

**CENTENNIAL ROAD  
COMMISSION**  
1913 / for OAKLAND COUNTY / 2013  
100 YEARS OF TRANSPORTATION EXCELLENCE



WINTER MAINTENANCE  
TRAINING

VINCE LOMBARDI



## VINCE



- Some people try to find things in this game that don't exist but football is only two things - blocking and tackling.

## PRE-TRIP INSPECTION



- WHY INSPECT?
- SAFETY FOR YOURSELF & OTHERS
- FEDERAL & STATE LAW'S REQUIRE INSPECTION



## KEY POINTS



- Check key connections
- Box Hoist and Hinges
- Cross Members
- Drives Shafts
- Floats





## PARKING/BREAK RELAY



## TRANSMISSION/HOLD BUTTON



## SUSPENSION/STEERING



## AIR TANKS

- Drain your air tanks daily.
- Condensation will freeze in the air lines.
- Service air dryer if there is moisture.



## EXHAUST BRAKE



- Verify that your exhaust brake and engine brake are “OFF” on wet or icy roads.
- Anti-Lock brakes are not effective with exhaust brakes on.



## BRAKE FADE

- Vehicle braking system fade, or **brake fade**, is the reduction in stopping power that can occur after repeated or sustained application of the brakes, especially in high load or high speed conditions.
- Travel at appropriate speed to reduce heat.
- Brake inspection is critical.

## SLACK ADJUSTERS





## Brake Inspection

- Front slack adjusters can have no more than 1" of play.
- Rear slack adjusters have to be less than 90 degrees with the parking break applied.
- Air loss for a single vehicle is 3 psi. 4 psi for a combination vehicle.
- Pop off Protection Valve should release between 20 and 40 psi.
- Buzzer or light should come on between 60 and 80 psi.



## BREAK INSPECTION

- **Air Compressor.** With the engine operating at normal operating range, the pressure should go from 80 PSI to 100 PSI in 45 seconds.
- Before you pull away, check the parking break by pulling against it to verify that the brake will hold.
- If a vehicle fails any part of this test it is a automatic down and shall be taken out of service.

## SETTING CHAINS FOR SALT

- There should be no more then 4 to 5 inches between the tail gate and the chain. Your hand in the flat position is a good measurement tool.
- Mark the chain link with a plastic tie for later use.



## SETTING CHAINS FOR SALT

- Set the chain in the 6th link from the end.
- The gate can not touch the pan.
- Sand plate needs to be in for salting applications.



## SETTING YOUR GATE FOR SALT

- Set your gate at 3 inches
- Make sure load does not have chunks of salt. This will clog gate.



## TARPING LOADS

- The goal is to tarp every load.
- Covering the load stops snow and rain from mixing with the salt.
- This will help stop the salt from binding together. Turning into Rocks.
- If you have a parked load that looks suspicious. Dump it and reload. No one likes fighting clumps.

## SNOW PLOWS ON TRUCKS

- Check your lug nuts daily.
- The weight of your plow will loosen lug nuts on the front tires.
- Use a torque wrench or torque stick with 475 ft/pds of torque on Hub Piloted wheels.



## Snow Plow Use



- Check the plow shoes
- Check the plow blade for wear, stay out of your moldboard
- Be careful when pushing back snow
- Speed = damage

## Damaged plows take time to repair



## TRAVELING SPEED

- Adjust your traveling speed for driving conditions.
- High speeds will scatter and waste salt.

