

Powered Roof Ballast Removal JHA

Worked instructional example

Work and worksite

A trained vacuum crew removes selected roof aggregate from an accepted ballasted low-slope roof using a ground-positioned industrial vacuum and a controlled roof hose. The removal zones, roof loading and temporary membrane-restraint plan are approved; membrane tear-off is separately planned. This fictional learning example describes planned controls; it records no actual inspection or work authorization.

- Partial roof tear-off and cleanup coverage: industrial-vacuum aggregate removal and its handoff only; no membrane cutting, pressure-blowback clearing or structural deck repair.
- The selected machine instructions and material assessment govern hose equipment, dust control, operating limits, isolation and collection discharge.
- Accepted ground staging, protected roof access and edges, a supported hose route and the approved wind and membrane-restraint sequence are available.

Questions before work

- Who approves the removal zones and temporary restraint as the ballast holding the membrane is taken away?
- How is hose weight and movement supported without damaging an edge or overloading roof areas?
- What stops extraction, isolates the machine and keeps people clear during a blockage or collection discharge?

Task Hazard Control

1 Release roof zones and the material assessment

Hazard: Removing ballast can change membrane restraint; an unidentified aggregate or roof layer can introduce harmful dust.

Control: Review the roof assembly, material assessment and approved zone sequence. Resolve dust and hazardous-material controls, support capacity, wind limits and temporary restraint before disturbing aggregate.

Verification: Supervisor records the removal and restraint plan and the released materials and roof conditions.

Reasoning: The stones are part of the roof system, so their removal can affect more than surface housekeeping.

2 Stage the vacuum and collection area

Hazard: Ground equipment or discharge can strike bystanders, obstruct access or expose people to airborne waste.

Control: Place and secure the selected machine on the accepted ground location. Close its operating and discharge zones, control traffic and emissions, and prepare compatible collection equipment and the planned waste destination.

Verification: Operator verifies machine setup, guarding and ground-area controls before the roof hose is connected.

Reasoning: A clear roof work area does not control the separate hazards around the ground machine.

3 Install the supported hose route

Hazard: An unsupported hose can fall, pull workers toward an edge or damage roof details.

Control: Use the specified compatible hose and connections. Support and secure the route using the accepted arrangement, protect edges and maintain clear access; keep workers within protected positions during routing.

Verification: Crew verifies connection condition, restraint and the actual roof-to-ground path before startup.

Reasoning: The long hose carries weight and movement that must not be resisted by a worker standing at an edge.

Complete the work and hand over

4 Remove aggregate in the released sequence

Hazard: Moving hose and suction can injure handlers; excessive removal can expose an unrestrained membrane.

Control: Operate on agreed commands and maintain the instructed nozzle handling position. Work only in released zones with the required dust controls, track roof conditions and apply the approved restraint sequence as ballast is removed.

Verification: Roof lead monitors zone progress, hose control and membrane restraint while the operator monitors machine limits.

Reasoning: Removal progress and roof stability must be reviewed together rather than treating extraction as unrestricted cleanup.

5 Stop and isolate before clearing or discharge

Hazard: Stored energy, unexpected suction or moving equipment can injure people handling a blockage or collected waste.

Control: Stop extraction on the agreed signal and follow the actual shutdown and energy-isolation procedure. Verify the required safe condition before opening connections, clearing a blockage or discharging collection equipment; use no improvised pressurized clearing.

Verification: Authorized operator confirms isolation and clearance of affected people before the prescribed intervention.

Reasoning: A blocked hose is an equipment problem requiring a controlled intervention, not a reason to improvise at the roof edge.

6 Inspect and hand over the prepared roof

Hazard: Unrecorded membrane damage or incomplete restraint can leave a vulnerable roof after the machine is removed.

Control: Inspect the removed zones, retain the approved temporary restraint and document damage and remaining ballast. Isolate and remove hose by the accepted route, clear waste and hand over the exact roof status before any separate tear-off.

Verification: Supervisor records zone condition, restraint and open repair or demolition actions for the receiving crew.

Reasoning: A clean-looking roof is not automatically ready for membrane removal or an unattended wind event.

Pause and reassess

- Pause for unassessed material, missing roof or restraint acceptance, unsafe wind or loss of edge protection.
- Stop for hose movement, damaged connections, failed dust controls, membrane movement or unexpected equipment behavior.
- Blockage, discharge, machine changes or membrane tear-off require the actual authorized procedure and revised work boundaries.

Improve the controls

Needs improvement: Work carefully and wear PPE.

More useful: Use the specified compatible hose and connections. Support and secure the route using the accepted arrangement, protect edges and maintain clear access; keep workers within protected positions during routing.

Needs improvement: Check that everything is ready.

More useful: Review the roof assembly, material assessment and approved zone sequence. Resolve dust and hazardous-material controls, support capacity, wind limits and temporary restraint before disturbing aggregate.

Decisions that change the analysis

Why does the existing low-slope tear-off resource not cover this task?

That example removes released membrane and insulation sections. Here a ground vacuum, supported hose route, aggregate collection and progressive loss of ballast restraint create a separate equipment and roof-stability workflow before tear-off.

What must the crew record for actual use?

Identify the actual equipment and work boundaries, responsible people, applicable criteria, inspection findings and open actions. Resolve changes with affected crews and obtain required project authorization before work.

Training needs

- Verify selected-vacuum operator instruction, compatible hose setup, shutdown, blockage and discharge procedures and roof-to-ground communication.
- Train the roof crew on the approved ballast-removal and temporary-restraint sequence, material exposures and protected hose-handling positions.

Confirm applicable qualifications and actual training evidence for the people assigned. Related toolbox talks support discussion; they do not establish competence.

References and adaptation

Industrial Vacuum Roof-rock vacuum equipment and applications

<https://www.industrialvacuum.com/applications/roofing/>

OSHA 1926.501 Duty to have fall protection

<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.501>

OSHA 1926.21 Safety training and education

<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.21>

OSHA 1926.300 Hand and power tools

<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.300>

OSHA 1926.1153 Respirable crystalline silica

<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.1153>

References reviewed October 9, 2026. Use actual equipment and product instructions, project design and site requirements. This original draft supplies no fabricated inspection, signature or approval.