



## **Floyd Hill – Technical Team**

### **Meeting Summary**

May 19, 2023, 10:30 AM to 12:00 PM

CDOT West Program – Lookout Mountain Conference Room and Virtual (Zoom)

### **1. Introductions, Meeting Purpose and Project Updates**

Daniel Estes, CDR Associates, opened the meeting and reviewed the agenda.

The purpose of today's meeting was to discuss:

- *Project Updates & Early Projects*
- *Roadway Maintenance and Management*
- *Look Ahead & Next Steps*

TT members confirmed the meeting agenda with no changes.

### **2. Project Updates**

#### **Updates on the Early Projects:**

- **Genesee Wildlife Crossing:** WB lane has been paved, project will be shifting traffic to work on EB. Construction on track to finish this year.
- **Roundabout projects:** Both Homestead and CR 65 locations are working through utilities relocation issues. Still aiming to have these completed this year.
- **Empire Wildlife Crossing:** Still finalizing the designs due to ROW issues and structural design complications due to an unsecure, talus slope. Aiming to post an RFP for contractors in August.
- **El Rancho Parking Lot:** This early project has been designed for 80 parking spots to facilitate users of the Pegasus transit service and potentially Bustang as well. Jefferson County is currently working through the rezoning process.



### Environmental Updates:

- **The Air Quality monitoring dashboard** (required by Senate Bill 260) is being finalized and will be rolled out as East Section construction kicks off in June.
- Currently in the reevaluation phase of the West Section package in order to document changes related to environmental impacts.
  - **TT Question:** Is CDOT looking into opportunities for Carbon Capture?
    - **Answer:** Not aware of any initiatives for Carbon Capture but there are other ongoing initiatives to reduce carbon emissions.

### Utilities:

- Kurt Kionka (CDOT) provided an overview of key utilities considerations for the main sections of the project. In the East Section, a fiber line will be moved. In the Central Section, while building bridges, construction teams will need to be careful of communications and power lines overhead, both of which will be relocated underground.
- Tyler Brady (CDOT) said the project team has been engaged with all utility companies located along the Central Section, including several site visits. There are two locations with overhead power that will require transfer underground along US6, timing TBD.

## 3. Maintenance & Management Discussion

The primary topic of this meeting was a presentation from CDOT Maintenance about winter maintenance practices and procedures. Shawn Smith, Deputy Director of Maintenance in Region 1, Mike Willyard, Maintenance Region 1 Superintendent, and Sabrina Jones, Envirotech Solutions, were the presenters. Daniel Estes introduced the topic, noting that questions had arisen about maintenance practices at prior TT meetings.

Sabrina Jones, Envirotech Services, presented a slideshow covering basic information on the deicer products used by CDOT as well as key considerations related to the application process. She also shared resources on these products, listed below:



Resources for Ice Slicer	Resources for Meltdown Apex
<a href="https://blog.iceslicer.com/deicer-impact-on-the-environment">https://blog.iceslicer.com/deicer-impact-on-the-environment</a>	<a href="https://envirotechservices.com/meltdown-apex/">https://envirotechservices.com/meltdown-apex/</a>
<a href="https://blog.iceslicer.com/pm2.5-vs-pm10-understanding-particle-air-pollution">https://blog.iceslicer.com/pm2.5-vs-pm10-understanding-particle-air-pollution</a>	
<a href="https://blog.iceslicer.com/is-ice-slicer-safe-for-the-environment">https://blog.iceslicer.com/is-ice-slicer-safe-for-the-environment</a>	
<a href="https://blog.iceslicer.com/balancing-public-safety-with-environmental-safety">https://blog.iceslicer.com/balancing-public-safety-with-environmental-safety</a>	

**Sabrina also highlighted the following points throughout her presentation:**

- CDOT uses both a liquid deicer, called MeltDown Apex, and a salt deicer, called Ice Slicer. Both applications lower the freezing point to keep the snow and ice on the road in a slush that can be more easily plowed.
- Meltdown Apex, the liquid deicer, is used during particularly windy storms (See informational graphic below).
- Training is key to proper deicer application. The products are most environmentally and economically sustainable when applied responsibly. CDOT routinely uses less than recommended amounts, using only what is needed to achieve safe roadways.
- All deicing products add chlorides into the environment, so CDOT has tried to use natural products that can dilute into solution and reduce overall impacts.



