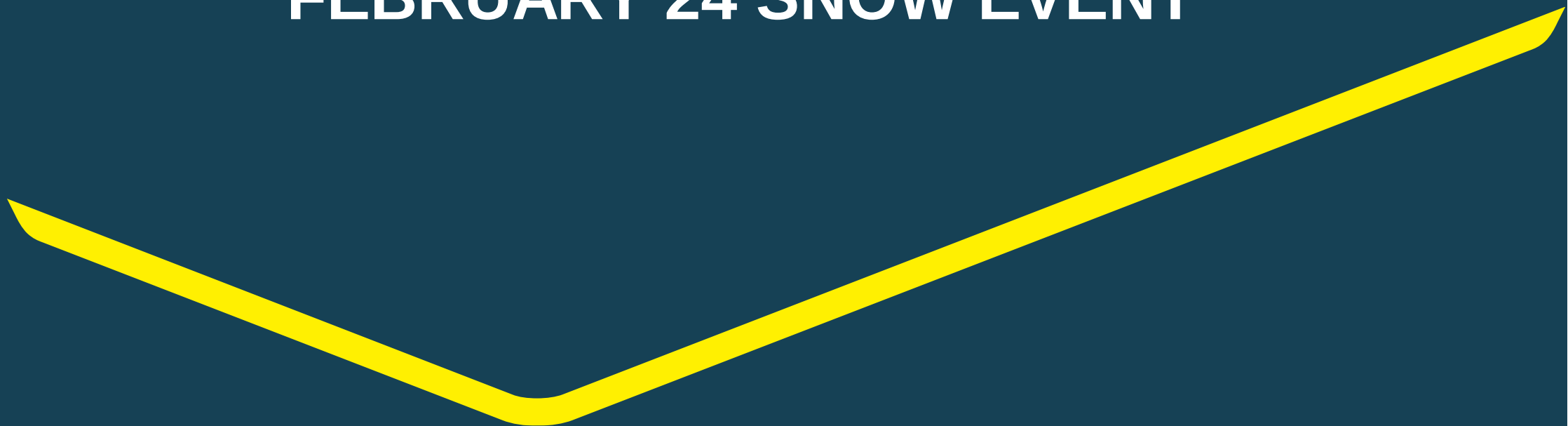
FEBRUARY 20 SNOW EVENT





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FEBRUARY 24 SNOW EVENT



OVERVIEW - FEBRUARY 24 SNOW EVENT

Air Temperature: -22°C

Surface Temperature: -17°C

Precipitation Amount: 2cm

Surface Conditions at application: Hard Packed Snow

Material Mix: 75% sand, 25% ECO-ST

15 Minute Observation: No Change

45 Minute Observation: Starting to melt in wheel paths

60 Minute Observation: Wheel paths expanding

90 Minute Observation: Bare paths expanding

FEBRUARY 24 SNOW EVENT



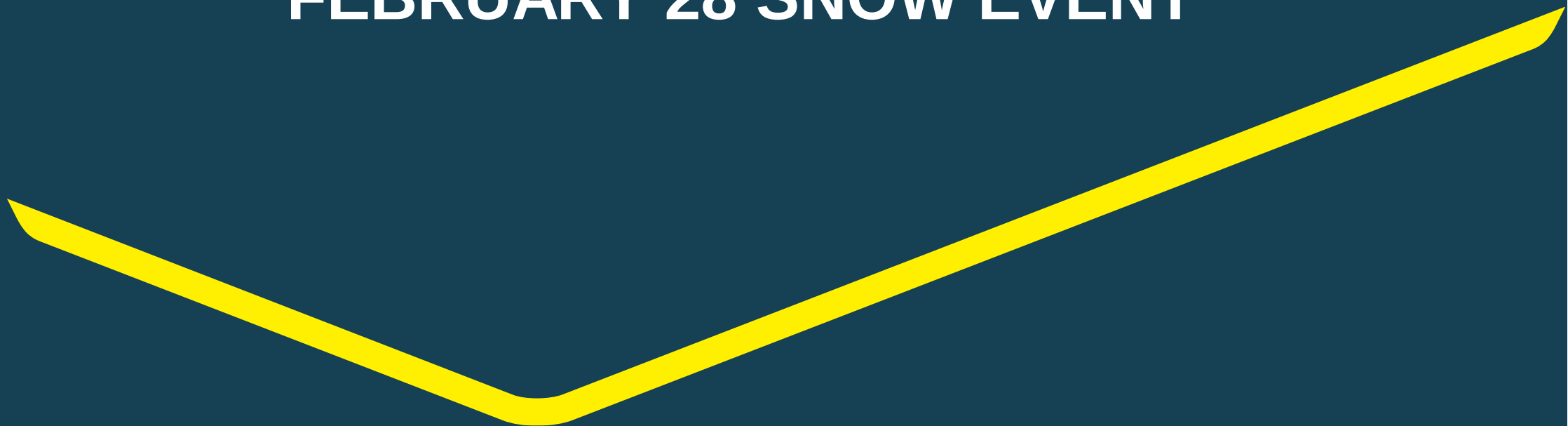
FEBRUARY 24 SNOW EVENT





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FEBRUARY 28 SNOW EVENT



OVERVIEW - FEBRUARY 28 SNOW EVENT

Air Temperature: -9°C

Surface Temperature: -7°C

Precipitation Amount: 3-5 cm

Surface Conditions at application: Wet, Snow Covered

Material Mix: 50% sand, 50% ECO-ST

15 Minute Observation: Starting to break up

