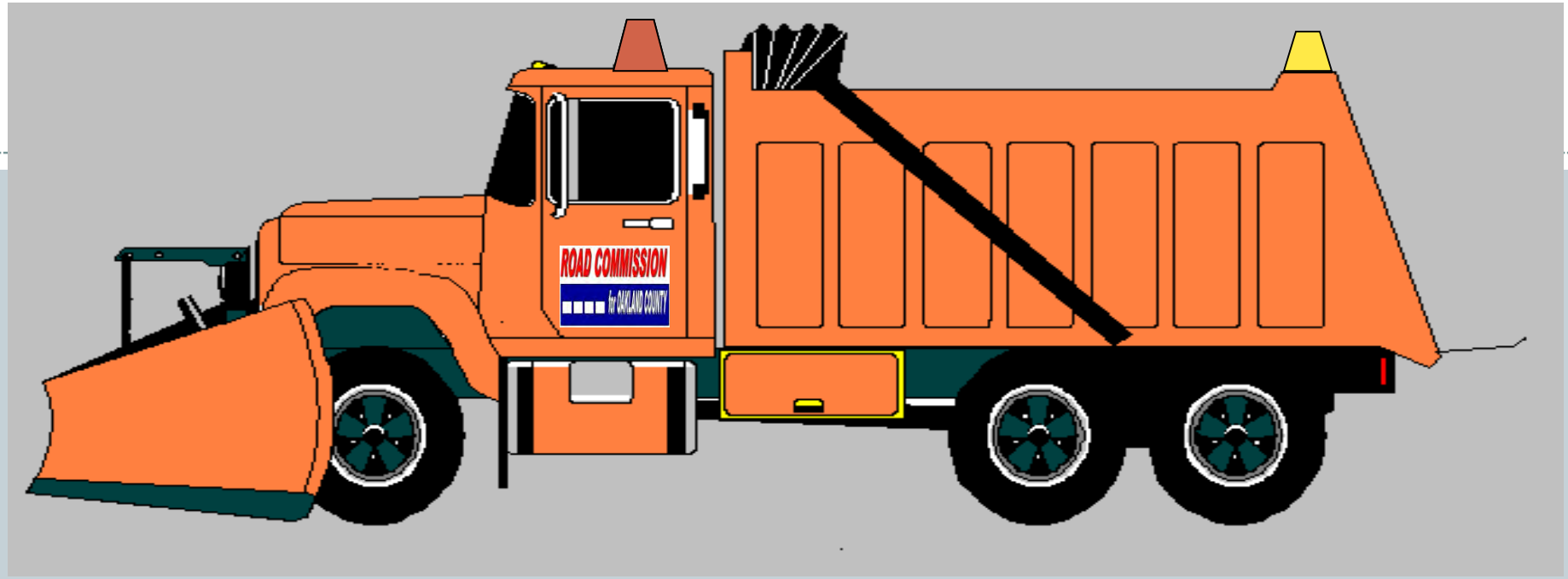
ROAD COMMISSION

for OAKLAND COUNTY



WINTER MAINTENANCE OPERATIONS 2016

ROAD COMMISSION for OAKLAND COUNTY

- SECOND LARGEST ROAD SYSTEM IN THE STATE.

SECOND ONLY TO MDOT.

ROAD COMMISSION for OAKLAND COUNTY

- Maintain more than 2,700 miles of county roads.
- 1,500 lane miles of state highways.

ROAD COMMISSION for OAKLAND COUNTY

SALT ROUTES AND STAFFING

- 106 Salt Routes.
- Average route is 35 travel miles.
- Maint. Dept. has 133 employees.
- Hire Approx. 35-40 winter temps.
- Spare drivers from other depts.
- 134 trucks.

ROAD COMMISSION for OAKLAND COUNTY

	D1	D2	D3	D4	D4S	D4T	Total
Routes	16	15	15	21	23	16	106
Critical	6	4	7	11	21	10	59
Pri l	10	11	8	10	2	6	47
Staff	21	20	20	30	33	23	147

PRE/POST-TRIP INSPECTION

WHY PERFORM PRE/POST TRIP INSPECTIONS?

1. IT'S MANDATORY. "FEDERAL & STATE LAWS REQUIRE INSPECTION."
2. FOR THE SAFETY OF YOURSELF AND THE MOTORING PULIC.

KEY POINTS

- Remove the snow from the underside of your truck at the end of your shift.
- Check key connections.
- Box hoist and hinges.
- Cross members.
- Drive shafts.
- Floats.

PARKING/BRAKE RELAY

SPRINGS/SUSPENSION

TRANSMISSION/HOLD BUTTON

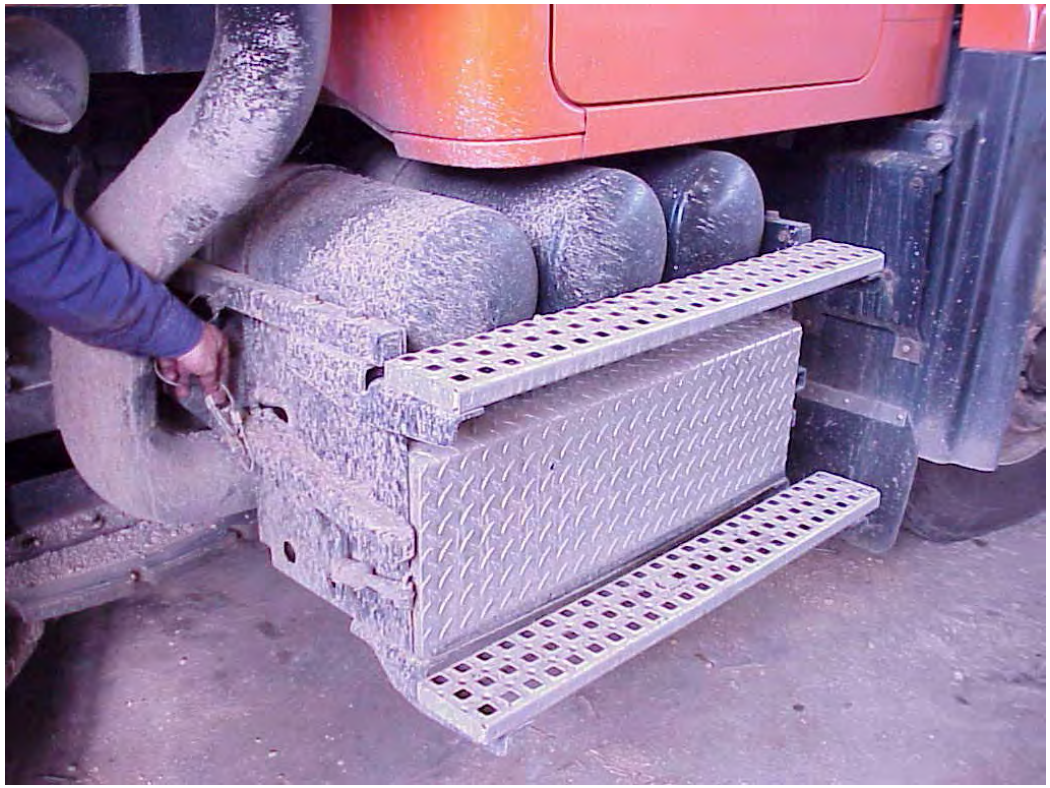
SUSPENSION/STEERING

CLEAN TRUCK

- KEEP ALL TOOLS AND LOOSE OBJECTS OFF THE FLOOR.
- Triangles.
- Fire extinguisher.
- Flares.
- Fuses or circuit breaker.
- First-aid kit.

AIR TANKS

- Drain your air tanks daily.
- Condensation will freeze in the air lines.
- If there is constant moisture, air dryer may need servicing.



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 per minute and 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.

BRAKE 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 an automatic “down” and shall be taken out of service.

