

CLEAR ROADS



PACIFIC NORTHWEST SNOWFIGHTERS

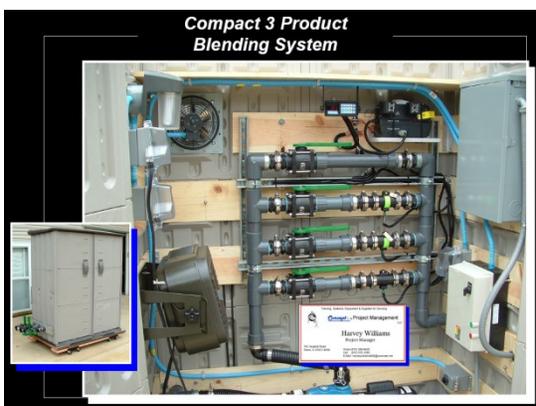
2016 Snow Conference

# Technology we use in Winter Maintenance

# Forward Thinkers!



# Brine and Blending Equipment





**THE SYSTEM CAN ALSO MAKE BLENDS FOR STORAGE IF DESIRED. FILL RATES, RATIOS AND BATCH PROGRESS CAN ALL BE MONITORED**



**This is the screen that shows the volume in storage, mixing ratios, volume pumped and all the other goodies**

# Fort Collins, Colorado



# Washington State System





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# Iowa DOT Dashboard Cams

