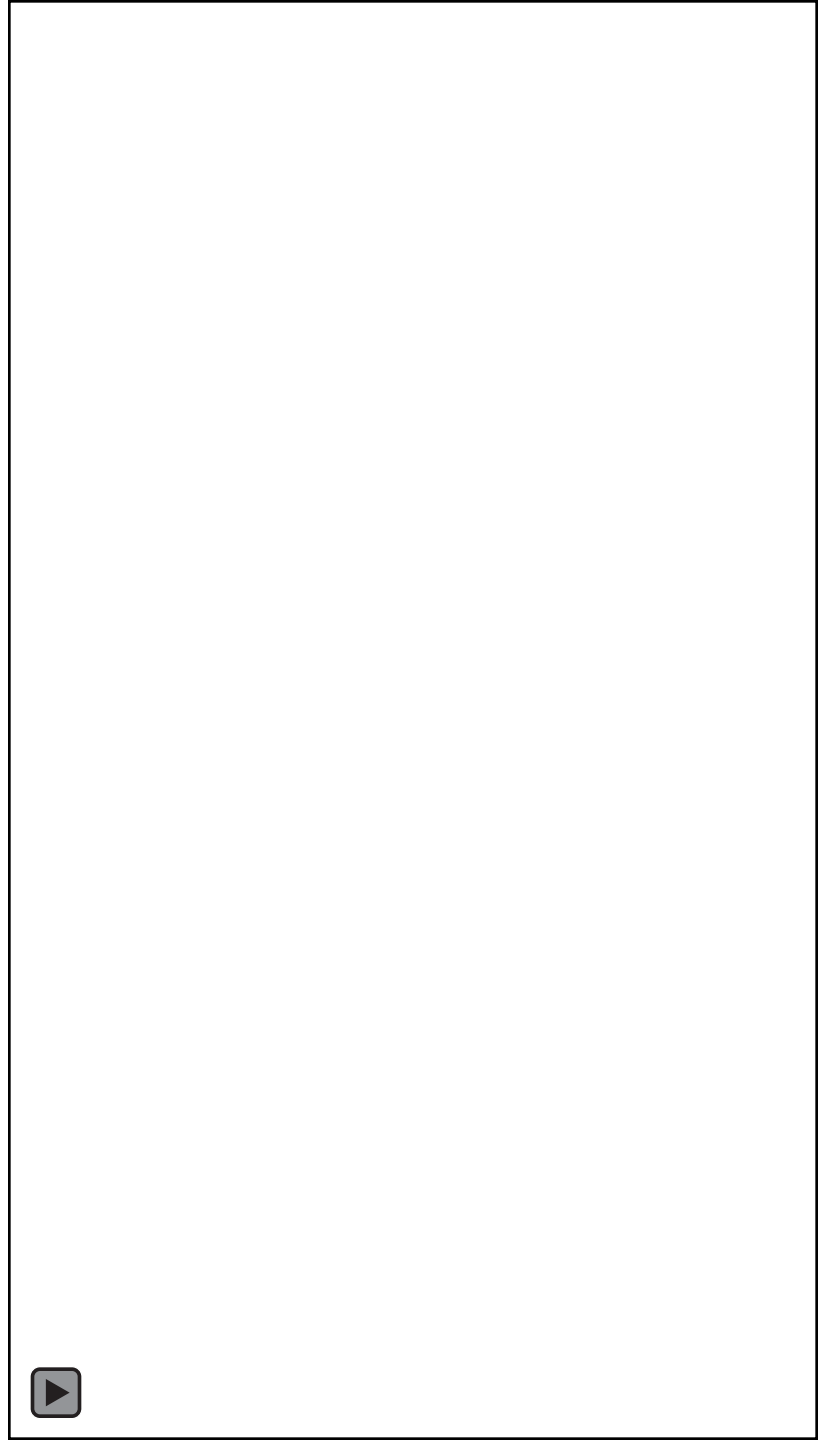
# Liquid Route for the first time?