## GET UNMATCHED MELTING PERFORMANCE

Liquid Anti-icing and Deicing Solution that Performs at Lower Temperatures

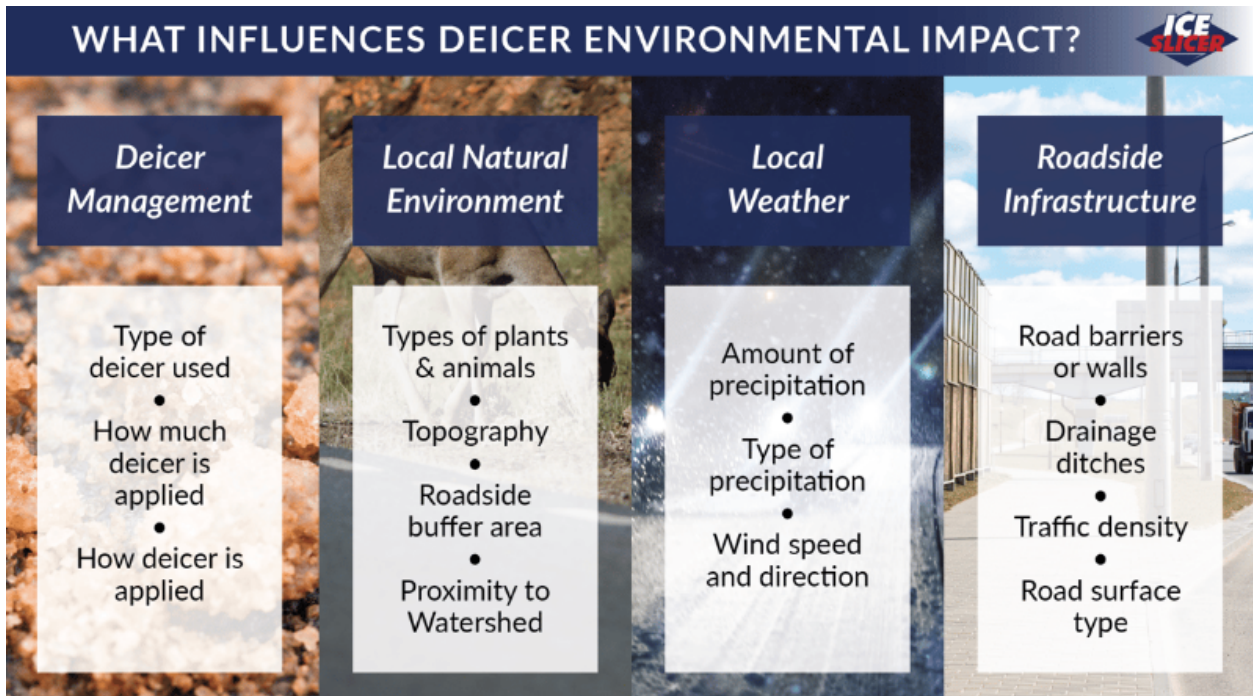
### Benefits & Features

- Delivers safer roads
- Reduces effects from corrosion
- Lowers refreeze point
- Increases snow and ice melt
- Improves snow removal
- Enhanced melting power

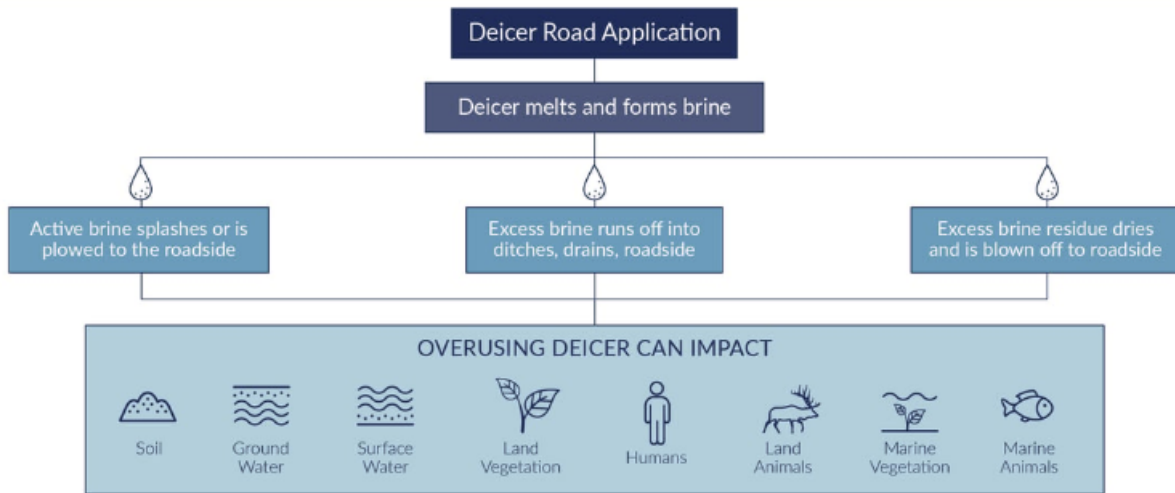
**MeltDown Apex delivers a 12°F improvement in freeze point over any other liquid de-icer.** This performance enhanced magnesium chloride (MgCl<sub>2</sub>) brine not only produces results at lower temperatures, it also improves the ability to combat snow and ice buildup on road surfaces.

