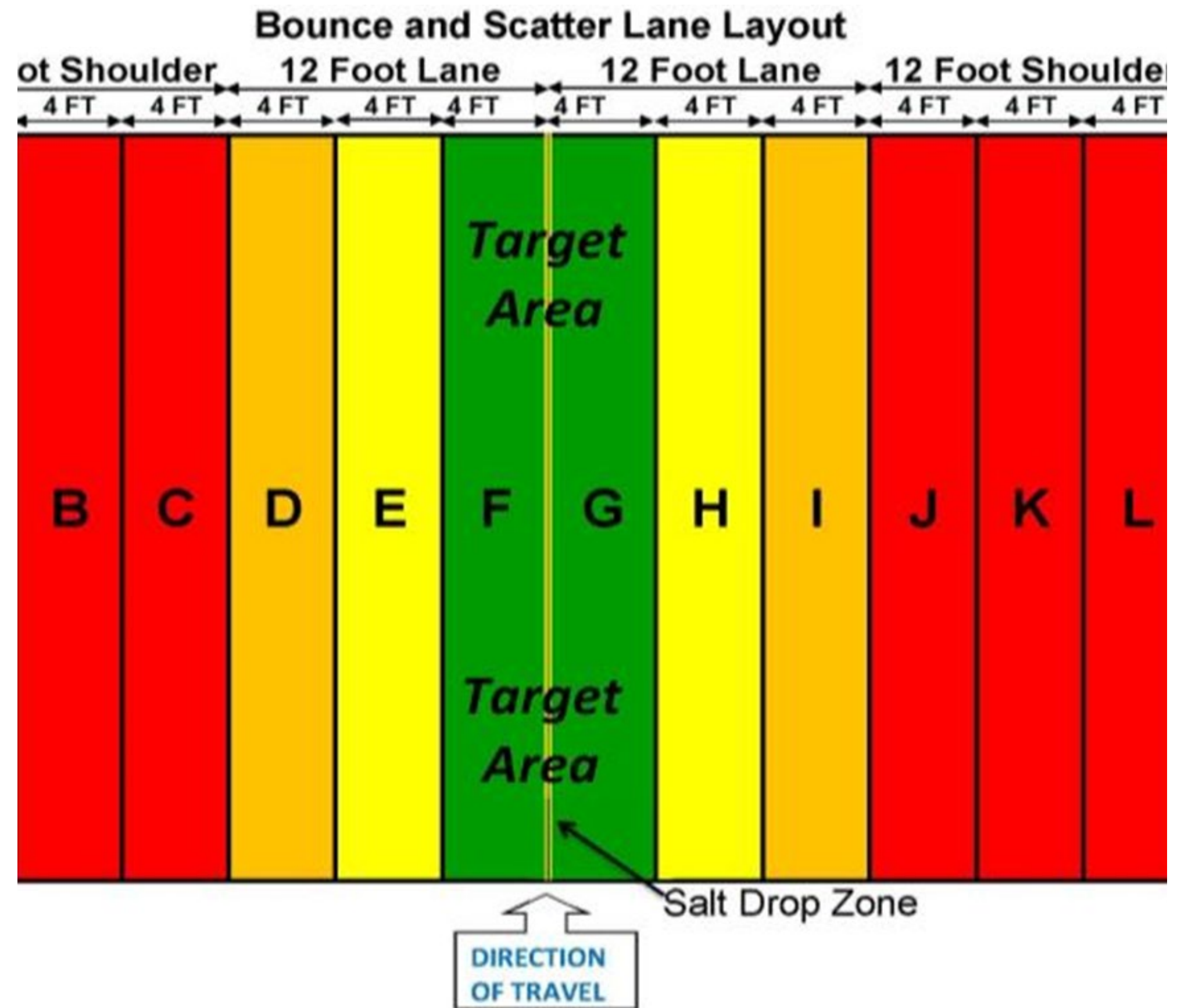


Bounce, Spread, Scatter, Pre- wetting, Grit: Lessons Learned and Best Practices

- Bob Chapin –MDOT
- Adam Lape –Washtenaw County Road Commission
- Steve Roon –Kent County Road Commission