# How did we get here

- Small Anti-Ice Truck-500 gallon limited success
- Frost spots, intersections, roundabouts, overpasses
- New Superintendant –not scared, liked brine, wanted to improve
- Experiments worked
- Mark Christensen
- Experiments worked

# Experiments

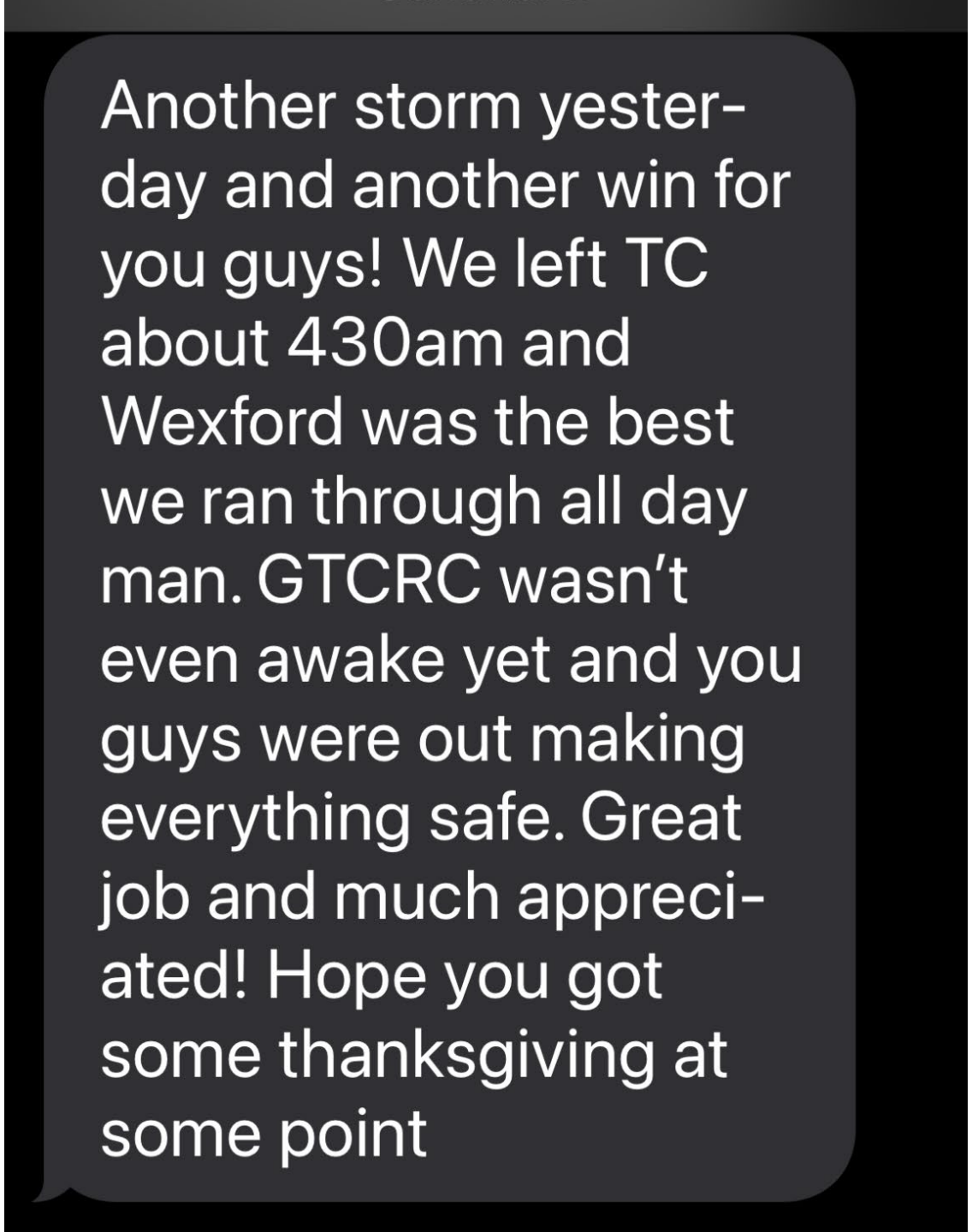
- Two Years ago-Stripping hardpack-bump 32 rd, 44 ½ rd
- M115 to Boon rd
- Thanksgiving storm
- Calibrating truck
- Spot treating routes without there knowledge
- Treating one lane

# M-115 to boon rd

- Used little truck 500 Gallons the evening before
- 5.7 miles
- Warm fall pavement cold air
- Wet sticky snow that glued on
- Only section that wasn’t a mess the following day

# Thanksgiving Storm

- First shot at big truck nozzle on centerline
- Kicked Ass
- Huge difference at county lines and our county routes were crappy




This is not to make fun of another county it just shows effectiveness

Our county routes were terrible too but everything we treated before with brine cleaned up great.