MeltDown Apex outperforms all other liquid anti-icing and deicing products across a wider spectrum of temperatures. When diluted to a ratio of 1:1 with water from melting snow and ice, MeltDown Apex will not refreeze until -8°F. Unlike other enhanced MgCl<sub>2</sub> products, MeltDown Apex is simply amplified by improving the concentration of its active ingredient. This has made MeltDown Apex Better - Faster - Stronger.

- All the salts are sourced from Utah. They are the same kinds of natural salts given to livestock to increase their mineral intake.
- Added chlorides do affect plants and animals, however the products used by CDOT meet solubility requirements, diluting into stormwater runoff to create a brine. For comparison, sand is another aggregate that can increase traction on icy roadways but does not dilute into solution and will stifle roadside vegetation over time.



## HOW CAN DEICERS ENTER THE ENVIRONMENT?



*Reduce deicing environmental impact by using a naturally high performing deicer that gives you more power with less product*

- Conditions such as precipitation and wind are key variables for determining the amount of product used.
- Ice slicer is 70% less corrosive than white salts and tests have indicated that soil and root uptake 3 feet from the roadways is not significant.



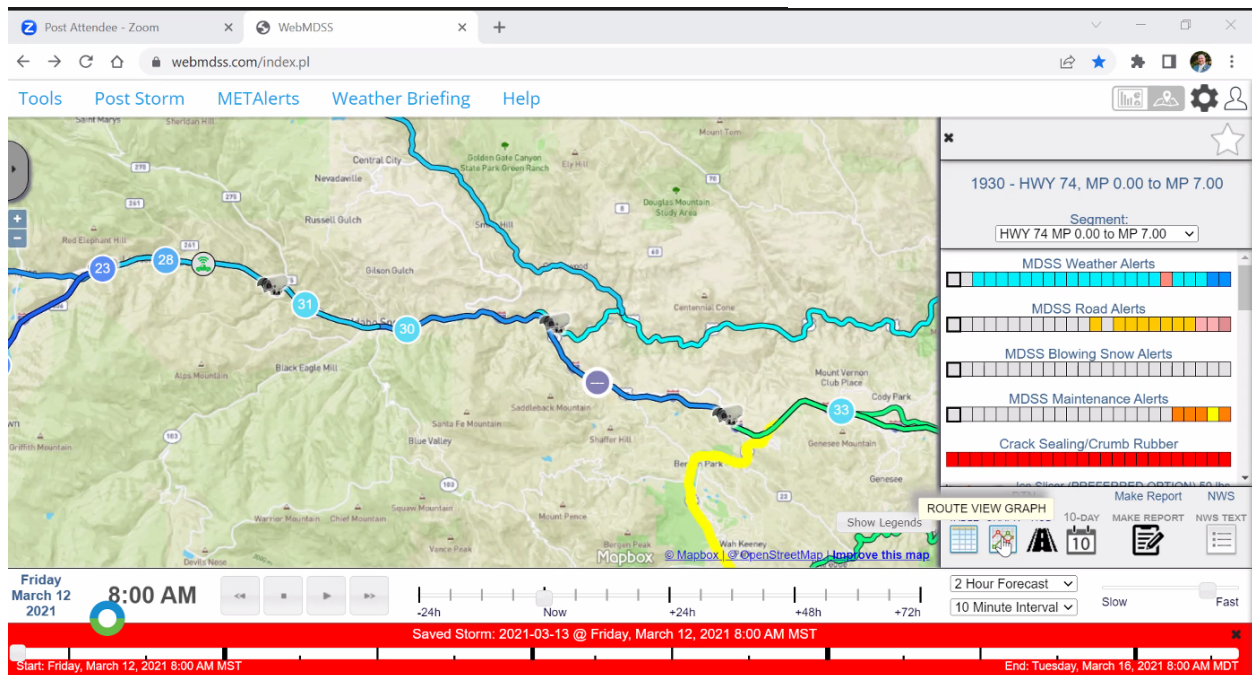
- Safety is CDOT's highest priority. There is a responsibility to apply deicer to ensure the traveling public is safe on icy roads. Using deicers responsibly reduces accidents by restoring traction.
- Particulate Matter (PM) is a key consideration, and especially important in Colorado. Sand is ground down over time on the roadway and can get blown off and increase PM in the environment. Granular Salts, conversely, are used on I-70 which dilute once water is present.