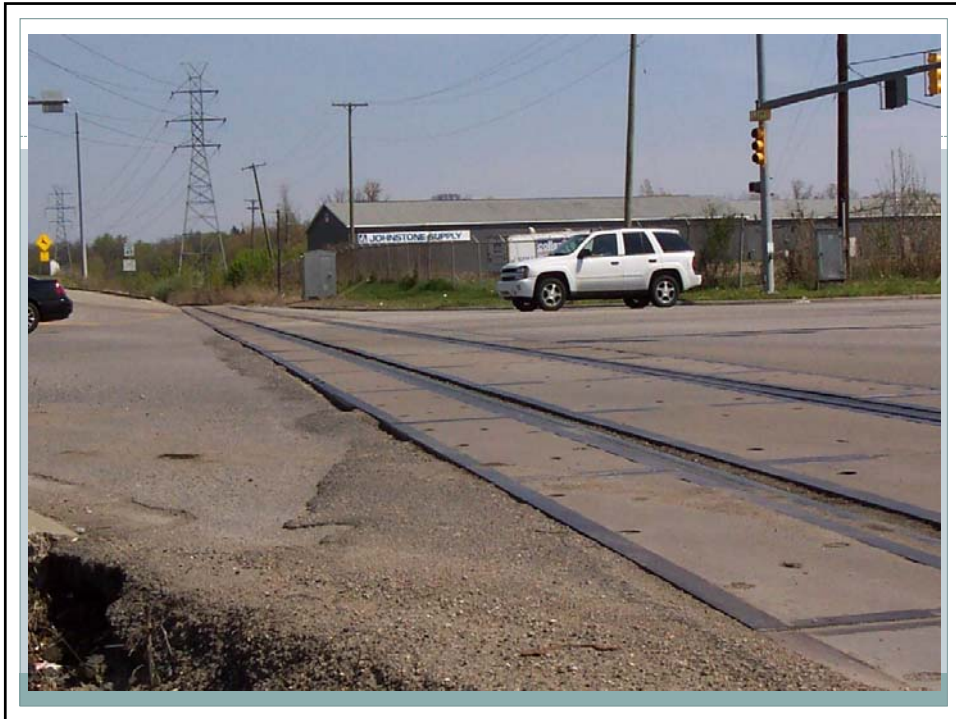


## RAILROAD CROSSINGS

- Make sure float blade is clear of tracks.
- Drive slowly over the tracks.
- Check in both directions for oncoming trains.







## BRIDGE DECKS



- Check your truck box height before going under an overpass.
- Always be aware of your box height.





## BRIDGE DECKS



- When blading snow on bridge decks, **SLOW DOWN**, do not push the snow over sides of bridge decks onto cars below.

# INTERSECTIONS

- Check your truck box height before entering an intersection.



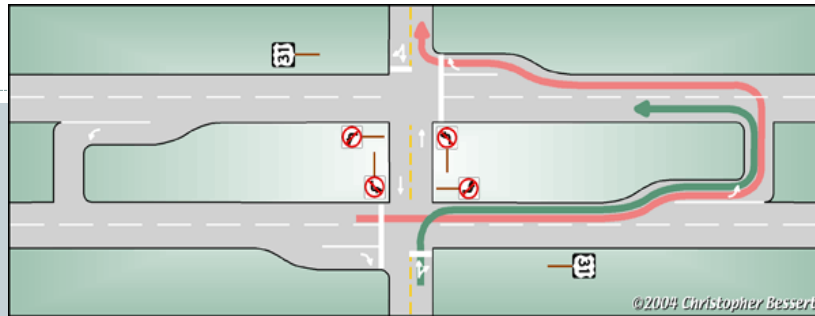
- You **shall** stop at all red lights when plowing no exceptions.



# OVER HEAD WIRES

- Check your truck box height especially in subdivisions.





–Do not back up in turn lanes  
when plowing.