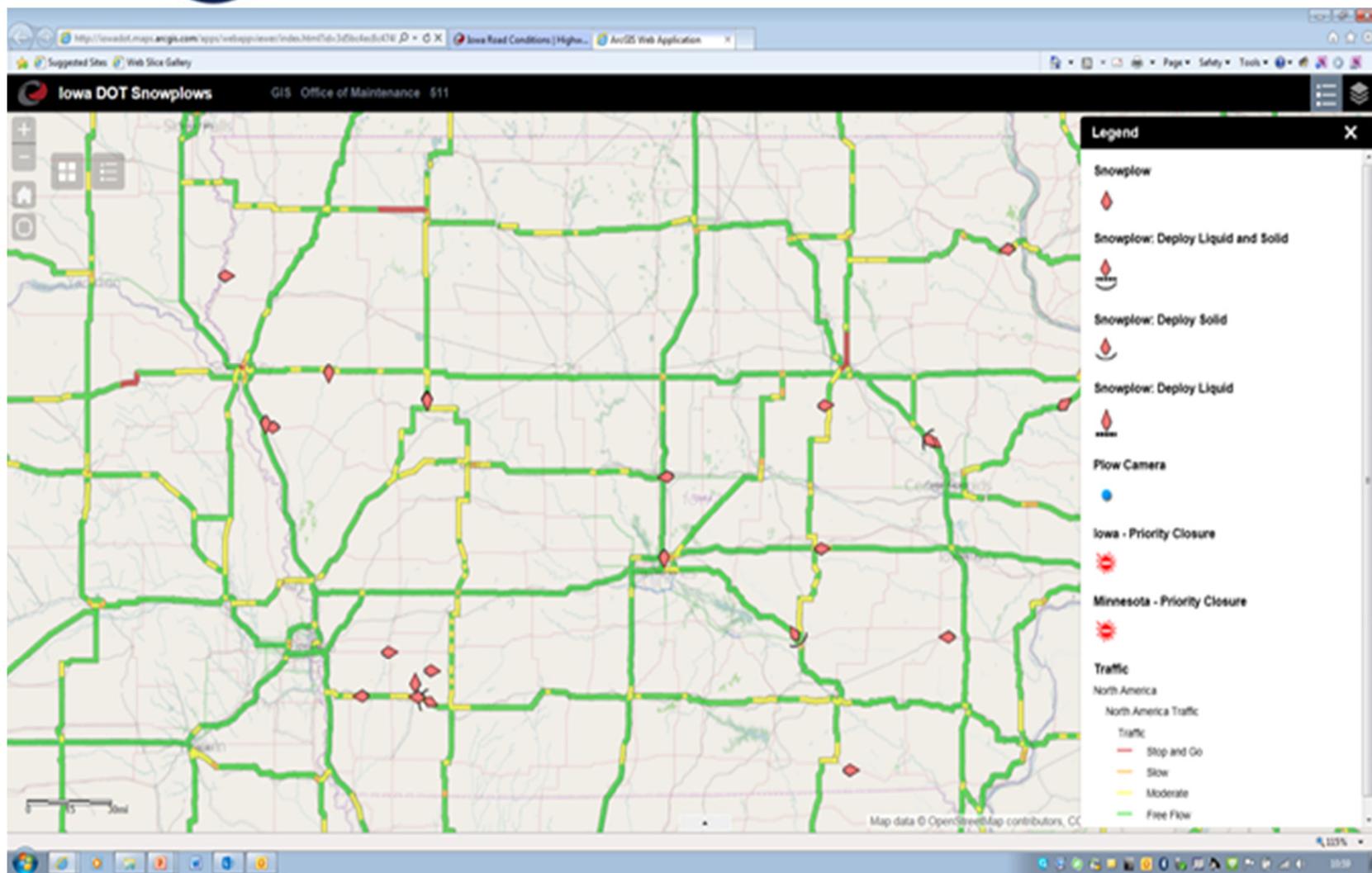


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# Utilizing Traffic Cameras

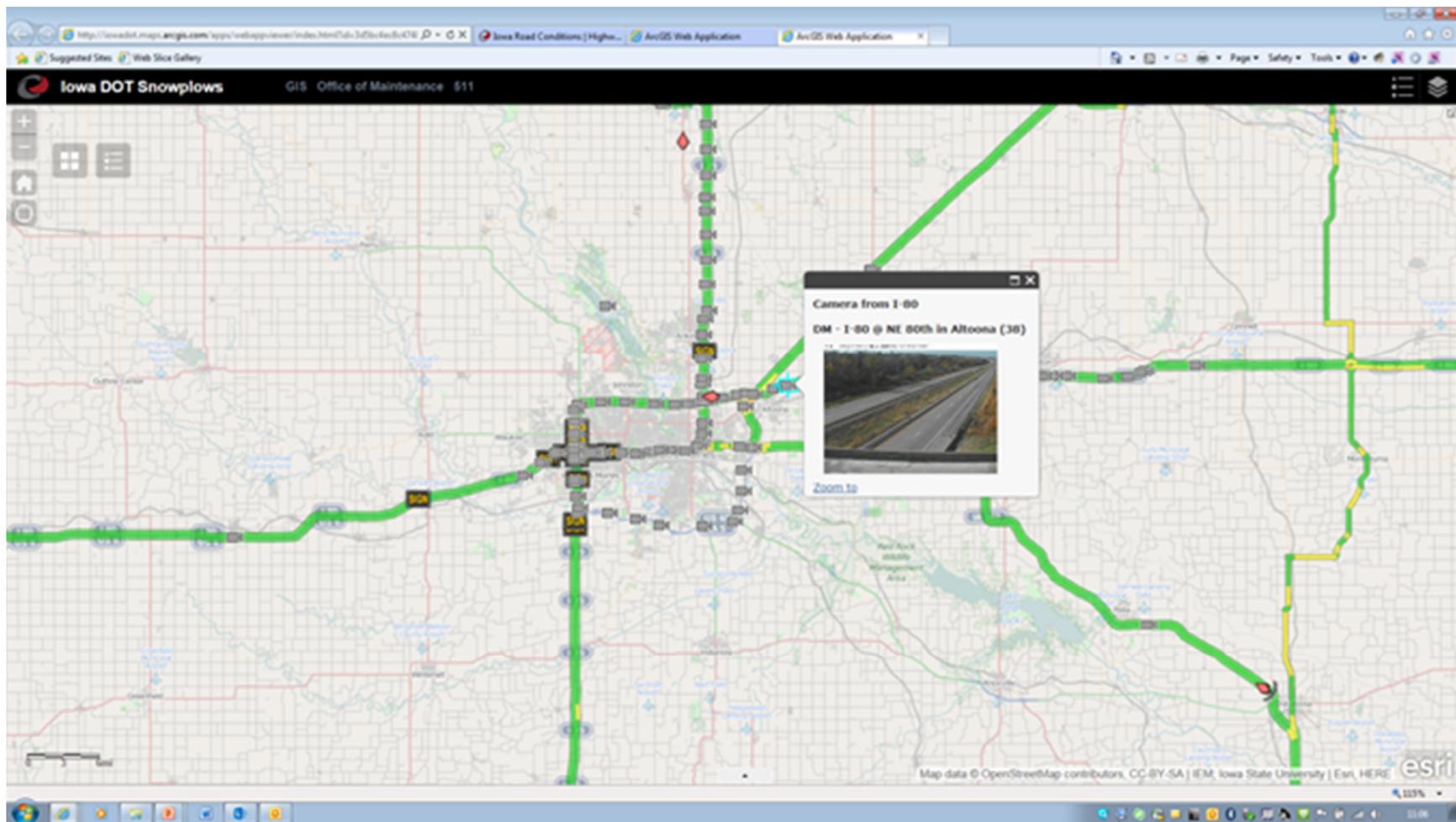


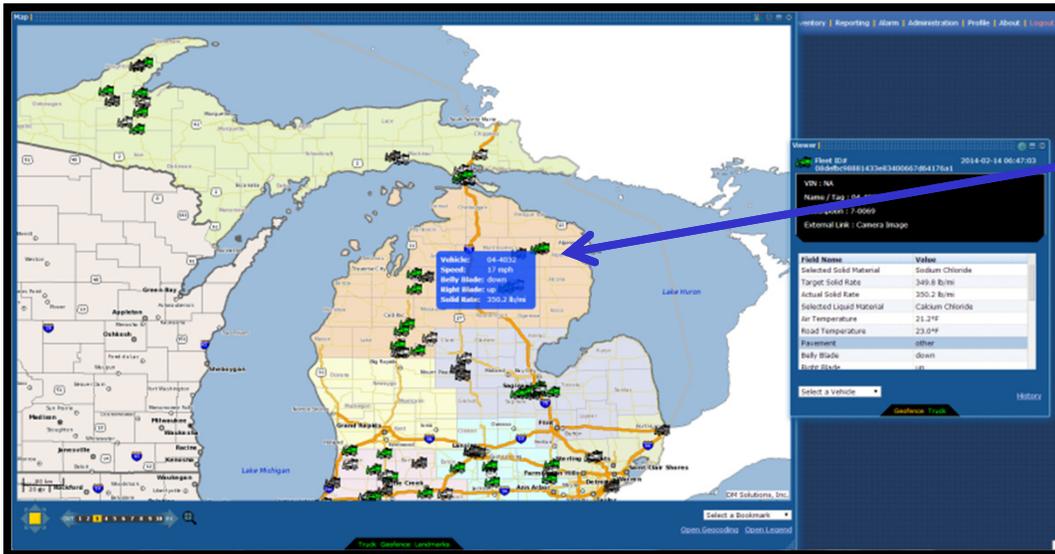
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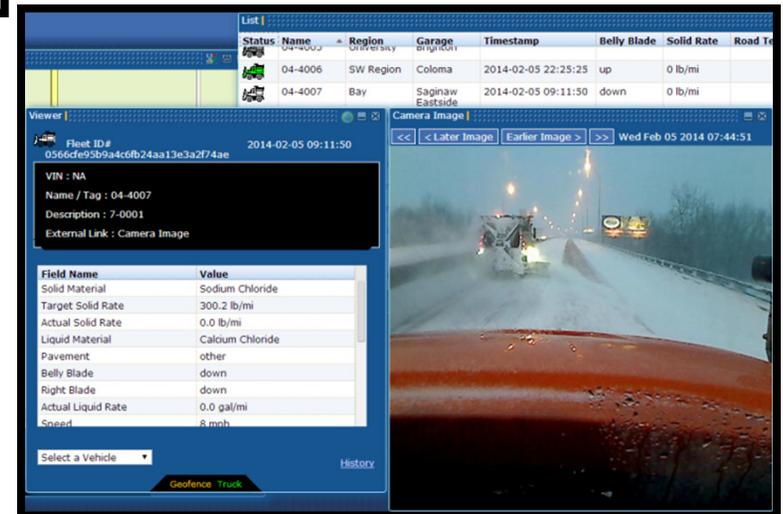
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**Vehicle:** 04-4032  
**Speed:** 17 mph  
**Belly Blade:** down  
**Right Blade:** up  
**Solid Rate:** 350.2 lb/mi

- Real time operations information (salting speed compliance)
- Camera images from WMT







# Remote Weather Information Systems (Not just for State DOT's )



# NON INTRUSIVE PAVEMENT SENSORS – FIXED MOUNT



# Mobile RWIS Units



# GETTING REAL TIME INFORMATION



# Mobile temperature sensors



## Modified Chute Connecticut DOT



**Before**

**After**





**Rear Discharge Chute**

## Pre-Wetting Apparatus



## Innovations – Salt Crusher



# Auger/Y-Chute Combo



# New Spinner Designs



# Salt Slurry Generator



# End Product



## 2012 Findings:

- Slower speeds (25mph) reduces B&S significantly
- Treated salt scatters less than dry salt

