Increase Productivity & Safety Through Effective Use of Power Sweeping Equipment
Presented by:
Gerry Kesselring
Carl Barton
SWEEPER TYPES

- Air
- Mechanical
Air Sweepers

• Vacuum
• Regenerative
Air Street Sweepers

- Vacuum – through the use of a fan they suck debris off the ground, through a tube and into the hopper.
  - Have an open in the system.
  - Great for cut outs and bridge decks.
  - Height can create issues with trees
- Regenerative Air – also uses a fan with both pressurized air and a vacuum to move material off the ground with a pick up head and into the hopper.
  - Full width of head cleaning.
  - Excellent on fine material.
Air Sweepers

- Small
- Mid-size
- Large
Small Air Sweeper

- 15,000 GVW or less
- 2-3 cubic yard hopper
- High dump (3-4 feet)
- Designed for parking lot sweeping
Small Air Sweeper
Mid-size Air Sweeper

- 26,000 GVW or less
- 4 cubic yard hopper
- High dump
- Designed for small municipalities
Mid-size Air Sweeper
• 26,000 GVW or larger

• Up to 7 cubic yard hopper

• Ground level dumping & high dump
  • High dumps have smaller hoppers

• Designed for municipal sweeping, leaves, sand blasting & concrete slurry

Large Air Sweeper
Large Air Sweeper
Mechanical Sweepers

- Kick Broom
- Mid-size
- Large
Side Cast, Tractor or Kick Broom

- Ideal for dirt applications where dirt can be pushed off to the side of a road
- May be used to assist street sweepers
Kick Broom
Mid-size Mechanical Sweeper

- 26,000 GVW or less
- 4 cubic yard hopper
- High dump
- Designed for dirt tracking, millings, sand, gravel, chip seal, and bulk debris
Mid-size Mechanical Sweeper
Large Mechanical Sweeper

- 26,000 GVW or larger
- 6-8 cubic yard hopper
- High dump
- Designed for dirt tracking, millings, sand, gravel, chip seal, and bulk debris
SWEEPER OPERATION AND MAINTENANCE
VACUUM OR REGENERATIVE SWEEPERS

Airflow is Important to Proper Operation

- Pick-up head
- Flaps
- The Fan
- Seals
- Debris Hopper Screen
- Intake Tubes
MECHANICAL SWEEPER

- Conveyor Belt or Chains
- Bearings
- Main Sweeping Broom
- Drag Shoes
- Rubber Flap
ALL SWEEPERS

- Curb brooms
- Hydraulic System
- Electrical System
- Water System
SWEEPER OPERATION

CHECKLISTS
- Daily
- Weekly
- Monthly
- Yearly

OPERATORS
- Experienced
- Same Operator
- Drive/sweep from the proper side
## Example Sweeper Inspection and Repetitive Task Schedule