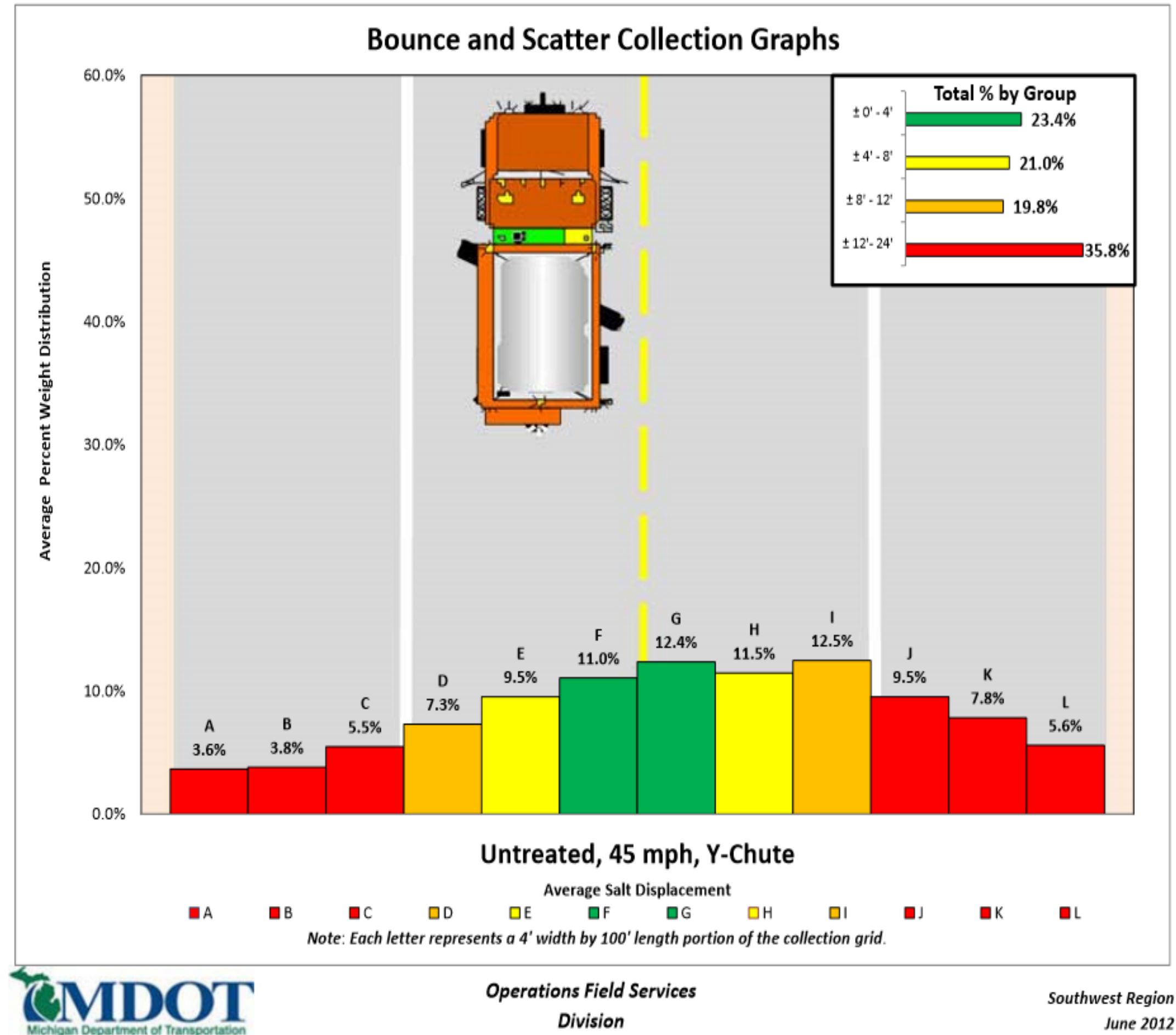
Grid Layout



The Results

Y-Chutes with boot at 1" or 6" from deck

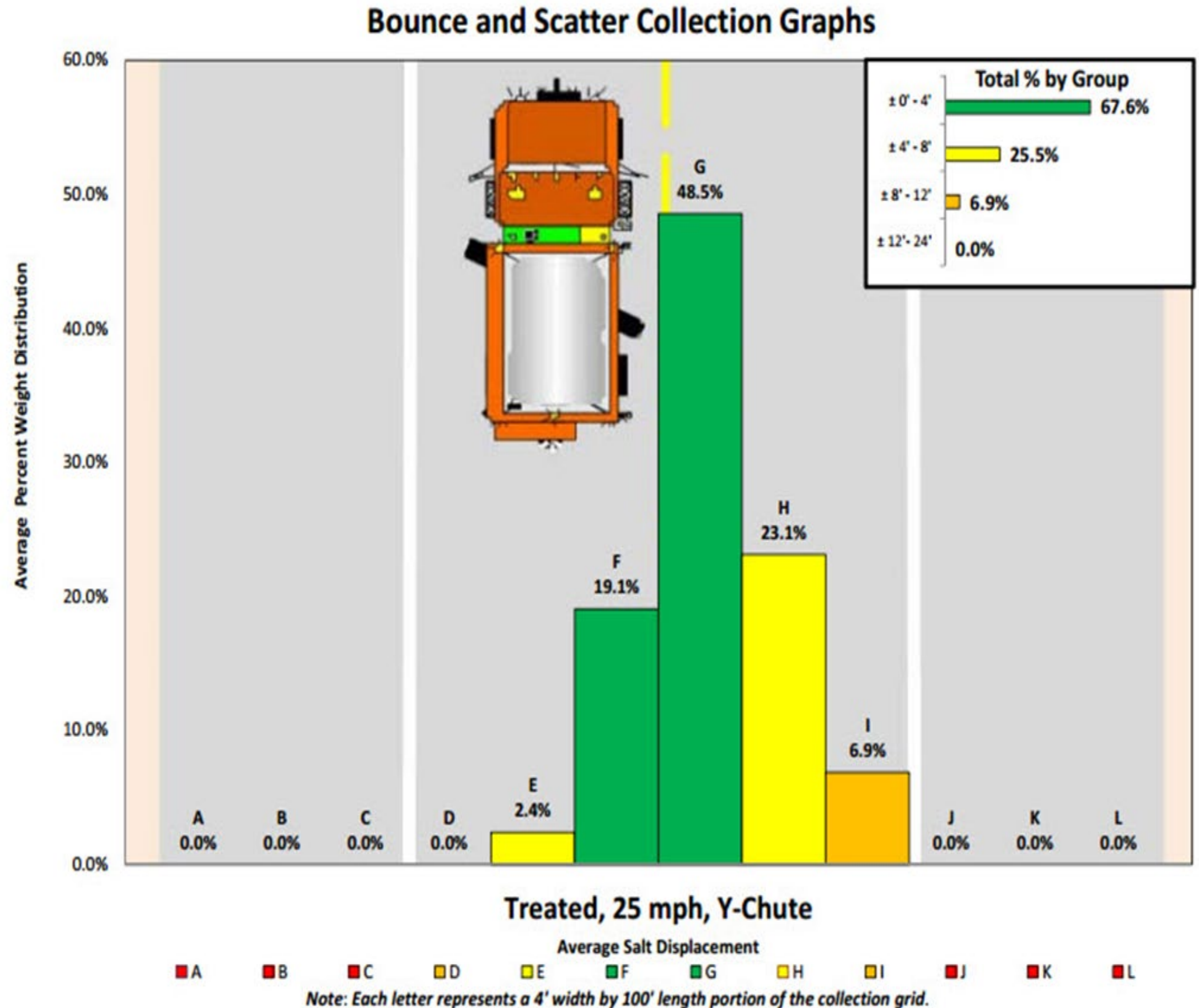
- 45 mph



The Results

Y-Chutes with boot at 1" or 6" from deck

- 25 mph

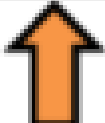




Best Practices

- Verify spreader system calibration each season, and when repairs are made to hydraulic systems
 - Maintain application speed no greater than 35 MPH
 - Use pre-wet salt to improve effectiveness and bounce/scatter, incorporating appropriate liquids as conditions dictate: Brine, CACL2, Additives
 - Place drop boots on chutes to lower the drop point of material
 - Adjust application rates dynamically using operator judgement
-

