

Dry Mix Shotcrete Wall JHA

Worked instructional example

Work and worksite

A specialist crew will apply dry-process shotcrete to an accessible outdoor building wall from protected ground positions. Dry or damp material enters the gun; compressed air conveys it and the qualified nozzle operator adds water. The actual system method governs the separate feed and nozzle operations. This fictional learning example describes planned controls; it records no actual inspection or work authorization.

- The wall, substrate and dry-process method are released. Qualified personnel use the identified gun, hose, nozzle, material and required supplies; this example gives no generic pressure or water recipe.
- The employer evaluates actual feed and nozzle dust and rebound exposure and specifies engineering, access and respiratory controls. No universally greater dry-process exposure is assumed.
- The shotcrete link 238110-19 is partial: ground-level dry-process wall application only. Wet-mix pumping, overhead or underground work, confined spaces, structural repair diagnosis, hose blockage clearing and machine repair require separate analyses.

Questions before work

- Which actual gun, nozzle and material instructions govern this dry-process application and its stop sequence?
- How are feed-point and nozzle exposures evaluated and controlled, and who keeps other workers out?
- What communication and supply conditions permit the nozzle operator to start, stop or reject application?

Task Hazard Control

1 Define the dry-process work and crew roles

Hazard: Using a wet-pump procedure for a dry gun or an unqualified nozzle role can leave the mixture formation and delivery hazards unmanaged.

Control: Specialist lead identifies the substrate area, accepted dry-process method, material and selected equipment. Assign the gun operator, qualified nozzle operator and support roles with a common stop command. Confirm required application acceptance and any testing responsibilities before starting; resolve changes with the responsible technical authority.

Verification: Lead verifies the selected system, released method and assigned qualifications.

Reasoning: The identified process determines equipment and operator responsibilities.

2 Establish separate feed and nozzle protection

Hazard: Material handling dust, airborne rebound and an exposed hose path can injure workers outside the apparent target area.

Control: Crew arranges controlled bag handling or the approved feed method, the employer's specified dust controls and a restricted application zone. Provide stable nozzle footing and a protected hose route without sharp damage points or public crossings. Locate support workers outside rebound and hose movement paths; arrange cleanup collection before loose material accumulates.

Verification: Lead checks both exposure locations, controls, routes and boundaries.

Reasoning: The feed location and nozzle require separate exposure controls.

3 Check the selected gun and supplies

Hazard: Damaged connections, missing guarding or unsuitable air and water supplies can cause unexpected hose movement, exposure or uncontrolled dry material delivery.

Control: Trained operators complete the actual system's pre-use checks for guards, hose condition, couplings, nozzle assembly and required supply readiness. Secure connections as specified and confirm stop communication before introducing material. Keep personnel clear during the prescribed startup and functional checks; quarantine defects instead of adjusting around them.

Verification: Operators confirm assigned pre-use checks and the startup hold point.

Reasoning: Connected equipment is not evidence of coordinated operating readiness.

Complete the work and hand over

4 Feed and apply through coordinated operator control

Hazard: Interrupted water, erratic feed or uncontrolled nozzle movement can discharge poorly controlled material, create rebound or strike someone in the application zone.

Control: Gun operator feeds the approved material through the actual equipment method while the qualified nozzle operator controls water addition and wall application under the accepted procedure. Maintain stable positions and the restricted zone. Either operator stops for lost communication, abnormal delivery or a supply problem; do not compensate with improvised pressure or water settings.

Verification: Assigned observer reports specified delivery and application deviations to operators.

Reasoning: Nozzle mixture formation depends on coordinated feed and water control.

5 Control interruptions and collected rebound

Hazard: Reaching into the gun, opening a suspect line or reusing unaccepted rebound can cause machinery injury, released energy or hidden material defects.

Control: Use the selected system's controlled stop procedure before addressing an interruption. Keep affected equipment and areas held while the responsible trained personnel identify the problem. Blockage clearing or guard-access servicing follows a separate authorized, energy-controlled method. Collect rebound through the planned protected process; route it as specified rather than assuming it can return to the mix.

Verification: Lead verifies the interruption decision and actual restart requirements.

Reasoning: A stoppage does not authorize access to hazardous energy.

6 Shut down and hand over the wall

Hazard: Residual energy, loose rebound or assumed wall acceptance can expose the cleanup crew and obscure unfinished application checks.

Control: Operators follow the actual shutdown and routine cleaning instructions with the applicable energy controls and exclusion maintained. Remove collected material using the specified dust-controlled method and retain waste containment. Record application areas and deviations for the responsible acceptance personnel, then transfer separate curing, surface review and any repair decisions to identified leads.

Verification: Lead checks shutdown, cleanup and unresolved wall actions with receivers.

Reasoning: A clear record prevents hidden interruption or acceptance concerns.

Pause and reassess

- Material, substrate release, assigned dry-process qualifications or applicable equipment instructions do not match the planned work.
- Communication, air or water supply, hose behavior or material delivery becomes abnormal.
- Feed-point dust controls, rebound exclusion, footing, respiratory arrangements or safe shutdown access are lost.

Improve the controls

Needs improvement: Shotcrete is shotcrete; use the wet-mix pump checklist.

More useful: Identify the dry gun, feed operation and nozzle water addition, then verify the actual system's distinct readiness and operator roles.

Needs improvement: Only the nozzle crew needs a dust plan.

More useful: Evaluate and control the feed location, nozzle zone, hose route and collected-material cleanup through the actual exposure assessment.

Decisions that change the analysis

Can a helper adjust water at the nozzle when the assigned nozzle operator leaves?

Stop through the agreed system procedure and secure the affected work. Nozzle water addition is part of the qualified dry-process application role, not an incidental hose adjustment. Resume only when an appropriately qualified assigned operator, supply readiness and the accepted method are restored. This example supplies no substitute pressure or water ratio.

What must the crew record for actual use?

Record wall and method identity, material and equipment instructions, assigned qualifications, exposure controls, actual pre-use findings, interruptions and completed areas. Identify unresolved acceptance or curing actions, actual shutdown condition and receiving lead; do not copy the fictional plan as a favorable inspection.

Training needs

- Selected dry-process system instruction for the gun operator and qualified nozzle operator, including material feeding, coordinated stop commands and recognition of abnormal delivery.
- Instruction on the employer's actual silica and rebound controls, respiratory-program requirements where applicable, protected work positions and safe collected-material handling.

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

References and adaptation

American Shotcrete Association Dry-Mix process
<https://shotcrete.org/about-shotcrete/dry-mix/>

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

OSHA 1926.702 Concrete construction equipment
<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.702>

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.