## Defensive Driving

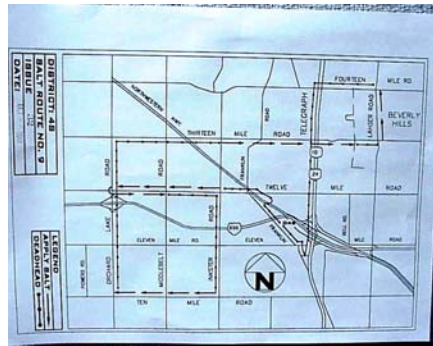
- Stay in control “Speed Kills”
- Pay attention to traffic “Motorist having trouble driving/stopping”
- Resist the urge to get the job done in a hurry “Safety First”
- Watch for signs of fatigue
- Make sure the equipment is in good shape Pre-Trip with thorough “Brake Inspection”






## SALT ROUTES

- Use as a guide to cover every part of our Routes
- Maximize passes by thinking of the big picture. The whole route or routes
- Remember approaches



## SALT & TEMPERATURE

- The effectiveness of salt operations is closely tied to temperature. Sunshine and traffic increases the effectiveness of salt. As temperatures decrease, more salt must be applied to reach the same level of effectiveness. At temperatures of 10 degrees or less, producing bare pavement using only salt becomes very difficult.



The **pavement temperature** is very important. Think about what application rate to use based on pavement temps. Look for the pavement temp gauge in the truck.

## SALT APPLICATION RATES



- 1/4 Inch      200 Pounds per 2 lane miles
- 1/2 Inch      300 Pounds per 2 lane miles
- 3/4 Inch      **400** Pounds per 2 lane miles
- Heavier application of salt and sand will be used in intersections, hills, ramps, and crossovers than on the remainder of the route.

## SUBDIVISIONS

- Salt usage in subdivisions will be controlled closely. Salt shall only be used on hills, stops and curves. Use of salt on straight flat section will need to be approved by the Snow Duty Officer. This is covered in section D of our winter maintenance guidelines.

## SPREADER CALIBRATION

- Spreaders should be calibrated and charts maintained in each vehicle showing the settings and the resulting application rates at various speeds. Operators are expected to select an appropriate application rate and use salt effectively.



## PRE-WET ADVANTAGES

- Reduces the amount of salt
- Reduces salt scatter
- Increases the rate of effectiveness
- Helps with lower temperatures
- Produced in house “savings”

## When do we get to drive?



## SPINNER SPEED

- Spinner speeds should be adjusted to reflect the type of work.
- Salt should be placed at or near the high point (crown) of the pavement.



## DIAL DOWN ON SINGLE LANE APPLICATIONS



## SALT "CREW" CARD

- Please fill in:
- Employee Name
- Truck Number
- Hours Worked
- Salting or Sanding
- Anti/De-Icing
- State Trunkline, Primary, Local
- Tons of Salt/Sand used
- Gallons of Brine used

ACTIVITY: WINTER MAINTENANCE		SHEET NO.		CREW SIZE	
ACTIVITY		DATE			
DISTRICT <b>1</b>		ASSIGNED TO			
SPECIAL INSTRUCTIONS					
EMPLOYEE				HOURS WORKED	
				REG. TIME	OVERTIME
TYPE OF SNOW REMOVAL WORK				REG. TIME	OVERTIME
ANTI-ICING (40 GAL. / 1216 LBS)					
SALTING / SANDING					
PLOWING					
PRE-WET					
MATERIAL CHARGES TONS / GALLONS					
SYSTEM	ROAD	SALT	BRINE	SAND	
STATE TRUNK LINE					
PRIMARY					
LOCAL					
DAILY TOTALS					
CREW DAY CARD					
ROAD COMMISSION FOR OAKLAND COUNTY					

## BLADING/SALTING

- Whenever snow accumulates to **one** inch or more the surfaces should be bladed off prior to applying salt.



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## PLOWING ROADS

- Start by plowing center lane first.
- (3 lane or 5 lane road) The center lane should be bladed during normal snow removal operations. Center left turn lanes should be salted or bladed as required during storm cleanup operations.
- Plow thru lanes.
- Plow passing lanes and aprons.
- Plow snow to the curb side to open for water run off.