## 2013 Findings:

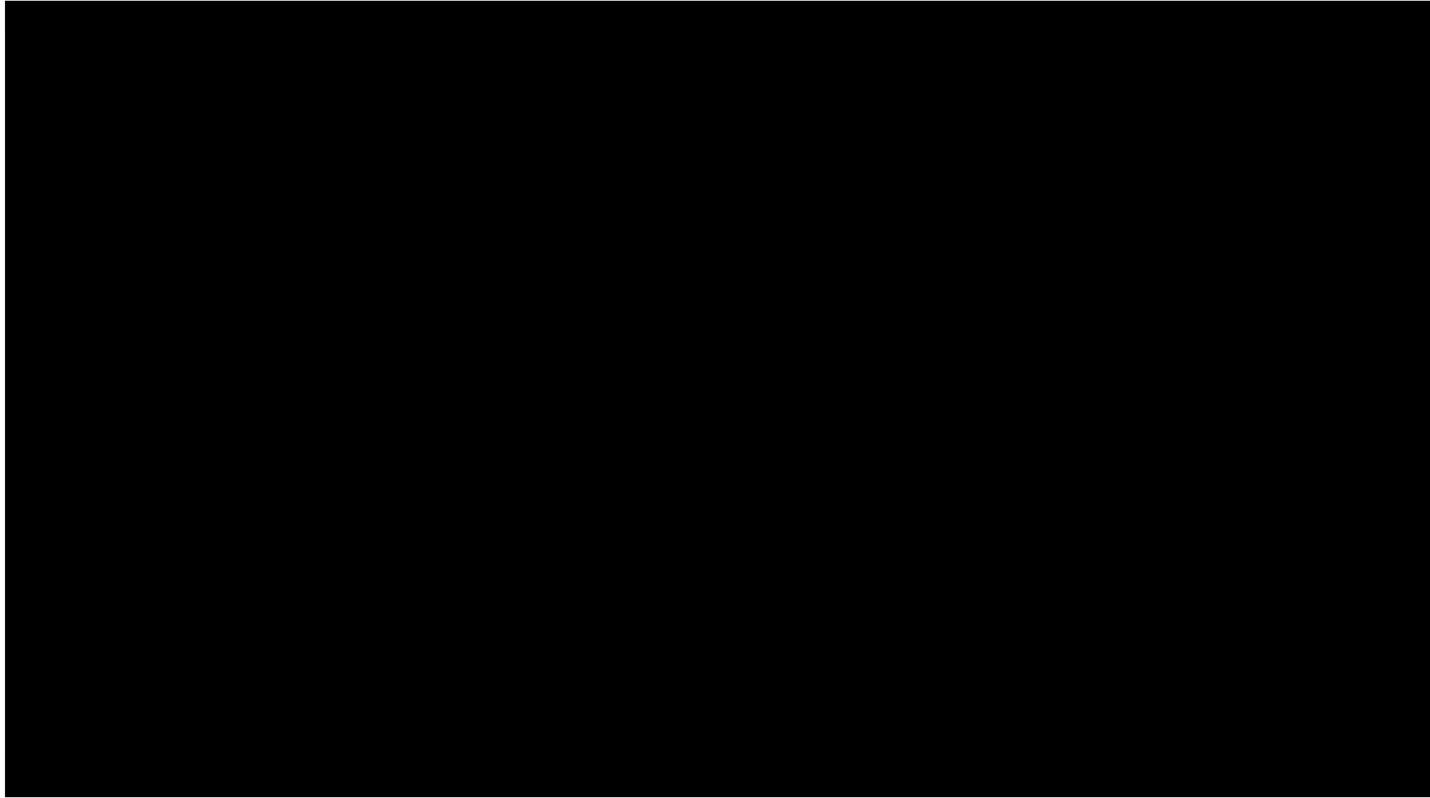
- Adding a “Boot” decreases B&S
- Zero Velocity & Slurry Generators limit B&S (acceptable up to 35 mph)