Recommended Treatment Parameters

AIR TEMP	PAVEMENT TEMPERATURE	WEATHER CONDITION	POUNDS PER 2 LANE MILE		ACTIONS & APPLICATION RECOMMENDED	
			PRE WET SALT *	SAND		
RISING	 — ABOVE 30° —	SNOW	150	NOT RECOMMENDED	PLOW, TREAT HAZARDS ONLY	
		FREEZING RAIN	150	NOT RECOMMENDED	APPLY AS NEEDED	
DROPPING		SNOW	150-300	NOT RECOMMENDED	PLOW & APPLY AS NEEDED	
		FREEZING RAIN	150-300	NOT RECOMMENDED	APPLY AS NEEDED	
RISING	 — 25° to 30° —	SNOW	150-300	NOT RECOMMENDED	PLOW & APPLY AS NEEDED	
		FREEZING RAIN	150-300	NOT RECOMMENDED	APPLY AS NEEDED	
DROPPING		SNOW	150-300	NOT RECOMMENDED	PLOW & APPLY AS NEEDED	
		FREEZING RAIN	300-350	400	APPLY AS NEEDED	
RISING	 — 20° to 25° — {	SNOW / FREEZING RAIN	150-300	400	PLOW & APPLY AS NEEDED	
		SNOW	225-300	NOT RECOMMENDED	PLOW & APPLY AS NEEDED	
DROPPING		FREEZING RAIN	300-350	400	APPLY AS NEEDED	
RISING	 — 15° to 20° — {	SNOW	225-300	NOT RECOMMENDED	PLOW & APPLY AS NEEDED	
		FREEZING RAIN	300-350	500-750	APPLY AS NEEDED	
DROPPING		SNOW / FREEZING RAIN	350	500-750	PLOW & APPLY AS NEEDED	
	BELOW 15°	SNOW	NOT RECOMMENDED	NOT RECOMMENDED	PLOW, TREAT HAZARDS AS NEEDED	



SAND

- Naturally occurring solid
- Does NOT melt snow
- Provides traction on top of snow/ice
- Most effect on low speed – low volume roads

Abrasives

Pros

- Low initial cost
- Easy to apply
- Easy to see (residents notice)
- Starts working immediately
- Unpaved roads
- Steep hills
- Intersections
- Works at any temperature

Cons

- Cleanup in spring
- Temporary effectiveness
- Air quality - fine dust
- Build up in ditches
- Washed into waterways
- Not all abrasives are equal
 - Too small - caking up
 - Too big - breaks windshields
 - Too round - not effective



Sand

- Clogs up drains and culverts
- Requires clean-up
- Contaminated
- Proper disposal

Dry Rock Salt (NaCl)

- Purchased in bulk, least expensive option
- Most effective at Temps above 15°F
- Corrosive
- Requires moisture to work
- Naturally a solid, doesn't stick to the road



Sand-Salt Mix



- 50/50 no longer recommended for typical road applications by MDOT
- Salt/Sand can work against each other
- Keep stockpiles separated
- Sand requires $<10\%$ salt to keep pile from freezing

Pre-wet Rock Salt

- Dry salt mixed with liquid chloride
 - 7-10 gals per ton
- Treated salt activates faster
- Can work in colder temperatures
- Stays on the road
- Requires less salt to work



Liquid Application Methods: Pre-wet Salting

- Pre-treated before application
- Accelerates melting activity and can lower effective temp of salt
- Reduces bounce/scatter



Liquid Application Methods: De-Icing

- Best achieved with Calcium based/ blended products
- Effective on hard-packed ice/snow



Liquid Application Methods: Anit-Icing

- Applied ahead of winter weather
- Reduce risk by using Sodium based products
- Prevents bonding, allows increased response time, holds bridges longer



	Pre-Treating	Pre-Wetting
When	In advance of application	At time of application
What	Standard brine Mag chloride Calcium chloride Carbohydrates	Standard brine Mag chloride Calcium chloride Carbohydrates
How	DIY or purchased pre -treated Dosage varies Rule of thumb: 8gal/ton	Equipment can be DIY Can also purchase equipment Dosage varies