<table>
<thead>
<tr>
<th>Inspect</th>
<th>Perform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gutter Broom(s) For Impact Damage / Wear</td>
<td>Cleaning Of Gutter Broom Torque Motor Shaft Area</td>
</tr>
<tr>
<td>Daily</td>
<td>Daily</td>
</tr>
<tr>
<td>Pick-Up Head Blast Orifice For Lodged Foreign Material / Adjustment</td>
<td>Check Of Hydraulic Tank Fluid Level</td>
</tr>
<tr>
<td>Daily</td>
<td>Cleaning Of Hydraulic Oil Return Line Filter</td>
</tr>
<tr>
<td>Pick-Up Head Skid Plates For Wear / Impact Damage</td>
<td>Draining Water Tank</td>
</tr>
<tr>
<td>Daily</td>
<td>Cleaning Of Hopper And Dust Separator</td>
</tr>
<tr>
<td>Pick-Up Head Curtains For Wear / Damage</td>
<td>Wash Down Of Engine Radiator(s)</td>
</tr>
<tr>
<td>Daily</td>
<td>Daily</td>
</tr>
<tr>
<td>Hydraulic System For Plumbing Or Component Leakage</td>
<td>Functional Test Sweeper Lights</td>
</tr>
<tr>
<td>Daily</td>
<td>Functional Test Truck Brakes</td>
</tr>
<tr>
<td>All Hopper And Transition Seals For Wear / Damage</td>
<td>Functional Test Truck Lights</td>
</tr>
<tr>
<td>Daily</td>
<td>Check Of Truck Fluid Level</td>
</tr>
<tr>
<td>Hopper Screen For Damage</td>
<td>Daily</td>
</tr>
<tr>
<td>Daily</td>
<td>Check Of Auxiliary Engine Fluid Level</td>
</tr>
<tr>
<td>Tires</td>
<td>Daily</td>
</tr>
<tr>
<td>Daily</td>
<td>Rotation Pressure And Suction Hoses 1/4 Turn</td>
</tr>
<tr>
<td>Daily (If Applicable)</td>
<td>100 Hours</td>
</tr>
<tr>
<td>Water Pump Oil Level</td>
<td>Change Of Water Pump Oil</td>
</tr>
<tr>
<td>Daily</td>
<td>150 Hours</td>
</tr>
<tr>
<td>Water Filter Hose Filter Screen</td>
<td>Change Of Hydraulic Oil Return Line Filter</td>
</tr>
<tr>
<td>Daily (If Applicable)</td>
<td>3000 Hours Or When Indicated</td>
</tr>
<tr>
<td>Water Pump Suction Hose Pre-Filter</td>
<td>Change Of Hydraulic System Oil</td>
</tr>
<tr>
<td>Daily (If Applicable)</td>
<td>2000 Hours Or By Oil Analysis</td>
</tr>
<tr>
<td>Dust Separator Liner For Wear / Damage</td>
<td>Adjustment Of Gutter Brooms</td>
</tr>
<tr>
<td>Daily (If Applicable)</td>
<td>As Required</td>
</tr>
<tr>
<td>Dust Separator Door Closed Before Operating</td>
<td>Cleaning Of Spray Nozzle Tips And Screens</td>
</tr>
<tr>
<td>Daily (If Applicable)</td>
<td>As Required</td>
</tr>
<tr>
<td>Engine Air Intake Filter Restriction Indicators</td>
<td>100 Hours Minimum</td>
</tr>
<tr>
<td>Weekly</td>
<td>Accessible Areas Of Blower Housing Liner For Wear / Damage</td>
</tr>
<tr>
<td>Blower Belt Tension</td>
<td>BLOWER LIP For Wear / Damage</td>
</tr>
<tr>
<td>100 Hours (Minimum)</td>
<td>BLOWER LIP For Wear / Damage</td>
</tr>
<tr>
<td>Pressure And Suction Hoses For Wear</td>
<td>BLOWER LIP For Wear / Damage</td>
</tr>
<tr>
<td>100 Hours</td>
<td>BLOWER LIP For Wear / Damage</td>
</tr>
</tbody>
</table>
### Complete Sweeper Inspection
- Check Auxiliary Engine Oil and Coolant
- Check for Seal leaks
- Check Warning and Work Lights
- Inspect Pick-Up Head
- Check Gutter Board(s)
- Adjust Mirrors
- Fill Fuel Tank
- Fill Water System

### Sweeper Start-Up Procedures
1. Start Rear Engine (Must be at idle)
2. Turn on Warning Lights
3. Turn on Water System
4. Lower Pick-Up Head
5. Pull Sweeper Forward to lock Pick-Up Head Cylinders
6. Throttle up Auxiliary Engine RPM to desired level
7. Lower Gutter Board(s)
8. Begin Sweeping
9. DO NOT BACK UP WITH PICK-UP HEAD DOWN. Throttle down, raise head then back up.

(Option: raise some Pick-Up Head Cylinders after you back up with the head down.)

### Alternative Fuel Option Start-Up Procedures
1. Slowly open fuel service valve on each CNG, PC Tank. (If not already open)
2. Slowly open fuel shut-off valves.
3. Start Chassis Engine and idle for five minutes to allow time for warm-up before engaging transmission.
4. Start Auxiliary Engine and idle for five minutes to allow time for warm-up before raising RPM

**NOTE:** This procedure supplements the sweeper Start-Up Procedure above. Read and comply with both.

### Leaf Pressure Bleeder Procedures
- Closed for heavy debris such as Sand, Gravel, Dirt, Etc. (Use DAH when necessary)
- Open 100% when sweeping light debris such as Leaves, Paper-Caps, Etc.
- Adjust opening 20% & 75% for mixed debris.

### Sweeper Shutdown Procedures
1. Lower Auxiliary Engine RPM to idle speed. (1000 RPM)
2. Raise Gutter Board(s) (Must hold switch in the up position to fully retract Gutter Board(s))
3. Raise Pick-Up Head - (Must hold switch in the up position to retract to the travel position)
4. Turn off Water System
5. Turn off Sweeping Lights
6. Turn off Auxiliary Engine.

### Alternative Fuel Option Shutdown Procedures
1. Bring all sweeper components to their stowed position.
2. Lower Engine RPM to idle on both engines for a minimum of 5 minutes to allow the engine to cool down.
3. Turn off Chassis (pilot) switch (CNG).
4. Outdoor Storage - Close both manual service valves (LPG) or both 1/4 turn shut-off valves (CNG). Allow auxiliary engine to run until it shuts down due to starvation.
   - **Indoor Storage** - Close both manual service valves (LPG) or 4 main service valves to fuel cylinders (CNG). Allow auxiliary engine to run until it shuts down due to starvation.
5. **NOTE:** This procedure supplements the sweeper Shutdown Procedure above. Read and comply with both.