## PLOWING SHOULDERS

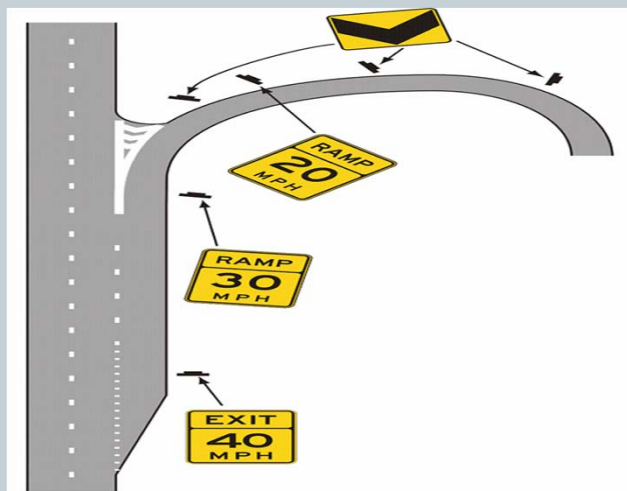
- **SHOULDERS SHOULD BE PLOWED BACK IF SNOW COVERED. USING LIGHT PRESSURE SO NOT TO PUT GRAVEL IN THE DITCH.**
- **GENERALLY, HOWEVER, PLOWING SHOULDERS SHOULD BE PART OF THE CLEAN UP OPERATIONS DURING REGULAR HOURS.**
- **IF THERE IS NO HAZARD LEAVE SHOULDERS WHITE.**

## Plowing Intersections

- Do not back through the intersections while blading. Visibility is low. There is too much happening to keep track of all the vehicles on the road



## First pass on ramps

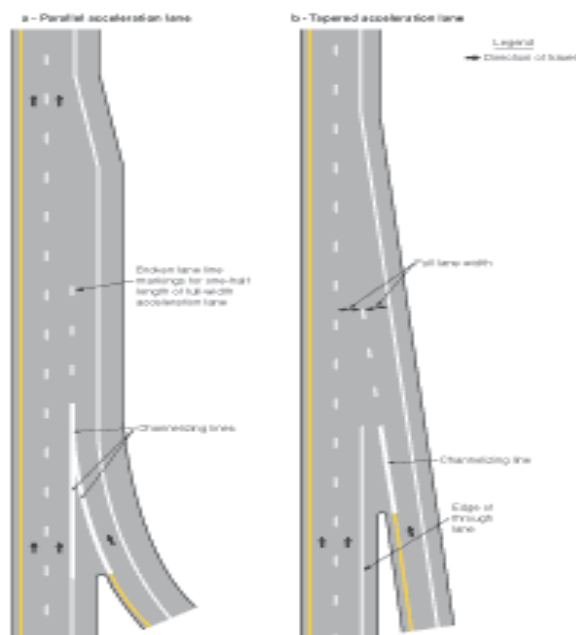




## Points

- When plowing ramps or merging expressways think about how to eliminate points.
- On the first pass be aggressive as possible cutting the point away.
- If there is a long point of snow we will have to use gang plowing to remove the point. This is very unproductive and costly!

Figure 3B-8. Examples of Channelizing Line Applications for Entrance Ramp Markings



## PLOWING IN TANDEM

- All blading and plowing in multi-lane roads should be done with one unit for each lane whenever possible. When working in tandem, 200 to 250 feet separation between units should be maintained to permit cars to pass.
- Blade first when possible. **Do not plow off the salt that was put down.**





## BRIDGE DECK ICING

- Preferential icing is a special condition; generally occurring on bridge decks in the beginning of the winter season and in early spring. Preferential icing occurs when moisture is present and bridge deck temperatures are less than bridge approach surface temperatures. During these conditions, bridge decks become icy before roadways.

## MAILBOX DAMAGE

- DCS had **473** reports of mailbox damages. 08-09. **206** for 09-10. **410** for 10-11.
- Resident would rather shovel a little more snow than have to replace a mailbox.
- We need to remove the snow and try very hard not to break mailboxes.

