
MWC
GLOBAL
MEMBER
NAPA
NATIONAL ASPHALT
PAVEMENT ASSOCIATION
Rubber Pavements Association

Objectives

- Increase plant maintenance issue awareness
- Understand how and where new technology can make workplace safer
- Ideas to discuss cleaner and more efficient

Key Question

- What is the most important aspect to the removal and cleaning of material?

TRAINING IS IMPORTANT

I. **Silo Cleaning/Plant Diagram**

II. Methods of Cleaning and Removal

III. AC Tanks and Lines

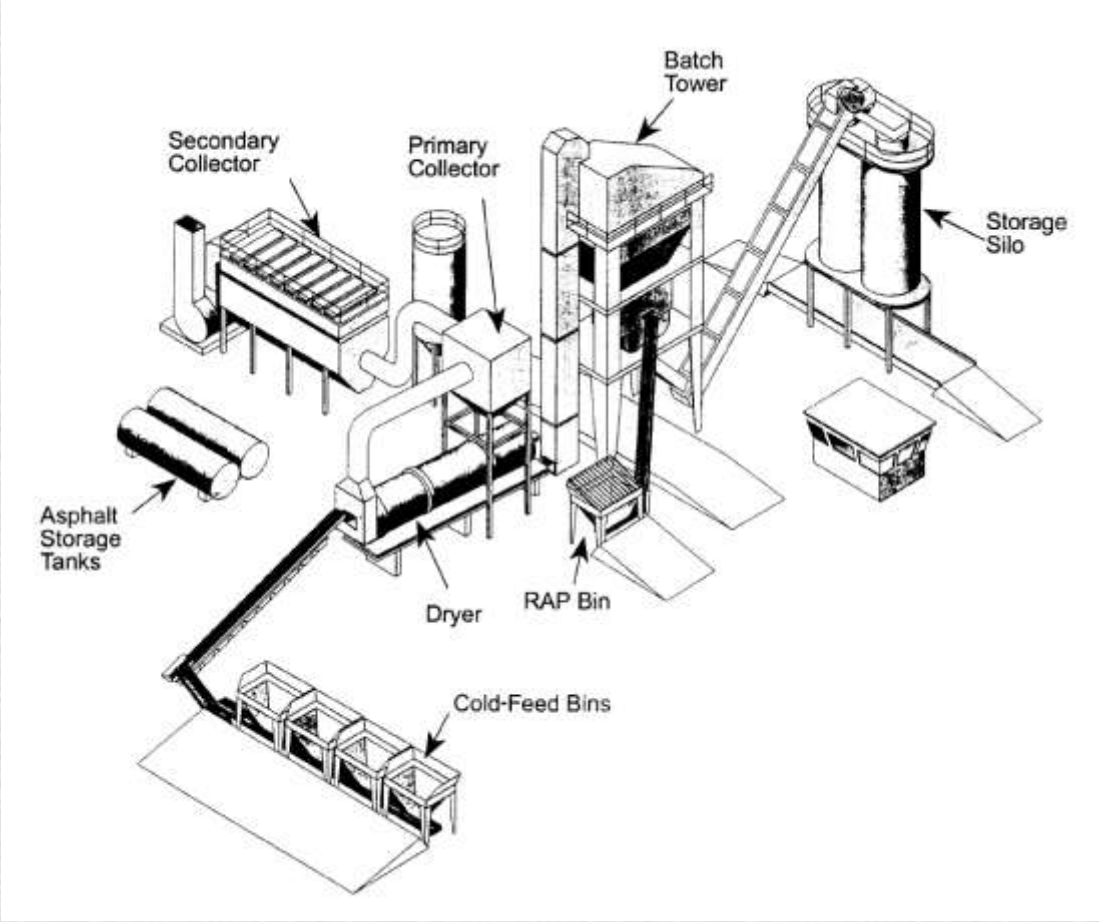
IV. Containment Pits

V. Bag house and Collectors

Hot Mix Silo Cleaning

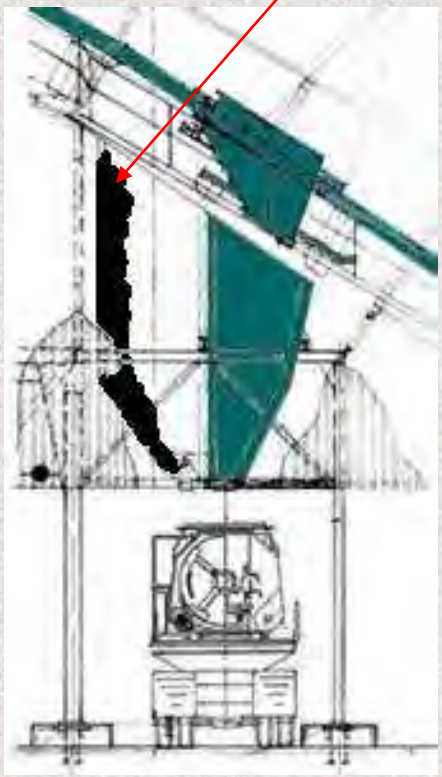
- Silo cleaning is a growing service offered by MWC Global
- MWC Global attempts to keep people out of confined spaces
  - Less chance of injury or death.

Plant Diagram



OSHA Occupational
Safety & Health Administration

Removal of Asphalt build up



1. Confined Space Entry
   - A space that is:
   - Large enough to enter & perform work
   - Restricted entrance & exit
   - NOT designed for continuous employee occupancy.
2. 2. Energy control
   - Lock out/tag out
3. Fall protection
4. Walking surfaces

I. Silo Cleaning/Plant Diagram

II. **Methods of Cleaning and Removal**

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Best Practices for Preventing Silo Buildup

- Make sure batcher gates are properly closing and have no holes
- Monitor for “drain down” on course mixes and polymers, consider storage time as a factor
- Fill silo completely to minimize oxidation and temperature loss in top of silo
- Use seal***, (top seals being most important)*** reduces temperature loss and oxidation
- Do not leave polymer and rubber mixtures over night

Best Practices for Preventing Silo Buildup

- **DO NOT** heat silos beyond storage temperatures.