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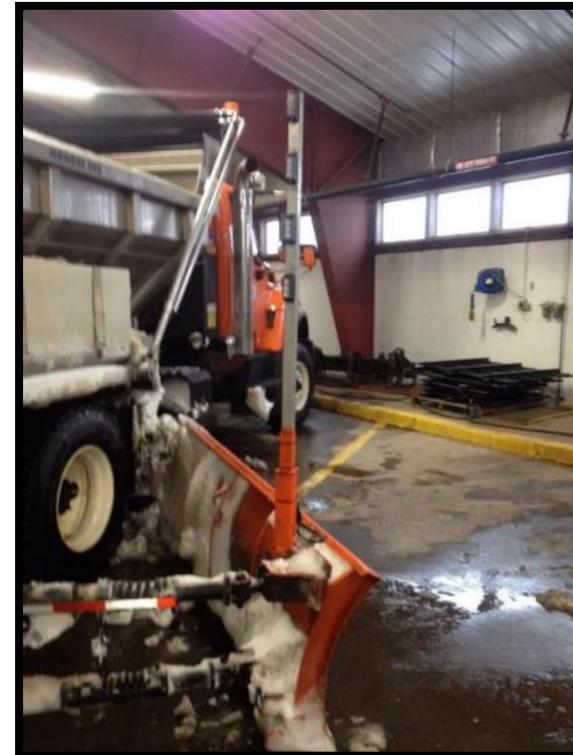




Michigan DOT  
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## Superior Stick



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# Wing Plow Controls



## Material Load Indicator

- Provides visual indication to driver of low level
- Improves safety, no climbing on truck



# More Liquids



## New trucks with 970 gallons of On-Board Liquid



## Monroe followed our design and installed two flood nozzles



430 gallon tank installed inside the truck body





# Manual vs. Groundspeed Controls



# In-Cab Plow Controls



**No more wires, the spinner is operated by Bluetooth!**

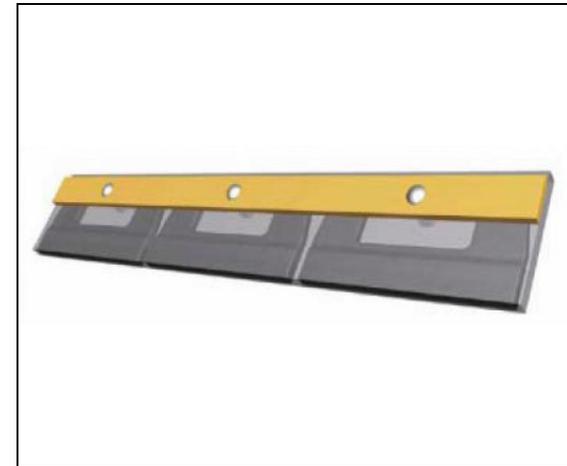
**NEW ASSIST PROGRAM  
– Pilot project in Sweden and Norway**



**A new satellite assisted GPS controller that controls, material dispensing, liquids, the front plow and the wing plow. The operator just drive!**