# We had to figure out how to control it!!

- Did a hillbilly test
- How long to fill up a 5 gallon pail
- Nerdy spreadsheet for speed /application
- Tested half full same test
- Cam Lock different hoses



| | Full Tank | | | | Full Tank | | | | Half Tank | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | bar | 1" Clear | big hose | small hose | bar | 1" Clear | big hose | small hose | bar | big hose | small hose |
| Time to fill bucket (min) | 0.117 | 0.195 | 0.3667 | 1.25 | 0.117 | 0.195 | 0.3667 | 1.25 | 0.133 | 0.4 | 1.25 |
| mph | 20 | 20 | 20 | 20 | 5 | 5 | 5 | 5 | 20 | 20 | 20 |
| gal per mile | 128 | 77 | 41 | 12 | 513 | 308 | 164 | 48 | 113 | 38 | 12 |
| | | | | | | | | | | | |
| | bar | 1" Clear | big hose | small hose | bar | 1" Clear | big hose | small hose | bar | big hose | small hose |
| Time to fill bucket (min) | 0.117 | 0.195 | 0.3667 | 1.25 | 0.117 | 0.195 | 0.3667 | 1.25 | 0.133 | 0.4 | 1.25 |
| mph | 30 | 30 | 30 | 30 | 7 | 7 | 7 | 7 | 30 | 30 | 30 |
| gal per mile | 85 | 51 | 27 | 8 | 366 | 220 | 117 | 34 | 75 | 25 | 8 |
| | | | | | | | | | | | |
| | bar | 1" Clear | big hose | small hose | bar | 1" Clear | big hose | small hose | bar | big hose | small hose |
| Time to fill bucket (min) | 0.117 | 0.195 | 0.3667 | 1.25 | 0.117 | 0.195 | 0.3667 | 1.25 | 0.133 | 0.4 | 1.25 |
| mph | 40 | 40 | 40 | 40 | 10 | 10 | 10 | 10 | 40 | 40 | 40 |
| gal per mile | 64 | 38 | 20 | 6 | 256 | 154 | 82 | 24 | 56 | 19 | 6 |
| | | | | | | | | | | | |
| | bar | 1" Clear | big hose | small hose | bar | 1" Clear | big hose | small hose | bar | big hose | small hose |
| Time to fill bucket (min) | 0.117 | 0.195 | 0.3667 | 1.25 | 0.117 | 0.195 | 0.3667 | 1.25 | 0.133 | 0.4 | 1.25 |
| mph | 50 | 50 | 50 | 50 | 15 | 15 | 15 | 15 | 50 | 50 | 50 |
| gal per mile | 51 | 31 | 16 | 5 | 171 | 103 | 55 | 16 | 45 | 15 | 5 |
| | | | | | | | | | | | |
| | bar | 1" Clear | big hose | small hose | bar | 1" Clear | big hose | small hose | bar | big hose | small hose |
| Time to fill bucket (min) | 0.117 | 0.195 | 0.3667 | 1.25 | 0.117 | 0.195 | 0.3667 | 1.25 | 0.133 | 0.4 | 1.25 |
| mph | 60 | 60 | 60 | 60 | 2 | 2 | 2 | 2 | 60 | 60 | 60 |
| gal per mile | 43 | 26 | 14 | 4 | 1282 | 769 | 409 | 120 | 38 | 13 | 4 |

# High speed coverage

- MDOT system 50-60 mph
- County Primary 30-50 mph
- Hose selection depends on
- What you are trying to accomplish

| | bar | 1" Clear | big hose | small hose |
|---|---|---|---|---|
| Time to fill bucket (min) | 0.117 | 0.195 | 0.3667 | 1.25 |
| mph | 30 | 30 | 30 | 30 |
| gal per mile | 85 | 51 | 27 | 8 |

| | bar | 1" Clear | big hose | small hose |
|---|---|---|---|---|
| Time to fill bucket (min) | 0.117 | 0.195 | 0.3667 | 1.25 |
| mph | 40 | 40 | 40 | 40 |
| gal per mile | 64 | 38 | 20 | 6 |

| | bar | 1" Clear | big hose | small hose |
|---|---|---|---|---|
| Time to fill bucket (min) | 0.117 | 0.195 | 0.3667 | 1.25 |
| mph | 50 | 50 | 50 | 50 |
| gal per mile | 51 | 31 | 16 | 5 |

| | bar | 1" Clear | big hose | small hose |
|---|---|---|---|---|
| Time to fill bucket (min) | 0.117 | 0.195 | 0.3667 | 1.25 |
| mph | 60 | 60 | 60 | 60 |
| gal per mile | 43 | 26 | 14 | 4 |