- You **CAN NOT** heat 200-300 tons of mix! You are just replacing temperature loss.
- Waste 1-2 TONS the morning after – this will remove oxidized plug
- Consider “BURPING” the silo during long storage times

METHODS OF STORAGE SILO MATERIAL REMOVAL

1. Torching of Material
2. I-Beam Welded to Loader
3. Jackhammer
4. Pyro Demolition
5. Hydro Demolition

Torching of Material Method

- Accessibility limitations
- Dangerous with compressed gas in confined space

I-BEAM WELDED TO LOADER

- Works for removal of small amounts of oxidized material (PLUG)
- Limited to usage
- Could damage cone ceramic tile or steel wall
- Becomes stuck or jammed into material and breaks from weld leaving it hanging from the cone bottom
- This has caused at least ONE DEATH!
- Damage to loader equipment. This may off set scale calibration

JACKHAMMER

- Easiest when material is just “Rat Holing” through the center of the silo
- Sloping of hardened material can make footing an issue
- Should always use fall protection
- Clam doors need to be chained open if entering through the discharge hole
- Plugged silos may need to be jacked out and removed to get opening started
- Damage to cone ceramic tile and steel wall
- Confined Space Permit Required
- High decibel level for long periods of time
- Danger of material falling from upper walls or roof top equipment
- Man hours


Rat Holing

PYRO DEMOLITION

- Loud decibel levels cause neighbors of plants to complains, possible ordinance citations
- Damages to silo equipment and integrity of metal strength
- Could take many days
- T & M

PYRO DEMOLITION

- Dangerous air quality
- Damage ceramic tiles
- Damage integrity of steel tank.
- Insulation damage
- Hydraulic damage

PYRO DEMOLITION

- Loss of hearing
- Problems in residential areas

PYRO DEMOLITION

- How cost effective?
- Liability?

