Direct Liquid Application

“High Volume Liquid”

odot

Introduction

- DLA can save salt, time and money.
- Easier and less post storm clean up.
- Applications for small and large organizations.
- DLA in construction zones.
- Equipment requirements.
- Types of applications and application rates.
- Regional Partnerships

What is Direct Liquid Application (DLA)?

- Directly applying liquids to the roadway surface during or after a storm.

- Liquid-only plowing is a method of removing snow and ice on the road by applying liquid chemicals directly to the roadway surface.

What is Direct Liquid Application (DLA)?

- This technique offers many advantages over solid chemicals and salts, including reduced material use, reduced cost and workload, lower environmental impact, and enhanced effectiveness.

What is Direct Liquid Application (DLA)?

- The most effective times and locations to use liquid-only plowing are determined by pavement temperature, storm intensity, and moisture content. When used correctly, these roadway treatments are a safe and reliable solution for snow and ice prevention and removal.

Application Rates

“2 Hours”

Application Rates

DIRECT LIQUID APPLICATION RATES (DLA)

DURING EVENT

(Gallons per Lane Mile of Brine - gplm)

2-Hour Cycle Times

Event Type	Pavement Temperatures					
	32-30° F	29-27° F	26-24° F	23-21° F	Below 21°F** (Use Blend)	Below15°F** (Use Wetted Salt)
Freezing Rain	Salt Only	Salt Only	Salt Only	Salt Only	Salt Only	Salt Only
Light Snow (Less than 0.5"/hr)	35 gplm	40 gplm	45 gplm	50 gplm	60+ gplm	Salt Only
Medium Snow (0.5"/hr to 1.0"/hr)	40 gplm	50 gplm	60 gplm	70 gplm	90+ gplm	Salt Only

Direct Liquid Application when snowing is based on reapplying every two hours with liquid to maintain concentration as melting occurs.

In areas of heavy ice or snow pack buildup large doses of liquid can quickly melt buildup.

DLA Helps:

- Minimizes post-storm cleanup, resulting in a quicker return to normal traffic speeds
- Maintains continuous level of service for a wider variety of conditions.
- Can produce “instantaneous” results
- Additional ice & snow fighting tool

Reduced Salt Use

DLA has been found to require 50% less material compared to granular-only applications - *Clear Roads Magazine*

1. ODOT Case Study in Northwest Ohio

- **Average cost savings of 27.2%**
  - **2014-15 10.5%**
  - **2015-17 32%-39%**

    (one less truck needed in the researched area)

2. Post-storm cleanup time reduced dramatically.

Equipment

6 – 5,500 gallon tankers

1 – 2,800 gallon mini tanker

6 - 1300 gallon insert tankers

1 - 350 gallon parking lot / sidewalk tanker

5,500 Gallon Tanker

Equipment

Direct Liquid Application(DLA)

Equipment

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Brine Makers & Liquid Capacity