Driver's Vehicle Inspection Report

Road Commission for Oakland County
2420 Pontiac Lake Road Waterford, MI 48328

White: Pre-Trip
Yellow: Post-Trip
Pink: Truck

☐ Vehicle Condition (This Must Be Checked If There Are No Defects) **#COC # 1538646**

Under The Hood Checks **Vehicle #** **Today's Date:**

☐ ○ Fluid Leaks	☐ ○ Coolant Level	☐ ○ Trans Fluid	☐ ○ Wiring
☐ ○ Oil Level	☐ ○ Power Steering Fluid	☐ ○ Drive Belts	☐ ○ Hoses

In The Cab Checks **Starting Mileage:**

☐ ○ Engine Gauges	☐ ○ Gear shift	☐ ○ Reg & Insurance	☐ ○ Fire Ext
☐ ○ Spare Fuses	☐ ○ Steering	☐ ○ Mirrors	☐ ○ 3 Flares
☐ ○ Warning Lights	☐ ○ Heat/Def	☐ ○ Air Brake Test	☐ ○ Horns
☐ ○ Hyd Brake Test	☐ ○ Windows	☐ ○ Back-Up Alarm	☐ ○ Clutch
☐ ○ 3 Triangles	☐ ○ Seat Belt	☐ ○ Wipers/Washers	☐ ○ Air Leaks

Exterior Checks **Ending Mileage:**

☐ ○ Air Tanks	☐ ○ Door Latches	☐ ○ Rims	☐ ○ Lug Nuts
☐ ○ Springs	☐ ○ Air Ride Comp	☐ ○ Safety Decals	☐ ○ Shocks
☐ ○ Fluid Leaks	☐ ○ Coupling Devices	☐ ○ Load Secure	☐ ○ Frame
☐ ○ All Lights	☐ ○ Spring Mnts/Beams	☐ ○ Reflectors	☐ ○ Mud Flaps
☐ ○ Axle Seals	☐ ○ Batt / Batt Cover	☐ ○ Exhaust	☐ ○ Drive Line
☐ ○ Steering	☐ ○ Mirrors Outside	☐ ○ Air Brake comp	☐ ○ Hoses
☐ ○ Tires	☐ ○ Air&Electric Connt	☐ ○ Landing Gear	☐ ○ Tarp SYS

Aerial Device / Trailer / Chipper **Trailer #**

☐ ○ Fluid Leaks	☐ ○ Fast/Welds	☐ ○ Liner/Bucket	☐ ○ Landing Gear
☐ ○ Outriggers	☐ ○ Safety Harn	☐ ○ Power Take-off	☐ ○ All Lights
☐ ○ Extensions	☐ ○ Brakes	☐ ○ Hyd Systems	☐ ○ Cutting Blades
☐ ○ Winch	☐ ○ Suspension	☐ ○ Lug Nuts	☐ ○ Chipper Chute
☐ ○ Coup Device	☐ ○ Wheel/Rims	☐ ○ Tires	☐ ○ Test Up/Lo Controls

☐ Pre-Trip Signature:

○ Post Trip Signature:

☐ Defects do not need to be Corrected for Safe Operation ☐ Defects Corrected

☐ Mechanic's Signature:

Sign And Return White Copy to Office Before Leaving the Yard. **(Pre-Trip book must remain in the truck)**

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 future use.

SETTING CHAINS FOR SALT

- Set the chain in the 6th link from the end.
- The gate can not touch the pan.

SETTING YOUR GATE FOR SALT

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

REMOVE PINTLE HITCH

TARPING LOADS

- The goal is to tarp every load.
- Covering the load stops snow and rain from mixing with the salt. Prevents from binding together, creating clumps.
- If you have a parked load that looks suspicious, dump it and reload. No one likes fighting clumps when trying to salt the road.

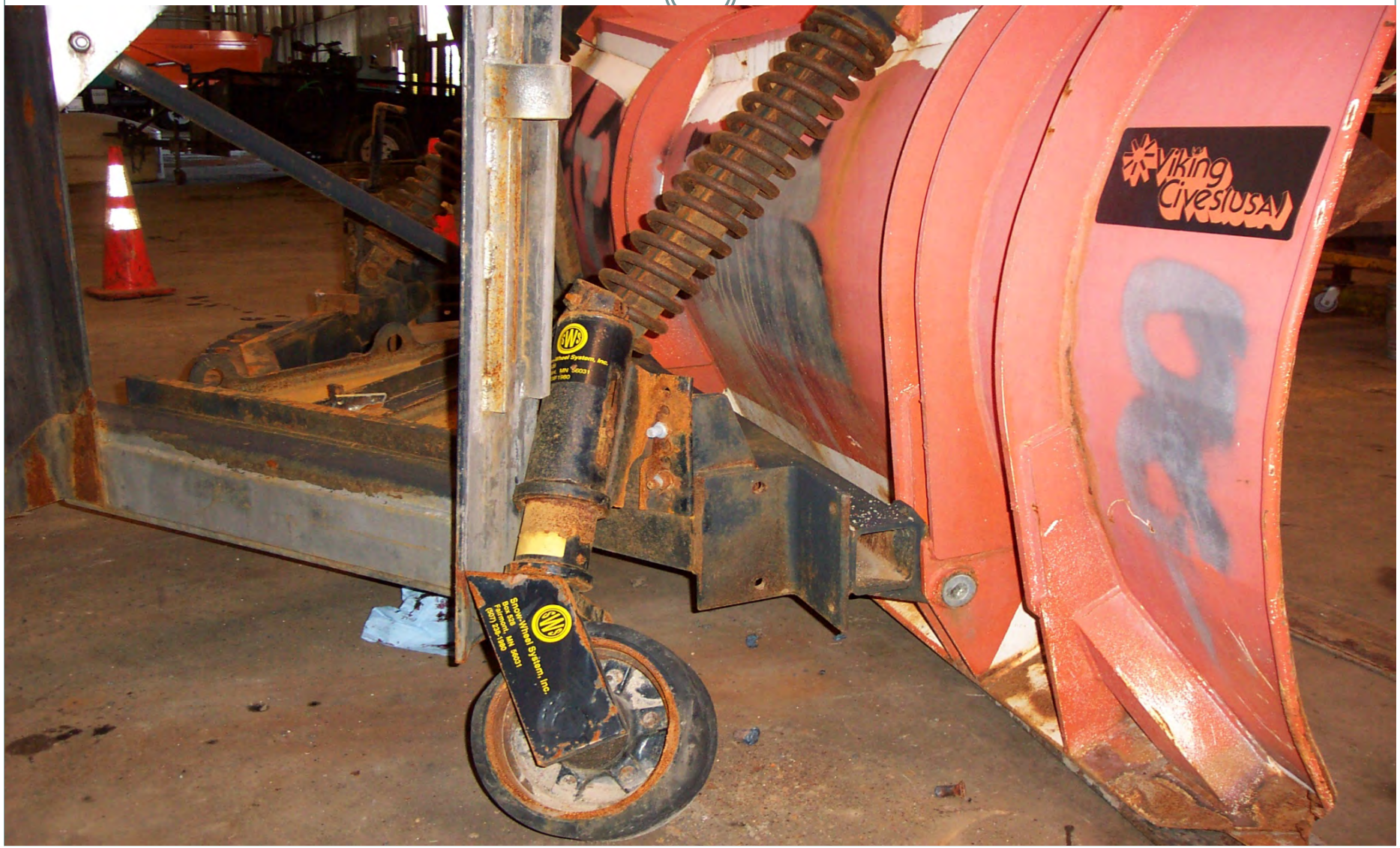
SNOWPLOWS ON TRUCKS

- 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./lbs. of torque on hub-piloted wheels.

SNOWPLOW 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



TRAVELING SPEED

- Adjust your traveling speed for driving conditions.
- Scatter salt for effective salting, keeping it between the lanes.

RAILROAD CROSSINGS

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


JOHNSTONE SUPPLY

BRIDGE DECKS

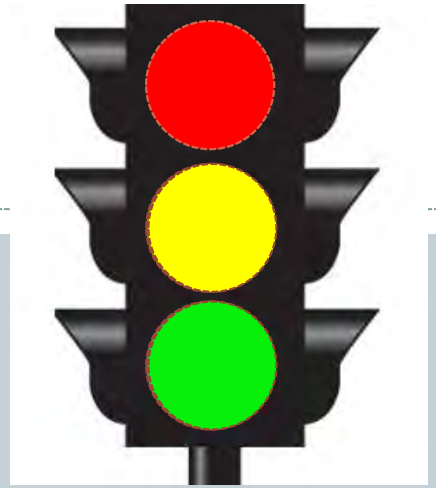
- Check your truck box height before going under an overpass.
- Always be aware of your box height.