HYDRO DEMOLITION

- Decibel level is diesel engine at 1800 rpms
- Uses approximately 1500 gallons of water/hour
- NON-ENTRY
- Capture material
- Per ton cost

HYDRO DEMOLITION

- Material removed small granular state
- RAP
- Least amount of damage to silo
- No time and material
- Weekend operations

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AC Tanks

A/C TANK SPILL

CLEANING METHODS FOR A/C TANKS AND LINES

Jack Hammer Method

- Confined space trained personnel
- Decibel levels in tank are high
- Danger of damaging hot oil tubes, direct fire tube or tank walls
- Time consuming to bucket a man through the manhole
- Cut away opening can damage the integrity of the tank

Cleaning A/C Tanks and Lines

Chemical Cleaning

- Chemicals or ATOL oil needs rinsing
- Disposal can be costly
- Most chemicals are not environmentally safe. All chemical and rinse water will have to be disposed.

Cleaning A/C Tanks and Lines

Hydro blasting

- Confined space trained personnel
- Uses a lot of water up to 25,000 gallons
- Generates waste that goes in RAP pile
- Gets tanks and coils very clean

EXTERIOR OF TANK AND LINES

INSIDE OF A/C TANK WITH COKE DEBRIS

UNDERGROUND A/C TANK

CLEANING ACCESS HOLE TO TANK

COKED MATERIAL ENTRY

100,000 GALLON A/C TANK

FLOORS, COILS, AND AGITATOR CLEANED

A/C LINES

A/C LINES CLEANED

BALL VALVES OPENED FOR CLEANING

A/C TANK CLEANING

- Using high pressure water to remove Liquid Asphalt from A/C Tanks.
- Vacuum all water and debris from tank
- All types of A/C containing (rubber or polymer).

A/C Cost Savings

- Formulas to help you see the cost savings involved in with MWC Global cleaning your AC tank coils

- The buildup of bitumen on your AC tanks reduces efficiency of your coils, in turn, increases operation costs

- For Bitumen: k=0.17w/m - C or 0.098btu/ft – F
  - k = Thermal Conductivity
  - F = Fahrenheit
  - Q = Heat Transfer Coefficient

AC Cost Savings Findings

- What We Found:

- Using the thermal conductivity for bitumen, we calculated that the coefficient of heat transferred through:

Thickness	Heat Transferred
0.25”	Q=4.91 btu/ft^2
1.00” Thick	Q=1.18 btu/ft^2
2.00” Thick	Q=0.59 btu/ft^2

- Therefore, having clean coils will pay for themselves over and over again

BEST PRACTICES FOR KEEPING TANK AND COILS CLEAN

Try not to let the binder material go below the top of the coils

- Coking occurs
- Polymers and rubber blends will bind and sometimes form sheeting if left at level too long

Don’t overheat heat transfer oil. It can coke on the inside of pipes.

- Synthetic fluid can be heated to 550 degrees F

KEEPING TANKS AND COILS CLEAN

Fin tubes do the BEST job at maintaining temperatures

- Can become clogged
- Difficult to clean

Polymers and rubber mixes need agitation or recirculation systems for proper blending and storage

KEEPING TANKS AND COILS CLEAN

Properly sealed manholes on top of tanks to stop heat loss and water entry

After tank cleaning

- Do a visual inspection
- Check metal thickness if possible
- Tank inspection (API 653)

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Containment Pits

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Containment Pits

LEAKING ASPHALT FROM PUMP INTO CONTAINMENT

HEATED BY BURNERS & SUN MATERIAL BECCOMES FLUID

Containment Pits

Hazards of Dirty Pits

- Personnel can trip on hazards such as pallets. Boards on blocks used to keep out of material that is spilled.
- Make it hard to gain access to certain equipment (electrical wire or braided hoses)
- DEQ Inspection
- Continuous build up can use calculated containment measurements