# Slow speed be careful

- At slow speeds you can really put out allot brine
- For specific intersection work adjust hoses

| | | Full Tank | |
|---|---|---|---|
| bar | 1" Clear | big hose | small hose |
| 0.117 | 0.195 | 0.3667 | 1.25 |
| 5 | 5 | 5 | 5 |
| 513 | 308 | 164 | 48 |

| | | | |
|---|---|---|---|
| bar | 1" Clear | big hose | small hose |
| 0.117 | 0.195 | 0.3667 | 1.25 |
| 7 | 7 | 7 | 7 |
| 366 | 220 | 117 | 34 |

| | | | |
|---|---|---|---|
| bar | 1" Clear | big hose | small hose |
| 0.117 | 0.195 | 0.3667 | 1.25 |
| 10 | 10 | 10 | 10 |
| 256 | 154 | 82 | 24 |

# Surprise –spot treating without the driver’s knowledge




Sherman Hill

McBain Road

Curves and hills

# Treating one lane

- Trying to remove the hardpack
- Pic taken 30 min after 1 lane treated



# What’s the Big Deal?



# What's the Big Deal?

- We ran numbers for December.
- MDOT Salt usage 1,426.37 Tons 50%
- County Salt Usage 1,447.90 Tons 50%
- Never used more county that MDOT
- Normal county usage 31-40%
- Once we started treating county January #
- MDOT Salt usage 1,841.53 Tons 60%
- County Salt Usage 1,236.59 Tons 40%
- Ended up County 46% entire year

Who Cares what we are doing works!!!!!