BRIDGE DECKS

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

INTERSECTIONS

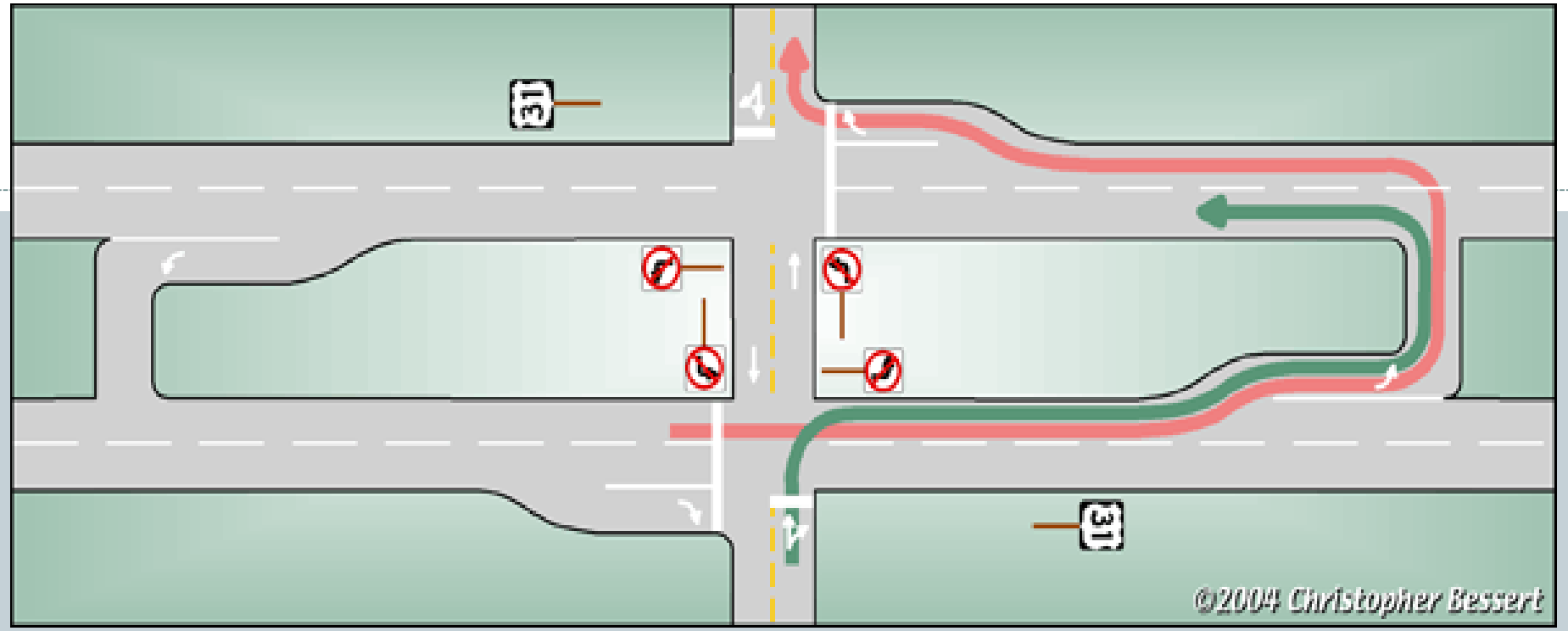
- Check your truck box height before entering an intersection.



- 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

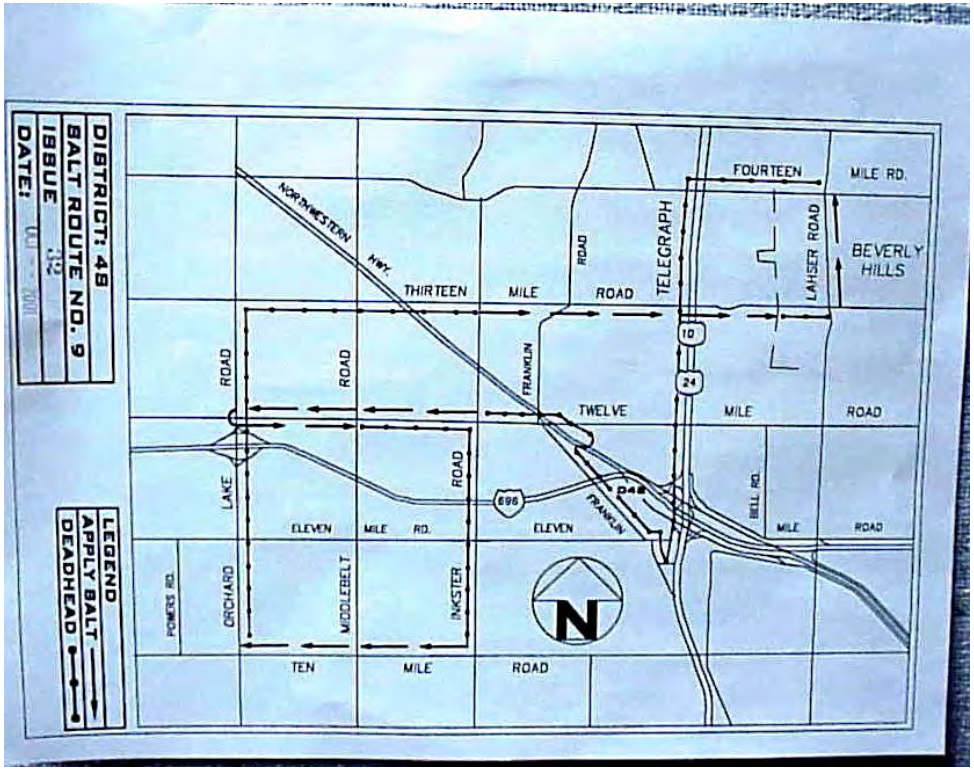
- Make sure the equipment is in good shape. Pre-trip with thorough "brake inspection."
- Stay in control: "Speed kills."
- Pay attention to traffic -- "Motorists having trouble driving/stopping."
- Resist the urge to get the job done in a hurry -- "safety first."
- Be aware of signs of fatigue.


2008/01/08

ROAD COMMISSION
for OAKLAND COUNTY

SALT ROUTES

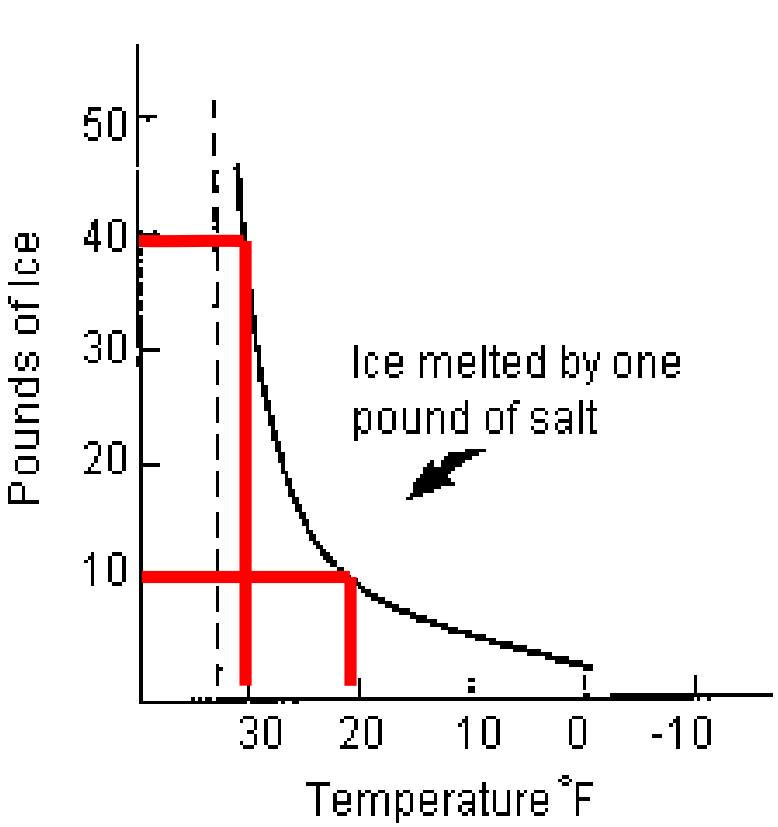
- Use as a guide to cover every part of our routes.
- Maximize passes by thinking of the big picture.
- Communicate with intersecting drivers.