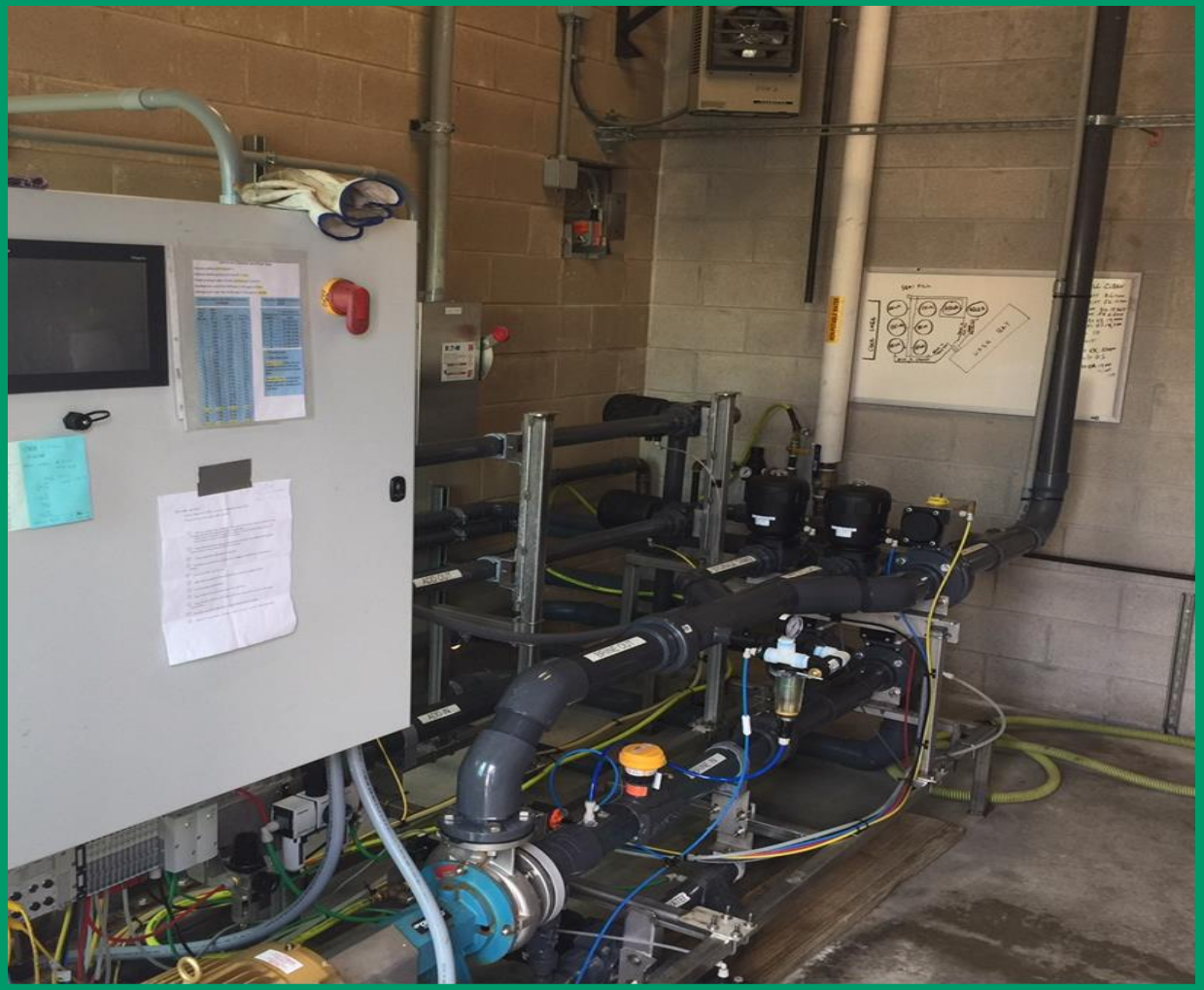
- **Brine Makers**
  - Henderson Brine Extreme Fixed Unit
  - Henderson Brine Extreme Trailer Unit
  - Cargill AccuBrine ABS2

- 60,000 gallons brine
- 30,000 gallons add-mixtures
  - Calcium Chloride
  - AquaSalina
  - Beet Heat

Brine Makers & Liquid Capacity

Direct Liquid Application(DLA)

Brine Makers & Liquid Capacity



Direct Liquid Application(DLA)

Brine Makers & Liquid Capacity

Direct Liquid Application(DLA)

Brine Makers & Liquid Capacity

Direct Liquid Application(DLA)

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Northwest Ohio ODOT 2017-18 Liquid Usage

- Beet Heet = 23,320 gallons
- AquaSalina = 208,350 gallons
- Calcium Chloride = 5,950 gallons
- Salt Brine = 2,406,842 gallons

During the storm

Case Study – January 13, 2016 (Before)

January 13, 2016

Temp: 10deg

5.5 miles / 11 LMi

5 MPH wind

3500 Gallon 85/15

(Brine/AquaSalina)

6 passes

Before = 8:00 am

After =9:45 am

Case Study – January 13, 2016 (During Application)

Case Study – January 13, 2016 (After)