30 Minute Observation: Wheel paths expanding

60 Minute Observation: Bare Wet

*No Pictures of this snow event are available



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MARCH 5 SNOW EVENT



OVERVIEW – MARCH 5 SNOW EVENT

Air Temperature: -13°C

Surface Temperature: -6°C

Precipitation Amount: 5-7 cm

Surface Conditions at application: Wet, Snow Covered, Hard Packed

Material Mix: 75% sand, 25% ECO-ST

20 Minute Observation: Wheel tracks starting to melt

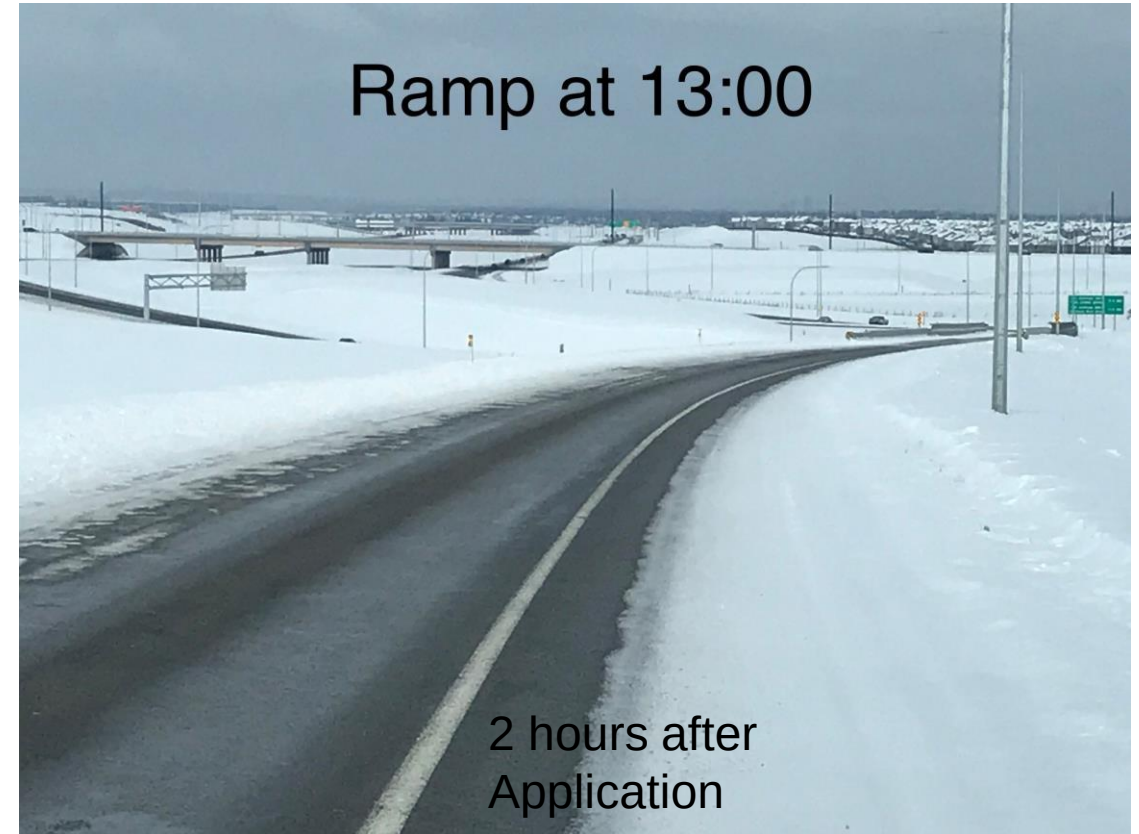
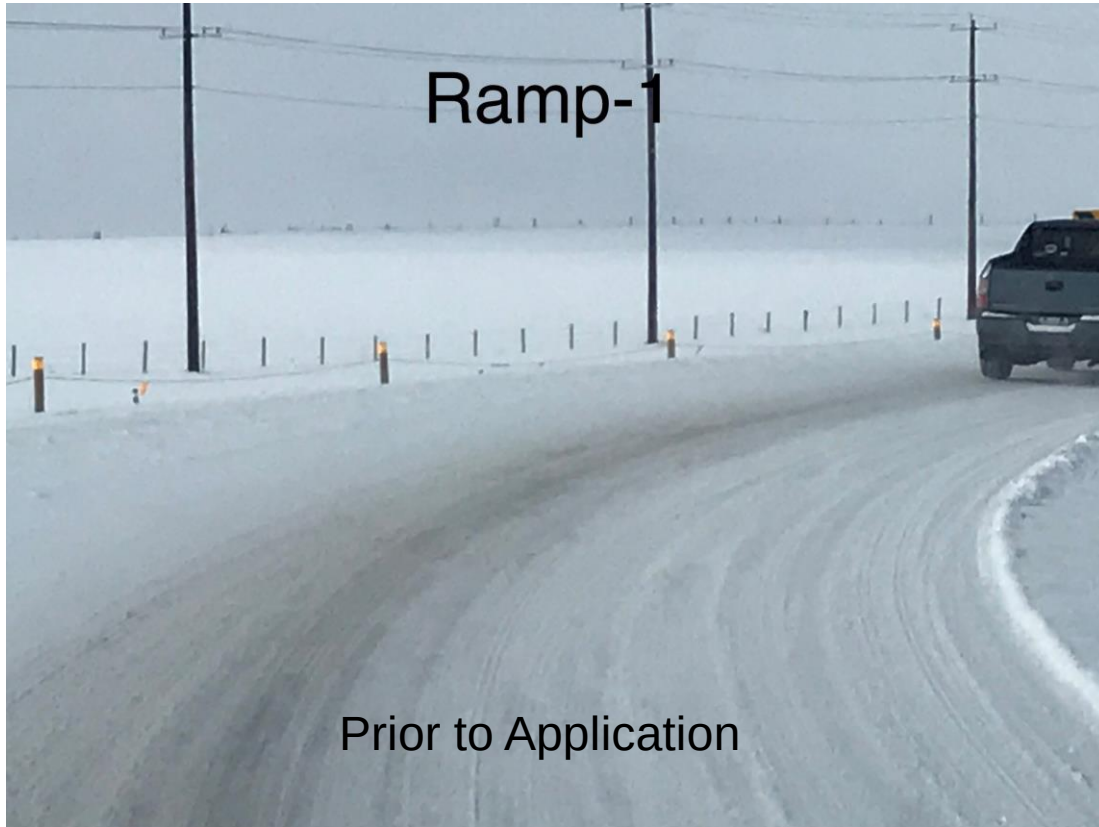
60 Minute Observation: Wheel paths expanding

120 Minute Observation: Wheel paths bare wet, lanes starting to expand

MARCH 5 SNOW EVENT



MARCH 5 SNOW EVENT





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FINDINGS



OVERVIEW - FEBRUARY 28 SNOW EVENT

The Southwest Calgary Ring Road received a wide range of winter conditions during the trial. Temperatures during the snow events ranged from -2°C to -22°C and snowfall amounts ranged from 2cm to 10cm.

- Indications are ECO-ST appeared to penetrate hard packed ice and snow better than our traditional road salt.
- February 24 snow event indicated effectiveness up to -22°C.
- Due to the coarse nature of ECO-ST it appeared to last on the roadway for a longer period of time; however, further trials would have to be performed to confirm this.
- Extra handling and manhours were required to unload the shipment and mix the product with sand compared to traditional salt.
- No corrosion or rust on equipment or guardrails has been noted, however due to the short time period this would be unlikely.
- No negative impacts on vegetation or the environment were noted, however no negative impacts were noted in areas treated with traditional salts.

Based on the results, AHSL would be interested in participating in future trials.