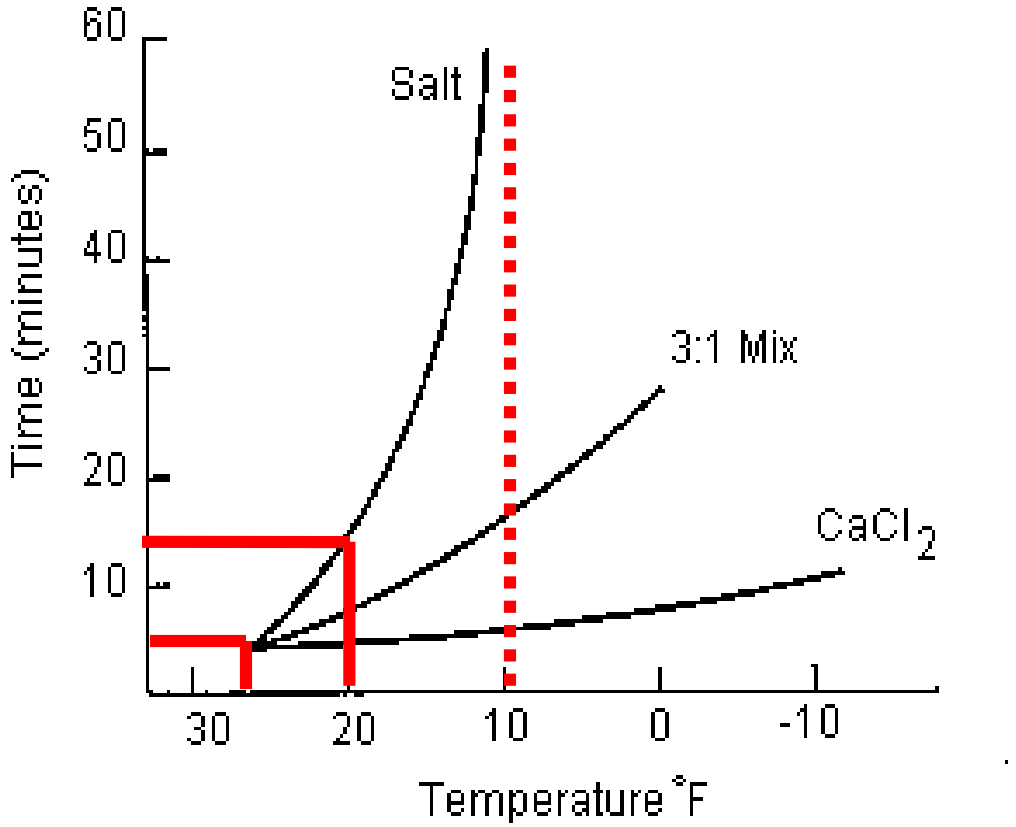


SALT & TEMPERATURE

- The effectiveness of salting operations is closely tied to temperature.
- Sunshine and traffic increase 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 graph [below] shows that salt can melt five times as much ice at 30º F as at 20º F. The time that it takes to melt the ice is increased as well.





Taken from US Roads: Road Management Journal (usroads.com)

PAVEMENT TEMPRETURE 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.

SUBDIVISIONS

- Salt usage in subdivisions will be controlled closely. Salt should only be used on hills, stops and curves. Use of salt on straight, flat section will need to be approve by the snow duty officer.

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.

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 of the pavement.

DIAL DOWN ON SINGLE LANE APPLICATIONS: 200 lbs

BLADING/SALTING

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

PLOWING ROADS

- Start by plowing center lane first.
- (3 lane/ 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, passing lanes, aprons and approaches to reduce pie affects.
- Plow snow to the curb side to open basin structures during clean up.

PLOWING SHOULDERS

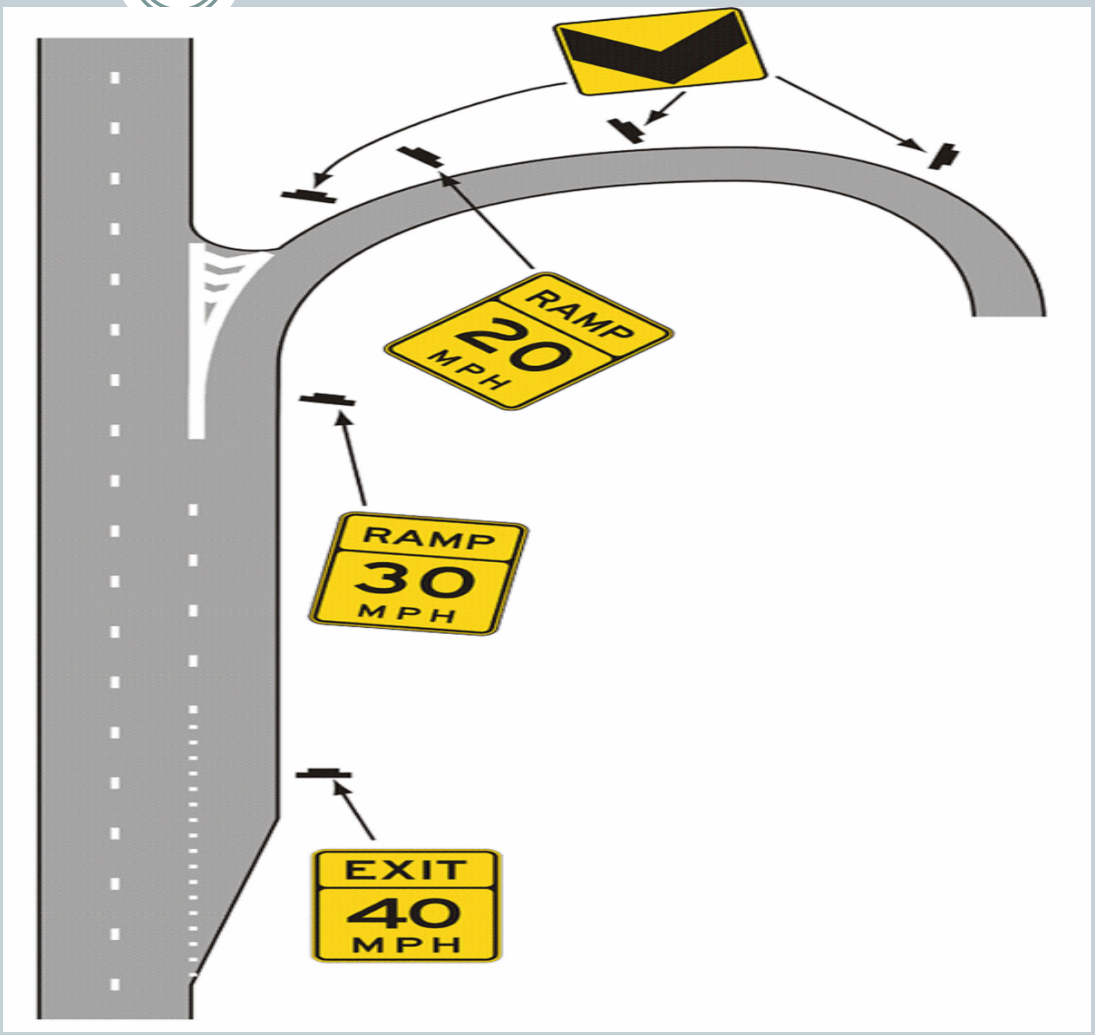
- SHOULDERS SHOULD BE PLOWED BACK IF SNOW COVERED. USE LIGHT PRESSURE SO NOT TO PUT GRAVEL IN THE DITCH.
- GENERALLY, HOWEVER, PLOWING SHOULDERS SHOULD BE PART OF THE CLEAN-UP OPERATIONS DURING REGULAR HOURS.
- IF THERE IS NO HAZARD, LEAVE SHOULDERS WHITE.

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 in the intersection.

FIRST PASS ON RAMPS

- Plow and salt high side of elevated curve.
- Remove portion of the point.



PLOWING POINTS

- When plowing ramps or merging expressways, think about how to eliminate points.
- On the first pass, be as aggressive as possible, cutting the point away.
- If there is a long point of snow, use team plowing to remove the point.


270 WEST
Dayton
EXIT 1/4 MILE
270 EAST
Cleveland

PLOWING IN TANDEM

- All blading and plowing on multi-lane roads should be done with one unit for each lane whenever possible.
- Following pictures show trucks together in tight formation.
- Blade first when possible. Do not plow off the salt that was put down.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BRIDGE
MAY BE
ICY

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.
- Bridges Decks will freeze before roadbed surfaces, since cold air reaches both top and bottom of the bridge-deck surfaces.
- They should receive early attention. (ANTI-ICING WILL HELP)

ANTI-ICING

ANTI-ICING

- “Anti-icing measures take place before a precipitation event to prevent formation or development of bonded snow and ice on the road surface.”
- Research has shown that anti-icing can cut the cost of maintaining road surfaces by 90% over the cost of deicing. Page 14 in the *Snow Fighters' Handbook*, Published by Salt Institute.

