sdmay19-18: Real time Route Optimization
Report 5
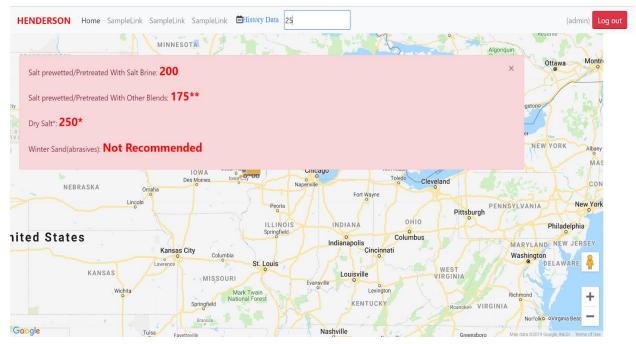**March 8 - March 15**

Team Members
Junjie Wen — *Backend Developer; Data Analytics Lead*
Zhanghao Wen — *Web Developer*
Yuhang Xie — *Web Developer; UI Lead*
Xinhe Yang — *Web Developer*
Tianhao Zhao — *Communication Leader; Technical Writing*

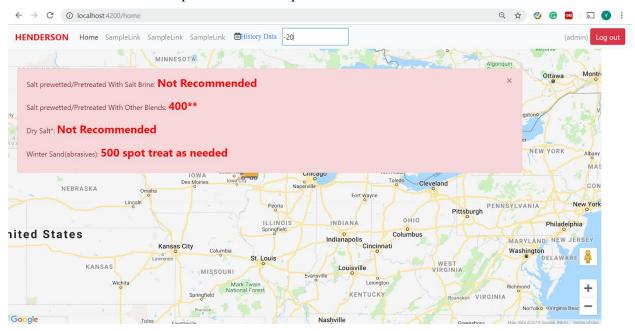
Summary of Progress this Report

- After discussed with client in our weekly meeting, We have obtained some forms which show us how to decide which snow sweeping operation we need to choose based on temperature and other real time data.
- By adding judgment conditions in the program, the software can give advice based on the obtained temperature.
- Finally, showed the suggestion box on the Google map.

Past Week Accomplishments

Input the temperature and software will show the tips on the web
This is the example when temperature is 25.

Salt prewetted/Pretreated With Salt Brine: **200**   ×

Salt prewetted/Pretreated With Other Blends: **175****

Dry Salt*: **250***

Winter Sand(abrasives): **Not Recommended**

This is another example when the temperature is -20.

Salt prewetted/Pretreated With Salt Brine: **Not Recommended**   ×

Salt prewetted/Pretreated With Other Blends: **400****

Dry Salt*: **Not Recommended**

Winter Sand(abrasives): **500 spot treat as needed**

All suggestions based on the following table

These rates are not fixed values, but rather the middle of a range to be selected and adjusted by an agency according to its local conditions and experience.

Pavement Temp. (°F) and Trend (↑↓)	Weather Condition	Maintenance Actions	Lbs/one-lane mile			
			Salt Pre-wetted/Pretreated With Salt Brine	Salt Pre-wetted/Pretreated With Other Blends	Dry Salt*	Winter Sand (abrasives)
>30° ↑	Snow	Plow treat intersections only	80	70	100*	Not Recommended
	Frz. rain	Apply Chemical	80	70	100*	Not Recommended
30° ↓	Snow	Plow & apply chemical	80	70	100*	Not Recommended
	Frz. rain	Apply Chemical	150	130	180*	Not Recommended
25-30° ↑	Snow	Plow & apply chemical	120	100	150*	Not Recommended
	Frz. rain	Apply Chemical	150	130	180*	Not Recommended
25-30° ↓	Snow	Plow & apply chemical	120	100	150*	Not Recommended
	Frz. rain	Apply Chemical	160	140	200*	400
20-25° ↑	Snow or frz. rain	Plow & apply chemical	160	140	200*	400
20-25° ↓	Snow	Plow & apply chemical	200	175	250*	Not Recommended
	Frz. rain	Apply Chemical	240	210	300*	400
15-20° ↑	Snow	Plow & apply chemical	200	175	250*	Not Recommended
	Frz. rain	Apply Chemical	240	210	300*	400
15-20° ↓	Snow or Frz. rain	Plow & apply chemical	240	210	300*	500 for frz. rain
0-15° ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not Recommended	300	Not Recommended	500 spot treat as needed
< 0°	Snow	Plow, treat with blends, sand hazardous areas	Not Recommended	400**	Not Recommended	500 spot treat as needed

*Dry salt is not recommended. It is likely to blow off the road before it melts ice.
**A blend of 6-8 gal/ton MgCL² or CaCl² added to NaCl can melt ice as low as -10°.

Pending Issues

● Need more unit test to testing the result of software

Plans for Upcoming Reporting Period

● Update program so that the software can show the movement of trucks using real data instead of simulate data
● Providing suggestion not only base on the temperature but also whether conditions

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Junjie Wen	Build backend algorithm to trigger alert.	10	50
Zhanghao Wen	Research on ice & snow control from other projects and find potential solutions to our project	9	41
Yuhang Xie	Builded suggestion function according the table on frontend for dispatcher	11	55
Xinhe Yang	Update the home page and add suggestion function base on the weather and road condition	11	53
Tianhao Zhao	Learn frontend coding styles, reflects problems and questions with client.	6	42