### Wash Out Procedures (DAILY)
- Clean Hopper Screen
- Clean out Hopper
- Clean out Dust Separator
- Close under Pick-Up Head
- Wash exterior of Sweeper and Chassis
- Wash off Radiators

### Parking Procedures
- Raises Hopper and lowers on 3x4 Wood Blocks: Do not close rear door
- Leaves Hopper Door and Inspection Door(s) open (All Models)
SWEEPER MAINTENANCE

• Dealer Relationship
• Experienced Mechanics & Operators
• Back-up Equipment
OWNING A SWEEPER

- High Maintenance
- Break-downs
- Back-up Plan
Using a Sweeping Contractor
EXPERIENCE

- Daily operation equals experience
- Experienced operators and mechanics
  - Times can differ from rest of crew
- Multiple types of equipment
- Dealer and manufacturer relationships
- Construction, Interstate and Municipal
If it looks good, it’s probably well maintained.

Sweeper appearance is a reflection on the paving contractor.
SCHEDULING A SWEEPER

- Date, Time Location and Directions to Job Site
  - Email site map- many streets have similar names
- Kind of job – paving, milling, chip seal, etc.
- Job site contact name and phone number
- Job number or P. O.
- Estimate of time needed
- Certified Payroll requirements
- Dump location
- Where is the water location
- Communicate monthly → weekly → daily
MILLING & PAVING JOB

• You may need more than 1 sweeper
  • Mill and fill, running 2 mills or double shifts
• The sweeper does not need a side kick
• Have a loader available to pick up piles
• Have 1 dump truck that is designated for just the sweeper to be dumping into and staying with the sweeper until the sweeper is finished
• **Traffic control stays with the sweeper until the sweeper is finished**
DUMPING CONSIDERATIONS

- A dedicated dump truck is most efficient
- Keep a dump truck with the sweeper through the end of the job
- If no dump truck is available sweeper will dump in the staging area
Sweepers need a legal way to get water

- Water location is critical
  - Metered Hydrant
  - Water Truck
  - Water Buffalo
  - Water Tank
The leading cause of highway construction worker injuries and fatalities is contact with construction vehicles, objects and equipment. These injuries and deaths are preventable through a number of good practices.
• Operators
• Traffic Control
• Job Site
• Equipment
• Night Work
RUN OVERS AND BACK OVERS

- Be visible
- Stay out of “blind spots”
- Stay outside an equipment “safety circle”
- If you can’t see the operator, they can’t see you
- Use a spotter to back up if possible
- Night work adds additional challenges
- **We drive from the right**
OPERATORS MUST HAVE THE PROPER PPE

- Safety clothing for road work comes in 3 classes
  - Class I – for use in activities that are separate from traffic
  - Class II – for use where the worker is in close proximity to traffic that travels 25 mph or more
  - Class III – for use when exposed to high speed traffic or when visibility is reduced

- WE RECOMMEND THAT CLASS III IS USED ALL THE TIME
INTERNAL TRAFFIC CONTROL PLAN

- Job Site Internal Traffic Control Plan
- Company Internal Traffic Control Plan
  - If you have a project radius, give one to sweeper

Employees should stay in the sweeper while in the active work zone area for a project. If a need arises to exit the sweeper, employees should move out of the work zone area to a safe place before exiting.
SAFETY TIPS

• Remind flaggers and dump truck drivers that sweepers are part of the “team”
• Make sure all flashers, lights, beacons and reverse beepers are working
• Consider installing back-up cameras
• Night work may require extra lighting
SWEEPER RESOURCES

• www.elginsweeper.com
• www.johnstonnorthamerica.com
• www.schwarze.com
• www.stewart-amos.com
• www.tymco.com
• www.powersweeping.org
• www.1800sweeper.com
SAFETY RESOURCES

• www.workzonesafety.org

• www.ansi.org

• www.osha.gov
CONTACT INFO

- Carl Barton
  - Aardvark Sweeping
  - 5461 E. Holmes Rd.
  - Memphis, TN 38118
  - Carl@aardvarkmemphis.com

- Gerry Kesselring
  - Contract Sweepers & Equipment
  - 2137 Parkwood Ave.
  - Columbus, OH 43219
  - GerryK@sweepers.com
Thanks for your Participation

Please complete the evaluation to provide your feedback on this session and suggest topics for future events.

Remember to mark these upcoming events on your calendar!

March 7-11, 2017
www.conexpoconagg.com
www.ifpe.com