ANTI-ICING ADVANTAGES

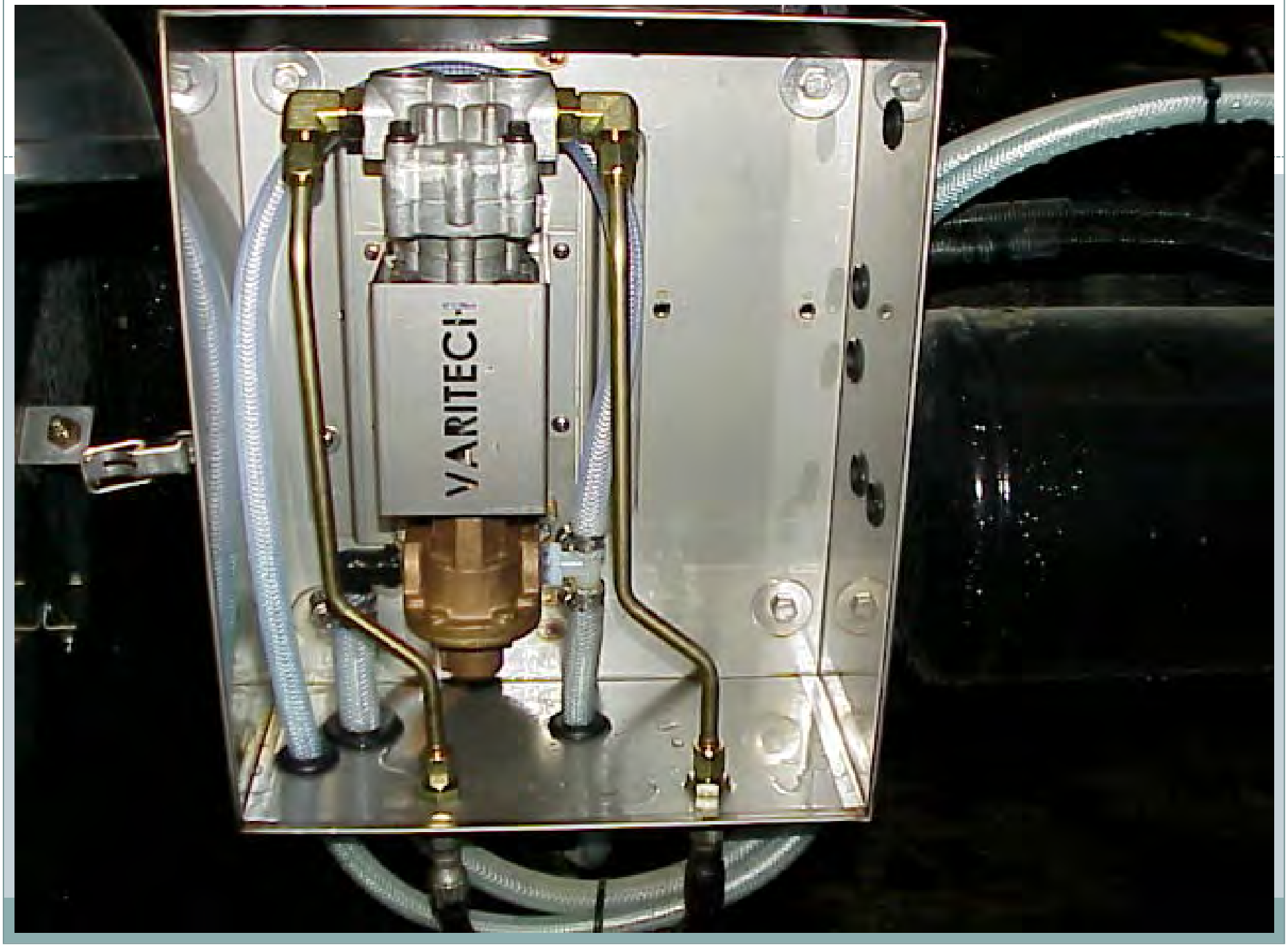
- Returns road surfaces to normal faster.
- Jump starts the melting process.
- If storm is delayed, salt residue remains on road to begin work when precipitation begins.
- Increased efficiency results in use of less deicer.
- Minimizes environmental concerns.

PRE-WET ADVANTAGES

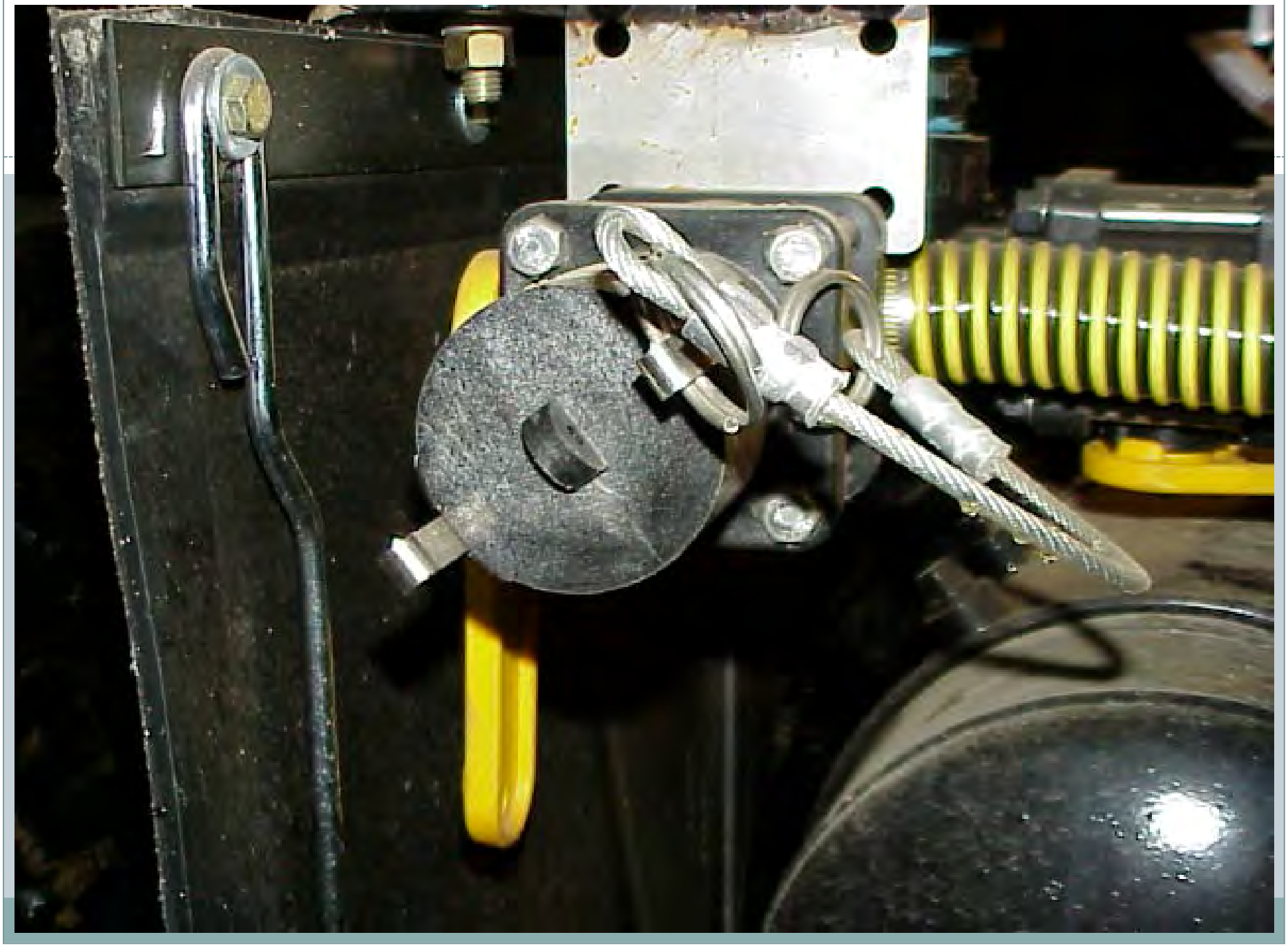
- Reduces the amount of salt.
- Helps stop bounce and scatter effect.
- Increases the rate of effectiveness. Starts a quicker salt reaction.
- Helps with lower temperatures.
- Produced in-house -- "savings."