# Salinity Monitors





**KUPER BLADES**

**JOMA BLADES – RUBBER  
ENCASED CARBIDE**

**New Kuper Blades on the  
Wing and front Plow**





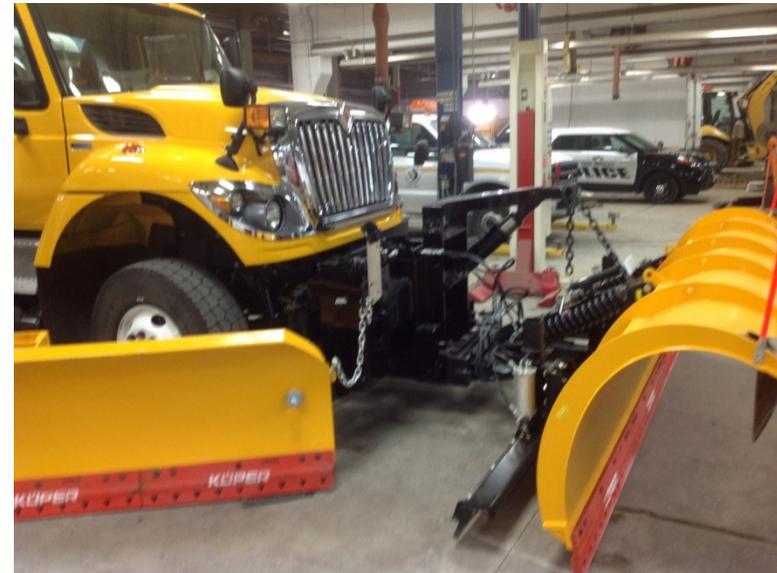
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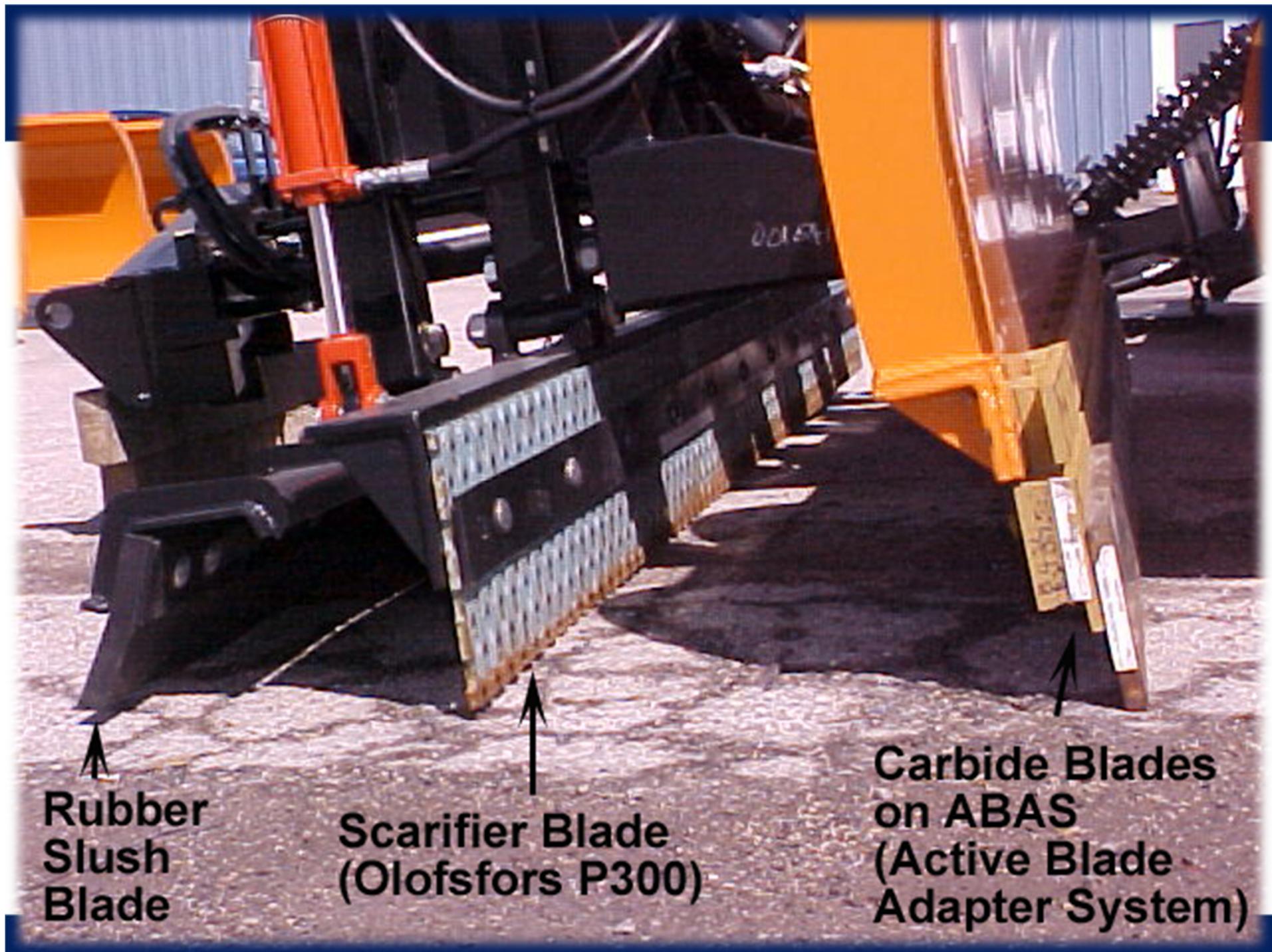
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# **SUPERIOR SCRAPING AND LESS VIBRATION/NOISE**