Containment Pits

Rain water and flooding

- Proper disposal if contaminated
- Drains/filtration

Cleaning Methods

- Jack hammers
- Torch and scrapers
- Hydro blasting

BEST PRACTICES FOR KEEPING CONTAINMENTS CLEAN

- Clean up spills when they happen
- If you have gauges, make sure they work
- Drivers need to check levels
- Drains with valves and filtration
- make sure valve remains closed unless supervised release
- Use proper walk ways (cat walk) and not pallets
- Sand base makes cleanups easier
- Fix faulty leaking equipment

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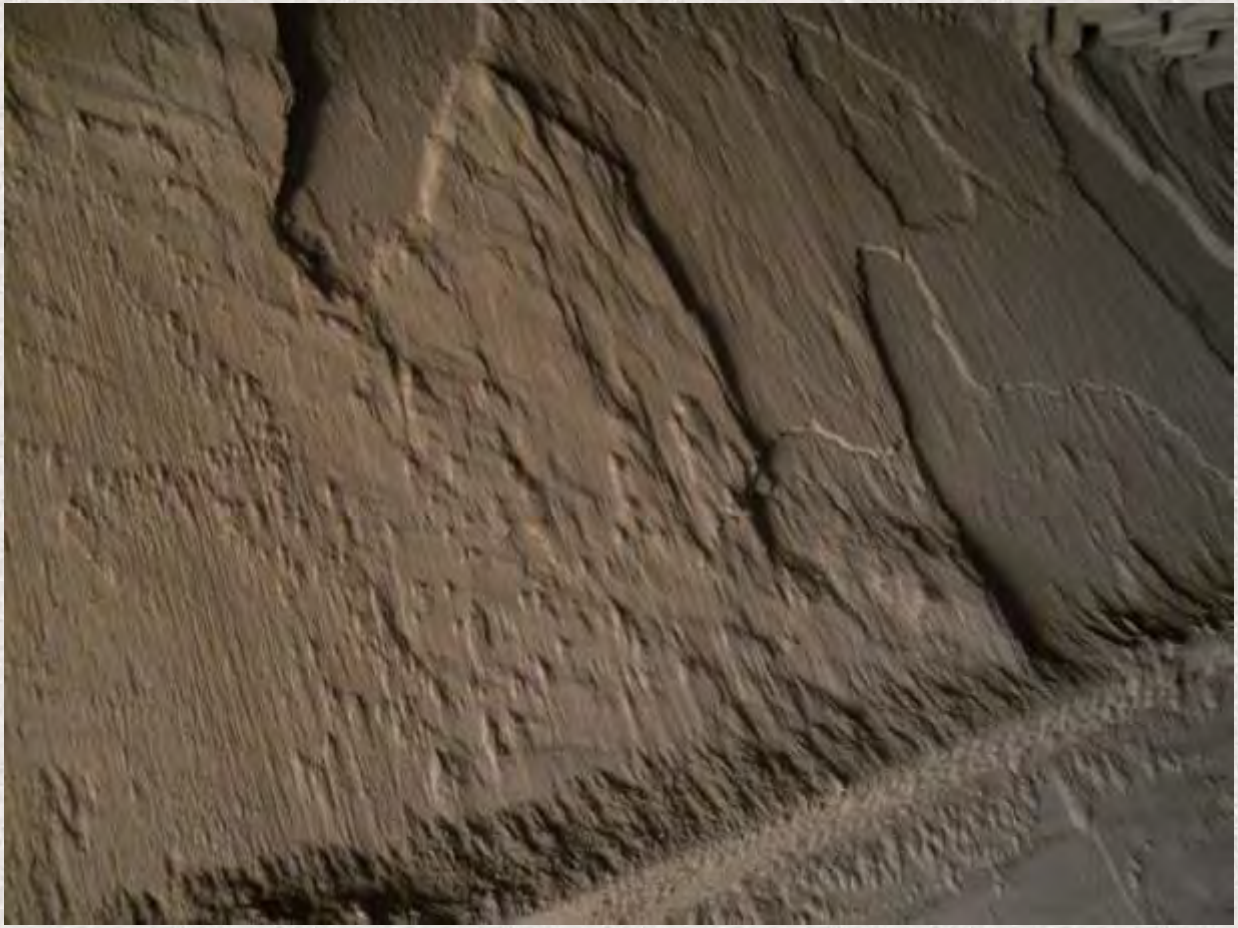
Bag House Cleaning