Preventative Maintenance for Pre-wet System

- Clean filters.
- Flush tanks.
- Flush pumps.
- Check all systems for leaks.
- Check controller for proper use.
- Drain system.

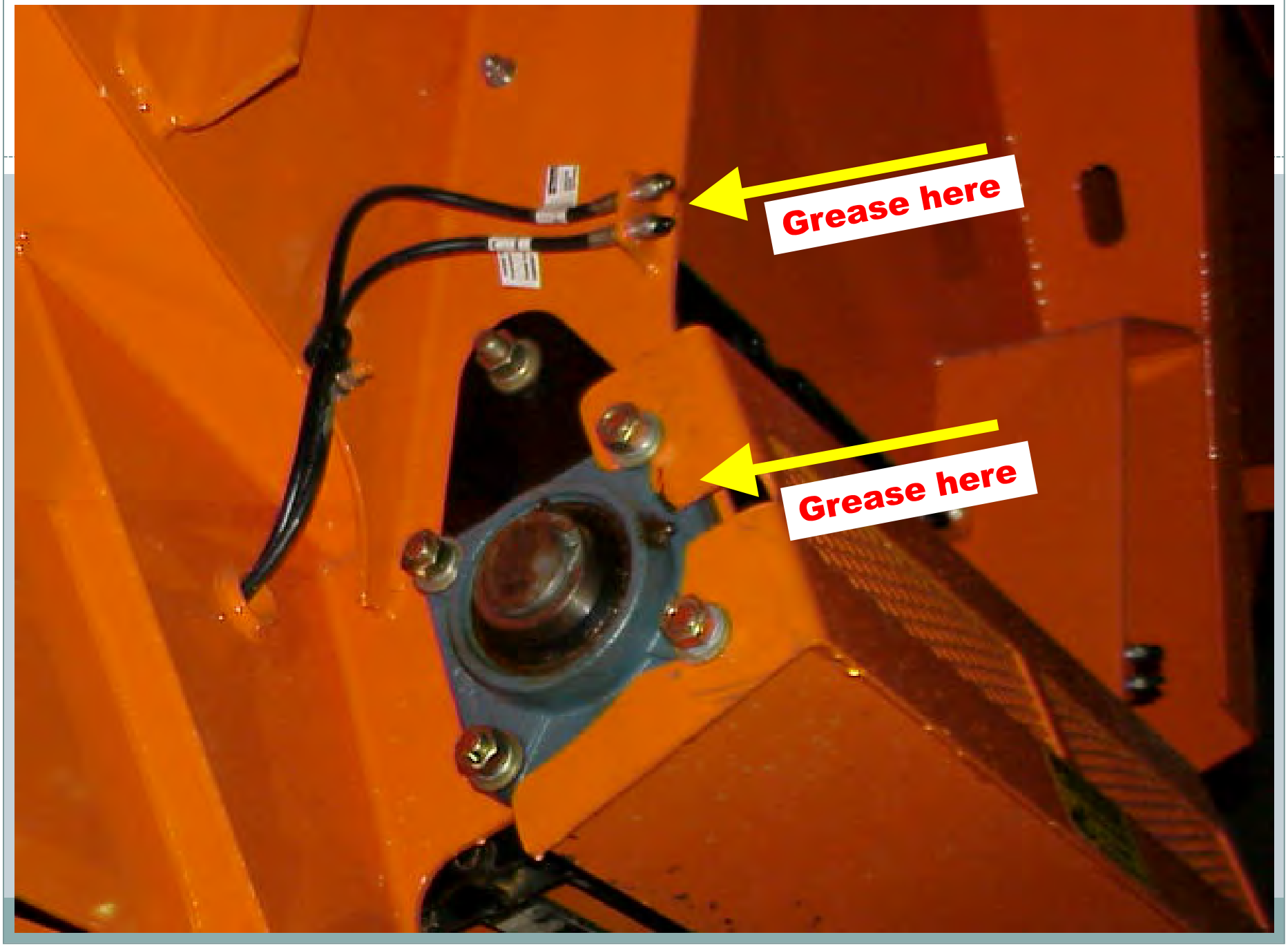

VARITECH

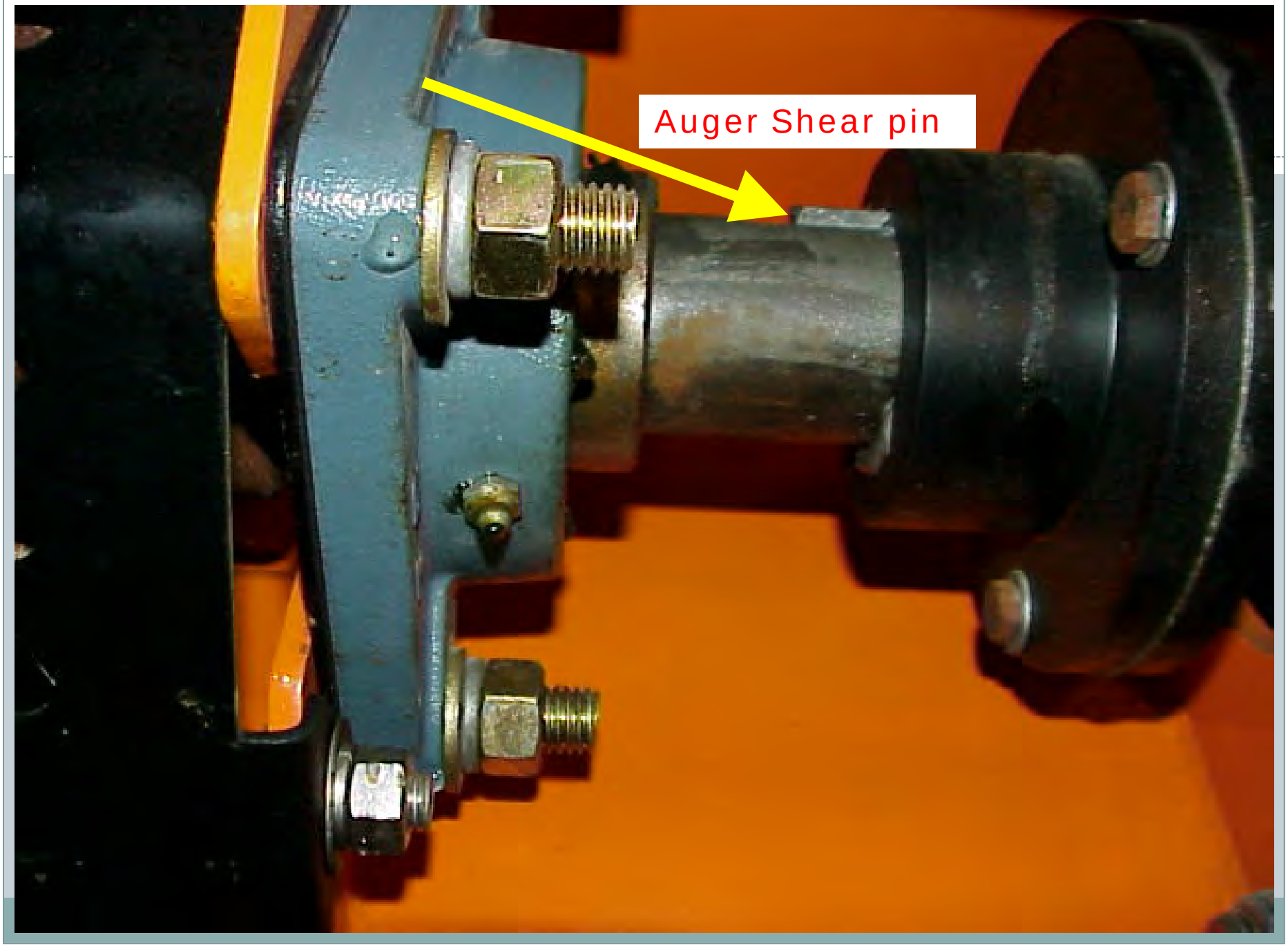

RAM



Keep pre-wet nozzles clear

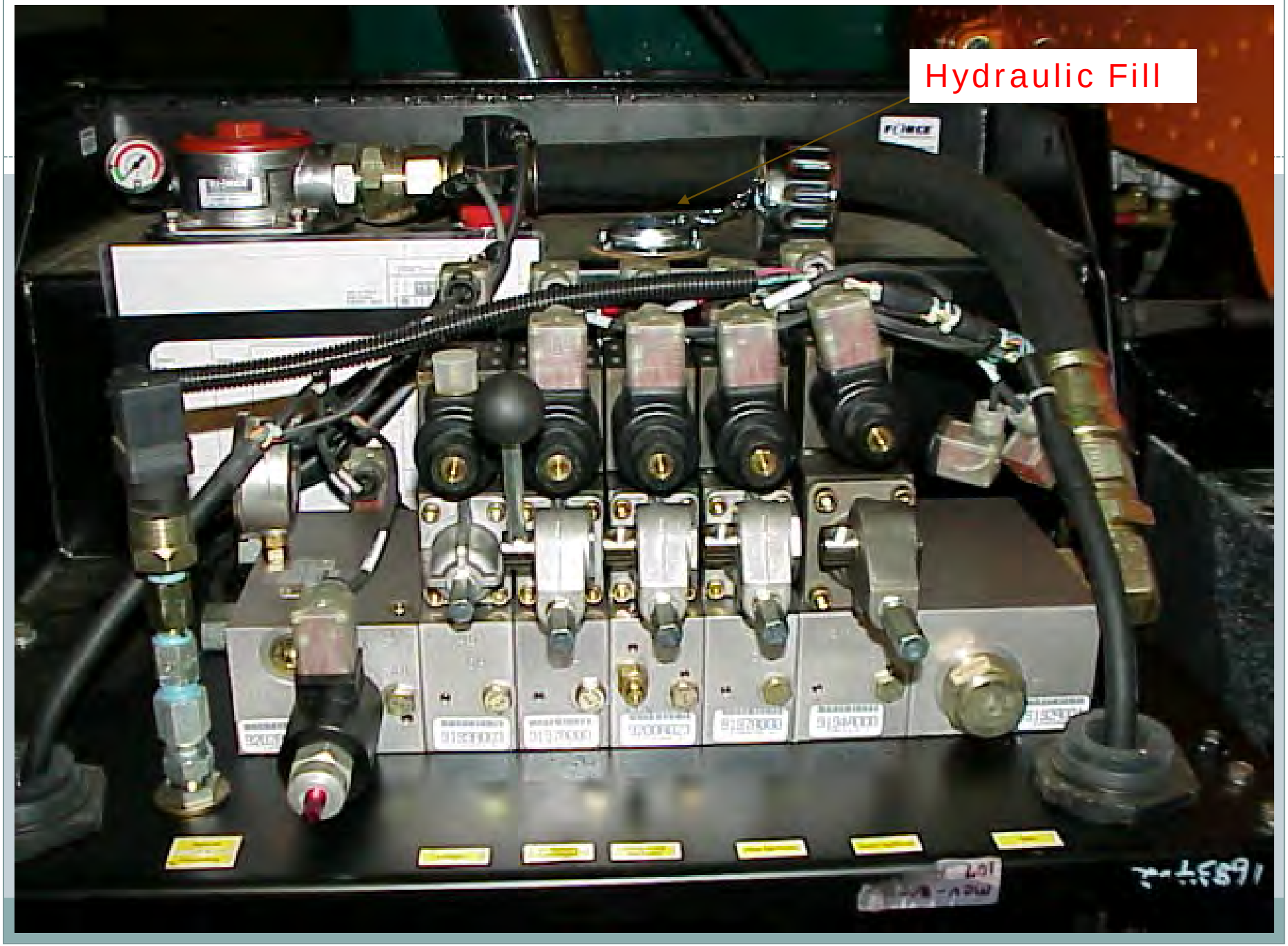
Keep conveyor and chains in proper working order


Grease here
Grease here

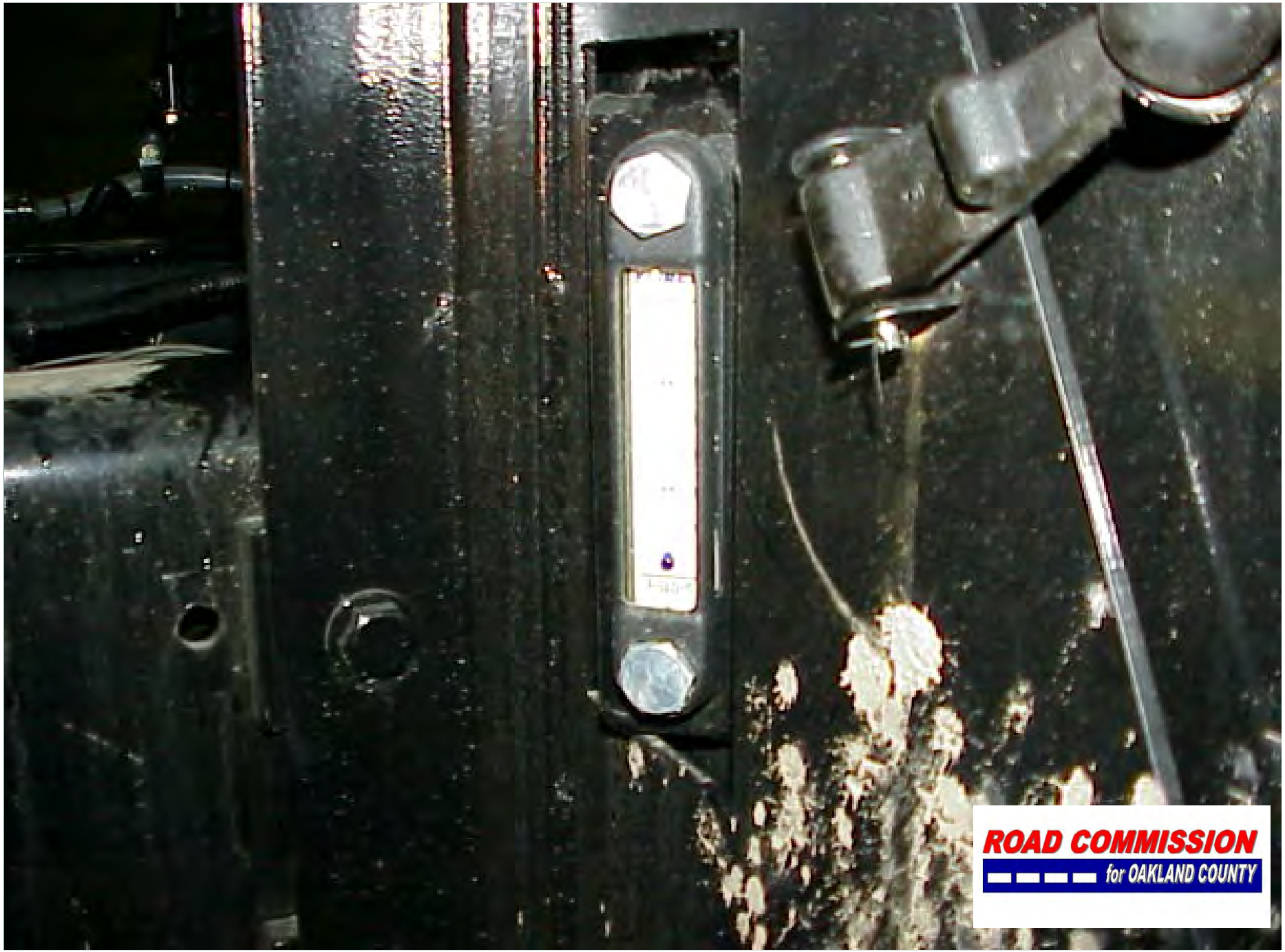

Auger Shear pin


What it's that easy
HOIST
HOIST
OPERATION OF BODY PROP


Still easy
CONVEYOR BEARING
TAILGATE LATCH
TAILGATE LATCH


Hydraulic Fill


WARNING
• Hydraulics system to be operated by trained personnel only.
• Use lockout tag out procedurns before performing any maintenance or manual operation of system.


ROAD COMMISSION
for OAKLAND COUNTY

Proper use of controllers makes us more efficient; reduces deadheading.

Dial Down when possible.

Operator manuals are in the trucks and office.