## MAILBOX REPAIRS

- Winter of 2008-2009, the average cost for each mailbox repair was \$300.
- This is bad for our budget and our image.



## CLEAR VISION

- Snow must not be piled at a height or in a location that obstructs the view of traffic or pedestrians.



# ANTI-ICING



## ANTI-ICING

- “Anti-icing, that is spraying brine on pavement before the storm arrives, requires anywhere from 1/3 to 1/4 the material of deicing, making it the most cost effective option for improving winter traffic safety” **Page 13 of the Snow Fighters Handbook.**
- 40 gallons per lane mile.

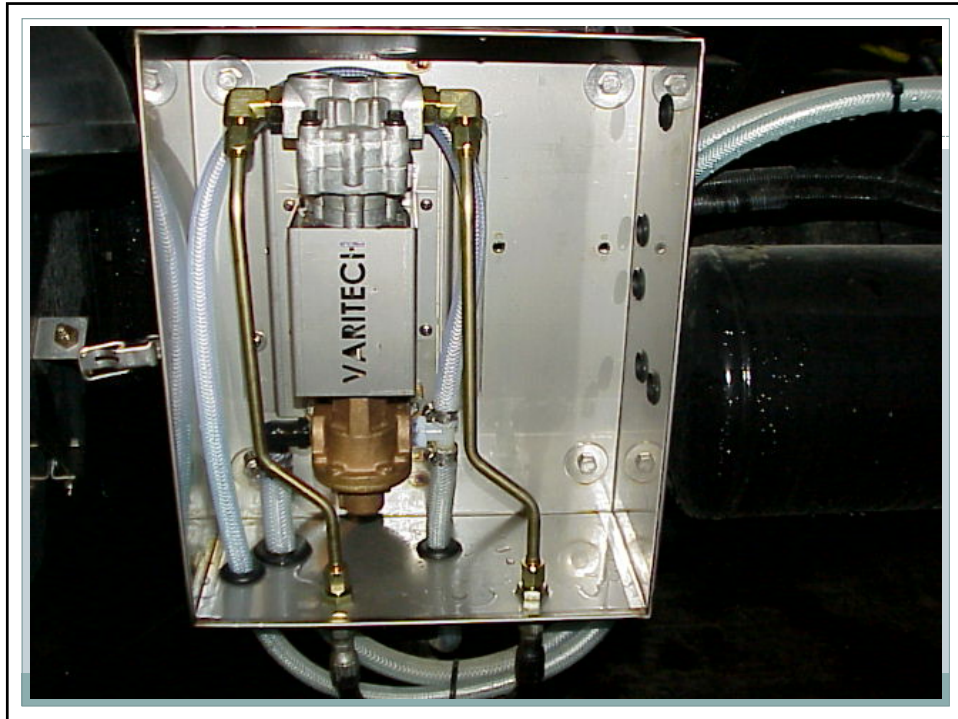


## Would Anti-Icing Help



## Preventative Maintenance for Pre-wet System

- Clean filters
- Flush tanks
- Flush pumps (use unload Pre-Wet mode)
- Check all systems for leaks
- Check controller for proper use
- Drain system
- Winterize pump with windshield washer fluid
- Brine will turn to solid salt “ROCK”



Keep nozzles clear for De-Icing





Proper use of our controllers makes us more efficient. Reduces deadheading.

**Dial Down** when possible.

Operator manuals are in the trucks and office.