Sidewalk Application

4 AM

20 deg

20 Min

Before

After

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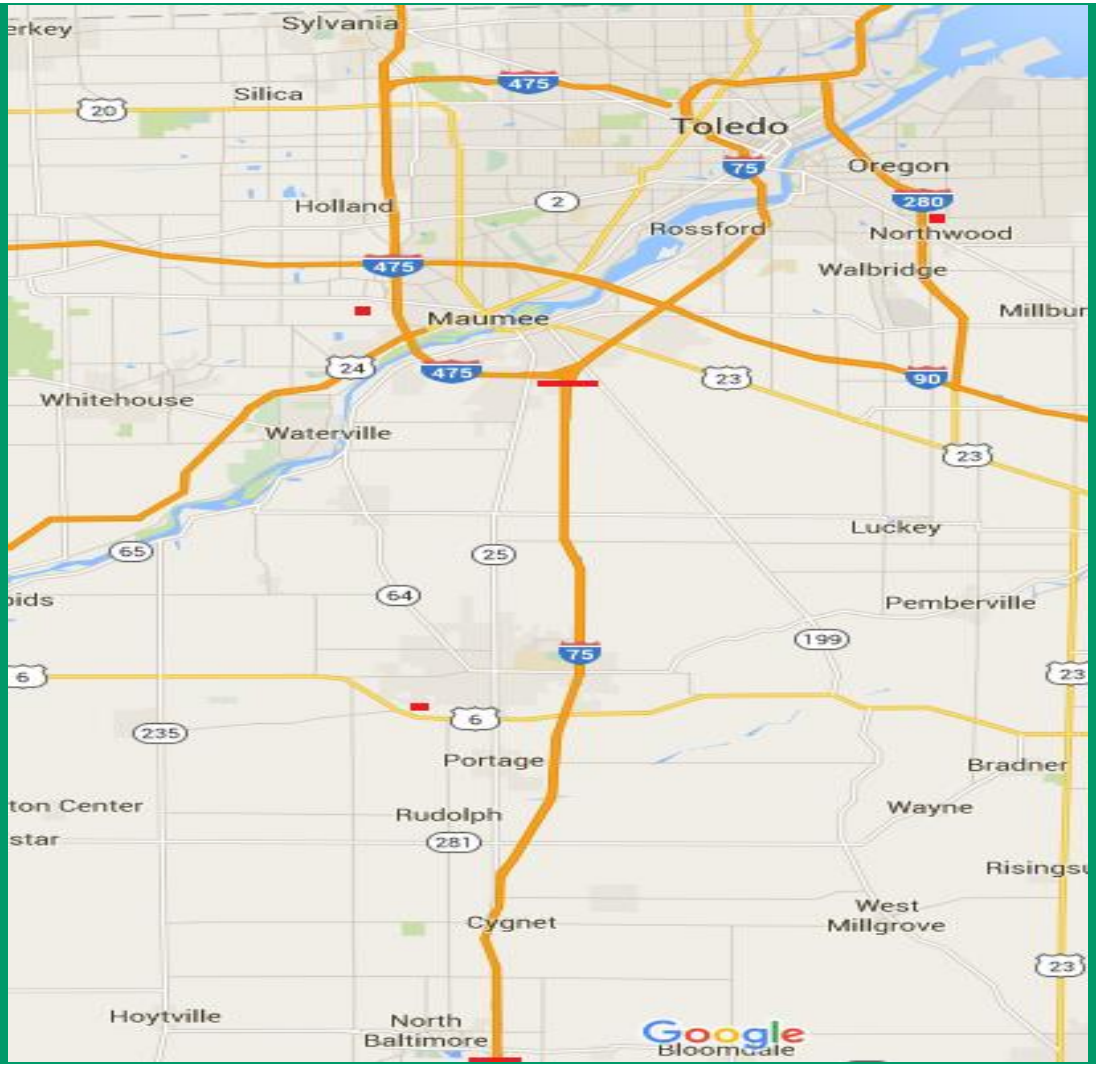
Use in Construction Zones



Construction I-75

Wood County Garage

30 miles of 6 lane Bi-directional Traffic

Direct Liquid Application(DLA)

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Example

Regional Partnerships

- Effective in large and small cities
- Villages, townships, parks & schools
- Partner on distributing liquids.
- Assist to develop a liquids program.
- Education

Working with other agencies

Direct Liquid Application(DLA)

Video

Conclusions

- Provide a higher level of service to the drivers in the State of Ohio.
- Maintain a higher average traffic speed compared to only using rock salt.
- Very little if any plowing is required during post storm clean up.
- Saving time and salt.

Questions!!!