Shawn Smith then discussed the Maintenance processes before, during, and after storms. He noted that CDOT has come a long way in their approach to dealing with ice and snow on the roadways. A much more sophisticated and data-driven approach is used today compared to that of past decades.

**Shawn highlighted the following points:**

- At the time of this presentation, the maintenance teams have just wrapped up the season, clearing the last few roads in the high mountains.
- The teams have now turned to prepping the equipment for next season, ensuring all machines and equipment are calibrated appropriately.
- Before storms, Maintenance teams will call and coordinate with CDOT leadership to ensure a clear strategy. Some storms this past season required calls every few hours to touch base and adapt to changing conditions.
- Crews use both an online tool as well as experience to determine the amount of deicing material needed.
- He then showed the group the Web Maintenance Decision Support System (Web MDSS), the online tool used for application of deicing material. This tool helps the crew decide when and how much product to apply to a given area (pictured below).
- The tool provides hourly recommendations for specific locations based on real-time weather conditions. The system also integrates plow driver input; drivers can self-calibrate if they see the need for more or less deicer on a certain stretch of road.





*(Pictured above: Web MDSS platform for determining deicing material application levels during a given storm.)*

**Shawn and Mike then addressed a few of the TT Questions submitted ahead of the meeting:**

- **Q:** When do you begin preparing for a storm?
  - **A:** As soon as we know weather is coming, we move into 12 hour shifts. Region 9 and Region 5 have offset shift changes to ensure that there is never a time with no plows on the road. In preparation for the winter season, we fill up all trucks to capacity in August and we must have at least 80% of our machines in service.
  
- **Q:** What are your main concerns for snow management on the viaducts?
  - **A:** Like any bridge deck, the viaducts will stay colder than roadways on grade. So, we will increase our deicer application rate. We also evaluate our turnaround time for viaducts so that they don't flash freeze before turnaround.
  
- **Q:** What are the ingress and egress points for plows?
  - **A:** Each plow has set mile markers that indicate their ingress and egress points along the corridor.



- **Q:** Is the full Floyd Hill project area managed by one maintenance group?
  - **A:** CDOT maintenance will be responsible for winter maintenance throughout construction. Roadway maintenance like fixing potholes will be the responsibility of the contractor (Kraemer). After construction, maintenance will be the responsibility of Region 1 maintenance (CDOT).

**Daniel Estes opened up the floor for any additional Questions from the TT.**

- **Q:** Please clarify if the preferred treatment is Ice Slicer (sodium chloride) or MeltDown Apex (magnesium chloride). Both treatments have been mentioned in the two presentations.
  - **A:** Both are used at different times, sometimes in combination, based on the needs.
- **Q:** I understand the claim that Ice Slicer is used as a fertilizer and its effect on grasses. However, what are the salts' effects on coniferous trees (as evidenced by the dead trees along the I-70 corridor).
  - **A:** We cannot draw a direct correlation between the use of deicer and tree conditions. There are many factors impacting tree health in this area such as beetle kill and drought.
- **Q:** Does Envirotech test the pH in the soil? High soil pH causes stress to plants. Previous studies have found that residual salts impact soil pH.
  - **A:** Not specifically. We do understand that we are adding chlorides to the environment. We do our best to reduce environmental impacts while keeping the roads as safe as possible. CDOT is using the best available products and there are no feasible products without chlorides on the market that create a safe roadway.
- **TT Comment:** I appreciate everything you've presented today and appreciate that CDOT is using all the tools they can to reduce environmental impacts. None of us want to reduce safety on the roadways. We just want to better understand the impacts that are unavoidable so that we can improve mitigations. For example, knowing that there may be impacts to soils and trees, is there any way that we could reduce fire danger through roadway design or different kinds of landscaping along the road. We want this to be a partnership. This presentation and partnership with Maintenance strengthens the CSS process. The Floyd Hill project is going to take five years, so we have time to incorporate your perspective and deliver a better project.