CONTROLERS

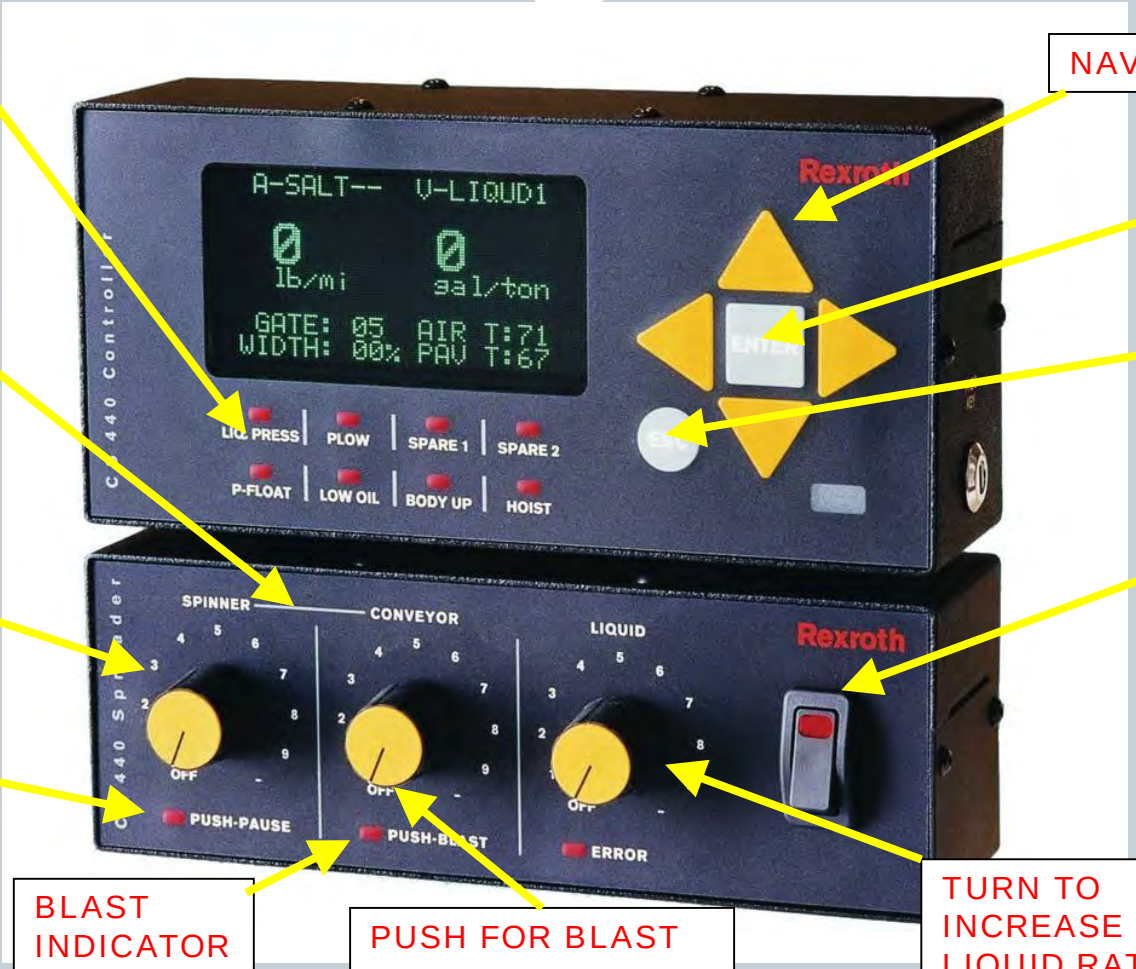

A-SALT-- V-LIQUD1
0
lb/mi
0
gal/ton
GATE: 05 AIR T:71
WIDTH: 00% PAV T:67
ENTER
ESC
LIQ. PRESS
PLOW
SPARE 1
SPARE 2
P-FLOAT
LOW OIL
BODY UP
HOIST
Rexroth
CS 440 Controller
SPINNER
CONVEYOR
LIQUID
OFF
PUSH-PAUSE
PUSH-BLAST
ERROR
Rexroth
CS 440 Spreader


FORCE
America
P 6.0

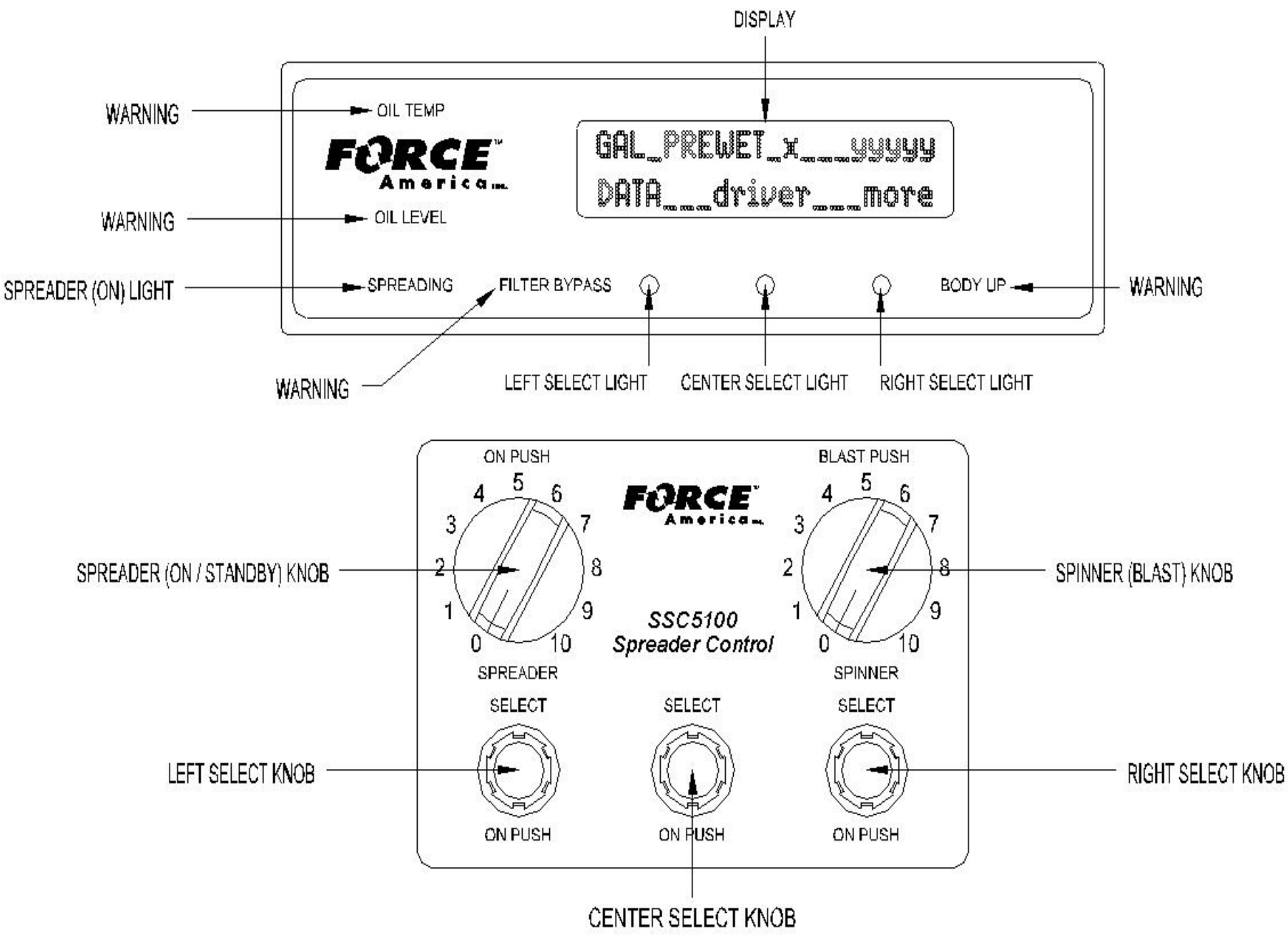

FORCE
America
SSC5100
Spreader Control
ON PUSH
ON PUSH
ON PUSH

REXROTH CONTROLER

REXROTH CONTROLER



FORCE CONTROLER


DISPLAY
WARNING
OIL TEMP
FORCE America
GAL_PREWET_x___yyyyy
DATA___driver___more
WARNING
OIL LEVEL
SPREADER (ON) LIGHT
SPREADING
FILTER BYPASS
BODY UP
WARNING
WARNING
LEFT SELECT LIGHT
CENTER SELECT LIGHT
RIGHT SELECT LIGHT
ON PUSH
BLAST PUSH
SPREADER (ON / STANDBY) KNOB
SSC5100
Spreader Control
SPINNER (BLAST) KNOB
SPREADER
SPINNER
SELECT
SELECT
SELECT
LEFT SELECT KNOB
RIGHT SELECT KNOB
ON PUSH
ON PUSH
ON PUSH
CENTER SELECT KNOB

QUESTIONS?

THANK YOU

ROAD COMMISSION for OAKLAND COUNTY