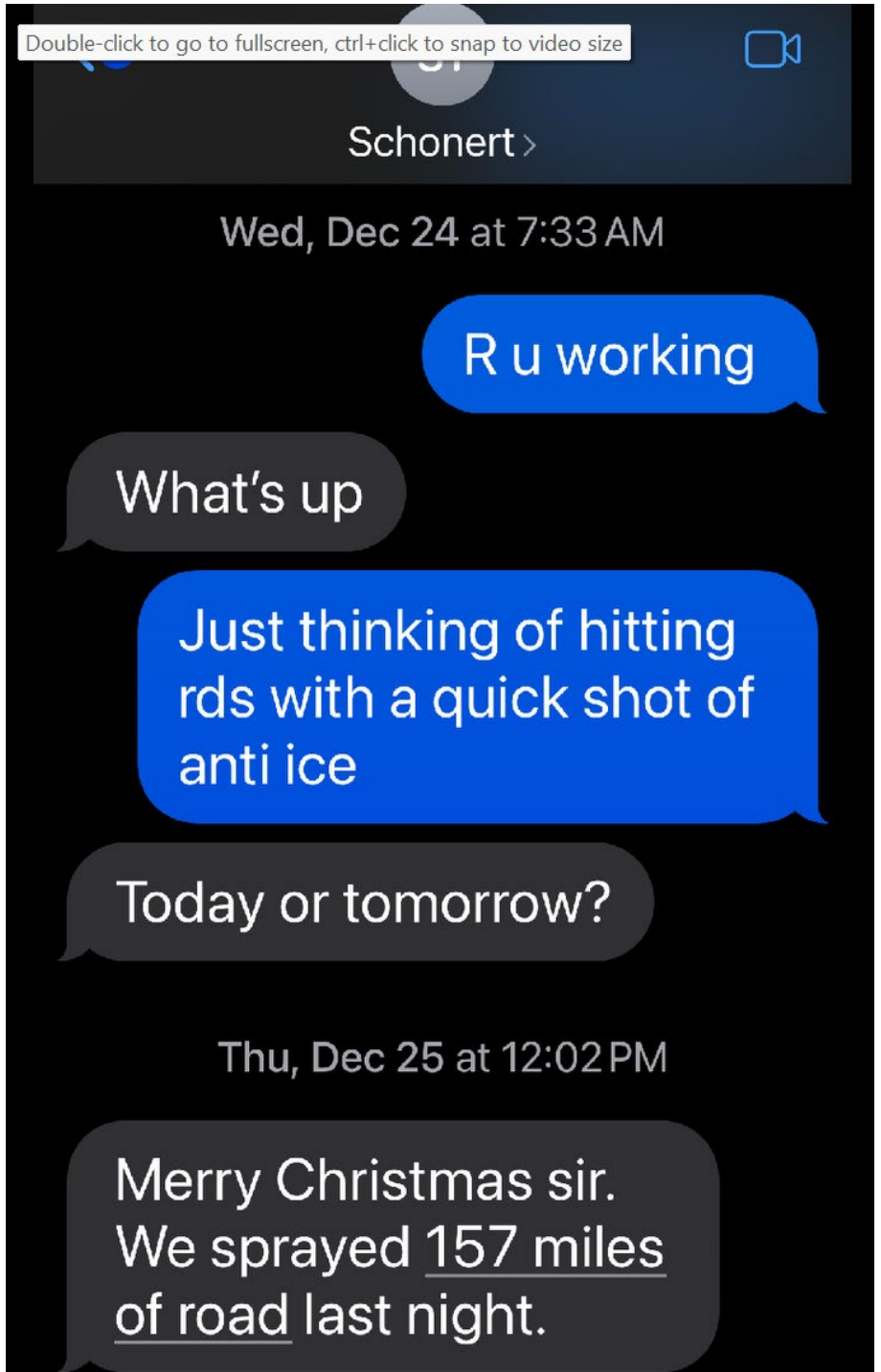


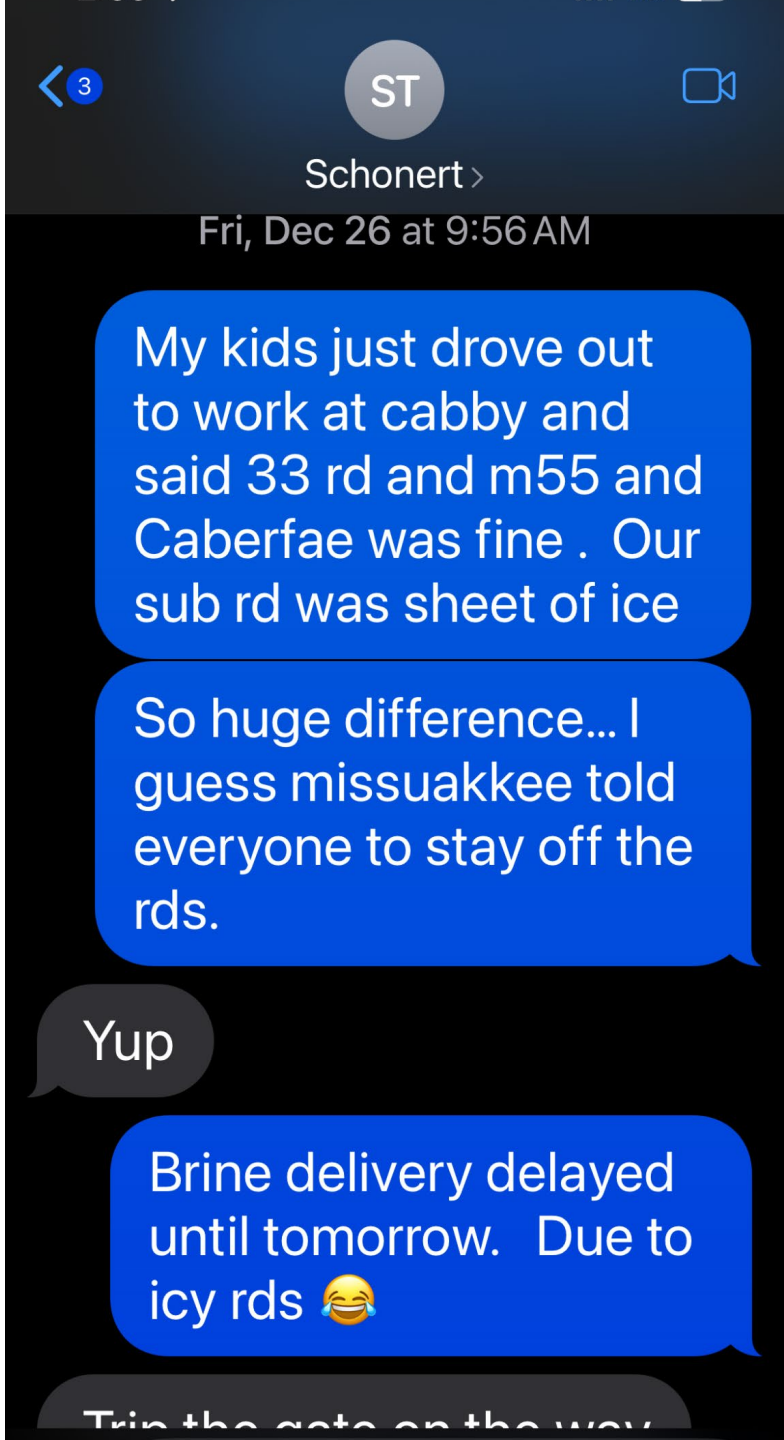
# Because My family drives these roads too