## CONTROLERS

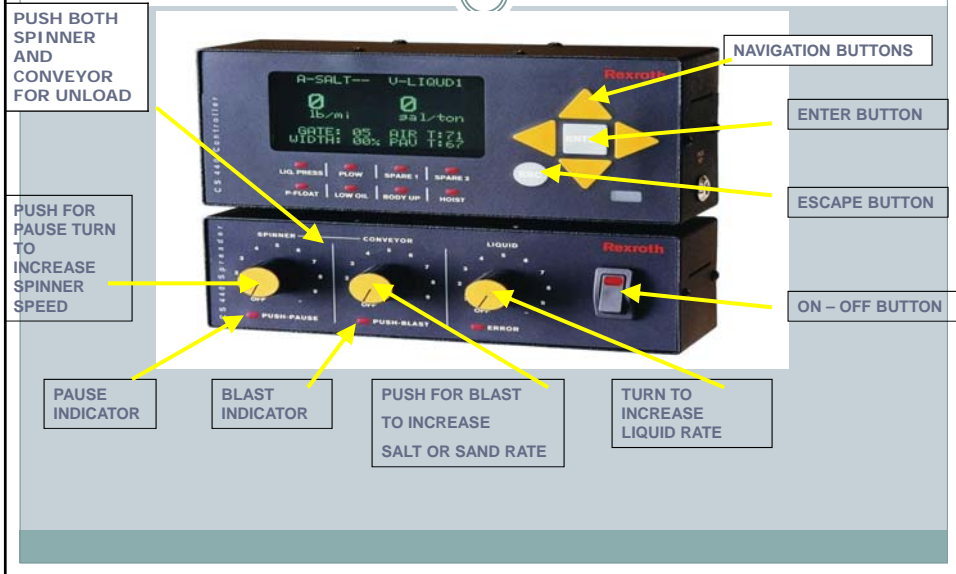


## REXROTH CONTROLLER



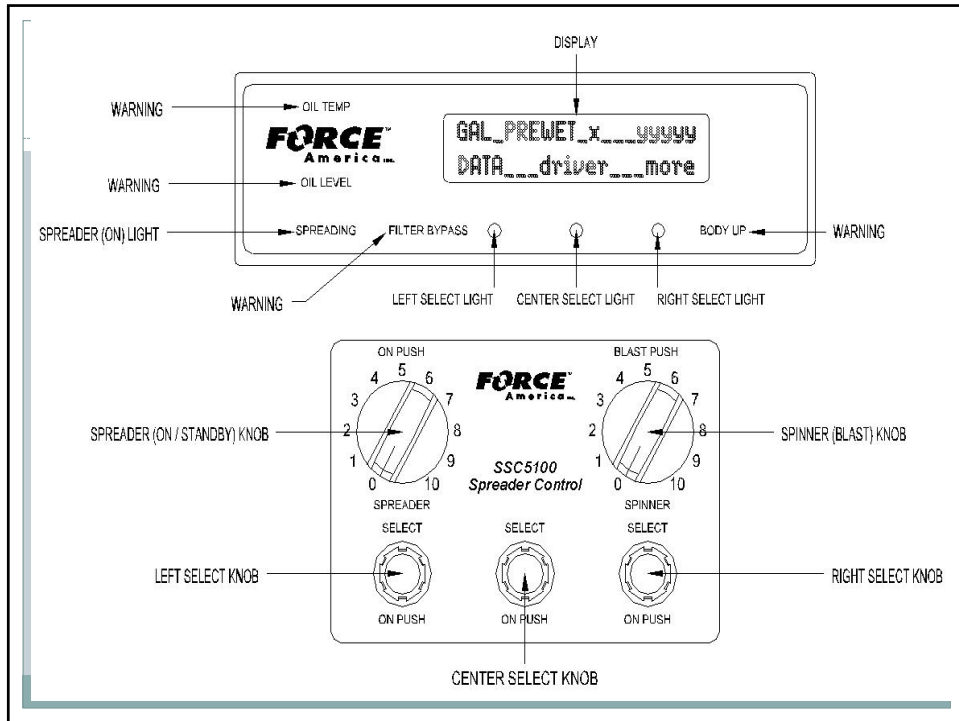


## REXROTH CONTROLLER



## FORCE CONTROLLER





# Any Questions

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# ***THANK YOU***

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