- Plugged augers
- Dirty bags
- Bag replacement
- MWC Global can help.

BAG HOUSES



Bag House and Dust Collection Systems

- Periodic cleaning equipment
- Bag Cleaning (does it work)
- Bag Replacement
- Proper PPE during replacement work
- Day to day practices for better operations
- Season shut down

BAGS ARE COVERED PROPERLY FOR GOOD OPERATION

AUGER IS FREE TO OPERATE AS NEEDED

MATERIAL CAN BECOME WET IN SHUTDOWN AND FORM CONCRETE LIKE MATERIAL DANGERING AUGER DURING START UP

IDEAL LOOK…a cleaned bag house at the end of the season

Best Practices in Bag Houses and Dust Collectors

Change out TIPS

Planning

- Set aside plenty of time for bag change out
- Check stock for bags and cages

Shut down

- Run clean gas stream through the baghouse prior to shutting down the fan
- Clean down bags after fan is shut down
- Be certain all dust has been conveyed from hoppers

Access

- Confined space
- Proper training and certifications
- Full respiratory gear and eye protection are required

Best Practices in Bag House Change Outs

Cage and bag removal

- Pull out a few bags out of the collector first and then test the intended replacements
- Pay attention to fit the bag on to the cage and snapband fit of the bag into the collector
- Work methodically one row at a time

Bag insertion

- For snapband/snap ring bags be sure to clean the cell plant hole to insure proper seal
- The bag should snap in using hands only

Best Practices in Bag Houses and Dust Collectors

- Inspect the seal on the primary collector (flop gate or airlock) on a regular basis
- Sequence the cleaning so that the dust level in the hopper is consistent from one end to the other
- (keeps dust return consistent on start-up and shut-down and during production rate changes…no “dust slugs” in the return lines)
- Leave dust on the bags and in the return equipment.
- (This ensures there will be dust in the system on start-up and the mix will not be void fines.)

MWC Global

- What does MWC Global have to offer?

Services:

- *High pressure water blasting:*
  - *1,500-5,000 PSI*
  - *10,000 PSI- High*
  - *20,000-PSI – Premium*
  - *36,000 PSI – Ultra*
- *Tank and vessel cleaning*
- *Pipe and sewer line cleaning*

- *Concrete and steel precision cutting*
- *Hydro-demolition*
- *Surface cleaning for re-coat*
- *Vessel and tank cutting in hazardous conditions*
- *Decommissions and demolition (Investment recovery)*
- *Heat exchanges and tube bundle cleaners*

- *CO_2 Blasting (Dry Ice)*
- *Drum and container crushing*
- *Deep cleaning of structure for repaint or decontamination purposes*
- *27" Wet/dry vacuum truck*
- *Liquid ring vacuum truck (handles flammable materials)*
- *Jet Order*
- *Hi dump Guzzler*
- *3-D Nozzle for tank and vessel cleaning**

Contacts

- Charlie Underwood
- Superintendent of Industrial Services
- Cell (517) 605-8463
- **Email: charlie@mwcglobal.com**

- Dave Render
- Safety Manager
- Cell (734) 476-9710
- **Email: dave@mwcglobal.com**

Home office
Call today for quotes on cleaning or replacement.

(517)-301-4101

ON BEHALF OF **MWC GLOBAL**– THANK YOU

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PAVEMENT ASSOCIATION

Rubber Pavements Association
Founded 1985

MWC
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