# Multi-Blade Plows







Multi-blade plows

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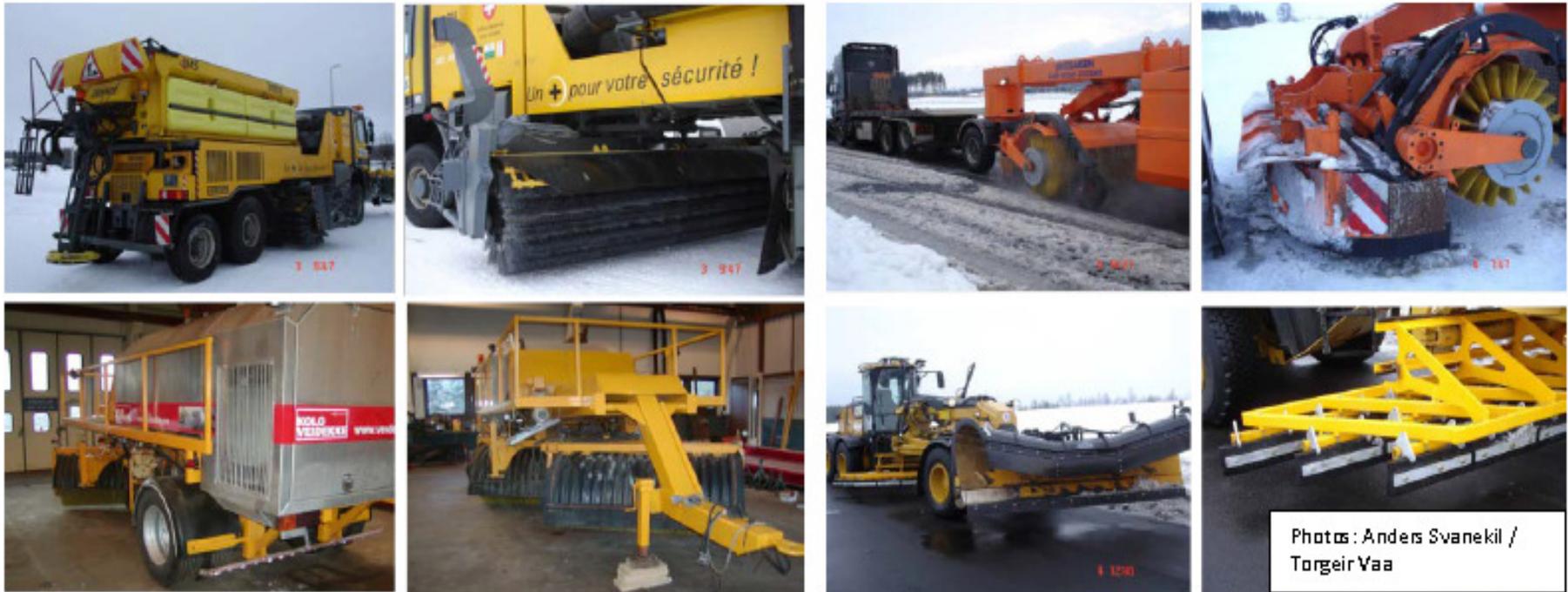
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# Background

- Salt SMART project in Norway (2007-2011) - One sub-project: Development and testing of equipment for reinforced mechanical removal of snow and slush (potential for reduced use of salt?)
- Four equipment's were tested on a field track in 2009:



- Jet Broom, "Slapsekaren", RSS 200 and Pon Cat Grader

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## New Method for Slush Removal

# SRC-3000, Smart Road Clearing

- Rubber slush grade, fixed angle  $\approx 35^\circ$
- Three rows with independent, non fixed rubber elements,  $L \approx 30$  cm
- Clearing width  $\approx 300$  cm (Transport width  $\approx 250$  cm)



Photos: Dagfin Grytseth

## New Method for Slush Removal

# SRC-3000, Smart Road Clearing – In Action

- Before (without front plow):



Photo: @yvind Stokkedal



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# Expandable Plows



**MAINE DOT**



**MARYLAND  
DOT**

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# UDOT's Pup Liquid Spreader w/Broom Plow



# Tow Plow



## Optional Equipment

Equipped with Spreader Body



Equipped with a Ballast Tank/DLA Equipment



## New Ontario Lighting Package



# Ice Breaking Technology









## Brooms/China



# Ice Breakers





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**THANK YOU!**

**Mark DeVries**

**Vaisala Inc**

**(303) 262 4084**

**[mark.devries@vaisala.com](mailto:mark.devries@vaisala.com)**

**Bret Hodne**

**West Des Moines**

**(515) 222-3480**

**[bret.hodne@wdm-ia.com](mailto:bret.hodne@wdm-ia.com)**