- **Q:** How do you anticipate managing snow removal and storage during construction?
  - **A:** The Maintenance team and the Project Team are having biweekly meetings in order to discuss these topics in depth.
  
- **Q:** As stated previously, public safety is paramount and we do not want to jeopardize that. However, in a 2019 report, the EPA identified salinity thresholds as 200 mg per liter up to 800 mg per liter. Water testing in 2018 measured 1600 mg per liter in Clear Creek. This may be an issue related to maintenance practices and we are not sure of long term impacts. We hope to work collaboratively to establish baseline monitoring and monitor through the project to better understand impacts and ways to manage these exceedances.
  - **A:** Josh Giovannetti, a CDOT water specialist, indicated that they are currently monitoring and collecting baseline data. While there are peaks in salinity levels, the EPA thresholds are not regulatory, and there is not a strong understanding of what the baseline should be. CDOT agrees that we need to have these conversations and continue working together.
  
- **TT Comment:** I wanted to echo much of what has been said, including that there is a definite need for the products being used. However, acknowledging potential impacts allows us to better work together to mitigate them. For example, what roadway designs can be used to better contain runoff. The bottom line is we need maintenance in these discussions.
  
- **Q:** How long has the combination of Apex (mag chloride) and Ice Slicer been used on this corridor?
  - **A:** Around 15 years.
  
- **Q:** Is the amount of product used reviewed and documented after a storm? Is there a comparison of planned application vs. actual?
  - **A:** Yes, product use is documented by work managers for each truck on every shift, so we have an account of every unit used. Sometimes there is variation between anticipated and actual application amounts.
  
- **Q:** How will snow removal occur on viaducts without falling over the edge?
  - **A:** A combination of engineering/design and strategic maintenance objectives, which will be discussed in the biweekly maintenance meetings.



## 4. Upcoming Topics & Next Steps

Having reached the end of the meeting, Daniel reviewed Next Steps before wrapping up.

- Greenway Site Visit: Wednesday June 14th
  - Preference for the afternoon
  - Approx 3 hour timeframe
- Next TT will be focused on the West Section Key Issues

The project team thanked all participants for joining the meeting, with a special thank you to the presenters from CDOT Maintenance.

### Summary of Action Items, Agreements, & Decisions:

**ACTION:** CDR to send information about MeltDown Apex (magnesium chloride deicing liquid) and Ice Slicer (sodium chloride salt) to full TT.

**TT Agreement:** Further integrating maintenance into the conversation moving forward will strengthen the CSS process and provide opportunities to design and mitigate against potential adverse environmental impacts.

## 5. Attendees

Cindy Neely, Amy Saxton (Clear Creek County); Jonathan Cain (Idaho Springs); Stefi Szrek (Jefferson County); Jessica North (Clear Creek County School District); Mike Raber (Clear Creek Bicycle User Group); Bill Coffin, Lisa Wolff (Floyd Hill POA); Margaret Bowes (I-70 Coalition); Brian Dabling (FHWA); John Curtis, JoAnn Sorenson (Upper Clear Creek Watershed Association (SWEEP)); Tanner Banks, Ashley Giles (Trout Unlimited); Paul Winkle (CPW); James Proctor (Bridge Enterprise/AECOM); Tracy Sakaguchi (CMCA); Tyler Brady, Ben Davis, Josh Giovannetti, Badr Husini, Kurt Kionka, Mike Willyard, Abbie Modafferi, Jack Petersen, Maria Rockan, Kristin Salamack, Jacob Schmit, Erik Schmude, Shawn Smith, Ryan Sullivan, Francesca Tordonato (CDOT); Alan Carter, Anthony Pisano (Atkins); Brandon Simao (Kraemer); Sabrina Jones (Envirotech Services); Megan Cohill, Larry Quirk, Carl Reeder (Rocksol); Mandy Whorton, Vanessa Halladay (PEAK Consulting); Kevin Shanks (THK Associates); Daniel Estes, Cara Potter (CDR Associates)