WE can deliver a better safer product cheaper



Treated roads XMAS eve rain snow 25 degrees. Treated roads fine everything else was a mess



# Does it work?

Our road treated the night before
The adjacent county ran their road already
and it covered over -ours had not been
run yet and still good.

This is not a typical situation but
thought it warranted noting, we
looked like we are out there early
and had not even been there yet.





# Does it work?



M-55 driving into the snow belt treated two days before
Just centerline first
Passing lanes ran drive lane on each direction
As you drive into snow bands you can see it accumulate
But not on the brine area very much.





Residual brine melting the snow in parking lot
No traffic Saturday

# Is this the pot of gold we have all been looking for?

It’s great for some stuff

Not great for others



# Not for here !!!!!!!!

Great for some things

Not for others.

Don’t use when its too cold!!!
15 degrees

Don’t use in the middle of storm!!!



# We are just scratching the surface

- Anti-icing
- De-icing
- Spot treating hills, stops, and curves!!!
- Spot treating large intersections, round-abouts, subdivisions
- Dealing with drift areas.

# Anti-Icing

Dec 28 Ice storm
Anti Iced state and county roads

Trees and power lines down

Ice just was mealey crunchy ice didn’t stick to the road.  Wide paved shoulders were a sheet of black ice.

Our county lines were a trap- complete sheets of ice in surrounding county and mdot roads.





# De-Icing





# Spot Treating

- Spot treating hills, stops, and curves!!!
- Spot treating large intersections, round-abouts, subdivisions
- Certain trucks aren’t configured to hit certain parts of the intersection.
- Requires changing out your hoses for correct speed and placement of brine.

# Drift areas and blow-ons

- Hard to deal with
- Treat with salt more snow sticks
- Just blade you get ice
- Sand doesn’t stick or if sun comes out melts and make worse.



You deserve a fish pic!!!
This can be boring!!!



# Frost or refreeze prevention

Visible frost line on shoulder

Visible melt line preventing road from icing



# Making it efficient

4 Fraq tanks at key locations allow efficient route planning and reduces deadheading





# What did he say?

- I like the speed of it.  What 1 guy can cover is awesome.  I can cover what 6 guys can with salt. And the effect is immediate.  30 minutes with no traffic at 3 am ours would look great and with salt you can't get that affect until the suns out.
- GREAT tool but has it's limitations
- During an ice storm I was treating out on m55 and my windshield was icing up and I was freaking out trying to get back to the garage to call guys but I hit M115 and it was totally fine, I couldn't believe it.  Then central starting blowing up  my phone about wanting us to treat mdot's end of the freeway because they had people crashing everywhere.

# What did he say?

- I hope they don’t start using it we look like heros and there roads are sh%#.
- I take Sh*! From the other night guys about it most don’t like the idea of it say it’s gonna reduce overtime. But also make them look bad cause our roads are better.
- You can tell the difference when your blading in the truck, blading the hard pack would just slide along and hit the brine the blade would drop down, and start stripping pack, you can hear the diffence.
- Don’t be close minded that you don’t try it.  The old school mentatilty of new different don’t like it but man it works.

# What did he say?

- The more the better lol anti-icing at 40-50 gallons heavier on hills so slow down so you shoot it heavier.
- Hualing our own brine to fill tanks when it’s slow helps break up the slow nights.
- It was a total fail when I tried to burn off Eddies wheel tracks when it was 10 degrees.
- And some other things I don’t think I should put up here lol….

# What is Wexford going to do?

- WE replumbed our distribution Bar with 3” main.
- We have two big trucks setup.
- We are setting up a tandem axle with no box and a tank, with a blade on it still.
- We are going to reinstall our prewet systems but put in a minibar to spot treat intersections, the old hills stops and curves.
- Redo our cheat sheet with our new plumbing.
- Keep experimenting

# We are going to keep on Cranking!!



